



# MONITORING YEAR 3 ANNUAL REPORT

**FINAL**

## **CANDY CREEK MITIGATION SITE**

Guilford County, NC

NCDEQ Contract 5794

NCDMS Project Number 96315

USACE Action ID Number 2015-01209

DWR Project Number 14-0334

Data Collection Period: March – October 2019

Final Submission Date: January 16, 2020

---

### **PREPARED FOR:**



**NC Department of Environmental Quality**

**Division of Mitigation Services**

1652 Mail Service Center

Raleigh, NC27699-1652

Mitigation Project Name Candy Creek Stream Mitigation Site  
 DMS ID 96315  
 River Basin Cape Fear  
 Cataloging Unit 03030002

County Guilford  
 Date Project Instituted 2/21/2014  
 Date Prepared 7/15/2019

USACE Action ID 2015-01209  
 NCDWR Permit No 2014-0334

Credit Release Milestone	Stream Credits						Wetland Credits							
	Scheduled Releases (Stream)	Warm	Cool	Cold	Anticipated Release Year (Stream)	Actual Release Date (Stream)	Scheduled Releases (Forested)	Riparian Riverine	Riparian Non-riparian	Non-riparian	Scheduled Releases (Coastal)	Coastal	Anticipated Release Year (Wetland)	Actual Release Date (Wetland)
Potential Credits (Mitigation Plan)	15,532.530													
Potential Credits (As-Built Survey)	15,506.467													
1 (Site Establishment)	N/A				N/A	N/A	N/A				N/A		N/A	N/A
2 (Year 0 / As-Built)	30%	4,651.940			2017	6/7/2017	N/A				N/A		N/A	N/A
3 (Year 1 Monitoring)	10%	1,550.647			2018	4/25/2018	N/A				N/A		N/A	N/A
4 (Year 2 Monitoring)	10%	1,550.647			2019	4/26/2019	N/A				N/A		N/A	N/A
5 (Year 3 Monitoring)	10%				2020		N/A				N/A		N/A	N/A
6 (Year 4 Monitoring)	5%				2021		N/A				N/A		N/A	N/A
7 (Year 5 Monitoring)	10%				2022		N/A				N/A		N/A	N/A
8 (Year 6 Monitoring)	5%				2023		N/A				N/A		N/A	N/A
9 (Year 7 Monitoring)	10%				2024		N/A				N/A		N/A	N/A
Stream Bankfull Standard	10%						N/A				N/A			
Total Credits Released to Date		7,753.233												

NOTES:

Contingencies (if any): None

  
 Signature of Wilmington District Official Approving Credit Release

27 Sept 2019

Date

- 1 - For NCDMS, no credits are released during the first milestone
- 2 - For NCDMS projects, the second credit release milestone occurs automatically when the as-built report (baseline monitoring report) has been made available to the NCIRT by posting it to the NCDMS Portal, provided the following criteria have been met:
  - 1) Approval of the final Mitigation Plan
  - 2) Recordation of the preservation mechanism, as well as a title opinion acceptable to the USACE covering the property
  - 3) Completion of all physical and biological improvements to the mitigation site pursuant to the mitigation plan
  - 4) Receipt of necessary DA permit authorization or written DA approval for projects where DA permit issuance is not required
- 3 - A 10% reserve of credits is to be held back until the bankfull event performance standard has been met



**PREPARED BY:**

---



**WILDLANDS**  
ENGINEERING

1430 South Mint Street, Suite 104  
Charlotte, NC 28203

Phone: 704.332.7754  
Fax: 704.332.3306

## EXECUTIVE SUMMARY

Wildlands Engineering Inc. (Wildlands) implemented a full delivery project at the Candy Creek Mitigation Site (Site) for the North Carolina Division of Mitigation Services (NCDMS) to restore, enhance, and preserve a total of 19,583 linear feet (LF) of perennial and intermittent streams, in Guilford County, NC. The Site is expected to generate approximately 15,507 stream mitigation units (SMUs) through the restoration, enhancement, and preservation of Candy Creek and nine unnamed tributaries (Table 1).

The Site is located northeast of the Town of Brown Summit within the NCDMS targeted local watershed for the Cape Fear River Basin Hydrologic Unit Code (HUC) 03030002010020 and NC Division of Water Resources (DWR) Subbasin 03-06-01 (Figure 1) and is being submitted for mitigation credit in the Cape Fear River Basin HUC 03030002. The Site is located within the Haw River Headwaters Watershed, which is part of NCDMS' Cape Fear River Basin Restoration Priorities (RBRP). While Candy Creek is not mentioned specifically, this document identifies a restoration goal for all streams within HUC 03030002 of reducing sediment and nutrient pollution to downstream Jordan Lake is a primary goal of the RBRP as stated in the Jordan Lake Nutrient Management Strategy (NCDENR, 2005). The Haw River Watershed was also identified in the 2005 NC Wildlife Resources Commission's Wildlife Action Plan as a priority area for freshwater habitat conservation and restoration to protect rare and endemic aquatic fauna and enhance species diversity. No rare and endemic aquatic species have been documented onsite or are proposed for re-establishment onsite as part of the project. The Wildlife Action Plan calls for "support of conservation and restoration of streams and riparian zones in priority areas (acquisition, easements, and buffer)." Restoration at the Site directly and indirectly addressed these goals by excluding cattle from the stream, creating stable stream banks, restoring a riparian corridor, and placing land historically used for agriculture under permanent conservation easement.

The project goals established in the Mitigation Plan (Wildlands, 2016) were to provide ecological enhancement and mitigate site water quality stressors that will benefit the receiving waters in the Cape Fear River Basin. This will primarily be achieved by creating functional and stable stream channels, increasing and improving the interaction of stream hydrology within the riparian zone, and improving floodplain habitat and ecological function. This will also be achieved by restoring a Piedmont Bottomland Forest community as described by Schafale and Weakley (1990) along the stream reaches within open pastures. With careful consideration of goals and objectives that were described in the RBRP, the following project goals were established:

- Reduce in-stream water quality stressors resulting in enhanced habitat and water quality in riffles and pools.
- Construct stream channels that are laterally and vertically stable resulting in a network of streams capable of supporting hydrologic, biologic, and water quality functions.
- Improve on-site habitat by diversifying and stabilizing the stream channel form; installing habitat features such as undercut logs, brush toe, wood and stone-based riffles; and by establishing native stream bank vegetation and shading where none exists.
- Exclude cattle from project streams resulting in greater treatment and reduction of overland flow and landscape derived pollutants including fecal coliform, nitrogen, and phosphorus.
- Increase and improve hydrologic connectivity between streams and their riparian floodplains; promote temporary water storage and wetland and floodplain recharge during high flows; increase groundwater connectivity within floodplains and wetlands; promote nutrient and carbon exchange between streams and floodplains and reduce shear stress forces on channels during larger flow events.



The Site construction and as-built surveys were completed between July 2016 and March 2017, respectively. A conservation easement was recorded on 61.74 acres to protect the restored riparian corridor in perpetuity. Maintenance measures were implemented in 2017 and 2019. Monitoring Year (MY) 3 assessments and site visits were completed between March and October 2019 to assess the conditions of the project.

Overall, the majority of the Site has met the required stream, vegetation, and hydrology success criteria for MY3, and is on track to meet in MY5 and MY7.

Morphological surveys found that the majority of the Site is stable and functioning as designed. Fluctuations in dimensional parameters have been observed; however, a majority of the cross-sections have remained constant or within the design parameters of the channel type. Entrenchment ratios (ER) remain at 2.2 or greater throughout the project reaches. Bank height ratios (BHR), except for one on UT1C, have not exceeded 1.2.

Stream problem areas throughout the Site are minimal. Erosional areas, where present, are located along outer meander bends, behind lunker logs, at the tie-ins of in-stream structures, or as scour lines below vegetated tops of bank. Areas of in-stream aggradation were also noted in isolated areas throughout the project Site. Currently, remedial action is not needed for these areas; however, they will continue to be monitored and a maintenance plan will be established if deemed necessary.

The overall average planted stem density in MY3 for the Site is 384 stems per acre. This exceeds the MY3 requirement of an average of 320 planted stems per acre and is on track to meet the average requirement of 260 planted stems per acre for MY5 and 210 planted stems per acre for MY7. MY3 results for individual vegetation plots noted that 32 out of 40 plots met the MY3 interim planted stem density success criteria. Additionally, if desirable volunteers are included in the stem density counts, all but one of the vegetation plots met the MY3 success criteria and all are on target to meet the success criteria for MY5 and MY7.

Except for UT1D, all the restoration and enhancement reaches documented at least one bankfull event in MY3 and have now met the stream hydrology assessment criteria of at least two bankfull events in separate monitoring years for each reach. The flow gage established on the upstream, intermittent section of UT1D recorded baseflow for 280 consecutive days during the MY3 monitoring period and has met the minimum 30 consecutive day hydrologic criteria.

Areas of invasive species were treated in 2017 and 2019 and currently make up approximately 3.2% of the total easement area. Over seeding and soil amendments implemented in 2019 have reduced the size of bare herbaceous areas within the planted riparian zone. During MY3, there was one small area of mowing encroachment documented along the upstream extent of Candy Creek Reach 1. Additionally, two beaver dams were documented on Candy Creek Reach 4.



**CANDY CREEK MITIGATION SITE**  
Monitoring Year 3 Annual Report

**TABLE OF CONTENTS**

**Section 1: PROJECT OVERVIEW** ..... 1-1

    1.1 Project Goals and Objectives ..... 1-1

    1.2 Monitoring Year 3 Data Assessment..... 1-2

        1.2.1 Stream Assessment ..... 1-2

        1.2.2 Stream Hydrology Assessment ..... 1-3

        1.2.3 Vegetative Assessment ..... 1-3

        1.2.4 Visual Assessment..... 1-3

        1.2.5 Areas of Concern/Adaptive Management Plan ..... 1-4

    1.3 Monitoring Year 3 Summary ..... 1-5

**Section 2: METHODOLOGY** ..... 2-1

**Section 3: REFERENCES**..... 3-1

**APPENDICES**

<b>Appendix 1</b>	<b>General Figures and Tables</b>
Figure 1	Project Vicinity Map
Figure 2	Project Components/Assets Map
Table 1	Project Components and Mitigation Credits
Table 2	Project Activity and Reporting History
Table 3	Project Contact Table
Table 4	Project Information and Attributes
<b>Appendix 2</b>	<b>Visual Assessment Data</b>
Figure 3.0-3.7	Integrated Current Condition Plan View
Table 5a-m	Visual Stream Morphology Stability Assessment Table
Table 6	Vegetation Condition Assessment Table
	Stream Photographs
	Vegetation Photographs
	Areas of Concern Photographs
<b>Appendix 3</b>	<b>Vegetation Plot Data</b>
Table 7	Vegetation Plot Criteria Attainment Table
Table 8	CVS Vegetation Plot Metadata
Table 9a-g	Planted and Total Stems
<b>Appendix 4</b>	<b>Morphological Summary Data and Plots</b>
Table 10a-f	Baseline Stream Data Summary
Table 11a-c	Morphology and Hydraulic Summary (Dimensional Parameters – Cross-Section)
Table 12a-p	Monitoring Data – Stream Reach Data Summary
	Cross-Section Plots
	Reachwide and Cross-Section Pebble Count Plots
<b>Appendix 5</b>	<b>Hydrology Summary Data and Plot</b>
Table 13	Verification of Bankfull Events
	Stream Gage Plot



## Section 1: PROJECT OVERVIEW

---

The Site is located in northeast Guilford County approximately located northeast of the Town of Brown Summit off of Old Reidsville Road and Hopkins Road (Figure 1). The project watershed is primarily comprised of agricultural and forested land. The drainage area for the Site is 937 acres.

The project streams consist of Candy Creek and its unnamed tributaries (UT1, UT2, UT2A, UT2B, UT3, UT4, UT5, and UT5A). Stream restoration reaches included Candy Creek (Reach 1, 2, and 4), upper UT1C, UT1D, UT2 (lower Reach 1), lower UT3, UT4, and lower UT5. Stream enhancement (Level I and II) activities were utilized for Candy Creek Reach 3, UT2 (upper Reach 1 and Reach 2), UT2A, and UT2B. The intact and functional reaches associated with lower UT1C, upper UT3, and UT5A were preserved with the implementation of the conservation easement. The riparian areas along the restoration and enhancement reaches were planted with native vegetation to improve habitat and protect water quality.

Construction activities were completed by Land Mechanic Designs, Inc. in March 2017. Planting and seeding activities were completed by Bruton Natural Systems, Inc. in March 2017. A conservation easement has been recorded and is in place on 61.74 acres. The project is expected to generate approximately 15,507 SMUs. Annual monitoring will be conducted for seven years with the close-out anticipated to commence in 2023 given the success criteria are met. Appendix 1 provides more detailed project activity, history, contact information, and watershed/site background information for this project.

Directions and a map of the Site are provided in Figure 1 and project components are illustrated for the Site in Figure 2.

### 1.1 Project Goals and Objectives

Prior to construction activities, stream impairments included incised and over widened channels, bank erosion with areas of mass wasting, historic channelization, floodplain alteration, degraded in-stream habitat, and impoundments. Riparian impairments included clearing and livestock grazing. Tables 10a-f in Appendix 4 present the pre-restoration conditions in detail.

The overarching goals of the stream mitigation project are to provide ecological enhancement and mitigate site water quality stressors that will benefit the receiving waters in the Cape Fear River Basin. The Site will treat almost all the headwaters of Candy Creek and 47% of the entire 3.1-square mile Candy Creek watershed before flowing to the Haw River. A primary goal of the RBRP is to restore and maintain water quality as stated in the Jordan Lake Nutrient Management Strategy (NCDENR, 2005). The project goals established for the Site were completed with careful consideration of goals and objectives that were described in the RBRP and include the following:

- *Reduce in-stream water quality stressors.* Reconstruct stream channels with stable dimensions. Stabilize eroding stream banks. Add bank protection and in-stream structures to protect restored/enhanced streams.
- *Construct stream channels that are laterally and vertically stable.* Construct stream channels that will maintain a stable pattern and profile considering the hydrologic and sediment inputs to the system, the landscape setting, and the watershed conditions.
- *Improve on-site habitat.* Construct diverse and stable channel form with varied and self-sustainable stream bedform. Install habitat features such as undercut logs, brush toe, wood and stone-based riffles. Establish native stream bank vegetation and shading where none exists.





- *Exclude cattle from project streams.* Install fencing around the conservation easement adjacent to cattle pastures.
- *Increase and improve the interaction of stream hydrology within the riparian zone to in turn improve floodplain habitat and ecological function.* Reconstruct stream channels with appropriate bankfull dimensions and raise them to the proper depths relative to a functioning floodplain.
- *Restore and enhance native floodplain forest.* Plant native trees and understory species and treat invasive species in the riparian zone.
- *Permanently protect the project Site from harmful uses.* Establish a conservation easement on the Site.

## 1.2 Monitoring Year 3 Data Assessment

Annual monitoring was conducted during MY3 to assess the condition of the project. The stream, vegetation, and hydrologic success criteria for the Site follows the approved success criteria presented in the Candy Creek Mitigation Plan (Wildlands, 2016). The stream reaches were assigned specific performance criteria components for stream morphology, hydrology, and vegetation. Performance criteria will be evaluated throughout the seven-year post-construction monitoring period.

### 1.2.1 Stream Assessment

Riffle cross-sections on the restoration and enhancement I reaches should be stable and show little change in bankfull area, maximum depth ratio, and width-to-depth ratio. Per NCDMS guidance, bank height ratios (BHR) shall not exceed 1.2 and entrenchment ratios (ER) shall be at least 2.2 for restored channels to be considered stable. All riffle cross-sections should fall within the parameters defined for channels of the appropriate stream type. If any changes do occur, these changes will be evaluated to assess whether the stream channel is showing signs of instability. Indicators of instability include trends in vertical incision or bank erosion. Changes in the channel that indicate a movement toward stability or enhanced habitat include a decrease in the width-to-depth ratio in meandering channels or an increase in pool depth. Remedial action would not be taken if channel changes indicate a movement toward stability.

Morphological surveys for MY3 were conducted in May, July, and October 2019. Results from these surveys found that the majority of the Site is stable and functioning as designed. Morphological adjustments across much of the site tend to be minimal and primarily indicate a trend toward increased stability with the narrowing of riffles, the deepening of pools, and the development of point bars. Minor adjustments in channel dimension related to scour or deposition were documented on several cross-sections. Pebble count results showed some areas of fining throughout the Site.

Cross-section survey results for MY3 indicate the majority of the Site's channel dimension is stable. Fluctuations in cross-sectional area, bankfull widths, BHRs, ERs, and max depths for the majority of the cross-sections have remained constant or within the design parameters of the channel type. ERs have remained at 2.2 or greater throughout the project reaches. BHRs, except for cross-section 27 (XS27) on UT1C, have not exceeded 1.2.

Results from the pebble counts in the restoration and EI reaches show a wide variability across the site. Though some of the pebble counts indicate a maintenance of coarser materials in the riffle features and finer particles in the pool features, many of the riffle 100 counts, as well as some of reachwide counts show an increase in fines from MY2 to MY3. A direct cause for this fining throughout the site is unknown; however, heavy in-stream vegetation trapping fines and slowing down stream velocities throughout project area are likely a contributing factor.



Refer to Appendix 2 for the visual stability assessment table, Current Condition Plan View (CCPV) maps, and reference photographs. Refer to Appendix 4 for the morphological data and plots.

### **1.2.2 Stream Hydrology Assessment**

At the end of the seven-year monitoring period, two or more bankfull events must have occurred in separate years within the restoration and enhancement I reaches. Seasonal flow must be documented in the intermittent stream (UT1D) at the Site. Under normal rainfall circumstances, the presence of stream flow on intermittent channels must be documented annually for at least 30 consecutive days during the seven-year monitoring period.

In MY3, partial attainment of the stream hydrology assessment criteria was documented. Except for UT1D, all other restoration and enhancement I reaches have recorded at least two bankfull events in separate monitoring years. Currently UT1D is the only stream that has not met the bankfull event success criteria. However, results from the stream gage established on UT1D indicate the stream is maintaining baseflow as expected for an intermittent stream. Baseflow was recorded for 100% of the monitoring period (280 consecutive days). Refer to Appendix 5 for hydrology summary data and plot.

### **1.2.3 Vegetative Assessment**

A total of 40 vegetation plots were established during the baseline monitoring, thirty-seven standard plots (10-meter x 10-meter) and three non-standard plots (5-meter by 20-meter), within the project easement area. The final vegetative success criteria will be the survival of 210 planted stems per acre in the planted riparian and wetland corridor at the end of the required seventh monitoring period. The interim measure of vegetative success for the Site will be the survival of at least 320 planted stems per acre at the end of MY3 and at least 260 stems per acre at the end of MY5. Planted vegetation must average 10 feet in height in each plot at the end of the MY7.

The MY3 vegetative survey was completed in August - September 2019. The 2019 vegetation monitoring resulted in an average stem density of 384 stems per acre for the Site, exceeding the interim requirement of 320 stems per acre required at MY3. The stem density of 384 stems per acre recorded in MY3 was approximately 37% less than the baseline density recorded at MY0 (610 stems per acre in March 2017). Stem densities within individual monitoring plots range from 202 to 526 planted stems per acre with stem counts ranging from 5 to 13 stems. Currently, there is an average of 10 stems per plot, and the average stem height is 2.6 feet.

Individually, eight vegetation plots (6, 12, 15, 17, 18, 20, 35, and 40) did not meet the MY3 interim success criteria. Of these eight plots, four (12, 17, 35, and 40) are on track to meet the required success criteria for MY5 (260 stems per acre) and MY7 (210 stems per acre). Three of the eight plots (6, 18, and 20) are not on track to meet the planted interim success criteria for MY5; however, they could still meet planted criteria for MY7. Vegetation plot 15, with a planted stem density of 202 stems per acre, did not meet MY3 planted criteria, nor is it on target to meet MY5 or MY7 planted criteria. However, if desirable volunteers are included in the stem density counts, all of the vegetation plots are on target to meet the success criteria for MY5 and MY7 and all but plot 35 meet the MY3 success criteria. Desirable volunteer species that have been present for at least two concurrent years and in plots where density rates are low will be recorded and tagged in MY4. These species will be monitored in subsequent monitoring years (MY4 – MY7) and included in the overall density rates for the associated plots. Refer to Appendix 2 for vegetation photographs and the vegetation condition assessment table and Appendix 3 for vegetation data tables.

### **1.2.4 Visual Assessment**

A final Site walk was performed in October of 2019 to document field conditions.



Bank erosion was observed in isolated pockets along outer meander bends, behind lunker logs, at the tie-ins of in-stream structures, or as scour lines below vegetated tops of bank. Areas of in-stream aggradation were also noted in isolated areas throughout the project Site. Visual assessments in subsequent monitoring years will continue to document these areas for instability issues. In the event intervention is needed, they will be addressed with an adaptive management plan.

A variety of invasive species such as English ivy (*Hedera helix*), Japanese honeysuckle (*Lonicera japonica*), Asian spiderwort (*Murdannia keisak*), water primrose (*Ludwigia hexapetala*), kudzu (*Pueraria montana*), multi-flora rose (*Rosa multiflora*), and tree of heaven (*Ailanthus altissima*) have been noted within the easement boundaries. Currently, these species make up approximately 3.2% of the easement area. English ivy and Japanese honeysuckle persist primarily in area of mature forests, while Asian spiderwort and water primrose are present along stream reaches and vernal pool areas where breaks in stream shade and canopy species are common. The remainder of the invasive species types are scattered throughout the easement.

A couple of bare/poor herbaceous cover areas along UT2 and UT2A, as well as some areas of low stem densities were noted in MY3. Impaired herbaceous areas were over seeded and supplemented with lime and 10-10-10 fertilization in early MY3. This application has reduced the size of bare herbaceous areas from 2.6% of the planted acreage in MY2 to 0.8% of the planted area in MY3. Low stem density areas have remained approximately the same with 0.5% of the planted area in MY2 versus 0.6% of the planted area in MY3.

One area of mowing encroachment was documented in July of 2019 and reconfirmed during the October site walk along the upstream extent of Candy Creek Reach 1. The area constitutes approximately 0.04 acres or 0.1% of the total easement acreage. Two beaver dams were documented on Candy Creek Reach 4 during the end of the year site walk. Locations of the mowing encroachment area and beaver dams are included on the CCPV Figures 3.1 and 3.6, respectively. Representative photographs are included in Appendix 2.

### **1.2.5 Areas of Concern/Adaptive Management Plan**

As result of large storm events (precipitation greater than two inches per event) that occurred during the fall of 2018 including the remnants of Hurricane Florence and Michael, a maintenance repair plan was created to stabilize any significant areas of instability and to remove large fallen trees impeding stream flow or causing erosive issues. The maintenance repair plan was conducted in March and August of 2019. The repairs were minor and consisted of live staking stream banks, trenching live fascines along top of bank, and rebuilding outside meander bends and replanting the banks with established vegetation transplanted from the floodplain.

Stream reaches with dense areas of the aquatic plant species Asian spiderwort (*Murdannia keisak*) and water primrose (*Ludwigia hexapetala*) were treated in the Fall of 2017 and 2019. Due to the dense nature of these species, follow up treatments will be needed. Additionally, tree of heaven and kudzu populations were treated in the Fall of 2019 across the entire project. A Site review of the invasive work concluded these treatments were beneficial but will require follow up treatments. Lastly, isolated areas of English ivy (*Hedera helix*) previously treated in 2017 continue to persist and will need to be re-treated in upcoming monitoring years.

The mowing encroachment noted in the upstream extent of the left floodplain along Candy Creek Reach 1 will be addressed with the property owner. Vegetation growth within this area will be subsequently monitored. If additional over-seeding or planting is needed a maintenance plan will be established. The beaver dams will be removed, and subsequent removal and/or trapping will be implemented if deemed necessary.



Refer to Appendix 2 for the vegetation condition assessment table and the CCPV.

### **1.3 Monitoring Year 3 Summary**

The Candy Creek Mitigation Site is on track to meet monitoring success criteria for geomorphology, hydrology, and vegetation performance standards. Morphological surveys indicate that overall the channel dimensions are stable and functioning as designed. The bankfull success criteria has been partially met and are expected to meet by MY7. The MY3 vegetation survey resulted in an average stem density of 384 planted stems per acre. The Site is on track to meeting the MY7 success criteria with 32 of 40 individual vegetation plots meeting the MY3 success criteria. With the inclusion of desirable volunteer species, all but one of the vegetation plots currently meet the MY3 vegetative success criteria and all are on track to meet MY5 and MY7 success criteria.

Summary information and data related to the performance of various project and monitoring elements can be found in the tables and figures in the report appendices. Narrative background and supporting information formerly found in these reports can be found in the Mitigation Plan documents available on NCDMS' website. All raw data supporting the tables and figures in the appendices are available from NCDMS upon request.



## Section 2: METHODOLOGY

---

Geomorphic data were 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 a Trimble handheld GPS with sub-meter accuracy and processed using Pathfinder and ArcGIS. Planted woody vegetation is being monitored in accordance with the guidelines and procedures developed by the Carolina Vegetation Survey-EEP Level 2 Protocol (Lee et al., 2008). Crest gages were installed in surveyed riffle cross-sections and monitored quarterly. Hydrologic monitoring instrument installation and monitoring methods are in accordance with the United States Army Corps of Engineers (USACE, 2003) standards.



## Section 3: 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.
- Harrelson, C.C., Rawlins, C.L., Potyondy, J.P. 1994. *Stream Channel Reference Sites: An Illustrated Guide to Field Technique*. Gen. Tech. Rep. RM-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 61 p.
- Lee, M.T., Peet, R.K., S.D., Wentworth, T.R. 2008. CVS-EEP Protocol for Recording Vegetation Version 4.2. Retrieved from <http://cvs.bio.unc.edu/protocol/cvs-eep-protocol-v4.2-lev1-5.pdf>.
- North Carolina Department of Environment and Natural Resources. 2005. Cape Fear River Basinwide Water Quality Plan. DWQ Planning Section, Raleigh, NC.
- North Carolina Ecosystem Enhancement Program. 2009. Cape Fear River Basin Restoration Priorities. [http://portal.ncdenr.org/c/document\\_library/get\\_file?uuid=864e82e8-725c-415e-8ed9-c72dfcb55012&groupId=60329](http://portal.ncdenr.org/c/document_library/get_file?uuid=864e82e8-725c-415e-8ed9-c72dfcb55012&groupId=60329)
- North Carolina Division of Mitigation Services and Interagency Review Team Technical Workgroup. 2018. Standard Measurement of the BHR Monitoring Parameter. Raleigh, NC.
- North Carolina Wildlife Resources Commission. 2005. North Carolina Wildlife Action Plan. Raleigh, NC.
- Rosgen, D. L. 1994. A classification of natural rivers. *Catena* 22:169-199.
- Rosgen, D. L. 1996. Applied River Morphology. Pagosa Springs, CO: Wildland Hydrology Books.
- Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina, 3rd approx. North Carolina Natural Heritage Program, Raleigh, North Carolina.
- United States Army Corps of Engineers. 2003. Stream Mitigation Guidelines. USACE, NCDENR-DWQ, USEPA, NCWRC.
- United States Geological Service. 2019. USGS Station 0209553650, Buffalo Creek at SR2819 NR, McLeansville, NC. [https://waterdata.usgs.gov/nc/nwis/current/?type=precip&group\\_key=county\\_cd](https://waterdata.usgs.gov/nc/nwis/current/?type=precip&group_key=county_cd)
- Wildlands Engineering, Inc. 2016. Candy Creek Mitigation Site Mitigation Plan. NCDMS, Raleigh, NC.



## **APPENDIX 1. General Figures and Tables**

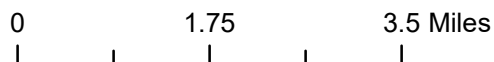
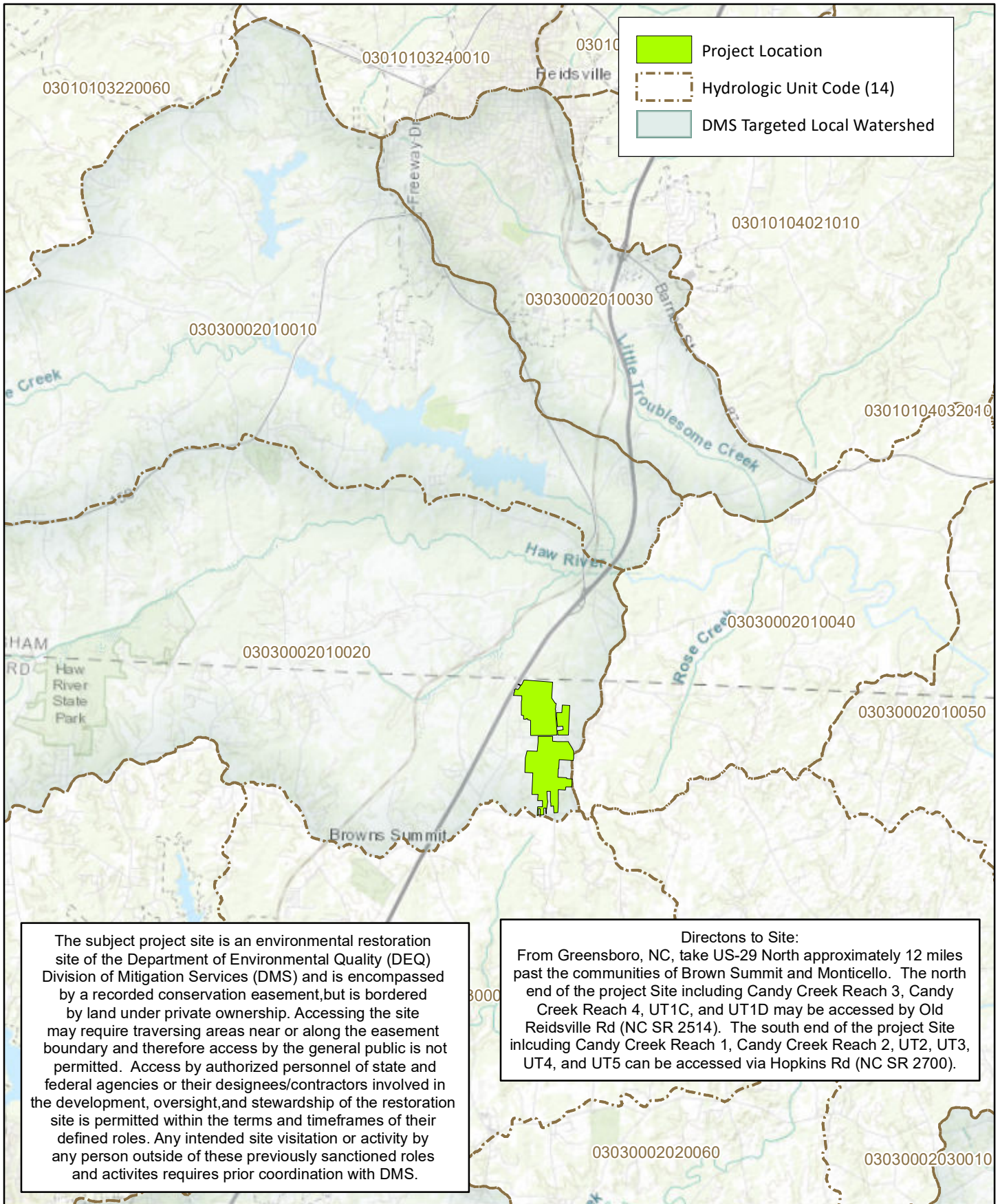
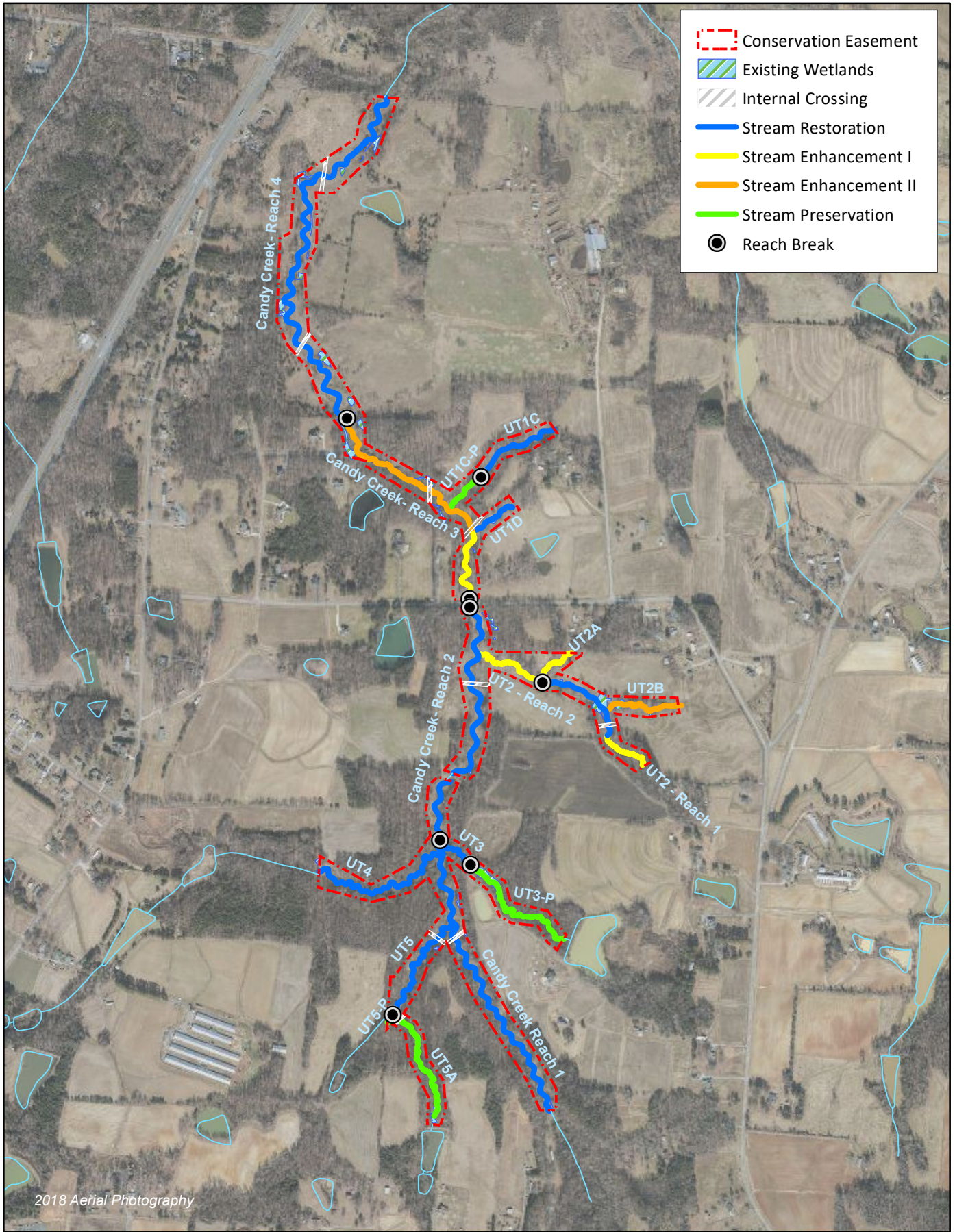


Figure 1 Project Vicinity Map  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC





2018 Aerial Photography

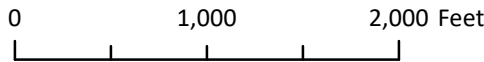


Figure 2 Project Components/Assets Map  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

**Table 1. Project Components and Mitigation Credits**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

Mitigation Credits									
	Stream		Riparian Wetland		Non-Riparian Wetland		Buffer	Nitrogen Nutrient Offset	Phosphorous Nutrient Offset
Type	R	RE	R	RE	R	RE			
Totals	14,975.867	530.600	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Project Components									
Reach ID	As-Built Stationing/ Location	Existing Footage/ Acreage	Approach	Restoration or Restoration Equivalent	Restoration Footage/ Acreage	Mitigation Ratio	Credits (SMU/WMU)		
<b>STREAMS</b>									
Candy Creek Reach 1	100+08 - 117+19	2,885	P1	Restoration	1,711	1:1	1,711.000		
	117+45 - 126+27		P1	Restoration	882	1:1	882.000		
Candy Creek Reach 2	126+27 - 131+80	2,398	P1	Restoration	553	1:1	553.000		
	132+40 - 141+17		P1	Restoration	877	1:1	877.000		
	141+43 - 148+42		P1	Restoration	699	1:1	699.000		
Candy Creek Reach 3	149+02 - 155+05	2,333	EI	Enhancement	603	1.5:1	402.000		
	155+05 - 155+33		EII	Enhancement	28	2.5:1	11.200		
	155+62 - 160+35		EII	Enhancement	473	2.5:1	189.200		
	160+62 - 170+37		EII	Enhancement	975	2.5:1	390.000		
Candy Creek Reach 4	170+71 - 178+74	3,386	P1	Restoration	803	1:1	803.000		
	179+00 - 196+47		P1	Restoration	1,747	1:1	1,747.000		
	196+68 - 206+35		P1	Restoration	967	1:1	967.000		
UT1C	200+12 - 207+40	551	P1	Restoration	728	1:1	728.000		
UT1C - P	207+40 - 211+38	398	-	Preservation	398	5:1	79.600		
UT1D	250+00 - 253+79	437	P1	Restoration	379	1:1	379.000		
UT2 Reach 1	300+00 - 304+24	940	EI	Enhancement	424	1.5:1	282.667		
	304+24 - 305+01		P1	Restoration	77	1:1	77.000		
	305+26 - 311+88		P1	Restoration	662	1:1	662.000		
UT2 Reach 2	311+88 - 318+31	746	EI	Enhancement	643	1.5:1	428.667		
UT2A	350+84 - 354+37	376	EI	Enhancement	353	1.5:1	235.333		
UT2B	270+28 - 276+85	702	EII	Enhancement	657	2.5:1	262.800		
UT3 - P	400+00 - 411+50	1,150	-	Preservation	1,150	5:1	230.000		
UT3	411+50 - 414+96	729	P1	Restoration	346	1:1	346.000		
UT4	500+49 - 514+05	1,270	P1	Restoration	1,356	1:1	1,356.000		
UT5-P	599+19 - 600+00	81	-	Preservation	81	5:1	16.200		
UT5	600+00 - 607+91	1,297	P1	Restoration	791	1:1	791.000		
	608+16 - 610+12			Restoration	196	1:1	196.000		
UT5A	650+00 - 659+70	1,056	-	Preservation	970	5:1	194.000		
	659+99 - 660+56		-	Preservation	54	5:1	10.800		

Component Summation						
Restoration Level	Stream (LF)	Riparian Wetland (acres)		Non-Riparian (acres)	Buffer (square feet)	Upland (acres)
		Riverine	Non-Riverine			
Restoration	12,774	-	-	-	-	-
Enhancement		-	-	-	-	-
Enhancement I	2,023					
Enhancement II	2,133					
Preservation	2,653	-	-	-		

The linear feet associated with the stream crossings were excluded from the computations.

**Table 2. Project Activity and Reporting History**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

Activity or Report		Data Collection Complete	Completion or Scheduled Delivery
Mitigation Plan		November 2014	March 2016
Final Design - Construction Plans		July 2016	July 2016
Construction		July 2016 - March 2017	March 2017
Temporary S&E mix applied to entire project area <sup>1</sup>		July 2016 - March 2017	March 2017
Permanent seed mix applied to reach/segments		March 2017	March 2017
Bare root and live stake plantings for reach/segments		March 2017	March 2017
Baseline Monitoring Document (Year 0)	Stream Survey	October 2016 - March 2017	May 2017
	Vegetation Survey	March 2017	
Invasive Species Treatment		September / October 2017	
Year 1 Monitoring	Stream Survey	October 2017	December 2017
	Vegetation Survey	October 2017	
Year 2 Monitoring	Stream Survey	June 2018	November 2018
	Vegetation Survey	August 2018	
Live Staking and Live Facines		March 2019	
Riparian Seeding		March 2019	
Year 3 Monitoring	Stream Survey	October 2019	December 2019
Stream Maintenance		August 2019	
Invasive Species Treatment		September 2019	
Year 3 Monitoring	Vegetation Survey	September 2019	December 2019
Year 4 Monitoring	Stream Survey	2020	December 2020
	Vegetation Survey	2020	
Year 5 Monitoring	Stream Survey	2021	December 2021
	Vegetation Survey	2021	
Year 6 Monitoring	Stream Survey	2022	December 2022
	Vegetation Survey	2022	
Year 7 Monitoring	Stream Survey	2023	December 2023
	Vegetation Survey	2023	

<sup>1</sup>Seed and mulch is added as each section of construction is completed.

**Table 3. Project Contact Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

<b>Designer</b> Aaron Earley, PE	<b>Wildlands Engineering, Inc.</b> 1430 South Mint Street, Suite 104 Charlotte, NC 28203 704.332.7754
<b>Construction Contractor</b>	<b>Land Mechanic Designs, Inc.</b> 126 Circle G Lane Willow Spring, NC 27592
<b>Planting Contractor</b>	<b>Bruton Natural Systems, Inc</b> P.O. Box 1197 Fremont, NC 27830
<b>Seeding Contractor</b>	<b>Land Mechanic Designs, Inc.</b> 126 Circle G Lane Willow Spring, NC 27592
<b>Seed Mix Sources</b>	<b>Green Resource, LLC</b>
<b>Nursery Stock Suppliers</b> <b>Bare Roots</b> <b>Live Stakes</b>	<b>Dykes and Son Nursery</b> 825 Maude Etter Rd. McMinnville, TN 37110
	<b>Foggy Mountain Nursery</b> 797 Helton Creek Rd. Lansing, NC 28643
	<b>Bruton Natural Systems, Inc.</b>
<b>Monitoring Performers</b>	<b>Wildlands Engineering, Inc.</b>
Monitoring, POC	Kristi Suggs 704.332.7754 ext. 110

**Table 4. Project Information and Attributes**

Candy Creek Mitigation Site

Project No.

96315

Monitoring Year 3 - 2019

Project Information										
Project Name	Candy Creek Mitigation Site									
County	Guilford County									
Project Area (acres)	61.74									
Project Coordinates (latitude and longitude)	Upstream Project Limits – 36°13'27.27"N, 79°39'37.79"W Downstream Project Limits – 36°14'39.74"N, 79°39'50.46"W									
Project Watershed Summary Information										
Physiographic Province	Inner Piedmont Belt of the Piedmont Physiographic Province									
River Basin	Cape Fear									
USGS Hydrologic Unit 8-digit	03030002									
USGS Hydrologic Unit 14-digit	03030002010020									
DWR Sub-basin	03-06-01									
Project Drainage Area (acres)	937									
Project Drainage Area Percentage of Impervious Area	1%									
CGIA Land Use Classification	66% – Agriculture/Managed Herbaceous; 29% – Forested/Scrubland, 5% - Developed									
Reach Summary Information										
Parameters	Candy Creek Reach 1		Candy Creek Reach 2		Candy Creek Reach 3		Candy Creek Reach 4			
Length of Reach (linear feet) - Post-Restoration	2,593		2,129		2,079		3,517			
Drainage Area (acres)	560		694		809		937			
NCDWR Stream Identification Score	40.5		40.5		45.0		45.0			
NCDWR Water Quality Classification	WS-V (NSW)									
Morphological Description (stream type)	G4c		F5		G4c		G4c			
Evolutionary trend (Simon's Model) - Pre- Restoration	IV		IV		IV		III/IV			
Underlying mapped soils	Clifford Sandy Clay Loam, Codorus Loam, Nathalie Sandy Loam, Poplar Forest Gravelly Sandy Loam									
Drainage class	Well Drained to Somewhat Poorly Drained									
Soil hydric status	Codorus Loam - Hydric									
Slope	---									
FEMA classification	N/A									
Native vegetation community	Piedmont Bottomland Forest									
Percent composition exotic invasive vegetation -Post-Restoration	0%									
Parameters	UT1C	UT1D	UT2	UT2A	UT2B	UT3	UT4	UT5	UT5A	
Length of Reach (linear feet) - Post-Restoration	1,126	379	1,806	353	657	1,496	1,356	1,068	1,024	
Drainage Area (acres)	28	6	63	15	24	79	190	137	45	
NCDWR Stream Identification Score	35.0	27.5	34.5	31.5	31.5	36.5	37.5	31.5	33.5	
NCDWR Water Quality Classification	C									
Morphological Description (stream type)	E5b	C5	F5	G5	B5c	G4	G4	F4	N/A	
Evolutionary trend (Simon's Model) - Pre- Restoration	III	II/III	III/V	III	III	IV	IV	IV	N/A	
Underlying mapped soils	Casville Sandy Loam, Codorus Loam, Nathalie Sandy Loam									
Drainage class	Well Drained to Somewhat Poorly Drained									
Soil hydric status	Codorus Loam - Hydric									
Slope	---									
FEMA classification	N/A									
Native vegetation community	Piedmont Bottomland Forest									
Percent composition exotic invasive vegetation -Post-Restoration	0%									
Regulatory Considerations										
Regulation	Applicable?	Resolved?	Supporting Documentation							
Waters of the United States - Section 404	Yes	Yes	USACE Nationwide Permit No.27 (Action ID# SAW-2015-01209) and DWR 401 Water Quality Certification (letter from DWR dated 5/13/2015).							
Waters of the United States - Section 401	Yes	Yes								
Division of Land Quality (Dam Safety)	No	N/A	N/A							
Endangered Species Act	Yes	Yes	Candy Creek Mitigation Plan; Wildlands determined "no effect" on Guilford County listed endangered species. USFWS responded on April 4, 2014 and stated the "proposed action is not likely to adversely affect any federally listed endangered or threatened species, their formally designated critical habitat or species currently proposed for listing under the Act".							
Historic Preservation Act	Yes	Yes	No historic resources were found to be impacted (letter from SHPO dated 3/24/2014).							
Coastal Zone Management Act (CZMA)/Coastal Area	No	N/A	N/A							
FEMA Floodplain Compliance	No	N/A	N/A							
Essential Fisheries Habitat	No	N/A	N/A							

## **APPENDIX 2. Visual Assessment Data**

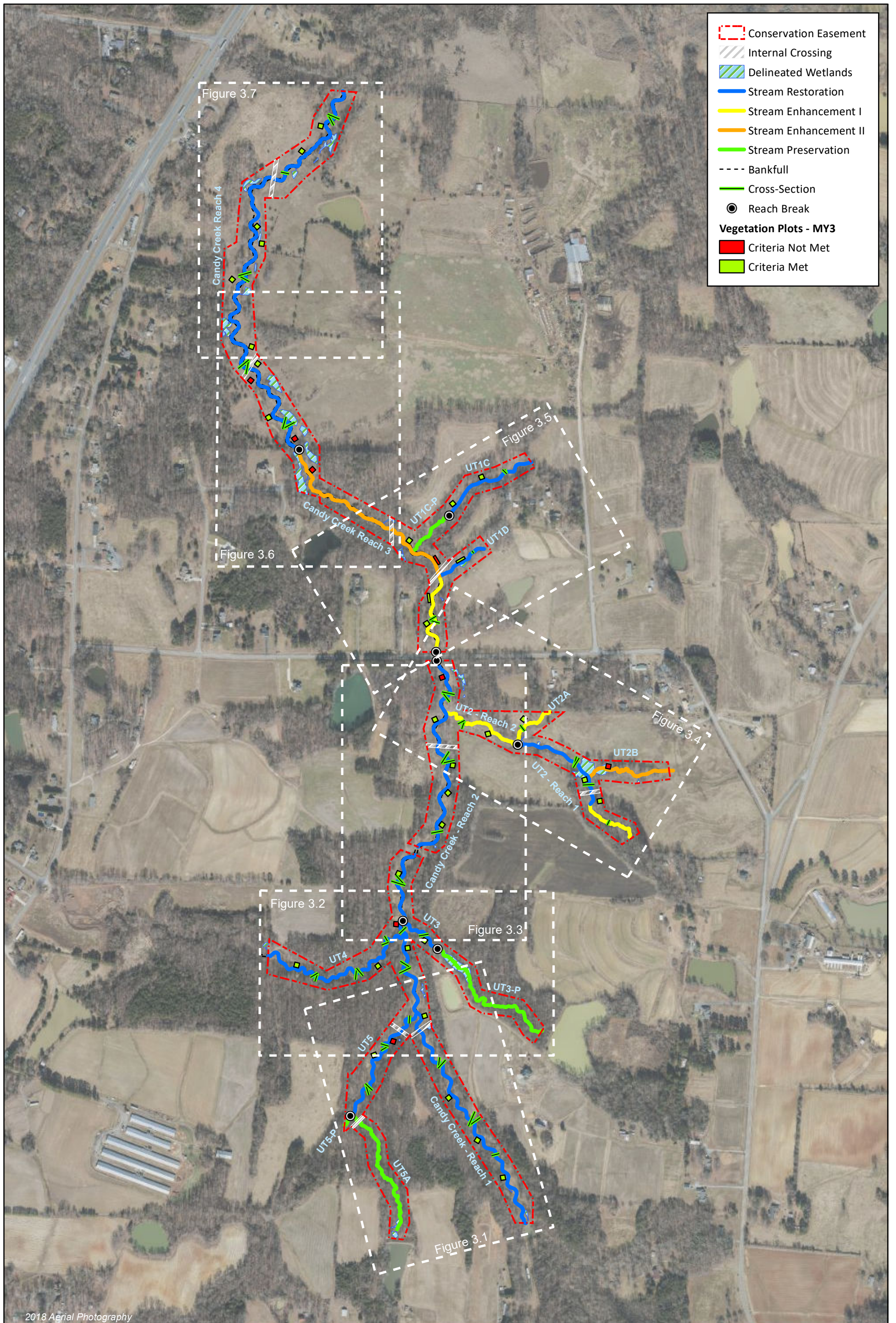
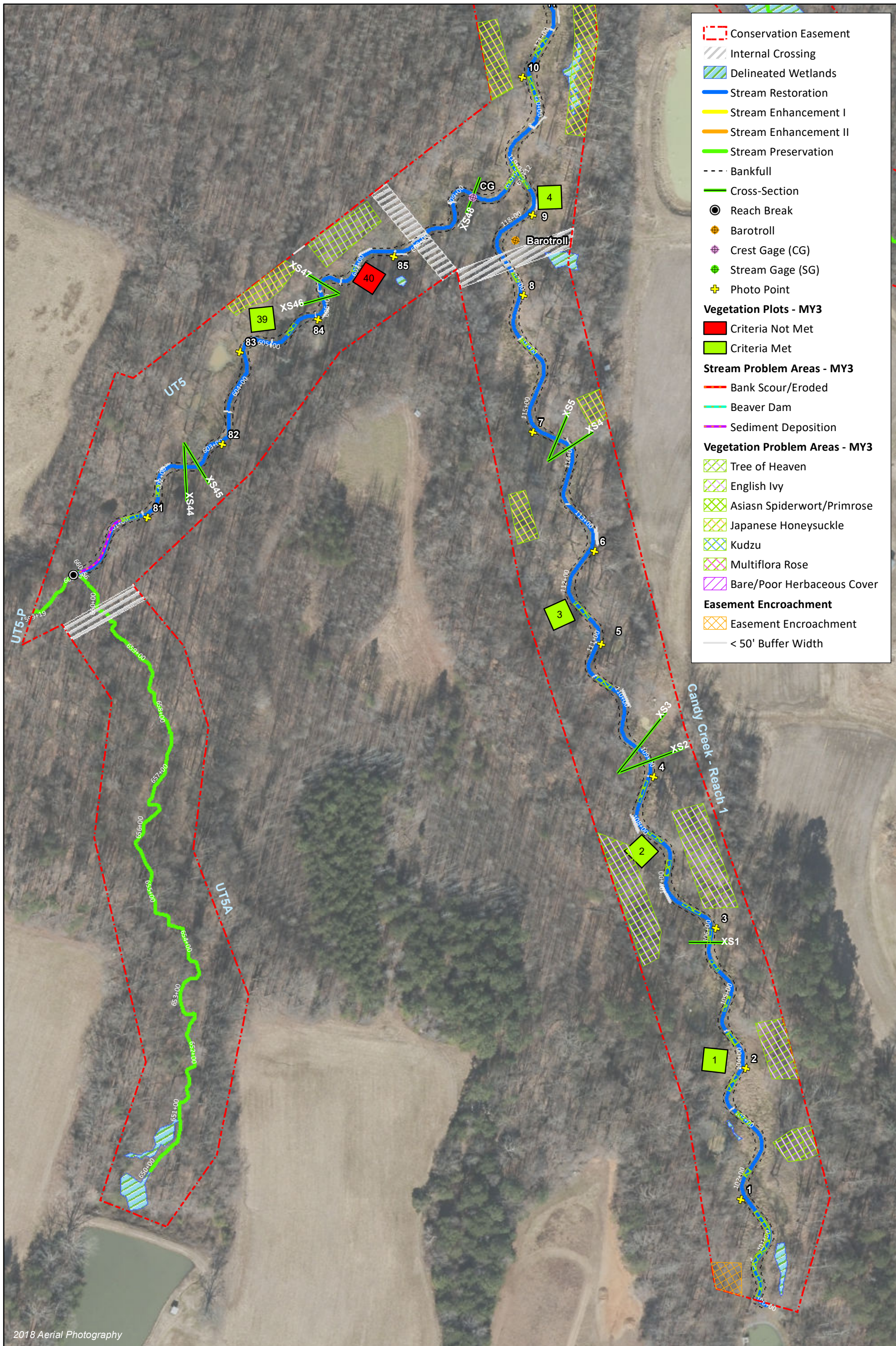


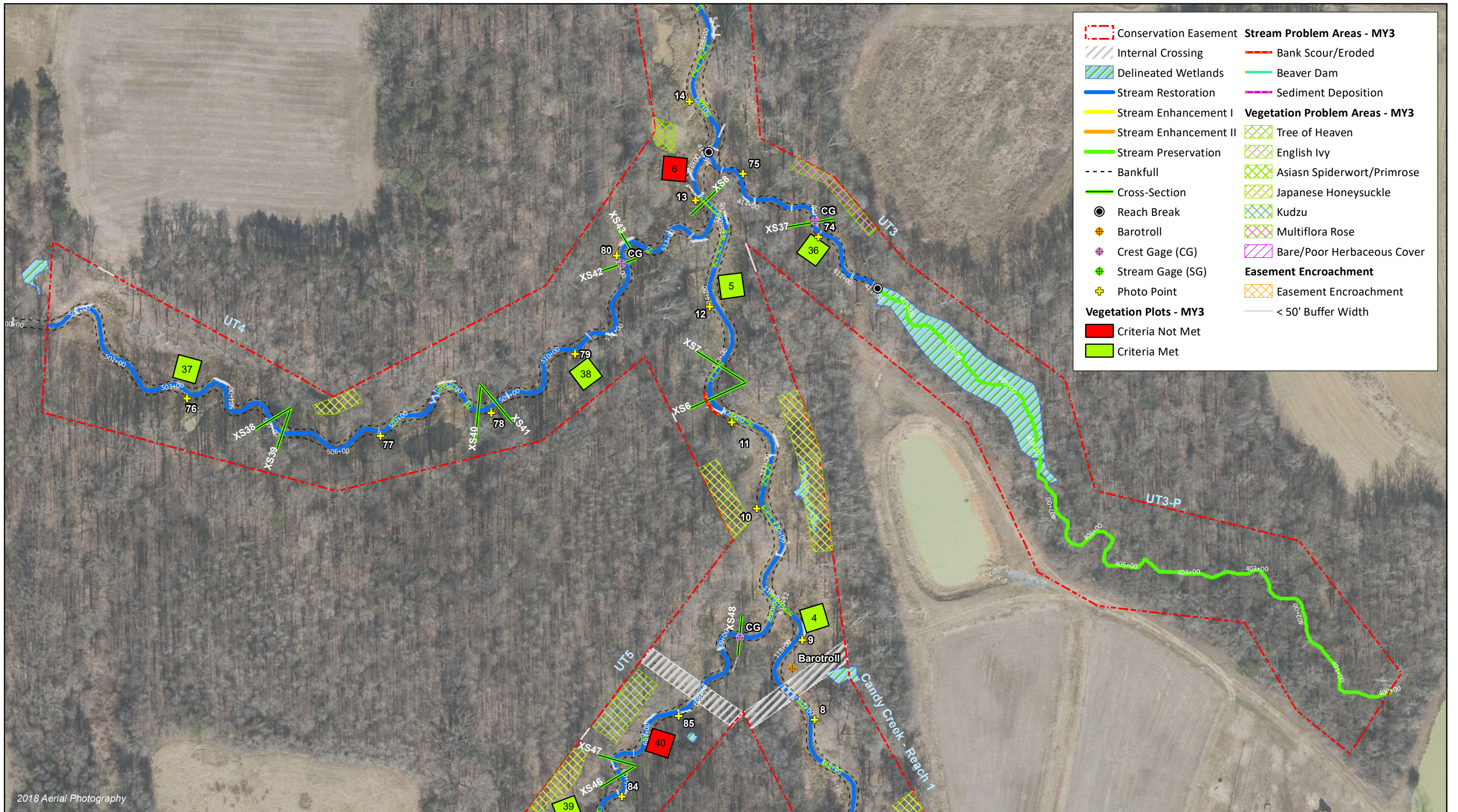
Figure 3.0 Integrated Current Condition Plan View  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC



0 150 300 Feet



Figure 3.1 Integrated Current Condition Plan View  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC



2018 Aerial Photography

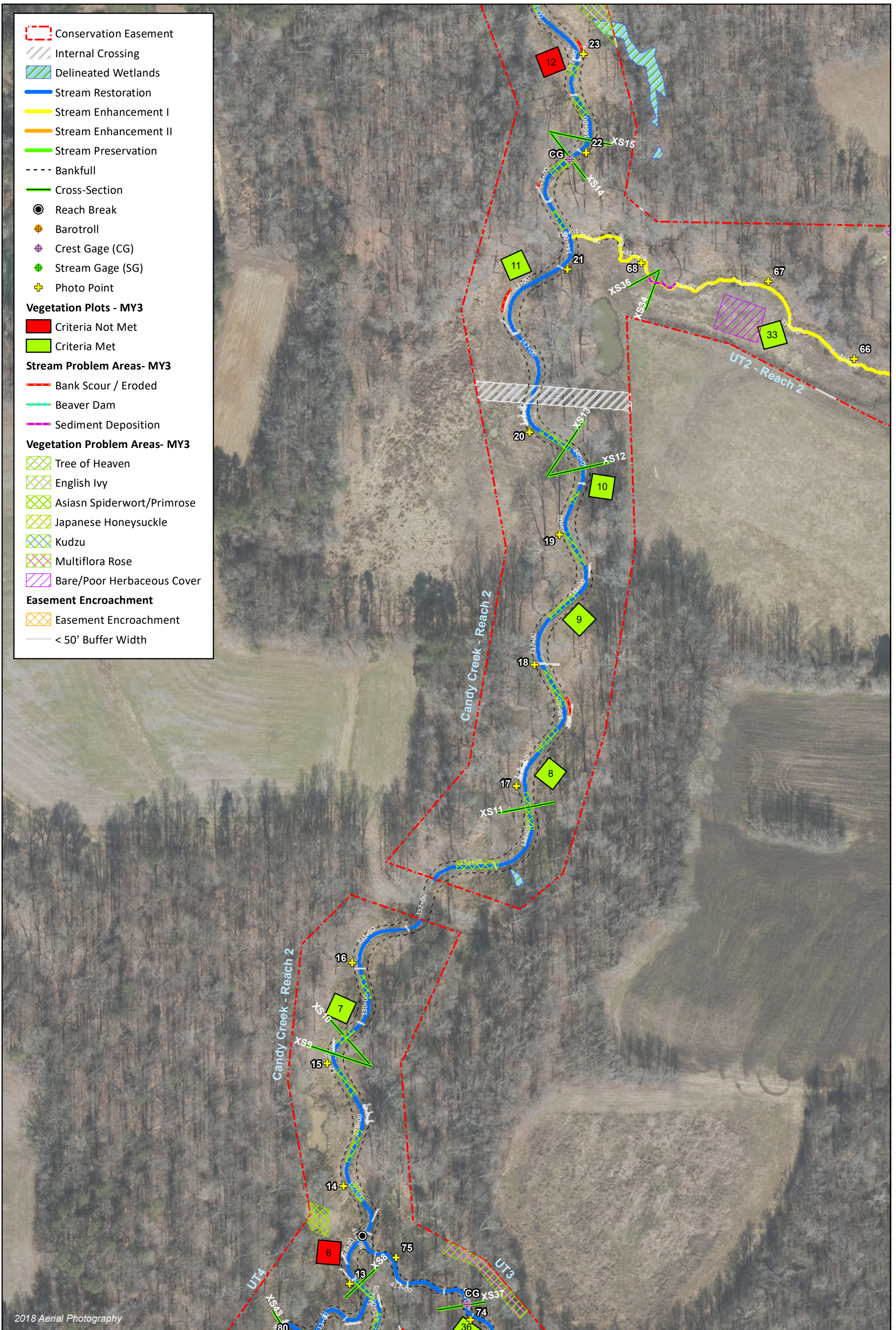


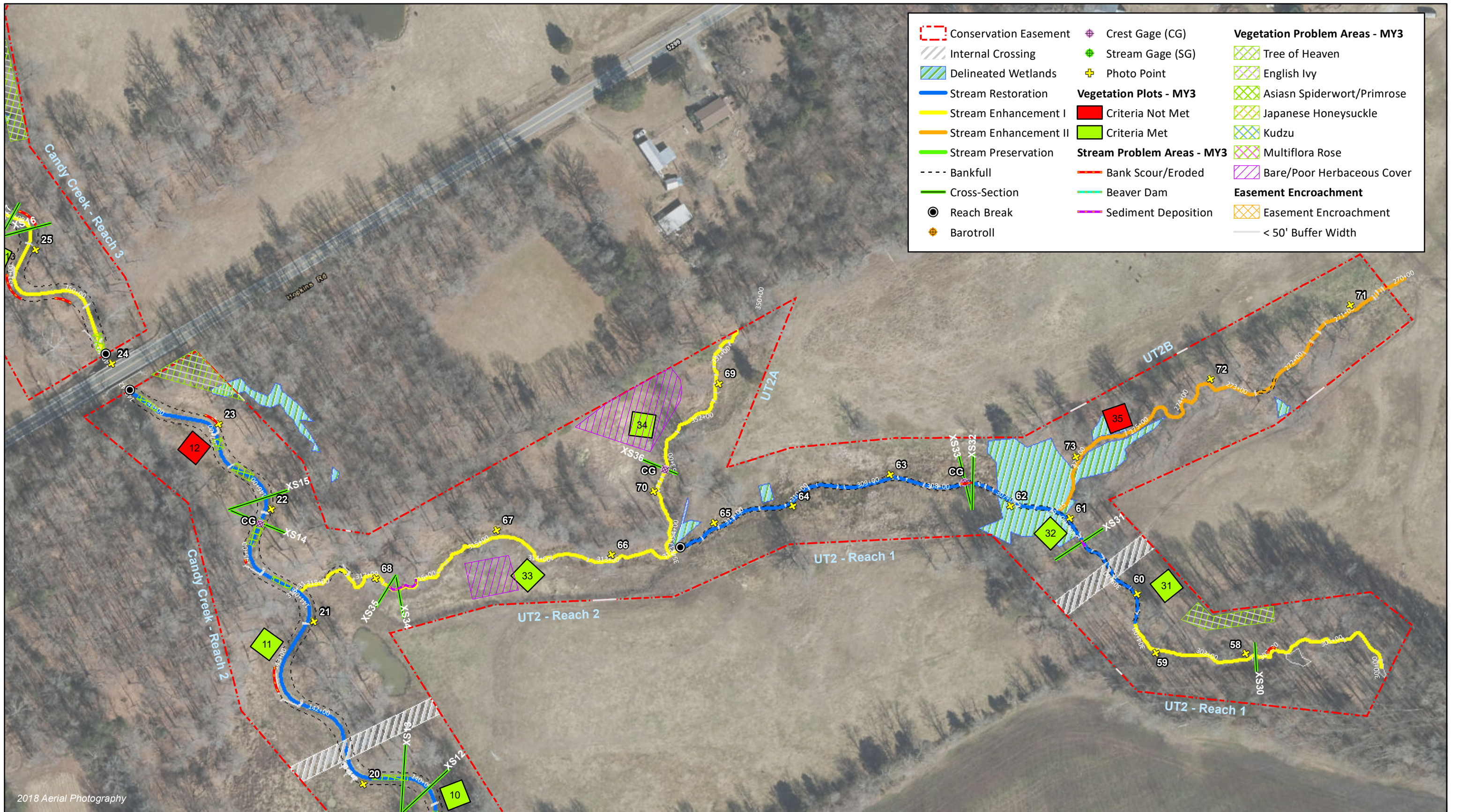
0 125 250 Feet



Figure 3.2 Integrated Current Condition Plan View  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC







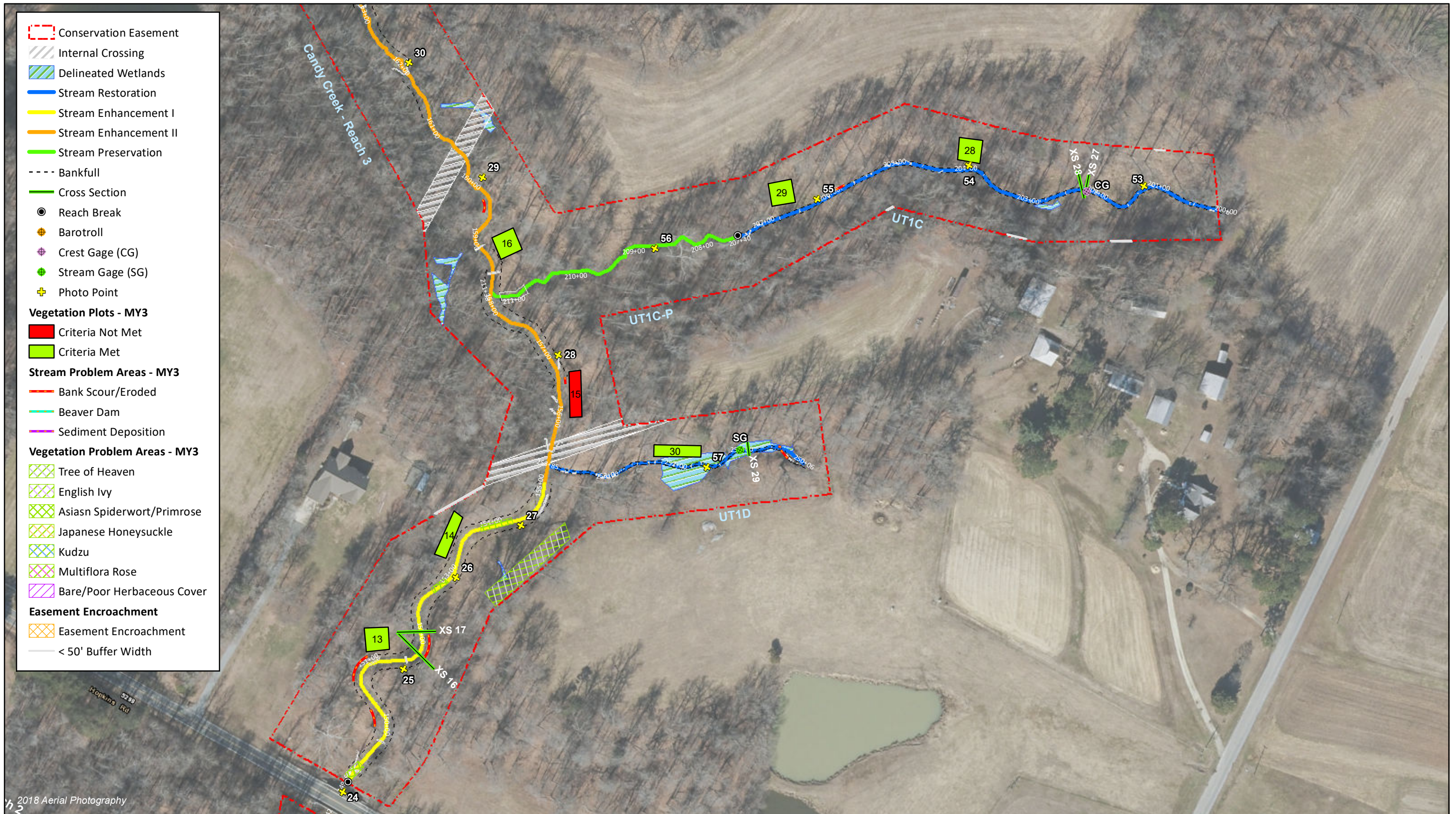
2018 Aerial Photography



0 125 250 Feet



Figure 3.4 Integrated Current Condition Plan View  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC



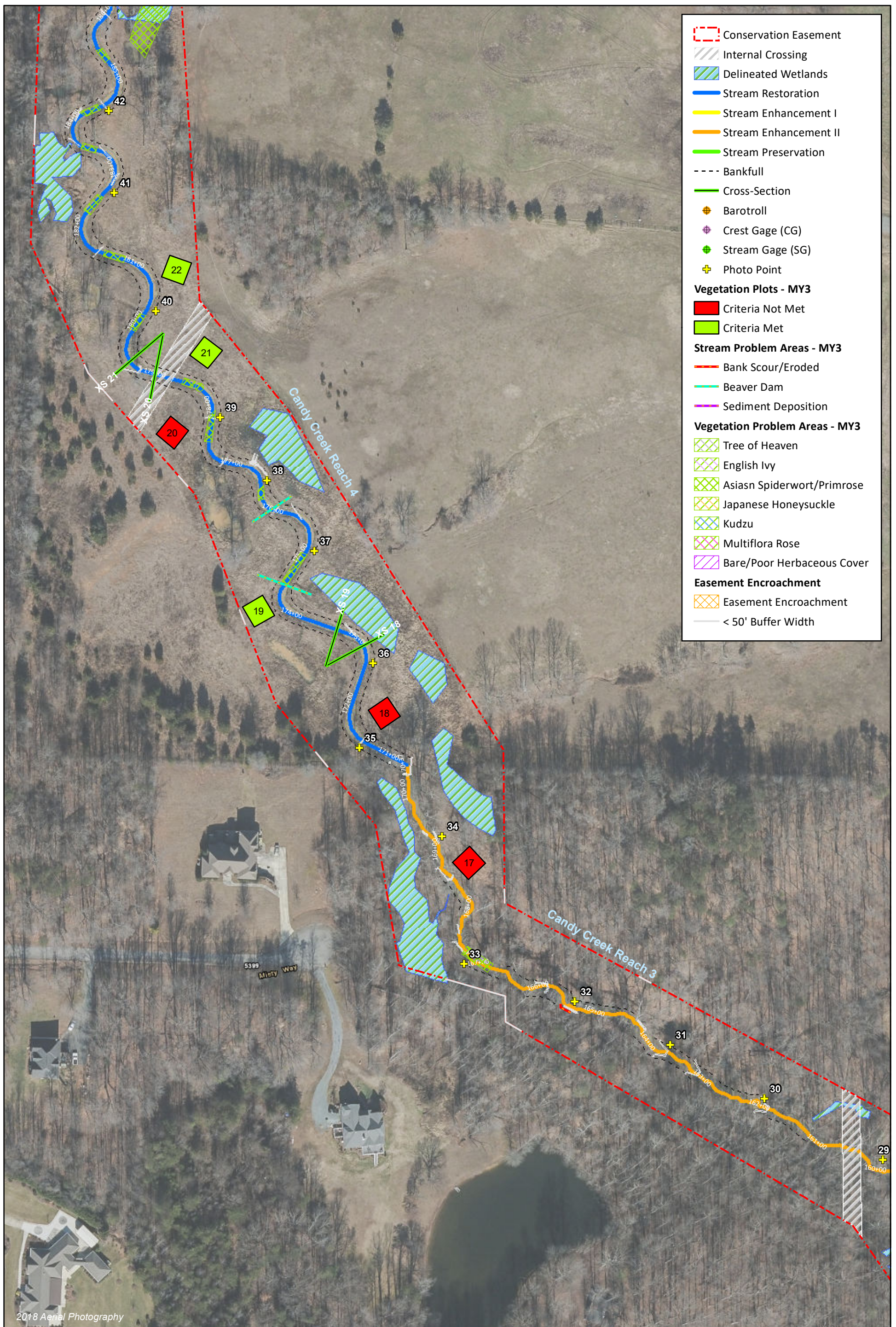
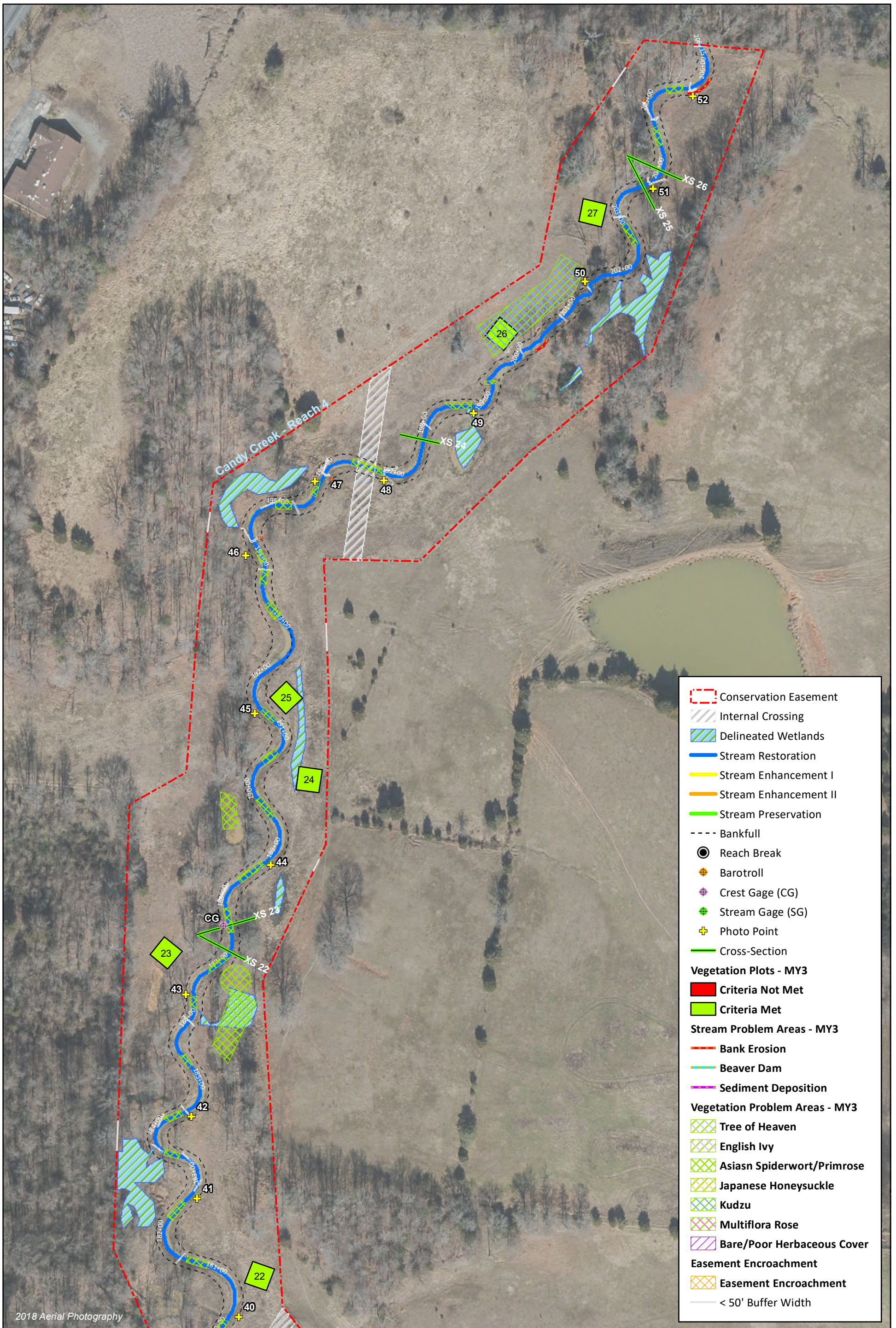


Figure 3.6 Integrated Current Condition Plan View  
 Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019  
 Guilford County, NC



**Table 5a. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 1 (2,619 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	39	39			100%			
	3. Meander Pool Condition	Depth Sufficient	38	38			100%			
		Length Appropriate	38	38			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	38	38			100%			
Thalweg centering at downstream of meander bend (Glide)		38	38	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.					1	42	99%	1
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					<b>1</b>	<b>42</b>	<b>99%</b>	<b>1</b>	<b>20</b>	<b>100%</b>
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	32	32			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	27	27			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	27	27			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5b. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 2 (2,215 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation												
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%															
		Degradation			0	0	100%															
	2. Riffle Condition	Texture/Substrate	24	24																		
		Depth Sufficient	24	24																		
	3. Meander Pool Condition	Length Appropriate	24	24																		
		Thalweg centering at upstream of meander bend (Run)	24	24																		
4. Thalweg Position	Thalweg centering at downstream of meander bend (Glide)	24	24																			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.				4	90				98%	0	0									98%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.				0	0				100%	0	0									100%
	3. Mass Wasting	Bank slumping, calving, or collapse				0	0				100%	0	0	100%								
<b>Totals</b>					<b>4</b>	<b>90</b>	<b>98%</b>				<b>0</b>	<b>0</b>	<b>98%</b>									
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	26	29																		
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12							100%											
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	11	12							92%											
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	17	17							100%											
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	17	17							100%											

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5c. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 3 (2,135 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	23	23			100%			
	3. Meander Pool Condition	Depth Sufficient	17	17			100%			
		Length Appropriate	17	17			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	17	17			100%			
Thalweg centering at downstream of meander bend (Glide)		16	16			100%				
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			5	128	97%	3	50	98%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	1	5	100%
<b>Totals</b>					<b>5</b>	<b>128</b>	<b>97%</b>	<b>4</b>	<b>55</b>	<b>98%</b>
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	34	35			97%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	12	12			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	23	23			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	23	23			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.



**Table 5d. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 4 (3,564 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation	
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%				
		Degradation			0	0	100%				
	2. Riffle Condition	Texture/Substrate	42	42			100%				
		3. Meander Pool Condition	Depth Sufficient	39	39						100%
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	Length Appropriate	39	39						100%
			Thalweg centering at upstream of meander bend (Run)	38	38						100%
		Thalweg centering at downstream of meander bend (Glide)	39	39			100%				
<b>Totals</b>											
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			5	75	99%	5	35	99%	
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%	
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%	
<b>Totals</b>											
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	56	56			100%				
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	22	22			100%				
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	19	22			86%				
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	37	38			97%				
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	38	38			100%				

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5e. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1C (728 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	32	32			100%			
	3. Meander Pool Condition	Depth Sufficient	7	7			100%			
		Length Appropriate	7	7			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	7	7			100%			
Thalweg centering at downstream of meander bend (Glide)		7	7	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			1	13	99%	0	0	99%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					1	13	99%	0	0	99%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	29	29			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	22	22			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	21	22			95%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	6	7			86%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	7	7			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5f. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1D (379 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	24	24		100%				
	3. Meander Pool Condition	Depth Sufficient	2	2		100%				
		Length Appropriate	2	2		100%				
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	2	2		100%				
Thalweg centering at downstream of meander bend (Glide)		2	2	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			2	19	97%	0	0	97%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					<b>2</b>	<b>19</b>	<b>97%</b>	<b>0</b>	<b>0</b>	<b>97%</b>
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	30	30			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	29	29			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	29	29			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	20	20			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5g. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 Reach 1 (1,188 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	32	32		100%				
	3. Meander Pool Condition	Depth Sufficient	8	8		100%				
		Length Appropriate	8	8		100%				
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	8	8		100%				
Thalweg centering at downstream of meander bend (Glide)		8	8	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			3	46	98%	0	0	98%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					3	46	98%	0	0	98%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	32	32			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	31	31			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	31	31			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	1	1			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	22	22			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5h. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 Reach 2 (643 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation	
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			1	49	92%				
		Degradation			0	0	100%				
	2. Riffle Condition	Texture/Substrate	5	6			83%				
		3. Meander Pool Condition	Depth Sufficient	6			7				86%
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	Length Appropriate	7			7				100%
			Thalweg centering at downstream of meander bend (Glide)	7			7				100%
7				7			100%				
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.					0	0	100%	0	0
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%	
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%	
<b>Totals</b>					0	0	100%	0	0	100%	
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	9	9			100%				
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	8	8			100%				
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	8	8			100%				
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	2	2			100%				
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	3	4			75%				

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5i. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2A (353 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	11	11			100%			
	3. Meander Pool Condition	Depth Sufficient	4	4			100%			
		Length Appropriate	4	4			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	4	4			100%			
Thalweg centering at downstream of meander bend (Glide)		4	4			100%				
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					0	0	100%	0	0	100%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	12	12			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	12	12			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	12	12			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5j. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2B (657 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	5			100%			
	3. Meander Pool Condition	Depth Sufficient	6	6			100%			
		Length Appropriate	6	6			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	6	6			100%			
Thalweg centering at downstream of meander bend (Glide)		6	6			100%				
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					<b>0</b>	<b>0</b>	<b>100%</b>	<b>0</b>	<b>0</b>	<b>100%</b>
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	16	16			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	16	16			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	16	16			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	n/a	n/a			n/a			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	4	4			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5k. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT3 (346 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	11	11			100%			
	3. Meander Pool Condition	Depth Sufficient	10	10			100%			
		Length Appropriate	10	10			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	10	10			100%			
Thalweg centering at downstream of meander bend (Glide)		10	10	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					0	0	100%	0	0	100%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	15	15			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	9	9			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	9	9			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	6	6			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	5	5			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.



**Table 5I. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT4 (1,356 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			0	0	100%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	32	32		100%				
	3. Meander Pool Condition	Depth Sufficient	30	30		100%				
		Length Appropriate	30	30		100%				
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	30	30		100%				
Thalweg centering at downstream of meander bend (Glide)		30	30	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					0	0	100%	0	0	100%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	22	22			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	7	7			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	7	7			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	15	15			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	16	16			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 5m. Visual Stream Morphology Stability Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT5 (1,012 LF)**

Major Channel Category	Channel Sub-Category	Metric	Number Stable, Performing as Intended	Total Number in As-Built	Number of Unstable Segments	Amount of Unstable Footage	% Stable, Performing as Intended	Number with Stabilizing Woody Vegetation	Footage with Stabilizing Woody Vegetation	Adjust % for Stabilizing Woody Vegetation
1. Bed	1. Vertical Stability (Riffle and Run Units)	Aggradation			1	98	90%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	21	21			100%			
	3. Meander Pool Condition	Depth Sufficient	20	21			95%			
		Length Appropriate	21	21			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	21	21			100%			
Thalweg centering at downstream of meander bend (Glide)		21	21	100%						
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
<b>Totals</b>					0	0	100%	0	0	100%
3. Engineered Structures <sup>1</sup>	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	22	22			100%			
	2. Grade Control	Grade control structures exhibiting maintenance of grade across the sill.	12	12			100%			
	2a. Piping	Structures lacking any substantial flow underneath sills or arms.	12	12			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	12	12			100%			
		Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	12	12			100%			

<sup>1</sup>Excludes constructed riffles since they are evaluated in channel category.

**Table 6. Vegetation Condition Assessment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Planted Acreage**

**32**

Vegetation Category	Definitions	Mapping Threshold (Ac)	Number of Polygons	Combined Acreage	% of Planted Acreage
<b>Bare Areas</b>	Very limited cover of both woody and herbaceous material.	0.1	2	0.27	0.8%
<b>Low Stem Density Areas</b>	Woody stem densities clearly below target levels based on MY3, 5, or 7 stem count criteria.	0.1	8	0.20	0.6%
<b>Total</b>			<b>10</b>	<b>0.5</b>	<b>1.4%</b>
<b>Areas of Poor Growth Rates or Vigor</b>	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 Ac	0	0	0%
<b>Cumulative Total</b>			<b>10</b>	<b>0.5</b>	<b>1.4%</b>

**Easement Acreage**

**62**

Vegetation Category	Definitions	Mapping Threshold (SF)	Number of Polygons	Combined Acreage	% of Easement Acreage
<b>Invasive Areas of Concern<sup>1</sup></b>	Areas of points (if too small to render as polygons at map scale).	1,000	18	1.97	3.2%
<b>Easement Encroachment Areas</b>	Areas of points (if too small to render as polygons at map scale).	none	1	0.04	0.1%

<sup>1</sup> In-stream vegetation was counted as one polygon because each individual polygon would have been too small to meet the minimum mapping threshold.

## **STREAM PHOTOGRAPHS**

Candy Creek Reach 1  
Monitoring Year 3



**Photo Point 1** – looking upstream (5/22/2019)



**Photo Point 1** – looking downstream (5/22/2019)



**Photo Point 2** – looking upstream (5/22/2019)



**Photo Point 2** – looking downstream (5/22/2019)



**Photo Point 3** – looking upstream (5/22/2019)



**Photo Point 3** – looking downstream (5/22/2019)



**Photo Point 4** – looking upstream (5/22/2019)



**Photo Point 4** – looking downstream (5/22/2019)



**Photo Point 5** – looking upstream (5/22/2019)



**Photo Point 5** – looking downstream (5/22/2019)



**Photo Point 6** – looking upstream (5/22/2019)



**Photo Point 6** – looking downstream (5/22/2019)



**Photo Point 7** – looking upstream (5/22/2019)



**Photo Point 7** – looking downstream (5/22/2019)



**Photo Point 8** – looking upstream (5/22/2019)



**Photo Point 8** – looking downstream (5/22/2019)



**Photo Point 9** – looking upstream (5/22/2019)



**Photo Point 9** – looking downstream (5/22/2019)



**Photo Point 10** – looking upstream (5/22/2019)



**Photo Point 10** – looking downstream (5/22/2019)



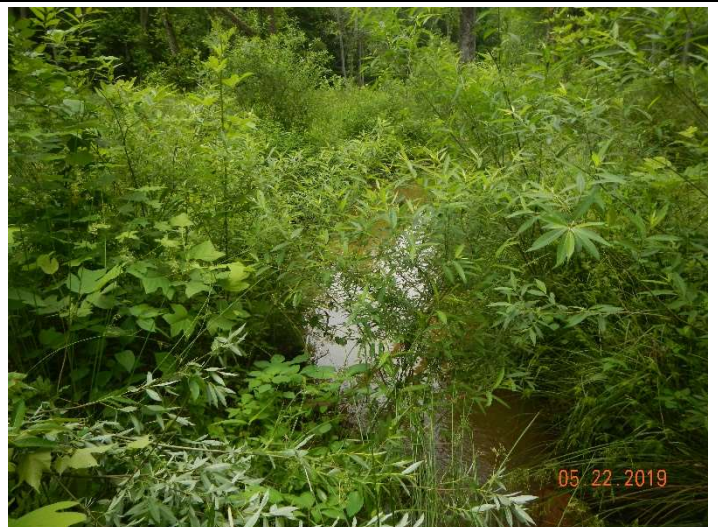
**Photo Point 11** – looking upstream (5/29/2019)



**Photo Point 11** – looking downstream (5/29/2019)



**Photo Point 12** – looking upstream (5/22/2019)



**Photo Point 12** – looking downstream (5/22/2019)





**Photo Point 13** – looking upstream (5/22/2019)



**Photo Point 13** – looking downstream (5/22/2019)

## **STREAM PHOTOGRAPHS**

Candy Creek Reach 2  
Monitoring Year 3



**Photo Point 14** – looking upstream (5/22/2019)



**Photo Point 14** – looking downstream (5/22/2019)



**Photo Point 15** – looking upstream (5/22/2019)



**Photo Point 15** – looking downstream (5/22/2019)



**Photo Point 16** – looking upstream (5/22/2019)



**Photo Point 16** – looking downstream (5/22/2019)



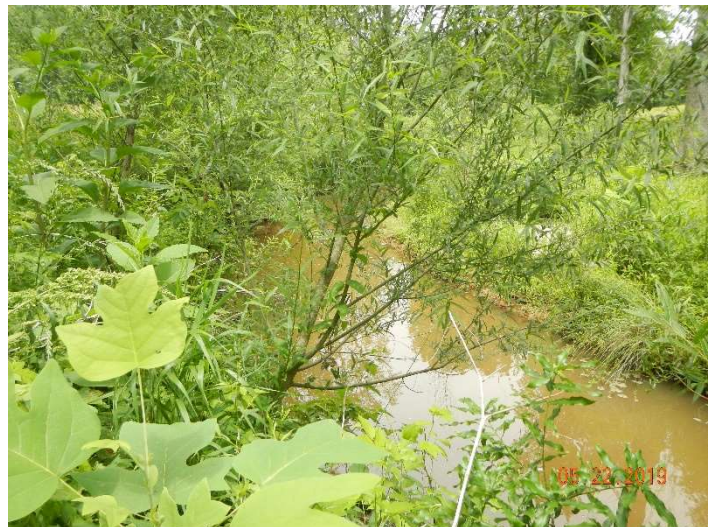
**Photo Point 17 – looking upstream (5/22/2019)**



**Photo Point 17 – looking downstream (5/22/2019)**



**Photo Point 18 – looking upstream (5/22/2019)**



**Photo Point 18 – looking downstream (5/22/2019)**



**Photo Point 19 – looking upstream (5/22/2019)**



**Photo Point 19 – looking downstream (5/22/2019)**



**Photo Point 20 – looking upstream (5/22/2019)**



**Photo Point 20 – looking downstream (5/22/2019)**



**Photo Point 21 – looking upstream (5/22/2019)**



**Photo Point 21 – looking downstream (5/22/2019)**



**Photo Point 22 – looking upstream (5/22/2019)**



**Photo Point 22 – looking downstream (5/22/2019)**



**Photo Point 23** – looking upstream (5/22/2019)



**Photo Point 23** – looking downstream (5/22/2019)



**Photo Point 24** – looking upstream (5/22/2019)

## **STREAM PHOTOGRAPHS**

Candy Creek Reach 3  
Monitoring Year 3



**Photo Point 24** – looking downstream (5/29/2019)



**Photo Point 25** – looking upstream (5/29/2019)



**Photo Point 25** – looking downstream (5/29/2019)



**Photo Point 26** – looking upstream (5/29/2019)



**Photo Point 26** – looking downstream (5/29/2019)

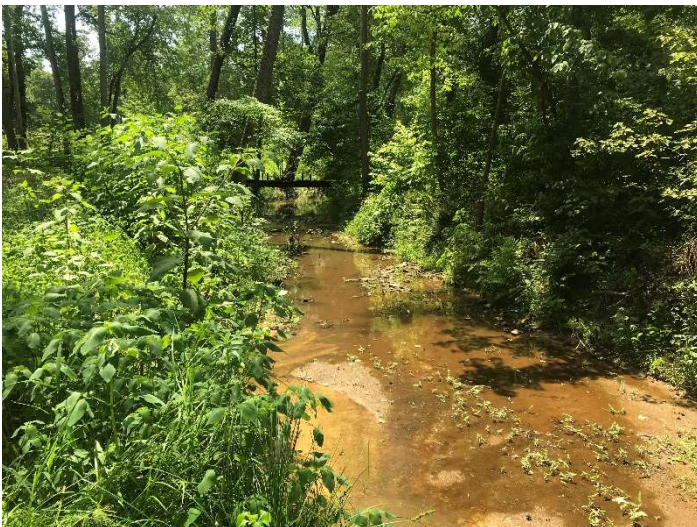




**Photo Point 27** – looking upstream (5/29/2019)



**Photo Point 27** – looking downstream (5/29/2019)



**Photo Point 28** – looking upstream (5/29/2019)



**Photo Point 28** – looking downstream (5/29/2019)



**Photo Point 29** – looking upstream (5/29/2019)



**Photo Point 29** – looking downstream (5/29/2019)



**Photo Point 30** – looking upstream (5/29/2019)



**Photo Point 30** – looking downstream (5/29/2019)



**Photo Point 31** – looking upstream (5/29/2019)



**Photo Point 31** – looking downstream (5/29/2019)



**Photo Point 32** – looking upstream (5/29/2019)



**Photo Point 32** – looking downstream (5/29/2019)



**Photo Point 33** – looking upstream (5/29/2019)



**Photo Point 33** – looking downstream (5/29/2019)



**Photo Point 34** – looking upstream (5/29/2019)



**Photo Point 34** – looking downstream (5/29/2019)

## **STREAM PHOTOGRAPHS**

Candy Creek Reach 4  
Monitoring Year 3



**Photo Point 35 – looking upstream (5/29/2019)**



**Photo Point 35 – looking downstream (5/29/2019)**



**Photo Point 36 – looking upstream (5/29/2019)**



**Photo Point 36 – looking downstream (5/29/2019)**



**Photo Point 37 – looking upstream (5/29/2019)**



**Photo Point 37 – looking downstream (5/29/2019)**



**Photo Point 38** – looking upstream (5/29/2019)



**Photo Point 38** – looking downstream (5/29/2019)



**Photo Point 39** – looking upstream (5/29/2019)



**Photo Point 39** – looking downstream (5/29/2019)



**Photo Point 40** – looking upstream (5/29/2019)



**Photo Point 40** – looking downstream (5/29/2019)



**Photo Point 41** – looking upstream (5/29/2019)



**Photo Point 41** – looking downstream (5/29/2019)



**Photo Point 42** – looking upstream (5/29/2019)



**Photo Point 42** – looking downstream (5/29/2019)



**Photo Point 43** – looking upstream (5/29/2019)



**Photo Point 43** – looking downstream (5/29/2019)



**Photo Point 44** – looking upstream (5/29/2019)



**Photo Point 44** – looking downstream (5/29/2019)



**Photo Point 45** – looking upstream (5/29/2019)



**Photo Point 45** – looking downstream (5/29/2019)



**Photo Point 46** – looking upstream (5/29/2019)



**Photo Point 46** – looking downstream (5/29/2019)





**Photo Point 47** – looking upstream (5/29/2019)



**Photo Point 47** – looking downstream (5/29/2019)



**Photo Point 48** – looking upstream (5/29/2019)



**Photo Point 48** – looking downstream (5/29/2019)



**Photo Point 49** – looking upstream (5/29/2019)



**Photo Point 49** – looking downstream (5/29/2019)



**Photo Point 50** – looking upstream (5/29/2019)



**Photo Point 50** – looking downstream (5/29/2019)



**Photo Point 51** – looking upstream (5/29/2019)



**Photo Point 51** – looking downstream (5/29/2019)



**Photo Point 52** – looking upstream (5/29/2019)



**Photo Point 52** – looking downstream (5/29/2019)

## **STREAM PHOTOGRAPHS**

UT1C and UT1D  
Monitoring Year 3



**Photo Point 53** – looking upstream (5/29/2019)



**Photo Point 53** – looking downstream (5/29/2019)



**Photo Point 54** – looking upstream (5/29/2019)



**Photo Point 54** – looking downstream (5/29/2019)



**Photo Point 55** – looking upstream (5/29/2019)



**Photo Point 55** – looking downstream (5/29/2019)



**Photo Point 56** – looking upstream (5/29/2019)



**Photo Point 56** – looking downstream (5/29/2019)



**Photo Point 57** – looking upstream (5/29/2019)



**Photo Point 57** – looking downstream (5/29/2019)

## **STREAM PHOTOGRAPHS**

UT2, UT2A, and UT2B  
Monitoring Year 3



**Photo Point 58** – looking upstream (5/22/2019)



**Photo Point 58** – looking downstream (5/22/2019)



**Photo Point 59** – looking upstream (5/22/2019)



**Photo Point 59** – looking downstream (5/22/2019)



**Photo Point 60** – looking upstream (5/22/2019)



**Photo Point 60** – looking downstream (5/22/2019)



**Photo Point 61** – looking upstream (5/22/2019)



**Photo Point 61** – looking downstream (5/22/2019)



**Photo Point 62** – looking upstream (5/22/2019)



**Photo Point 62** – looking downstream (5/22/2019)



**Photo Point 63** – looking upstream (5/29/2019)



**Photo Point 63** – looking downstream (5/29/2019)





**Photo Point 64** – looking upstream (5/29/2019)



**Photo Point 64** – looking downstream (5/29/2019)



**Photo Point 65** – looking upstream (5/22/2019)



**Photo Point 65** – looking downstream (5/22/2019)



**Photo Point 66** – looking upstream (5/22/2019)



**Photo Point 66** – looking downstream (5/22/2019)



**Photo Point 67 – looking upstream (5/22/2019)**



**Photo Point 67 – looking downstream (5/22/2019)**



**Photo Point 68 – looking upstream (5/22/2019)**



**Photo Point 68 – looking downstream (5/22/2019)**



**Photo Point 69 – looking upstream (5/22/2019)**



**Photo Point 69 – looking downstream (5/22/2019)**



**Photo Point 70** – looking upstream (5/22/2019)



**Photo Point 70** – looking downstream (5/22/2019)



**Photo Point 71** – looking upstream (5/22/2019)



**Photo Point 71** – looking downstream (5/22/2019)



**Photo Point 72** – looking upstream (5/22/2019)



**Photo Point 72** – looking downstream (5/22/2019)



**Photo Point 73** – looking upstream (5/22/2019)



**Photo Point 73** – looking downstream (5/22/2019)

## **STREAM PHOTOGRAPHS**

UT3, UT4, and UT5  
Monitoring Year 3



**Photo Point 74** – looking upstream (5/22/2019)



**Photo Point 74** – looking downstream (5/22/2019)



**Photo Point 75** – looking upstream (5/22/2019)



**Photo Point 75** – looking downstream (5/22/2019)



**Photo Point 76** – looking upstream (5/22/2019)



**Photo Point 76** – looking downstream (5/22/2019)



**Photo Point 77 – looking upstream (5/22/2019)**



**Photo Point 77 – looking downstream (5/22/2019)**



**Photo Point 78 – looking upstream (5/22/2019)**



**Photo Point 78 – looking downstream (5/22/2019)**



**Photo Point 79 – looking upstream (5/22/2019)**



**Photo Point 79 – looking downstream (5/22/2019)**



**Photo Point 80** – looking upstream (5/22/2019)



**Photo Point 80** – looking downstream (5/22/2019)



**Photo Point 81** – looking upstream (5/22/2019)



**Photo Point 81** – looking downstream (5/22/2019)



**Photo Point 82** – looking upstream (5/22/2019)



**Photo Point 82** – looking downstream (5/22/2019)

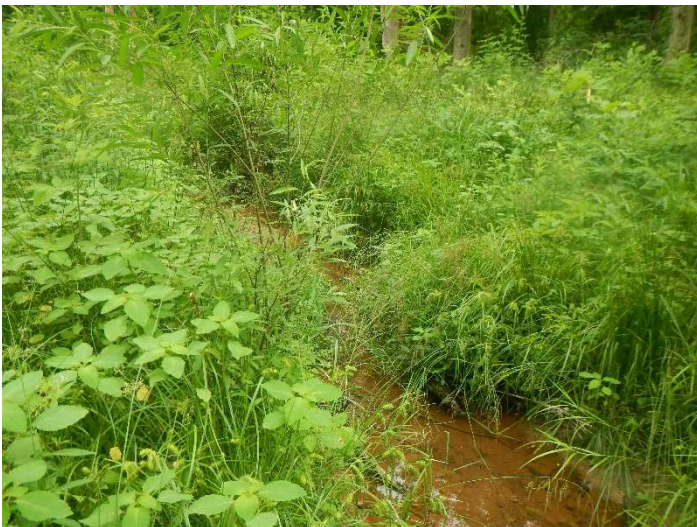




**Photo Point 83** – looking upstream (5/22/2019)



**Photo Point 83** – looking downstream (5/22/2019)



**Photo Point 84** – looking upstream (5/22/2019)



**Photo Point 84** – looking downstream (5/22/2019)



**Photo Point 85** – looking upstream (5/29/2019)



**Photo Point 85** – looking downstream (5/22/2019)

# **VEGETATION PHOTOGRAPHS**

Monitoring Year 3



**Vegetation Plot 1** (9/02/2019)



**Vegetation Plot 2** (9/02/2019)



**Vegetation Plot 3** (9/02/2019)



**Vegetation Plot 4** (9/02/2019)



**Vegetation Plot 5** (8/30/2019)



**Vegetation Plot 6** (8/30/2019)



**Vegetation Plot 7** (8/30/2019)



**Vegetation Plot 8** (8/29/2019)



**Vegetation Plot 9** (8/29/2019)



**Vegetation Plot 10** (8/29/2019)



**Vegetation Plot 11** (8/29/2019)



**Vegetation Plot 12** (8/29/2019)



**Vegetation Plot 13** (8/29/2019)



**Vegetation Plot 14** (8/28/2019)



**Vegetation Plot 15** (8/28/2019)



**Vegetation Plot 16** (8/28/2019)



**Vegetation Plot 17** (8/28/2019)



**Vegetation Plot 18** (8/28/2019)



**Vegetation Plot 19** (8/28/2019)



**Vegetation Plot 20** (8/27/2019)



**Vegetation Plot 21** (8/27/2019)



**Vegetation Plot 22** (8/27/2019)



**Vegetation Plot 23** (8/27/2019)



**Vegetation Plot 24** (8/27/2019)



**Vegetation Plot 25 (8/27/2019)**



**Vegetation Plot 26 (8/27/2019)**



**Vegetation Plot 27 (8/27/2019)**



**Vegetation Plot 28 (8/28/2019)**



**Vegetation Plot 29 (8/28/2019)**



**Vegetation Plot 30 (8/28/2019)**



**Vegetation Plot 31 (8/29/2019)**



**Vegetation Plot 32 (8/29/2019)**



**Vegetation Plot 33 (8/29/2019)**



**Vegetation Plot 34 (8/29/2019)**



**Vegetation Plot 35 (8/29/2019)**



**Vegetation Plot 36 (8/30/2019)**





**Vegetation Plot 37** (8/30/2019)



**Vegetation Plot 38** (8/30/2019)



**Vegetation Plot 39** (9/02/2019)



**Vegetation Plot 40** (9/02/2019)

## **AREAS OF CONCERN PHOTOGRAPHS**

Monitoring Year 3



**Candy Creek Reach 1 Mowing Encroachment** – looking upstream  
*(07/15/2019)*

**Candy Creek Reach 4 Beaver Dam** – looking upstream  
*(10/08/2019)*

## **APPENDIX 3. Vegetation Plot Data**

**Table 7. Vegetation Plot Criteria Attainment Table**

Candy Creek Mitigation Site

DMS Project No. 96315

**Monitoring Year 3 - 2019**

Plot	Success Criteria Met (Y/N)	Tract Mean
1	Y	80%
2	Y	
3	Y	
4	Y	
5	Y	
6	N	
7	Y	
8	Y	
9	Y	
10	Y	
11	Y	
12	N	
13	Y	
14	Y	
15	N	
16	Y	
17	N	
18	N	
19	Y	
20	N	
21	Y	
22	Y	
23	Y	
24	Y	
25	Y	
26	Y	
27	Y	
28	Y	
29	Y	
30	Y	
31	Y	
32	Y	
33	Y	
34	Y	
35	N	
36	Y	
37	Y	
38	Y	
39	Y	
40	N	

**Table 8. CVS Vegetation Plot Metadata**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

<b>Report Prepared By</b>	Jeffrey Turner
<b>Date Prepared</b>	9/25/2019
<b>Database Name</b>	Candy Creek MY3 CVS-v2.5.0.mdb
<b>Database Location</b>	Q:\ActiveProjects\005-02145 Candy Creek\Monitoring\Monitoring Year 3 (2019)\Vegetation Assessment
<b>Computer Name</b>	JEFF-PC
<b>File Size</b>	87818240
<b>DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT-----</b>	
<b>Metadata</b>	Description of database file, the report worksheets, and a summary of project(s) and project data.
<b>Project Planted</b>	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
<b>Project Total Stems</b>	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
<b>Plots</b>	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
<b>Vigor</b>	Frequency distribution of vigor classes for stems for all plots.
<b>Vigor by Spp</b>	Frequency distribution of vigor classes listed by species.
<b>Damage</b>	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
<b>Damage by Spp</b>	Damage values tallied by type for each species.
<b>Damage by Plot</b>	Damage values tallied by type for each plot.
<b>Planted Stems by Plot and Spp</b>	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
<b>ALL Stems by Plot and Spp</b>	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
<b>PROJECT SUMMARY-----</b>	
<b>Project Code</b>	96315
<b>Project Name</b>	Candy Creek Mitigation Site
<b>Sampled Plots</b>	40

**Table 9a. Planted and Total Stems**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)																					
			Vegetation Plot 1			Vegetation Plot 2			Vegetation Plot 3			Vegetation Plot 4			Vegetation Plot 5			Vegetation Plot 6			Vegetation Plot 7			
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	
<i>Acer rubrum</i>	Red Maple	Tree										2									2			3
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree																						
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree																						
<i>Betula nigra</i>	River Birch, Red Birch	Tree	3	3	7	2	2	2	2	2	7	2	2	2	2	2	2				1	1	1	
<i>Carya</i>	Hickory	Tree																						
<i>Carya ovata</i>	Common Shagbark Hickory	Tree																						
<i>Cercis canadensis</i>	Redbud	Shrub Tree																						
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree																						
<i>Fagus grandifolia</i>	American Beech	Tree																						
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	1	1	1	2	2	2	3	3	3	2	2	2	2	2	2	2	2	2	3	3	3	
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree																						
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree																						
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree																						
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree						1			2			2										
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			5			36			33						26			14			56	
<i>Morus rubra</i>	Red Mulberry	Tree																						
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree						1			3													
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	2	2	5	2	2	2	2	2	4	1	1	1	1	1	3	2	2	2	1	1	1	
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree																						
<i>Prunus serotina</i>	Black Cherry	Shrub Tree																						
<i>Quercus alba</i>	White Oak	Tree									2													
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree																						
<i>Quercus lyrata</i>	Overcup Oak	Tree																						
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	2	2	2	
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree													1	1	1							
<i>Quercus phellos</i>	Willow Oak	Tree	3	3	3	2	2	3	1	1	1	2	2	2	1	1	1	1	1	1	3	3	4	
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree																						
<i>Rhus typhina</i>	Staghorn Sumac	Shrub																						
<i>Salix nigra</i>	Black Willow	Tree									9													
<i>Salix sericea</i>	Silky Willow	Shrub Tree									2													
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree						1			3			1										
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree															2							
<i>Ulmus alata</i>	Winged Elm	Tree									3			14						4			4	
<i>Ulmus americana</i>	American Elm	Tree			2			4												12				
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree																						
	<b>Stem count</b>		10	10	24	9	9	53	9	9	75	9	9	26	8	8	50	6	6	26	10	10	74	
	<b>Size (ares)</b>			1			1			1			1			1			1			1		
	<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
	<b>Species count</b>		5	5	7	5	5	10	5	5	14	5	5	8	6	6	9	4	4	7	5	5	8	
	<b>Stems per ACRE</b>		405	405	971	364	364	2,145	364	364	3,035	364	364	1,052	324	324	2,023	243	243	1,052	405	405	2,995	

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9b. Planted and Total Stems**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)																				
			Vegetation Plot 8			Vegetation Plot 9			Vegetation Plot 10			Vegetation Plot 11			Vegetation Plot 12			Vegetation Plot 13			Vegetation Plot 14		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			1			4			12			5			5					3	
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree																					
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree																					
<i>Betula nigra</i>	River Birch, Red Birch	Tree				2	2	2				1	1	1				3	3	6	2	2	2
<i>Carya</i>	Hickory	Tree																					
<i>Carya ovata</i>	Common Shagbark Hickory	Tree																					
<i>Cercis canadensis</i>	Redbud	Shrub Tree																					
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree																					
<i>Fagus grandifolia</i>	American Beech	Tree																					
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	2	
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree																		2			
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree																					
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree																					
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			1			56			1			16			11			9		3	
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			4			5			5			4			20			8		16	
<i>Morus rubra</i>	Red Mulberry	Tree									1												
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree																					
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	3	3	6	1	1	2	3	3	7	1	1	1	1	1	6	2	2	25	3	3	7
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree																					
<i>Prunus serotina</i>	Black Cherry	Shrub Tree									2						1						
<i>Quercus alba</i>	White Oak	Tree																					
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree																					
<i>Quercus lyrata</i>	Overcup Oak	Tree																					
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	1	1	1	2	2	2				2	2	2	2	2	2	2	2	2	3	3	3
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree				1	1	1				2	2	2	1	1	1	1	1	1	1	1	1
<i>Quercus phellos</i>	Willow Oak	Tree	2	2	2	2	2	2	3	3	3	3	3	3	1	1	1						
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree																					
<i>Rhus typhina</i>	Staghorn Sumac	Shrub																					
<i>Salix nigra</i>	Black Willow	Tree															1						
<i>Salix sericea</i>	Silky Willow	Shrub Tree									5												
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree																					
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree															1						
<i>Ulmus alata</i>	Winged Elm	Tree															1						2
<i>Ulmus americana</i>	American Elm	Tree			20						8			5					1				
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree																					
<b>Stem count</b>			9	9	38	11	11	77	9	9	47	12	12	42	7	7	52	10	10	56	11	11	39
<b>Size (ares)</b>			1			1			1			1			1			1			1		
<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
<b>Species count</b>			4	4	8	6	6	9	3	3	10	6	6	10	5	5	12	5	5	9	5	5	9
<b>Stems per ACRE</b>			364	364	1,538	445	445	3,116	364	364	1,902	486	486	1,700	283	283	2,104	405	405	2,266	445	445	1,578

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems



**Table 9c. Planted and Total Stems**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)																				
			Vegetation Plot 15			Vegetation Plot 16			Vegetation Plot 17			Vegetation Plot 18			Vegetation Plot 19			Vegetation Plot 20			Vegetation Plot 21		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			1							2			3								
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree																					
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree																					
<i>Betula nigra</i>	River Birch, Red Birch	Tree			2	1	1	1				1	1	1	2	2	2			1	1	1	
<i>Carya</i>	Hickory	Tree																					
<i>Carya ovata</i>	Common Shagbark Hickory	Tree																					
<i>Cercis canadensis</i>	Redbud	Shrub Tree																					
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree																					
<i>Fagus grandifolia</i>	American Beech	Tree																					
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	3	3	3	3	3	3	3	3	3	2	2	2	3	3	3	2	2	2	2	2	
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree																					
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree																					
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree																					
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree						1					1									1	
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			2			20											2				
<i>Morus rubra</i>	Red Mulberry	Tree																					
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree								2													
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree				2	2	23	2	2	2	1	1	3	3	3	3	3	3	3	3	3	
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree																					
<i>Prunus serotina</i>	Black Cherry	Shrub Tree																					
<i>Quercus alba</i>	White Oak	Tree																					
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree															1	1	1				
<i>Quercus lyrata</i>	Overcup Oak	Tree																					
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	1	1	1	2	2	2	1	1	1	2	2	2	2	2	2			1	1	1	
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree				1	1	1	1	1	1				1	1	1			2	2	2	
<i>Quercus phellos</i>	Willow Oak	Tree	1	1	1	2	2	2							2	2	2			1	1	1	
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree						1															
<i>Rhus typhina</i>	Staghorn Sumac	Shrub																					
<i>Salix nigra</i>	Black Willow	Tree												11					4		50		
<i>Salix sericea</i>	Silky Willow	Shrub Tree																	1			12	
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree																					
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree			2			1															
<i>Ulmus alata</i>	Winged Elm	Tree																					
<i>Ulmus americana</i>	American Elm	Tree						1															
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree						17						2					5			3	
<b>Stem count</b>			5	5	11	11	11	74	7	7	9	6	6	24	13	13	21	6	6	63	10	10	26
<b>Size (ares)</b>			1			1			1			1			1			1			1		
<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
<b>Species count</b>			3	3	6	6	6	13	4	4	5	4	4	8	6	6	9	3	3	6	6	6	9
<b>Stems per ACRE</b>			202	202	445	445	445	2,995	283	283	364	243	243	971	526	526	850	243	243	2,550	405	405	1,052

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9d. Planted and Total Stems**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)																				
			Vegetation Plot 22			Vegetation Plot 23			Vegetation Plot 24			Vegetation Plot 25			Vegetation Plot 26			Vegetation Plot 27			Vegetation Plot 28		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			7						5			1								7	
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree																					
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree																					
<i>Betula nigra</i>	River Birch, Red Birch	Tree			5	2	2	6	2	2	2				1	1	1	2	2	7	3	3	3
<i>Carya</i>	Hickory	Tree																				7	
<i>Carya ovata</i>	Common Shagbark Hickory	Tree																					
<i>Cercis canadensis</i>	Redbud	Shrub Tree																					
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree																					
<i>Fagus grandifolia</i>	American Beech	Tree																					
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	3	3	3	3	3	3	2	2	2	3	3	3	3	3	3	2	2	2	4	4	4
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree																					
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree																					
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree																					
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			26			65			9			33						12		17	
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			2			2														37	
<i>Morus rubra</i>	Red Mulberry	Tree																					
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree																					
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	1	1	1	3	3	4				3	3	3	3	3	3	3	3	4	3	3	19
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree																					
<i>Prunus serotina</i>	Black Cherry	Shrub Tree																				1	
<i>Quercus alba</i>	White Oak	Tree																					
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree																					
<i>Quercus lyrata</i>	Overcup Oak	Tree																					
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree				2	2	2	2	2	2	1	1	1	3	3	3	2	2	2	1	1	1
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree	1	1	1	1	1	1	1	1	1	1	1	1				1	1	1			
<i>Quercus phellos</i>	Willow Oak	Tree	3	3	3	2	2	2	3	3	3	2	2	2	2	2	2	1	1	1	2	2	2
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree																				5	
<i>Rhus typhina</i>	Staghorn Sumac	Shrub																				1	
<i>Salix nigra</i>	Black Willow	Tree						1						1									
<i>Salix sericea</i>	Silky Willow	Shrub Tree			11																		
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree																					
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree																					
<i>Ulmus alata</i>	Winged Elm	Tree									3			17			1					8	
<i>Ulmus americana</i>	American Elm	Tree																					
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree			5			2			1			1						4			
<b>Stem count</b>			8	8	64	13	13	88	10	10	28	10	10	64	12	12	14	11	11	33	13	13	112
<b>Size (ares)</b>			1			1			1			1			1			1			1		
<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
<b>Species count</b>			4	4	10	6	6	10	5	5	9	5	5	11	5	5	7	6	6	8	5	5	13
<b>Stems per ACRE</b>			324	324	2,590	526	526	3,561	405	405	1,133	405	405	2,590	486	486	567	445	445	1,335	526	526	4,532

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9e. Planted and Total Stems**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)																				
			Vegetation Plot 29			Vegetation Plot 30			Vegetation Plot 31			Vegetation Plot 32			Vegetation Plot 33			Vegetation Plot 34			Vegetation Plot 35		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			9			4			6						1			10			
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree			1					4													
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree																					
<i>Betula nigra</i>	River Birch, Red Birch	Tree						3							1	1	1	1	1	1			
<i>Carya</i>	Hickory	Tree																					
<i>Carya ovata</i>	Common Shagbark Hickory	Tree																					
<i>Cercis canadensis</i>	Redbud	Shrub Tree			2																		
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree			1																		
<i>Fagus grandifolia</i>	American Beech	Tree																					
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree																					
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree																					
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree																					
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree									62			13			1			4			
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			27						9			1			10			17			
<i>Morus rubra</i>	Red Mulberry	Tree									1												
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree																					
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	1	1	17	2	2	3	3	3	12	3	3	3	2	2	5	1	1	5	3	3	3
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree																					
<i>Prunus serotina</i>	Black Cherry	Shrub Tree																					
<i>Quercus alba</i>	White Oak	Tree																					
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree																					
<i>Quercus lyrata</i>	Overcup Oak	Tree																					
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	5	5	5	1	1	1	3	3	3	1	1	1	2	2	2	3	3	3	2	2	2
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree				1	1	1	2	2	2	1	1	1	1	1	1	1	1	1			
<i>Quercus phellos</i>	Willow Oak	Tree	2	2	2	1	1	1				2	2	2	2	2	2	3	3	3	1	1	1
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree			1						1												
<i>Rhus typhina</i>	Staghorn Sumac	Shrub																					
<i>Salix nigra</i>	Black Willow	Tree												2									
<i>Salix sericea</i>	Silky Willow	Shrub Tree																					
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree																					
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree																					
<i>Ulmus alata</i>	Winged Elm	Tree			2			5									1						
<i>Ulmus americana</i>	American Elm	Tree									3									70			
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree																					
<b>Stem count</b>			10	10	69	8	8	21	11	11	106	10	10	26	11	11	27	12	12	117	7	7	7
<b>Size (ares)</b>			1			1			1			1			1			1			1		
<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02			0.02			0.02		
<b>Species count</b>			4	4	11	5	5	8	4	4	11	5	5	8	6	6	10	6	6	10	4	4	4
<b>Stems per ACRE</b>			405	405	2,792	324	324	850	445	445	4,290	405	405	1,052	445	445	1,093	486	486	4,735	283	283	283

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9f. Planted and Total Stems**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Current Plot Data (MY3 2019)														
			Vegetation Plot 36			Vegetation Plot 37			Vegetation Plot 38			Vegetation Plot 39			Vegetation Plot 40		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			32									4			5
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree															
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree															
<i>Betula nigra</i>	River Birch, Red Birch	Tree	3	3	3	1	1	1	1	1	1	2	2	2			
<i>Carya</i>	Hickory	Tree															
<i>Carya ovata</i>	Common Shagbark Hickory	Tree															
<i>Cercis canadensis</i>	Redbud	Shrub Tree															
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree															
<i>Fagus grandifolia</i>	American Beech	Tree															
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	2	2	2	3	3	3	3	3	4	3	3	3	1	1	1
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree															
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree												1			
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree															
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			7			950			6			4			7
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			45			16			17			29			50
<i>Morus rubra</i>	Red Mulberry	Tree															
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree									1						
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	3	3	12	3	3	5	2	2	3	1	1	1	3	3	4
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree															
<i>Prunus serotina</i>	Black Cherry	Shrub Tree															
<i>Quercus alba</i>	White Oak	Tree															
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree															
<i>Quercus lyrata</i>	Overcup Oak	Tree															
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	1	1	1	1	1	1	1	1	1				1	1	1
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1
<i>Quercus phellos</i>	Willow Oak	Tree				1	1	1	1	1	1	2	2	2	1	1	1
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree						1									
<i>Rhus typhina</i>	Staghorn Sumac	Shrub															
<i>Salix nigra</i>	Black Willow	Tree			4									4			9
<i>Salix sericea</i>	Silky Willow	Shrub Tree															
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree															1
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree									13						
<i>Ulmus alata</i>	Winged Elm	Tree			47			1			3						10
<i>Ulmus americana</i>	American Elm	Tree												13			
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree															
<b>Stem count</b>			10	10	154	11	11	981	9	9	51	9	9	64	7	7	90
<b>Size (ares)</b>			1			1			1			1			1		
<b>Size (ACRES)</b>			0.02			0.02			0.02			0.02			0.02		
<b>Species count</b>			5	5	10	6	6	10	6	6	11	5	5	11	5	5	11
<b>Stems per ACRE</b>			405	405	6,232	445	445	39,700	364	364	2,064	364	364	2,590	283	283	3,642

Exceeds requirements by 10%  
 Exceeds requirements, but by less than 10%  
 Fails to meet requirements, by less than 10%  
 Fails to meet requirements by more than 10%  
 Volunteers included

PnoLS: Number of planted stems excluding live stakes  
 P-All: Number of planted stems including live stakes  
 T: Total stems

**Table 9g. Planted and Total Stems**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

Scientific Name	Common Name	Species Type	Annual Means											
			MY3 (2019)			MY2 (2018)			MY1 (2017)			MY0 (2017)		
			PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
<i>Acer rubrum</i>	Red Maple	Tree			134			188			215			
<i>Ailanthus altissima</i>	Tree-of-Heaven, Copal Tree, Stink-tree	Tree			5									
<i>Alnus serrulata</i>	Tag Alder, Smooth Alder, Hazel Alder	Shrub Tree						1						
<i>Betula nigra</i>	River Birch, Red Birch	Tree	44	44	75	47	47	70	67	67	92	98	98	98
<i>Carya</i>	Hickory	Tree			7									
<i>Carya ovata</i>	Common Shagbark Hickory	Tree						3						
<i>Cercis canadensis</i>	Redbud	Shrub Tree			2			2						
<i>Diospyros virginiana</i>	American Persimmon, Possumwood	Tree			1			1						
<i>Fagus grandifolia</i>	American Beech	Tree									199			
<i>Fraxinus pennsylvanica</i>	Green Ash, Red Ash	Tree	101	101	102	103	103	104	105	105	105	107	107	107
<i>Hamamelis virginiana</i>	American Witchhazel	Shrub Tree			2									
<i>Juniperus virginiana</i>	Eastern Redcedar	Tree			1									
<i>Lindera benzoin</i>	Northern Spicebush	Shrub Tree						1						
<i>Liquidambar styraciflua</i>	Sweet Gum, Red Gum	Tree			1,321			188			100			
<i>Liriodendron tulipifera</i>	Tulip Poplar	Tree			518			444			319			
<i>Morus rubra</i>	Red Mulberry	Tree			2									
<i>Nyssa sylvatica</i>	Sour Gum, Black Gum, Pepperidge	Tree			7			1			11			
<i>Platanus occidentalis</i>	Sycamore, Plane-tree	Tree	82	82	216	83	83	224	97	97	202	107	107	107
<i>Prunus caroliniana</i>	Carolina Laurel Cherry	Shrub Tree						1						
<i>Prunus serotina</i>	Black Cherry	Shrub Tree			5									
<i>Quercus alba</i>	White Oak	Tree			2									
<i>Quercus falcata</i>	Spanish Oak, Southern Red Oak	Tree	1	1	2									
<i>Quercus lyrata</i>	Overcup Oak	Tree						2						
<i>Quercus michauxii</i>	Basket Oak, Swamp Chestnut Oak	Tree	62	62	62	68	68	68	97	97	97	109	109	109
<i>Quercus pagoda</i>	Cherrybark Oak, Swamp Spanish Oak	Tree	29	29	29	36	36	37	63	63	63	75	75	75
<i>Quercus phellos</i>	Willow Oak	Tree	61	61	63	70	70	70	93	93	93	107	107	107
<i>Rhus copallinum</i>	Winged Sumac	Shrub Tree			9			1			2			
<i>Rhus typhina</i>	Staghorn Sumac	Shrub			1									
<i>Salix nigra</i>	Black Willow	Tree			96			8			31			
<i>Salix sericea</i>	Silky Willow	Shrub Tree			31			35			1			
<i>Sambucus canadensis</i>	Common Elderberry	Shrub Tree			6			8						
<i>Sambucus nigra</i>	Common Elderberry	Shrub Tree			19									
<i>Ulmus alata</i>	Winged Elm	Tree			126			238						
<i>Ulmus americana</i>	American Elm	Tree			139			31						
<i>Ulmus rubra</i>	Slippery Elm, Red Elm	Tree			40									
<b>Stem count</b>			380	380	3,023	407	407	1,726	522	522	1,530	603	603	603
<b>Size (ares)</b>			40			40			40			40		
<b>Size (ACRES)</b>			0.99			0.99			0.99			0.99		
<b>Species count</b>			7	7	29	6	6	23	6	6	14	6	6	6
<b>Stems per ACRE</b>			384	384	3,058	412	412	1,746	528	528	1,548	610	610	610

- Exceeds requirements by 10%
- Exceeds requirements, but by less than 10%
- Fails to meet requirements, by less than 10%
- Fails to meet requirements by more than 10%
- Volunteers included

PnoLS: Number of planted stems excluding live stakes  
P-All: Number of planted stems including live stakes  
T: Total stems

## **APPENDIX 4. Morphological Summary Data and Plots**

**Table 10a. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
DMS Project No. 96315  
Monitoring Year 3 - 2019

**Candy Creek Reach 1**

Parameter	Gage	Pre-Restoration Condition		Reference Reach Data								Design						As-Built/Baseline						
		Candy Creek Reach 1		Collins Creek		Long Branch		UT to Rocky Creek		Spencer Creek Reach 2		Candy Creek Reach 1 (100+08 - 118+91)		Candy Creek Reach 1 (118+91 - 125+27)		Candy Creek Reach 1 (125+27 - 126+27)		Candy Creek Reach 1 (100+08 - 118+91)		Candy Creek Reach 1 (118+91 - 125+27)		Candy Creek Reach 1 (125+27 - 126+27)		
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
<b>Dimension and Substrate - Shallow</b>																								
Bankfull Width (ft)	N/A	8.7	9.4	11.9	20.1	14.8	18.6	12.2	10.7	11.2	10.6	13.6	16.8	11.9	12.8	16.1	17.0							
Floodprone Width (ft)		11	16	60		>50		72	60	>114	23	53	30	68	37	84	53	97	164	292				
Bankfull Mean Depth		1.3	1.4	1.6	2.7	1.3	2.1	1.3	1.6	1.8	0.8	1.0	1.2	1.8	0.5	0.7	0.9	1.2						
Bankfull Max Depth		1.7	1.8	3.3	4.2	1.9	2.9	1.8	2.1	2.6	1.2	1.5	1.8	1.8	1.0	1.2	1.8	2.3						
Bankfull Cross-sectional Area (ft <sup>2</sup> )		12.1	12.3	32.9		25.0	34.6	16.3	17.8	19.7	8.2	13.2	19.9	19.9	5.7	8.9	13.9	20.3						
Width/Depth Ratio		6.2	7.2	4.4	12.1	7.9	13.8	9.1	5.8	7.1	13.7	14.0	14.2	14.2	18.4	25.3	18.6	14.3						
Entrenchment Ratio <sup>1</sup>		1.2	1.7	2.0	3.0	>3.4		6.0	5.5	>10.2	2.2	5.0	2.2	5.0	2.2	5.0	4.4	8.1	10.2	17.1				
Bank Height Ratio <sup>2</sup>		3.8	3.9	1.0	1.1	1.2	1.5	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
D50 (mm)		2.4														0.9	2.8	14.6						
<b>Pattern</b>																								
Riffle Length (ft)	N/A			---		---		---		---		---		---		11	55	7	59	17	29			
Riffle Slope (ft/ft)		0.007	0.031	0.003	0.008	0.012	0.013	0.061	0.089	0.013	0.005	0.078	0.007	0.047	0.007	0.023	0.002	0.055	0.006	0.017	0.007	0.017		
Pool Length (ft)				---		---		---		---		---		---		18	70	19	57	52				
Pool Max Depth (ft)		2.1		2.4		2.2		2.2		3.3	0.9	2.4	1.2	3.0	1.4	3.7	2.1	3.0	3.3		3.2			
Pool Spacing (ft)		20	57	32	80	50	105	26	81	71	23	85	30	106	37	118	23	102	53	110	N/A			
Pool Volume (ft <sup>3</sup> )																								
<b>Substrate, Bed and Transport Parameters</b>																								
Channel Beltwidth (ft)	N/A	N/A		---		60		---		38	41	28	94	39	121	50	150	19	47	25	58	54		
Radius of Curvature (ft)		N/A		---		16	87	---		11	15	16	34	20	44	25	54	17	38	22	44	40		
Rc:Bankfull Width (ft/ft)		N/A		---		1.1	4.7	---		1.3	1.4	1.5	3.2	1.5	3.2	1.5	3.2	1.6	3.0	1.4	2.6	2.4		
Meander Length (ft)		N/A		---		---		---		---		53	148	68	190	84	235	32	92	65	110	160		
Meander Width Ratio		N/A		---		---		---		---		5.0	14.0	5	14.0	5.0	14.0	3.1	6.4	3.6	6.2	3.2		
<b>Additional Reach Parameters</b>																								
Drainage Area (SM)	N/A	0.88		1.68		1.49		1.10		0.96		0.22		0.24		0.88		0.22		0.24		0.88		
Watershed Impervious Cover Estimate (%)		1%		---		---		---		---		---	1%		1%		1%		1%		1%		1%	
Rosgen Classification		G4c		E4		C/E4		E4b		E4		C/E		C/E		C/E		C/E		C4				
Bankfull Velocity (fps)		5.3	5.4	3.9	3.6	4.0	5.5	4.9	5.4	3.0	3.3	3.2	2.7	4.2	3.0	3.2								
Bankfull Discharge (cfs)		65		115	150	101	124	85	97	24	42	65	24	42	65									
Q-NFF regression (2-yr)		---																						
Q-USGS extrapolation (1.2-yr)		---																						
Q-Mannings		---																						
Valley Length (ft)		2,268		---		---		---		---		1,615	550	88	1,615	550	88							
Channel Thalweg Length (ft)		2,887		---		---		---		---		1,894	636	100	1,883	636	100							
Sinuosity		1.27		---		1.30		1.10		2.30		1.17	1.16	1.14	1.17	1.16	1.14							
Water Surface Slope (ft/ft) <sup>2</sup>		---		---		---		---		---		0.004	0.021	0.006	0.012	0.006	0.010	0.010	0.008	0.009				
Bankfull Slope (ft/ft)		---		---		---		---		---		0.012	0.009	0.005	0.010	0.009	0.008	0.009						

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.

**Table 10b. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
DMS Project No. 96315  
Monitoring Year 3 - 2019

**Candy Creek Reaches 2 and 3**

Parameter	Gage	Pre-Restoration Condition				Reference Reach Data		Design						As-Built/Baseline							
		Candy Creek Reach 2		Candy Creek Reach 3		See Table 7a		Candy Creek Reach 2 (126+27 - 143+06)		Candy Creek Reach 2 (143+06 - 148+02)		Candy Creek Reach 3 (149+02 - 155+05)		Candy Creek Reach 2 (126+27 - 143+06)		Candy Creek Reach 2 (143+06 - 148+02)		Candy Creek Reach 3 (149+02 - 155+05)			
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
<b>Dimension and Substrate - Riffle</b>																					
Bankfull Width (ft)	N/A	18.2	19.4	15.3	17.6	See Table 10a	17.5		17.0		20.0		16.1	19.5	16.7	19.2					
Floodprone Width (ft)		27	99+	24	60		39	88	37	85	44	100	154	254	164	57					
Bankfull Mean Depth		1.2	1.5	1.6	1.7		1.2	1.2	1.4	1.0	1.2	1.2	1.5								
Bankfull Max Depth		1.8	2.4	2.2	2.4		1.9	1.9	2.1	1.9	2.1	1.8	2.3								
Bankfull Cross-sectional Area (ft <sup>2</sup> )		23.4	27.9	25.8	27.6		21.8	20.9	28.0	16.2	23.3	20.8	28.2								
Width/Depth Ratio		11.9	16.2	9.1	11.2		14.0	13.8	14.3	13.3	16.3	13.5	13.1								
Entrenchment Ratio <sup>1</sup>		1.4	3.2+	1.4	3.9		2.2	5.0	2.2	5.0	2.2	5.0	9.5	15.8	9.8	3.0					
Bank Height Ratio <sup>2</sup>		1.3	2.4	1.8	2.3		1.0	1.0	1.0	1.0	1.0	1.0	1.0								
D50 (mm)		0.8	N/A							0.4	0.5	1.0									
<b>Riffle</b>																					
Riffle Length (ft)	N/A	0.005		0.010		N/A		---		---		---		24	63	14	60	10	61		
Riffle Slope (ft/ft)		0.004		0.035		0.011		0.035		0.006		0.013		0.001	0.019	0.001	0.019	0.001	0.035		
Pool Length (ft)		---		---		---		---		---		---		23	101	23	58	22	53		
Pool Max Depth (ft)		2.7		N/A		1.5		3.9		1.5		3.8		2.1		4.2		3.3		3.5	
Pool Spacing (ft)		16		68		39		124		37		119		40		130		59		146	
Pool Volume (ft <sup>3</sup> )																					
<b>Pattern</b>																					
Channel Beltwidth (ft)	N/A	N/A		N/A		48		156		38		151		N/A		31	72	23	68	N/A	
Radius of Curvature (ft)		N/A		N/A		26		56		26		54		N/A		20	107	27	42	N/A	
Rc:Bankfull Width (ft/ft)		N/A		N/A		1.5		3.2		1.5		3.2		N/A		1.1	4.5	1.3	1.9	N/A	
Meander Length (ft)		N/A		N/A		88		245		85		238		N/A		81	171	54	121	N/A	
Meander Width Ratio		N/A		N/A		2.2		8.9		2.2		8.9		N/A		1.4	3.0	1.1	3.0	N/A	
<b>Substrate, Bed and Transport Parameters</b>																					
RI%/Ru%/P%/G%/S%	N/A																				
SC%/Sa%/G%/C%/B%/Be%																					
d16/d35/d50/d84/d95/d100		SC/0.3/0.8/9.1/13.9/23		N/A										SC/0.17/0.4/93/146/256		SC/0.21/0.5/72/117/362		SC/0.27/1.0/113/148/256			
Reach Shear Stress (Competency) lb/ft <sup>2</sup>		0.42		N/A		0.50		0.50		N/A		0.40		0.48		0.58		N/A			
Max part size (mm) mobilized at bankfull																					
Stream Power (Capacity) W/m <sup>2</sup>																					
<b>Additional Reach Parameters</b>																					
Drainage Area (SM)	N/A	1.08		1.26		0.93		1.08		1.26		0.93		1.08		1.26					
Watershed Impervious Cover Estimate (%)		1%		1%		1%		1%		1%		1%		1%		1%					
Rosgen Classification		F5		G4c		C/E		C/E		C/E		C5		C5		C5					
Bankfull Velocity (fps)		3.6	4.3	3.4	3.6	3.5	4.0	3.2	3.2	4.6	4.1	3.3									
Bankfull Discharge (cfs)		85		93		75		85		93		75		85		93					
Q-NFF regression (2-yr)		---		---		---		---		---		---		---		---					
Q-USGS extrapolation (1.2-yr)		---		---		---		---		---		---		---		---					
Q-Mannings		---		---		---		---		---		---		---		---					
Valley Length (ft)		1,387		551		1,363		426		511		1,363		426		490					
Channel Thalweg Length (ft)		1,780		671		1,679		536		628		1,679		536		603					
Sinuosity		1.28		1.22		1.23		1.26		1.23		1.23		1.26		1.23					
Water Surface Slope (ft/ft) <sup>2</sup>		---		---		0.004		0.009		0.009		0.004		0.005		0.007		0.008		0.004	
Bankfull Slope (ft/ft)		---		---		0.006		0.018		0.007		0.007		0.007		0.009		0.005			

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.



**Table 10c. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
DMS Project No. 96315  
**Monitoring Year 3 - 2019**

**Candy Creek Reach 4**

Parameter	Gage	Pre-Restoration Condition		Reference Reach Data		Design				As-Built/Baseline			
		Candy Creek Reach 4		See Table 7a		Candy Creek Reach 4 (170+71 - 196+50)		Candy Creek Reach 4 (196+50 - 206+35)		Candy Creek Reach 4 (170+71 - 196+50)		Candy Creek Reach 4 (196+50 - 206+35)	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate - Riffle</b>													
Bankfull Width (ft)	N/A	11.4	14.1	See Table 10a	22.0		20.0		19.1	24.9	21.7	23.2	
Floodprone Width (ft)		17	21		77	176	70	120	158	222	132	155	
Bankfull Mean Depth		1.5	1.8		1.5	1.4	1.4	1.5	1.4	1.5	1.4	1.5	
Bankfull Max Depth		1.8	2.1		2.2	2.0	2.1	2.9	2.5	2.9	2.5	2.9	
Bankfull Cross-sectional Area (ft <sup>2</sup> )		20.4	21.5		32.1	27.2	26.9	38.1	31.6	32.8			
Width/Depth Ratio		6.4	9.2		15.1	14.7	13.6	16.3	14.4	17.1			
Entrenchment Ratio <sup>1</sup>		1.5	1.5		3.5	8.0	3.5	6.0	7.1	11.6	6.1	6.7	
Bank Height Ratio <sup>2</sup>		1.9	2.3		1.0	1.0	1.0	1.0	1.0	1.0			
D50 (mm)		2.2					0.4		0.6				
<b>Pattern</b>													
Riffle Length (ft)	N/A	N/A		See Table 10a	---		---		14	74	15	53	
Riffle Slope (ft/ft)		N/A			0.006	0.020	0.011	0.039	0.003	0.022	0.004	0.025	
Pool Length (ft)		N/A			---		---		20	125	22	71	
Pool Max Depth (ft)		2.8			2.9	4.4	2.7	4.1	4.5	4.6	4.1		
Pool Spacing (ft)		N/A			88	154	26	132	40	145	52	111	
Pool Volume (ft <sup>3</sup> )		N/A			---		---		---		---		
<b>Pattern</b>													
Channel Beltwidth (ft)	N/A	N/A		See Table 10a	66	154	30	100	66	154	30	100	
Radius of Curvature (ft)		N/A			25	55	25	50	25	55	25	50	
Rc:Bankfull Width (ft/ft)		N/A			1.2	2.5	1.3	2.5	1.2	2.5	1.3	2.5	
Meander Length (ft)		N/A			84	220	80	220	84	220	80	220	
Meander Width Ratio		N/A			3.0	7.0	1.5	5.0	3.0	7.0	1.5	5.0	
<b>Substrate, Bed and Transport Parameters</b>													
Ri%/Ru%/P%/G%/S%	N/A	---		See Table 10a	---		---		---		---		
SC%/Sa%/G%/C%/B%/Be%		---			---		---		---		---		
d16/d35/d50/d84/d95/d100		0.3/0.7/2.2/14/28/256			---		---		SC/0.15/0.4/64/180/256		0.09/0.26/0.6/49/111/180		
Reach Shear Stress (Competency) lb/ft <sup>2</sup>		0.69			0.46	0.46	0.40	0.44	0.85	0.83			
Max part size (mm) mobilized at bankfull		---			---		---		---				
Stream Power (Capacity) W/m <sup>2</sup>	---		---		---		---						
<b>Additional Reach Parameters</b>													
Drainage Area (SM)	N/A	1.46		See Table 10a	1.40		1.46		1.40		1.46		
Watershed Impervious Cover Estimate (%)		1%			1%		1%		1%				
Rosgen Classification		G4c			C/E		C/E		C5		C5		
Bankfull Velocity (fps)		4.9	5.2		3.3	4.0	3.3	3.2	3.3				
Bankfull Discharge (cfs)		105			---		105		---		105		
Q-NFF regression (2-yr)		---			---		---		---				
Q-USGS extrapolation (1.2-yr)		---			---		---		---				
Q-Mannings		---			---		---		---				
Valley Length (ft)		2,847			1,976		744		1,981		745		
Channel Thalweg Length (ft)		3,359			2,575		983		2,579		985		
Sinuosity		1.18			1.30		1.32		1.30		1.32		
Water Surface Slope (ft/ft) <sup>2</sup>		---			0.004	0.008	0.009	0.013	0.005	0.010			
Bankfull Slope (ft/ft)		---			0.005		0.012		0.005		0.008		

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.

**Table 10d. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
DMS Project No. 96315  
Monitoring Year 3 - 2019

**UT1C and UT1D**

Parameter	Gage	Pre-Restoration Condition				Reference Reach Data								Design				As-Built/Baseline				
		UT1C		UT1D		UT to Varnals Creek		Spencer Creek Reach 3		Agony Acres UT1-Reach 3		UT to Richland Creek		UT1C		UT1D		UT1C		UT1D		
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
<b>Dimension and Substrate - Shallow</b>																						
Bankfull Width (ft)	N/A	8.7	6.4	9.3	10.5	6.3	9.3	9.1	10.4	8.8	10.4	5.8	3.7	7.8	7.6							
Floodprone Width (ft)		12	34	20	64	14	125	36+		28	31	13	29	8	18	28	15					
Bankfull Mean Depth		1.3	0.6	1.1	1.2	0.8	1.0	1.0	1.2	0.8	0.9	0.4	0.2	0.5	0.5							
Bankfull Max Depth		1.7	1.0	1.5	1.7	1.0	1.2	1.8		1.1	1.3	0.5	0.3	0.9	0.8							
Bankfull Cross-sectional Area (ft <sup>2</sup> )		7.2	3.7	10.3	12.3	6.6	8.7	10.7	11.3	7.8	8.5	2.1	0.8	4.0	3.8							
Width/Depth Ratio		4.5	11.2	8.1	9.3	7.9	9.3	7.3	10.1	10.0	12.8	16.0	16.1	15.0	15.4							
Entrenchment Ratio <sup>1</sup>		2.1	5.3	1.9	6.1	1.7	4.3	>3.9		2.5	4.0	2.2	5.0	2.2	5.0	3.6	2.0					
Bank Height Ratio <sup>2</sup>		3.8	1.2	0.9	1.0	1.0		1.0		1.4	2.1	1.0		1.0		1.0	1.0					
D50 (mm)		0.3	0.3													12.8	31.2					
Riffle Length (ft)	N/A	---		---		---		---		---		---		---		3	43	4	62			
Riffle Slope (ft/ft)		N/A	N/A	0.024	0.057	0.018	0.034	N/A		0.021	0.045	0.030	0.050	0.006	0.112	0.003	0.082	0.002	0.085			
Pool Length (ft)		---		---		---		---		---		---		---		5.0	20.0	4.0	15.0			
Pool Max Depth (ft)		N/A	N/A	2.5	2.6	1.2	1.8	2.5		N/A		0.7	1.3	0.5	0.8	1.7		1.1				
Pool Spacing (ft)		N/A	N/A	8	82	9	46	N/A		N/A		8	29	5	26	6	51	6	33			
Pool Volume (ft <sup>3</sup> )																						
<b>Pattern</b>																						
Channel Beltwidth (ft)	N/A	N/A	N/A	15	45	10	50	21	93	N/A		N/A		N/A		N/A		N/A				
Radius of Curvature (ft)		N/A	N/A	8	47	12	85	14	60	N/A		N/A		N/A		N/A		N/A				
Rc:Bankfull Width (ft/ft)		N/A	N/A	0.6	3.2	1.9	9.1	1.5	5.8	N/A		N/A		N/A		N/A		N/A				
Meander Length (ft)		N/A	N/A	---		53	178	---		N/A		N/A		N/A		N/A		N/A				
Meander Width Ratio		N/A	N/A	1.0	3.0	1.6	5.4	2.3	8.9	N/A		N/A		N/A		N/A		N/A				
<b>Substrate, Bed and Transport Parameters</b>																						
Ri%/Ru%/P%/G%/S%	N/A																					
SC%/Sa%/G%/C%/B%/Be%																						
d16/d35/d50/d84/d95/d100		SC/SC/0.3/9.4/30/90	SC/0.1/0.3/2.9/5.2/16	---		1.9/8.9/11/64/128/---		---		---		---		---		SC/0.39/12.8/82/117/180		0.3/6.1/31/57/78/128				
Reach Shear Stress (Competency) lb/ft <sup>2</sup>		2.70	0.39																			
Max part size (mm) mobilized at bankfull																						
Stream Power (Capacity) W/m <sup>2</sup>																						
<b>Additional Reach Parameters</b>																						
Drainage Area (SM)	N/A	0.04	0.01	0.41	0.37	0.30	0.28	0.04	0.01	0.04	0.01											
Watershed Impervious Cover Estimate (%)		1%	<1%	---	---	---	---	1%	<1%	1%	<1%											
Rosgen Classification		E5b	C5	B	E4	E4	C4/E4	B/C	B/C	B/C	B/C											
Bankfull Velocity (fps)		0.8	0.5	4.4	5.2	5	5.6	2.2	2.4	3.5	4.1	2.5	3.0	1.5	0.5							
Bankfull Discharge (cfs)		6	2	54	35	25	29	32	6	2	6	2										
Q-NFF regression (2-yr)		---	---																			
Q-USGS extrapolation (1.2-yr)		---	---																			
Q-Mannings		---	---																			
Valley Length (ft)		688	378	---	---	---	---	684	370	672	363											
Channel Thalweg Length (ft)		728	436	---	---	---	---	740	385	728	379											
Sinuosity		1.06	1.15	1.20	1.00	1.30	1.35	1.00	1.08	1.04	1.08	1.04										
Water Surface Slope (ft/ft) <sup>2</sup>		---	---	---	---	---	---	---	0.028	0.006	0.075	0.028	0.051									
Bankfull Slope (ft/ft)		---	---	---	---	---	---	---	0.040	0.052		0.028	0.045									

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.

**Table 10e. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

**UT2 and UT2A**

Parameter	Gage	Pre-Restoration Condition						Reference Reach Data		Design						As-Built/Baseline											
		UT2 - Reach 1		UT2 - Reach 2		UT2A		See Table 7d		UT2 - Reach 1		UT2 - Reach 2		UT2A		UT2 - Reach 1		UT2 - Reach 2		UT2A							
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max						
<b>Dimension and Substrate - Shallow</b>																											
Bankfull Width (ft)	N/A	3.1	6.7	5.2	2.8	See Table 10d		6.4	7.5	4.6	4.8	7.5	7.8	7.0													
Floodprone Width (ft)		4	9	7	9	19	82	16	28	10	18	22	47	60	31												
Bankfull Mean Depth		0.4	0.8	0.6	0.4	0.4	0.5	0.3	0.3	0.9	0.5	0.6	1.0	0.6													
Bankfull Max Depth		0.8	1.0	0.9	0.6	0.6	0.8	0.4	0.4	1.5	0.8	1.0	1.0	1.0													
Bankfull Cross-sectional Area (ft <sup>2</sup> )		2.4	3.0	3.3	1.2	2.7	3.9	1.3	1.2	6.8	4.1	4.1	4.1	4.1													
Width/Depth Ratio		4.0	14.9	8.3	6.6	15.1	14.4	16.3	8.3	18.5	14.9	11.9	11.9	11.9													
Entrenchment Ratio <sup>1</sup>		1.1	1.3	1.4	3.1	3.0	12.8	2.1	3.7	2.2	3.9	2.9	9.8	7.7	4.4												
Bank Height Ratio <sup>2</sup>		4.3	4.9	3.8	5.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0												
D50 (mm)	0.1	N/A	N/A	N/A							34.6	4.5	2.5	2.5													
Riffle Length (ft)	N/A	0.003		0.110		N/A		N/A		---		---		---		4	68	7	80	3	102						
Riffle Slope (ft/ft)		0.003		0.110		N/A		N/A		0.011		0.070		0.017		0.032		0.035		0.065		0.004	0.063	0.001	0.055	0.019	0.071
Pool Length (ft)		1.1		N/A		N/A		N/A		---		---		---		---		4	18	11	62	4	12				
Pool Max Depth (ft)		22		116		N/A		N/A		1.0		1.9		1.0		2.0		0.6		1.0		1.7		1.5		1.5	2.1
Pool Spacing (ft)		8		42		17		53		6		30		8		45		13		51		7		55			
Pool Volume (ft <sup>3</sup> )																											
<b>Pattern</b>																											
Channel Beltwidth (ft)	N/A	N/A		N/A		N/A		N/A		N/A		N/A		N/A		10	25	N/A		N/A							
Radius of Curvature (ft)		N/A		N/A		N/A		N/A		N/A		N/A		N/A		17	54	N/A		N/A							
Rc:Bankfull Width (ft/ft)		N/A		N/A		N/A		N/A		N/A		N/A		N/A		3.7	9.2	N/A		N/A							
Meander Length (ft)		N/A		N/A		N/A		N/A		N/A		N/A		N/A		21	68	N/A		N/A							
Meander Width Ratio		N/A		N/A		N/A		N/A		N/A		N/A		N/A		2.2	5.6	N/A		N/A							
<b>Substrate, Bed and Transport Parameters</b>																											
Ri%/Ru%/P%/G%/S%	N/A	SC/SC/0.1/22.6/36.7/90		N/A		N/A		See Table 10d								0.35/6.0/34.6/70/90/256		0.2/0.7/5/56/161/>2048		0.27/1.1/2.5/47/76/180							
SC%/Sa%/G%/C%/B%/Be%		1.80		N/A		N/A		0.95		---		---		0.31		1.05		0.45		1.32							
d16/d35/d50/d84/d95/d100																											
Reach Shear Stress (Competency) lb/ft <sup>2</sup>																											
Max part size (mm) mobilized at bankfull																											
Stream Power (Capacity) W/m <sup>2</sup>																											
<b>Additional Reach Parameters</b>																											
Drainage Area (SM)	N/A	0.07		0.10		0.02		0.07		0.10		0.02		0.07		0.10		0.02									
Watershed Impervious Cover Estimate (%)		3%		3%		5%		3%		3%		5%		3%		3%		5%									
Rosgen Classification		F5		G5c		G5		B		C/E		B		C4		C5		C5									
Bankfull Velocity (fps)		3.0		3.7		3.6		3.5		3.1		3.1		2.3		1.3		7.5		2.9		1.0					
Bankfull Discharge (cfs)		9		12		4		9		9		12		4		9		12		4							
Q-NFF regression (2-yr)		---		---		---		---		---		---		---		---		---		---							
Q-USGS extrapolation (1.2-yr)		---		---		---		---		---		---		---		---		---		---							
Q-Mannings		---		---		---		---		---		---		---		---		---		---							
Valley Length (ft)		1,105		595		341		1,168		591		340		1,168		591		358									
Channel Thalweg Length (ft)		1,279		731		376		1,208		645		349		1,208		643		366									
Sinuosity		1.16		1.23		1.10		1.03		1.09		1.02		1.03		1.09		1.02									
Water Surface Slope (ft/ft) <sup>2</sup>		---		---		---		0.010		0.035		0.014		0.016		0.032		0.036		0.021		0.031		0.015		0.039	
Bankfull Slope (ft/ft)		---		---		---		0.038		0.019		0.038		0.023		0.032		0.014		0.040							

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.

**Table 10f. Baseline Stream Data Summary**

Candy Creek Mitigation Site  
DMS Project No. 96315  
Monitoring Year 3 - 2019

**UT3, UT4, and UT5**

Parameter	Gage	Pre-Restoration Condition						Reference Reach Data		Design						As-Built/Baseline																									
		UT3		UT4		UT5		See Table 7d		UT3		UT4		UT5		UT3		UT4		UT5																					
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max																				
<b>Dimension and Substrate - Shallow</b>																																									
Bankfull Width (ft)	N/A	5.8		8.5		9.5		See Table 10d		7.8		11.0		9.8		8.8		11.5		15.1		9.7		10.6																	
Floodprone Width (ft)		8		11		10				17		100		24		135		22		100		77		98		288		83		229											
Bankfull Mean Depth		0.7		0.8		0.7				0.6		0.9		0.8		0.6		0.9		1.1		0.6		0.8		0.8		0.8													
Bankfull Max Depth		0.9		1.0		1.0				0.9		1.2		1.1		1.1		1.6		2.1		0.9		1.3		1.3		1.3													
Bankfull Cross-sectional Area (ft <sup>2</sup> )		3.9		7.2		6.7				4.8		9.4		7.5		5.5		11.0		15.2		6.0		8.8		8.8		8.8													
Width/Depth Ratio		8.8		10.2		13.4				12.7		12.9		12.8		14.0		10.2		15.0		12.8		15.5		15.5		15.5													
Entrenchment Ratio <sup>1</sup>		1.3		1.2		1.1				2.2		12.8		2.2		12.3		2.2		10.2		8.8		6.5		25.0		8.6		21.6											
Bank Height Ratio <sup>2</sup>		5.4		6.2		5.6				1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0		1.0													
D50 (mm)		10.6		2.8		12.5										1.5		0.6		0.6		0.6		0.6		0.6		0.6													
<b>Pattern</b>																																									
Riffle Length (ft)	N/A							See Table 10d		---		---		---		8		20		8		69		11		28															
Riffle Slope (ft/ft)		0.011		0.072		0.011		0.064		0.020		0.012		0.012		0.092		0.003		0.018		0.003		0.035		0.007		0.057		0.000		0.072		0.000		0.027					
Pool Length (ft)																8		24		9		42		12		39		39		39		39									
Pool Max Depth (ft)		1.1		1.4		1.2				1.1		2.1		1.7		2.6		1.5		2.4		1.1		2.7		2.3		2.9		1.9		1.9									
Pool Spacing (ft)		6		43		12		42		9		54						17		43		28		66		25		64		24		33		24		123		26		65	
Pool Volume (ft <sup>3</sup> )																																									
<b>Substrate, Bed and Transport Parameters</b>																																									
Channel Beltwidth (ft)	N/A	N/A		N/A		N/A		See Table 10d		6		16		10		28		9		64		7		19		10		45		10		39									
Radius of Curvature (ft)		N/A		N/A		N/A				10		27		14		28		13		49		12		24		12		33		11		48									
Rc:Bankfull Width (ft/ft)		N/A		N/A		N/A				1.3		3.5		1.3		2.5		1.3		5.0		1.1		2.1		1.1		2.1		0.8		3.6									
Meander Length (ft)		N/A		N/A		N/A				41		101		39		105		54		127		28		76		31		72		34		71									
Meander Width Ratio		N/A		N/A		N/A				0.8		2.0		0.9		2.5		0.9		6.5		0.8		1.7		0.7		2.7		0.9		2.2									
<b>Additional Reach Parameters</b>																																									
Drainage Area (SM)	N/A	0.12		0.30		0.21		See Table 10d		0.12		0.30		0.21		0.12		0.30		0.21		0.12		0.30		0.21		0.21		0.21											
Watershed Impervious Cover Estimate (%)		1%		0%		1%				1%		0%		1%		1%		1%		0%		1%		0%		1%		1%		1%											
Rosgen Classification		G4		G4		F4				C/E		C/E		C/E		C5		C5/E5		C5/E5		C5/E5		C5/E5		C5/E5		C5/E5		C5/E5											
Bankfull Velocity (fps)		3.7		4.2		3.3				2.9		3.2		2.9		2.5		2.0		2.7		2.5		3.7		2.5		3.7		3.7											
Bankfull Discharge (cfs)		14		30		22				14		30		22		14		30		22		14		30		22		22		22											
Q-NFF regression (2-yr)		---		---		---				---		---		---		---		---		---		---		---		---		---		---											
Q-USGS extrapolation (1.2-yr)		---		---		---				---		---		---		---		---		---		---		---		---		---		---											
Q-Mannings		---		---		---				---		---		---		---		---		---		---		---		---		---		---											
Valley Length (ft)		238		1,058		732				301		1,111		845		301		1,111		845		301		1,111		845		845													
Channel Thalweg Length (ft)		346		1,270		1,012				346		1,355		1,012		346		1,356		1,012		346		1,356		1,012		1,012													
Sinuosity		1.45		1.20		1.38				1.15		1.22		1.20		1.15		1.22		1.20		1.15		1.22		1.20		1.20													
Water Surface Slope (ft/ft) <sup>2</sup>		---		---		---				0.011		0.032		0.003		0.012		0.002		0.010		0.024		0.006		0.006		0.006													
Bankfull Slope (ft/ft)		---		---		---				0.016		0.032		0.012		0.012		0.012		0.012		0.022		0.006		0.006		0.007													

SC: Silt/Clay <0.062 mm diameter particles

(---): Data was not provided

N/A: Not Applicable

<sup>1</sup>Entrenchment Ratio is the flood prone width divided by the bankfull width.

<sup>2</sup>Bank Height Ratio is the bank height divided by the max depth of the bankfull channel.







**Table 12a. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

**Candy Creek Reach 1 (Sta. 100+08 - 118+91)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	11.9	12.8	10.6	12.1	11.4	13.0	10.3	13.0								
Floodprone Width (ft)	53.0	97.0	53.0	97.0	54.6	95.6	54.5	96.2								
Bankfull Mean Depth	0.5	0.7	0.5	0.7	0.5	0.6	0.5	0.6								
Bankfull Max Depth	1.0	1.2	0.9	1.2	1.0	1.3	0.9	1.3								
Bankfull Cross-sectional Area (ft <sup>2</sup> )	5.7	8.9	5.1	8.3	6.2	7.1	5.9	7.7								
Width/Depth Ratio	18.4	25.3	15.4	22.2	19.0	27.2	16.5	21.8								
Entrenchment Ratio <sup>1</sup>	4.4	8.1	4.4	9.1	4.8	7.3	5.3	8.5								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9	1.0	0.8	1.0								
D50 (mm) <sup>4</sup>	23.6	40.9	37.9	45.0	1.4	33.6	28.5	34.4								
<b>Profile</b>																
Riffle Length (ft)	11	55														
Riffle Slope (ft/ft)	0.002	0.055														
Pool Length (ft)	18	70														
Pool Max Depth (ft)	2.1	3.0														
Pool Spacing (ft)	23	102														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	19	47														
Radius of Curvature (ft)	17	38														
Rc:Bankfull Width (ft/ft)	1.6	3.0														
Meander Wave Length (ft)	32	92														
Meander Width Ratio	3.1	6.4														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	1,883															
Sinuosity (ft)	1.17															
Water Surface Slope (ft/ft)	0.010															
Bankfull Slope (ft/ft)	0.010															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.35/0.9/62/114/512															
% of Reach with Eroding Banks	0%		<1%		<1%		4%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.



**Table 12b. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 1 (Sta. 118+91 - 125+27)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	16.1		16.8		13.6		11.7									
Floodprone Width (ft)	164.0		164.0		82.7		82.7									
Bankfull Mean Depth	0.9		1.0		0.9		1.0									
Bankfull Max Depth	1.8		1.8		1.7		1.8									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	13.9		14.3		12.2		12.0									
Width/Depth Ratio	18.6		15.4		15.3		11.3									
Entrenchment Ratio <sup>1</sup>	10.2		11.1		6.1		7.1									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9		1.0									
D50 (mm) <sup>4</sup>	46.2		35.9		68.5		49.1									
<b>Profile</b>																
Riffle Length (ft)	7	59														
Riffle Slope (ft/ft)	0.006	0.017														
Pool Length (ft)	19	57														
Pool Max Depth (ft)	3.3															
Pool Spacing (ft)	53	110														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	25	58														
Radius of Curvature (ft)	22	44														
Rc:Bankfull Width (ft/ft)	1.4	2.6														
Meander Wave Length (ft)	65	110														
Meander Width Ratio	3.6	6.2														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C4															
Channel Thalweg Length (ft)	636															
Sinuosity (ft)	1.16															
Water Surface Slope (ft/ft)	0.008															
Bankfull Slope (ft/ft)	0.009															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.34/2.8/72/168/256															
% of Reach with Eroding Banks	0%		0%	0%	0%	7%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12c. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 1 (Sta. 125+27 - 126+27)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	17.0		15.3		15.2		15.2									
Floodprone Width (ft)	292.0		292.0		63.8		63.8									
Bankfull Mean Depth	1.2		1.3		1.3		1.4									
Bankfull Max Depth	2.3		2.3		2.2		2.3									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	20.3		20.3		19.8		20.7									
Width/Depth Ratio	14.3		11.5		11.7		11.1									
Entrenchment Ratio <sup>1</sup>	17.1		19.1		4.2		4.2									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0		1.0									
D50 (mm) <sup>4</sup>	22.6		90		22.6		74.1									
<b>Profile</b>																
Riffle Length (ft)	17	29														
Riffle Slope (ft/ft)	0.007	0.017														
Pool Length (ft)	52															
Pool Max Depth (ft)	3.2															
Pool Spacing (ft)	N/A															
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	54															
Radius of Curvature (ft)	40															
Rc:Bankfull Width (ft/ft)	2.4															
Meander Wave Length (ft)	160															
Meander Width Ratio	3.2															
<b>Additional Reach Parameters</b>																
Rosgen Classification	C4															
Channel Thalweg Length (ft)	100															
Sinuosity (ft)	1.14															
Water Surface Slope (ft/ft)	0.009															
Bankfull Slope (ft/ft)	0.008															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.15/0.9/15/83/129/256															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12d. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

**Candy Creek Reach 2 (Sta. 126+27 - 143+06)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	16.1	19.5	16.0	18.2	14.5	17.9	15.3	19.1								
Floodprone Width (ft)	154.0	254.0	154.0	254.0	82.7	95.7	82.8	95.8								
Bankfull Mean Depth	1.0	1.2	1.0	1.3	1.0	1.3	1.1	1.3								
Bankfull Max Depth	1.9	2.1	2.0	2.3	1.9	2.3	2.1	2.4								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	16.2	23.3	16.5	24.3	14.7	22.3	19.1	21.6								
Width/Depth Ratio	13.3	16.3	12.2	13.7	12.7	14.3	11.9	16.9								
Entrenchment Ratio <sup>1</sup>	9.5	15.8	9.5	15.9	5.0	6.5	5.0	5.9								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9	1.0	1.0	1.1								
D50 (mm) <sup>4</sup>	26.9	47.3	16.0	93.6	1.0	14.6	27.4	80.7								
<b>Profile</b>																
Riffle Length (ft)	24	63														
Riffle Slope (ft/ft)	0.001	0.019														
Pool Length (ft)	23	101														
Pool Max Depth (ft)	3.3	3.5														
Pool Spacing (ft)	59	146														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	31	72														
Radius of Curvature (ft)	20	107														
Rc:Bankfull Width (ft/ft)	1.1	4.5														
Meander Wave Length (ft)	81	171														
Meander Width Ratio	1.4	3.0														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	1,679															
Sinuosity (ft)	1.23															
Water Surface Slope (ft/ft)	0.007															
Bankfull Slope (ft/ft)	0.007															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.17/0.4/93/146/256															
% of Reach with Eroding Banks	0%		<1%		<1%		4%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12e. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 2 (Sta. 143+06 - 148+02)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	16.7		17.3		17.5		17.4									
Floodprone Width (ft)	164		164		80.8		87									
Bankfull Mean Depth	1.2		1.3		1.2		1.3									
Bankfull Max Depth	1.8		2.1		2.0		2.0									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	20.8		22.7		21.8		22.0									
Width/Depth Ratio	13.5		13.2		14.0		13.7									
Entrenchment Ratio <sup>1</sup>	9.8		9.5		4.6		5.0									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0		1.0									
D50 (mm) <sup>4</sup>	9.4		77.2		11.0		37.6									
<b>Profile</b>																
Riffle Length (ft)	14	60														
Riffle Slope (ft/ft)	0.001	0.019														
Pool Length (ft)	23	58														
Pool Max Depth (ft)	3.9															
Pool Spacing (ft)	55	136														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	23	68														
Radius of Curvature (ft)	27	42														
Rc:Bankfull Width (ft/ft)	1.3	1.9														
Meander Wave Length (ft)	54	121														
Meander Width Ratio	1.1	3.0														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	536															
Sinuosity (ft)	1.26															
Water Surface Slope (ft/ft)	0.008															
Bankfull Slope (ft/ft)	0.009															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.21/0.5/72/117/362															
% of Reach with Eroding Banks	0%		2%		2%		5%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12f. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 3 (Sta. 149+02 - 155+05)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	19.2		18.0		20.0		19.7									
Floodprone Width (ft)	57		57		53.8		53.7									
Bankfull Mean Depth	1.5		1.4		1.3		1.5									
Bankfull Max Depth	2.3		2.4		2.3		2.4									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	28.2		25.9		26.9		29.2									
Width/Depth Ratio	13.1		12.5		14.9		13.2									
Entrenchment Ratio <sup>1</sup>	3.0		3.2		2.7		2.7									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0		1.0									
D50 (mm) <sup>4</sup>	87.8		97.2		4.0		65.8									
<b>Profile</b>																
Riffle Length (ft)	10	61														
Riffle Slope (ft/ft)	0.001	0.035														
Pool Length (ft)	22	53														
Pool Max Depth (ft)	3.5															
Pool Spacing (ft)	49	97														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	N/A															
Radius of Curvature (ft)	N/A															
Rc:Bankfull Width (ft/ft)	N/A															
Meander Wave Length (ft)	N/A															
Meander Width Ratio	N/A															
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	603															
Sinuosity (ft)	1.23															
Water Surface Slope (ft/ft)	0.004															
Bankfull Slope (ft/ft)	0.005															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.27/1.0/113/148/256															
% of Reach with Eroding Banks	0%		0%		0%		16%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12g. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 4 (Sta. 170+71 - 196+50)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	19.1	24.9	19.8	22.5	20.4	23.9	19.6	24.2								
Floodprone Width (ft)	158.0	222.0	158.0	222.0	85.9	100.3	85.9	100.4								
Bankfull Mean Depth	1.4	1.5	1.2	1.7	1.4	1.4	1.4	1.4								
Bankfull Max Depth	2.1	2.9	2.1	2.8	2.3	2.6	2.3	2.5								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	26.9	38.1	23.3	37.4	28.0	34.2	27.9	33.9								
Width/Depth Ratio	13.6	16.3	13.5	16.8	14.8	16.6	13.8	17.3								
Entrenchment Ratio <sup>1</sup>	7.1	11.6	7.1	11.2	3.8	4.5	3.7	4.6								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9	1.0	0.9	1.0								
D50 (mm) <sup>4</sup>	27.6	37.9	17.7	51.8	22.6	51.1	31.4	55.1								
<b>Profile</b>																
Riffle Length (ft)	14	74														
Riffle Slope (ft/ft)	0.003	0.022														
Pool Length (ft)	20	125														
Pool Max Depth (ft)	4.5	4.6														
Pool Spacing (ft)	40	145														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	66	154														
Radius of Curvature (ft)	25	55														
Rc:Bankfull Width (ft/ft)	1.2	2.5														
Meander Wave Length (ft)	84	220														
Meander Width Ratio	3.0	7.0														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	2,579															
Sinuosity (ft)	1.30															
Water Surface Slope (ft/ft)	0.005															
Bankfull Slope (ft/ft)	0.005															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.15/0.4/64/180/256															
% of Reach with Eroding Banks	0%		<1%		0%		<1%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12h. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy Creek Reach 4 (Sta. 196+50 - 206+35)**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	21.7	23.2	21.6	23.5	22.7	23.6	23.2	23.6								
Floodprone Width (ft)	132.0	155.0	132.0	155.0	58.7	85.9	58.8	85.8								
Bankfull Mean Depth	1.4	1.5	1.4	1.5	1.3	1.5	1.3	1.5								
Bankfull Max Depth	2.5	2.9	2.5	2.6	2.4	2.5	2.5	2.5								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	31.6	32.8	32.4	32.8	31.4	33.5	29.6	33.9								
Width/Depth Ratio	14.4	17.1	14.3	17.1	15.3	17.7	15.8	18.8								
Entrenchment Ratio <sup>1</sup>	6.1	6.7	6.1	6.6	2.5	3.8	2.5	3.7								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0	1.0	1.0	1.0								
D50 (mm) <sup>4</sup>	29.3	39.0	28.5	102.5	1.0	100.4	41.6	60.4								
<b>Profile</b>																
Riffle Length (ft)	15	53														
Riffle Slope (ft/ft)	0.004	0.025														
Pool Length (ft)	22	71														
Pool Max Depth (ft)	4.1															
Pool Spacing (ft)	52	111														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	30	100														
Radius of Curvature (ft)	25	50														
Rc:Bankfull Width (ft/ft)	1.3	2.5														
Meander Wave Length (ft)	80	220														
Meander Width Ratio	1.5	5.0														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	985															
Sinuosity (ft)	1.32															
Water Surface Slope (ft/ft)	0.010															
Bankfull Slope (ft/ft)	0.008															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.09/0.3/0.6/49/111/180															
% of Reach with Eroding Banks	0%		0%		0%		7%									

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12i. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1C**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	7.8		7.8		10.1		11.4									
Floodprone Width (ft)	28.0		28.0		24.6		24.9									
Bankfull Mean Depth	0.5		0.5		0.5		0.6									
Bankfull Max Depth	0.9		0.8		1.1		1.2									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	4.0		3.7		5.1		6.7									
Width/Depth Ratio	15.0		16.2		19.9		19.4									
Entrenchment Ratio <sup>1</sup>	3.6		3.6		2.4		2.2									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.1		1.3									
D50 (mm) <sup>4</sup>	54.5		84.6		54.1		39.4									
<b>Profile</b>																
Riffle Length (ft)	3	43														
Riffle Slope (ft/ft)	0.003	0.082														
Pool Length (ft)	5	20														
Pool Max Depth (ft)	1.7															
Pool Spacing (ft)	6	51														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	N/A															
Radius of Curvature (ft)	N/A															
Rc:Bankfull Width (ft/ft)	N/A															
Meander Wave Length (ft)	N/A															
Meander Width Ratio	N/A															
<b>Additional Reach Parameters</b>																
Rosgen Classification	B/C															
Channel Thalweg Length (ft)	728															
Sinuosity (ft)	1.08															
Water Surface Slope (ft/ft)	0.028															
Bankfull Slope (ft/ft)	0.028															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.4/12.8/82/117/180															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.



**Table 12j. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1D**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	7.6		7.1		8.4		7.4									
Floodprone Width (ft)	15.0		15.0		18.7		17.1									
Bankfull Mean Depth	0.5		0.5		0.5		0.4									
Bankfull Max Depth	0.8		0.8		0.9		0.7									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	3.8		3.3		4.0		3.0									
Width/Depth Ratio	15.4		15.3		17.9		18.7									
Entrenchment Ratio <sup>1</sup>	2.0		2.1		2.2		2.3									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0		0.9									
D50 (mm) <sup>4</sup>	25.1		33.7		34.8		0.9									
<b>Profile</b>																
Riffle Length (ft)	4	62														
Riffle Slope (ft/ft)	0.002	0.085														
Pool Length (ft)	4	15														
Pool Max Depth (ft)	1.1															
Pool Spacing (ft)	6	33														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	N/A															
Radius of Curvature (ft)	N/A															
Rc:Bankfull Width (ft/ft)	N/A															
Meander Wave Length (ft)	N/A															
Meander Width Ratio	N/A															
<b>Additional Reach Parameters</b>																
Rosgen Classification	B/C															
Channel Thalweg Length (ft)	379															
Sinuosity (ft)	1.04															
Water Surface Slope (ft/ft)	0.051															
Bankfull Slope (ft/ft)	0.045															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.3/6.1/31/57/78/128															
% of Reach with Eroding Banks	0%		0%	0%	0%	5%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12k. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 - Reach 1**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	4.8	7.5	4.3	7.5	3.1	7.5	3.8	7.2								
Floodprone Width (ft)	22.0	47.0	22.0	47.0	21.9	79.4	21.2	78.1								
Bankfull Mean Depth	0.3	0.9	0.2	0.8	0.2	0.8	0.2	0.8								
Bankfull Max Depth	0.4	1.5	0.3	1.4	0.3	1.4	0.4	1.4								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	1.2	6.8	0.8	6.3	0.7	6.3	0.9	5.5								
Width/Depth Ratio	8.3	18.5	9.7	23.3	9.0	13.9	9.3	16.5								
Entrenchment Ratio <sup>1</sup>	2.9	9.8	2.8	11.0	2.9	13.6	3.0	12.5								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.7	1.0	0.9	1.0								
D50 (mm) <sup>4</sup>	34.0	39.0	34.8	40.2	9.9	33.3	25.0	36.7								
<b>Profile</b>																
Riffle Length (ft)	4	68														
Riffle Slope (ft/ft)	0.004	0.063														
Pool Length (ft)	4	18														
Pool Max Depth (ft)	1.7															
Pool Spacing (ft)	8	45														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	10	25														
Radius of Curvature (ft)	17	54														
Rc:Bankfull Width (ft/ft)	3.7	9.2														
Meander Wave Length (ft)	21	68														
Meander Width Ratio	2.2	5.6														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C4															
Channel Thalweg Length (ft)	1,208															
Sinuosity (ft)	1.03															
Water Surface Slope (ft/ft)	0.021	0.031														
Bankfull Slope (ft/ft)	0.023	0.032														
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.35/6.0/34.6/70/90/256															
% of Reach with Eroding Banks	0%		0%	0%	1%											

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12I. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 - Reach 2**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	7.8		7.8		7.0		6.5									
Floodprone Width (ft)	60.0		60.0		24.8		60.0									
Bankfull Mean Depth	0.5		0.4		0.4		0.4									
Bankfull Max Depth	0.8		0.8		0.7		0.7									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	4.1		3.0		3.0		2.8									
Width/Depth Ratio	14.9		20.2		16.4		14.8									
Entrenchment Ratio <sup>1</sup>	7.7		7.7		3.6		9.3									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.8		0.8									
D50 (mm) <sup>4</sup>	26.2		66.5		11.0		10.7									
<b>Profile</b>																
Riffle Length (ft)	7	80														
Riffle Slope (ft/ft)	0.001	0.055														
Pool Length (ft)	11	62														
Pool Max Depth (ft)	1.5															
Pool Spacing (ft)	13	51														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	N/A															
Radius of Curvature (ft)	N/A															
Rc:Bankfull Width (ft/ft)	N/A															
Meander Wave Length (ft)	N/A															
Meander Width Ratio	N/A															
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	643															
Sinuosity (ft)	1.09															
Water Surface Slope (ft/ft)	0.015															
Bankfull Slope (ft/ft)	0.014															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.2/0.7/5/56/161/>2048															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12m. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2A**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	7.0		7.6		7.4		5.9									
Floodprone Width (ft)	31.0		31.0		22.2		40.1									
Bankfull Mean Depth	0.6		0.5		0.5		0.5									
Bankfull Max Depth	1.0		1.0		1.1		1.2									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	4.1		3.7		3.5		3.1									
Width/Depth Ratio	11.9		15.8		15.7		11.2									
Entrenchment Ratio <sup>1</sup>	4.4		4.1		3.0		6.8									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9		0.9									
D50 (mm) <sup>4</sup>	18.2		7.5		5.6		9.3									
<b>Profile</b>																
Riffle Length (ft)	3	102														
Riffle Slope (ft/ft)	0.019	0.071														
Pool Length (ft)	4	12														
Pool Max Depth (ft)	1.5	2.1														
Pool Spacing (ft)	7	55														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	N/A															
Radius of Curvature (ft)	N/A															
Rc:Bankfull Width (ft/ft)	N/A															
Meander Wave Length (ft)	N/A															
Meander Width Ratio	N/A															
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	366															
Sinuosity (ft)	1.02															
Water Surface Slope (ft/ft)	0.039															
Bankfull Slope (ft/ft)	0.040															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	0.27/1.1/2.5/47/76/180															
% of Reach with Eroding Banks	0%		0%		0%		0%		0%							

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12n. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT3**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	8.8		8.7		9.0		10.4									
Floodprone Width (ft)	77.0		77.0		67.6		67.3									
Bankfull Mean Depth	0.6		0.6		0.7		0.5									
Bankfull Max Depth	1.1		1.1		1.2		1.0									
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	5.5		5.3		5.9		5.3									
Width/Depth Ratio	14.0		14.1		13.7		20.3									
Entrenchment Ratio <sup>1</sup>	8.8		8.9		7.5		6.5									
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0		1.0									
D50 (mm) <sup>4</sup>	74.4		96		72.7		58.6									
<b>Profile</b>																
Riffle Length (ft)	8	20														
Riffle Slope (ft/ft)	0.007	0.057														
Pool Length (ft)	8	24														
Pool Max Depth (ft)	1.1	2.1														
Pool Spacing (ft)	24	33														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	7	19														
Radius of Curvature (ft)	12	24														
Rc:Bankfull Width (ft/ft)	1.1	2.1														
Meander Wave Length (ft)	28	76														
Meander Width Ratio	0.8	1.7														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5															
Channel Thalweg Length (ft)	346															
Sinuosity (ft)	1.15															
Water Surface Slope (ft/ft)	0.024															
Bankfull Slope (ft/ft)	0.022															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.36/1.5/81/111/180															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12o. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT4**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	11.5	15.1	12.3	14.7	12.4	15.3	12.3	15.6								
Floodprone Width (ft)	98.0	288.0	98.0	288.0	49.9	69.1	49.9	69.1								
Bankfull Mean Depth	0.9	1.1	0.9	1.0	0.8	1.0	0.8	1.0								
Bankfull Max Depth	1.6	2.1	1.6	2.1	1.5	1.9	1.5	1.8								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	11.0	15.2	11.1	14.4	10.6	13.3	10.2	13.6								
Width/Depth Ratio	10.2	15.0	11.9	15.0	13.6	17.6	12.5	17.9								
Entrenchment Ratio <sup>1</sup>	6.5	25.0	6.7	23.5	3.8	5.6	3.7	5.4								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		0.9	1.0	0.9	1.0								
D50 (mm) <sup>4</sup>	16.0	45.0	22.6	79.4	25.4	64.7	1.9	77.2								
<b>Profile</b>																
Riffle Length (ft)	8	69														
Riffle Slope (ft/ft)	0.000	0.072														
Pool Length (ft)	9	42														
Pool Max Depth (ft)	2.3															
Pool Spacing (ft)	24	123														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	10	45														
Radius of Curvature (ft)	12	33														
Rc:Bankfull Width (ft/ft)	1.1	2.1														
Meander Wave Length (ft)	31	72														
Meander Width Ratio	0.7	2.7														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C4															
Channel Thalweg Length (ft)	1,356															
Sinuosity (ft)	1.22															
Water Surface Slope (ft/ft)	0.006															
Bankfull Slope (ft/ft)	0.006															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/0.2/0.6/100/161/512															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

**Table 12p. Monitoring Data - Stream Reach Data Summary**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**UT5**

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY4 2020		MY5 2021		MY6 2022		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
<b>Dimension and Substrate</b>																
Bankfull Width (ft)	9.7	10.6	9.6	10.8	10.6	11.6	9.3	10.1								
Floodprone Width (ft)	83.0	229.0	83.0	229.0	53.9	82.3	53.8	82.3								
Bankfull Mean Depth	0.6	0.8	0.6	0.8	0.6	0.7	0.6	0.8								
Bankfull Max Depth	0.9	1.3	0.9	1.3	1.0	1.3	1.0	1.3								
Bankfull Cross-Sectional Area (ft <sup>2</sup> )	6.0	8.8	5.6	8.4	6.4	8.2	5.5	7.6								
Width/Depth Ratio	12.8	15.5	13.8	16.2	16.2	19.1	13.5	15.8								
Entrenchment Ratio <sup>1</sup>	8.6	21.6	8.8	21.2	4.7	7.2	5.3	8.6								
Bank Height Ratio <sup>2,3</sup>	1.0		1.0		1.0	1.1	0.9	1.0								
D50 (mm) <sup>4</sup>	11.0	46.2	40.6	53.0	18.0	45.0	1.0	47.7								
<b>Profile</b>																
Riffle Length (ft)	11	28														
Riffle Slope (ft/ft)	0.000	0.027														
Pool Length (ft)	12	39														
Pool Max Depth (ft)	1.9															
Pool Spacing (ft)	26	65														
Pool Volume (ft <sup>3</sup> )																
<b>Pattern</b>																
Channel Beltwidth (ft)	10	39														
Radius of Curvature (ft)	11	48														
Rc:Bankfull Width (ft/ft)	0.8	3.6														
Meander Wave Length (ft)	34	71														
Meander Width Ratio	0.9	2.2														
<b>Additional Reach Parameters</b>																
Rosgen Classification	C5/E5															
Channel Thalweg Length (ft)	1,012															
Sinuosity (ft)	1.20															
Water Surface Slope (ft/ft)	0.006															
Bankfull Slope (ft/ft)	0.007															
Ri%/Ru%/P%/G%/S%	---															
SC%/Sa%/G%/C%/B%/Be%	---															
d16/d35/d50/d84/d95/d100	SC/SC/0.6/32/143/362															
% of Reach with Eroding Banks	0%		0%	0%	0%	0%										

(---): Data was not provided

<sup>1</sup> ER in MY2 is based on the width of the cross-section, in lieu of assuming the width across the floodplain as was done in previous monitoring years.

<sup>2</sup> Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

<sup>3</sup> MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document provided by the NCIRT (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

<sup>4</sup> All D50 values revised in the MY3 report (2019) to correct a previous error. Previous years reported a reachwide value rather than a riffle-only value.

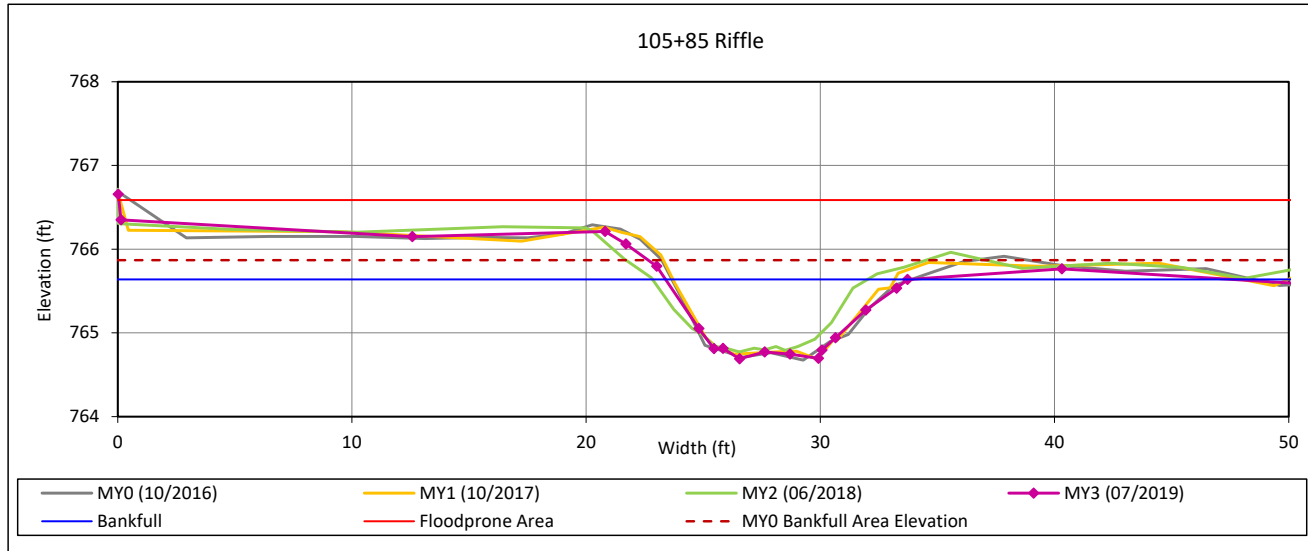
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 1 - Candy Creek Reach 1



#### Bankfull Dimensions

6.5	x-section area (ft.sq.)
10.3	width (ft)
0.6	mean depth (ft)
0.9	max depth (ft)
10.6	wetted perimeter (ft)
0.6	hydraulic radius (ft)
16.5	width-depth ratio
54.5	W flood prone area (ft)
5.3	entrenchment ratio
0.8	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



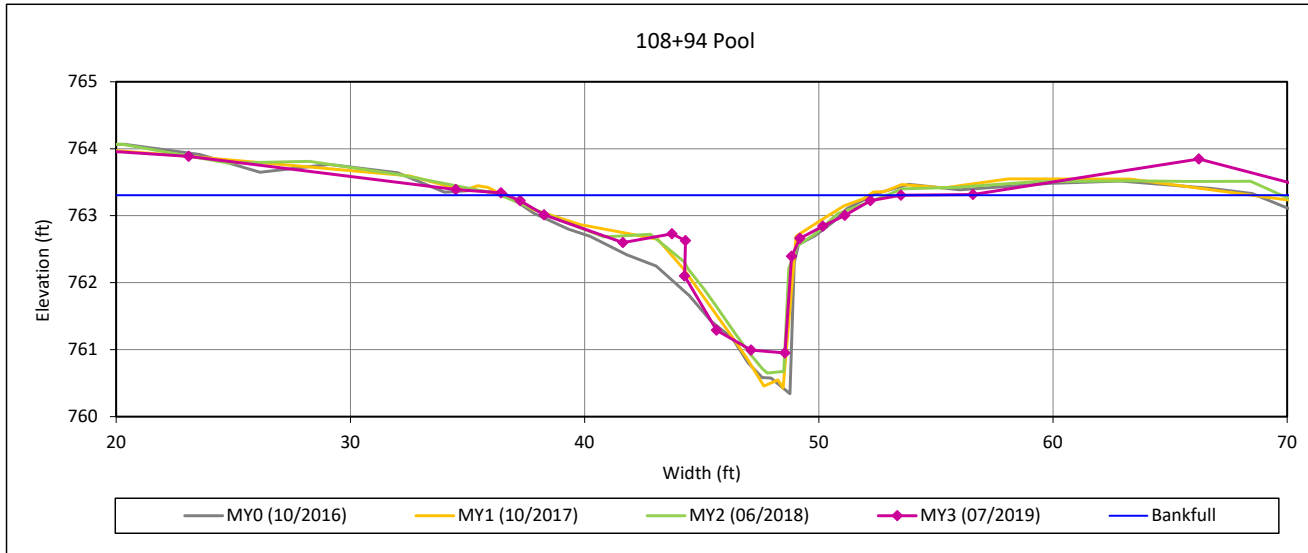
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 2 - Candy Creek Reach 1



#### Bankfull Dimensions

14.2	x-section area (ft.sq.)
16.8	width (ft)
0.8	mean depth (ft)
2.4	max depth (ft)
19.1	wetted perimeter (ft)
0.7	hydraulic radius (ft)
19.9	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

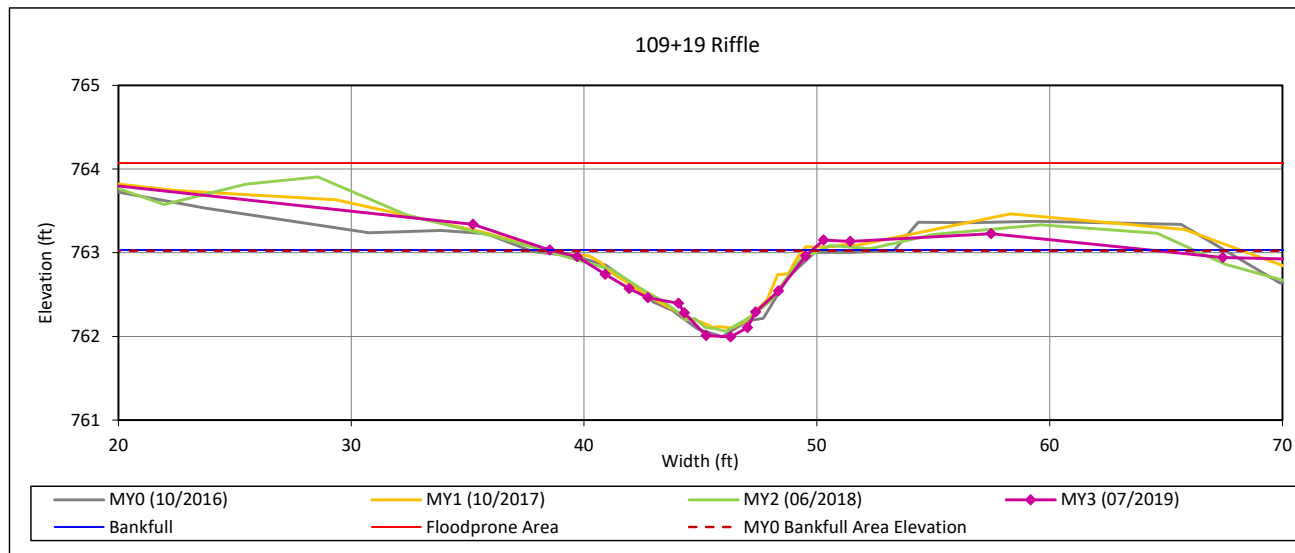
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 3 - Candy Creek Reach 1



#### Bankfull Dimensions

5.9	x-section area (ft.sq.)
11.3	width (ft)
0.5	mean depth (ft)
1.0	max depth (ft)
11.6	wetted perimeter (ft)
0.5	hydraulic radius (ft)
21.6	width-depth ratio
96.2	W flood prone area (ft)
8.5	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

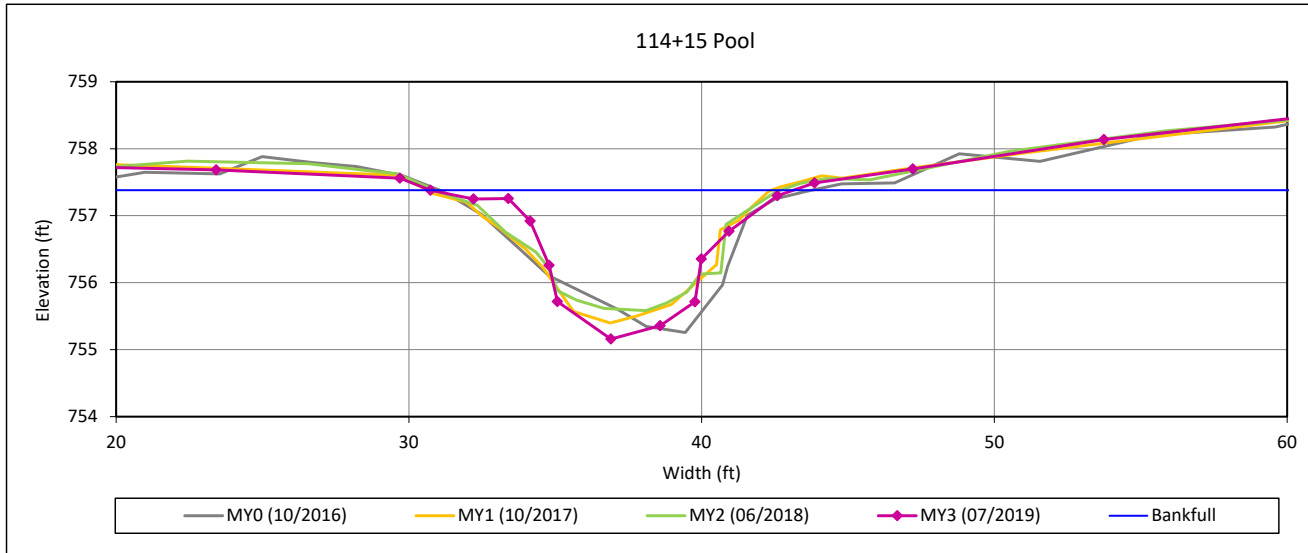
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross Section 4 - Candy Creek Reach 1



#### Bankfull Dimensions

12.3	x-section area (ft.sq.)
11.8	width (ft)
1.0	mean depth (ft)
2.2	max depth (ft)
13.3	wetted perimeter (ft)
0.9	hydraulic radius (ft)
11.4	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

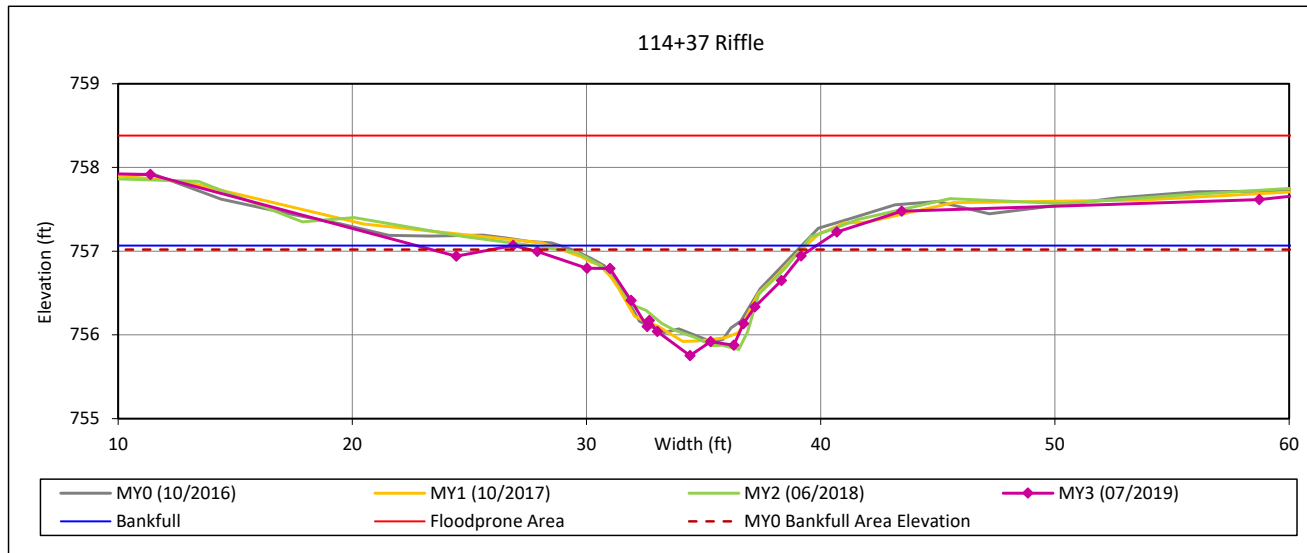
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 5 - Candy Creek Reach 1



#### Bankfull Dimensions

7.7	x-section area (ft.sq.)
13.0	width (ft)
0.6	mean depth (ft)
1.3	max depth (ft)
13.4	wetted perimeter (ft)
0.6	hydraulic radius (ft)
21.8	width-depth ratio
74.8	W flood prone area (ft)
5.8	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

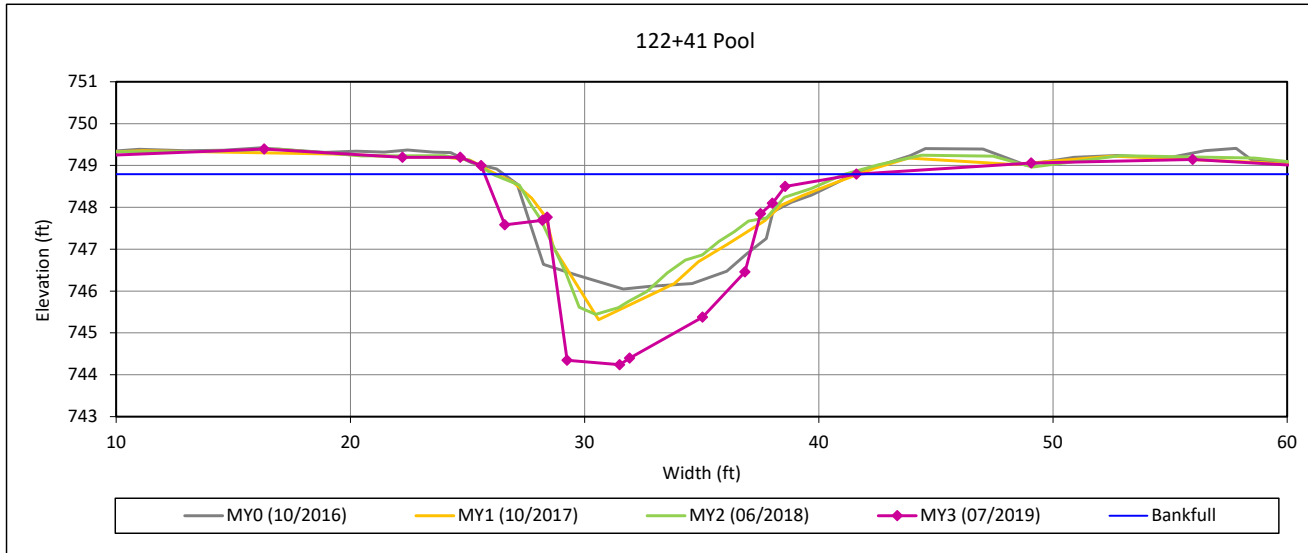
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 6 - Candy Creek Reach 1



#### Bankfull Dimensions

36.5	x-section area (ft.sq.)
15.9	width (ft)
2.3	mean depth (ft)
4.6	max depth (ft)
20.7	wetted perimeter (ft)
1.8	hydraulic radius (ft)
6.9	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

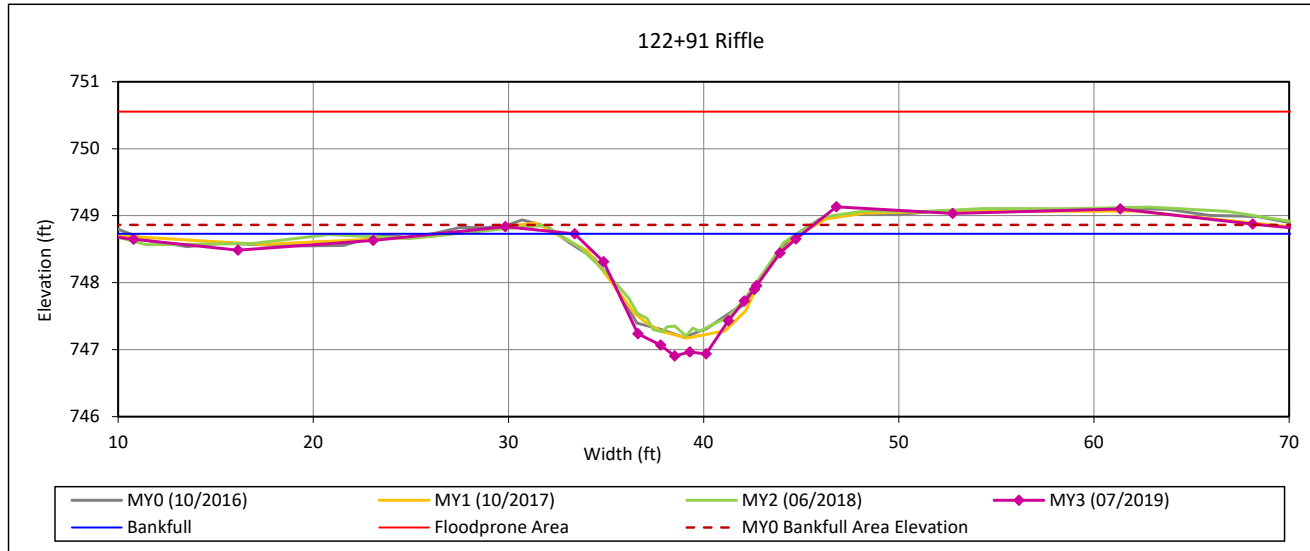
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 7 - Candy Creek Reach 1



#### Bankfull Dimensions

12.0	x-section area (ft.sq.)
11.7	width (ft)
1.0	mean depth (ft)
1.8	max depth (ft)
12.4	wetted perimeter (ft)
1.0	hydraulic radius (ft)
11.3	width-depth ratio
82.7	W flood prone area (ft)
7.1	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

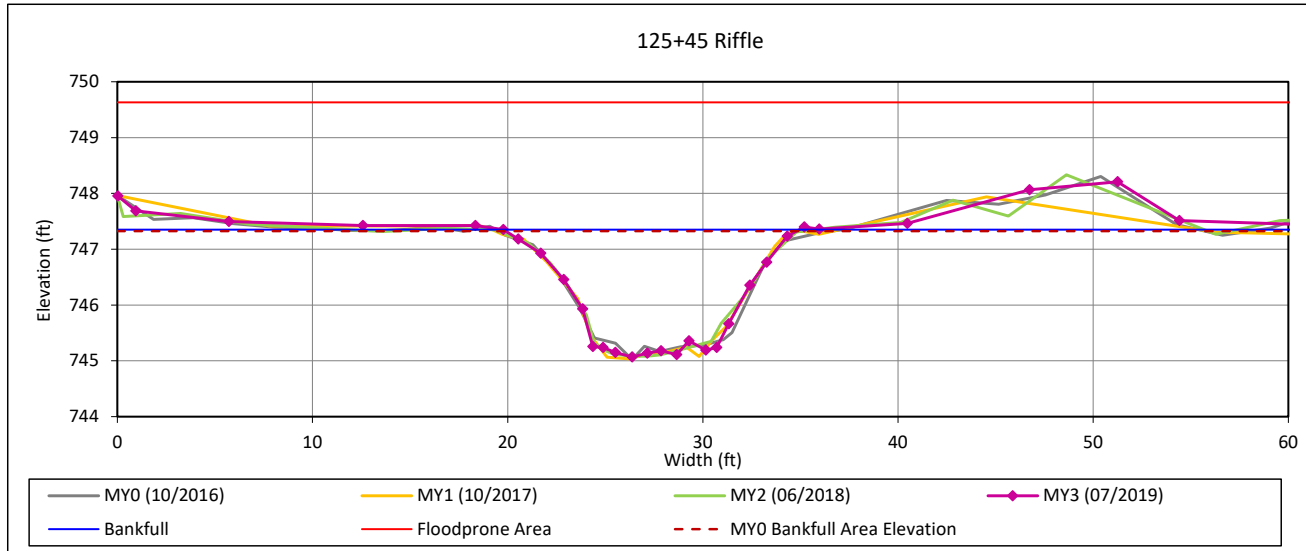
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 8 - Candy Creek Reach 1



#### Bankfull Dimensions

20.7	x-section area (ft.sq.)
15.2	width (ft)
1.4	mean depth (ft)
2.3	max depth (ft)
16.4	wetted perimeter (ft)
1.3	hydraulic radius (ft)
11.1	width-depth ratio
63.8	W flood prone area (ft)
4.2	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

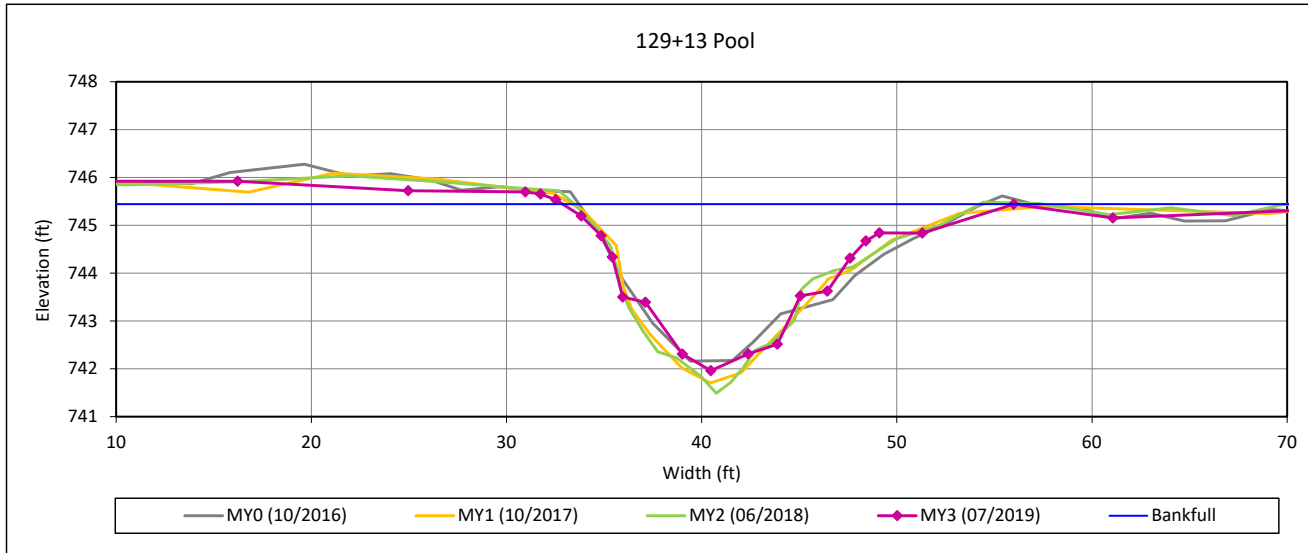
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 9 - Candy Creek Reach 2



#### Bankfull Dimensions

36.0	x-section area (ft.sq.)
23.1	width (ft)
1.6	mean depth (ft)
3.5	max depth (ft)
24.9	wetted perimeter (ft)
1.4	hydraulic radius (ft)
14.9	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



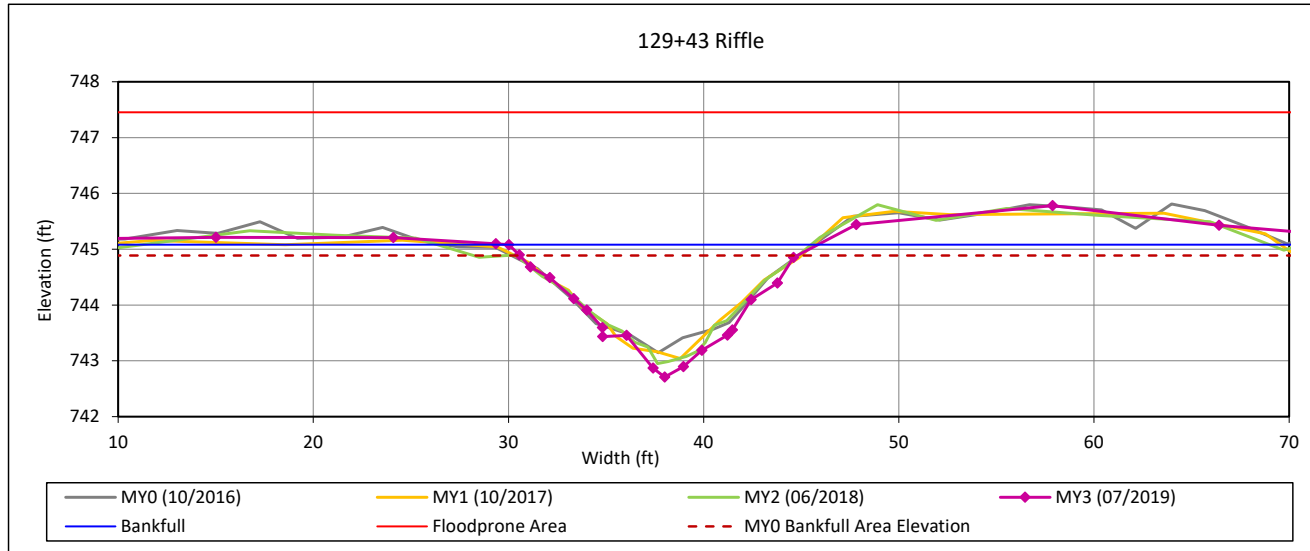
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 10 - Candy Creek Reach 2



#### Bankfull Dimensions

19.1	x-section area (ft.sq.)
15.8	width (ft)
1.2	mean depth (ft)
2.4	max depth (ft)
16.8	wetted perimeter (ft)
1.1	hydraulic radius (ft)
13.1	width-depth ratio
93.4	W flood prone area (ft)
5.9	entrenchment ratio
1.1	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

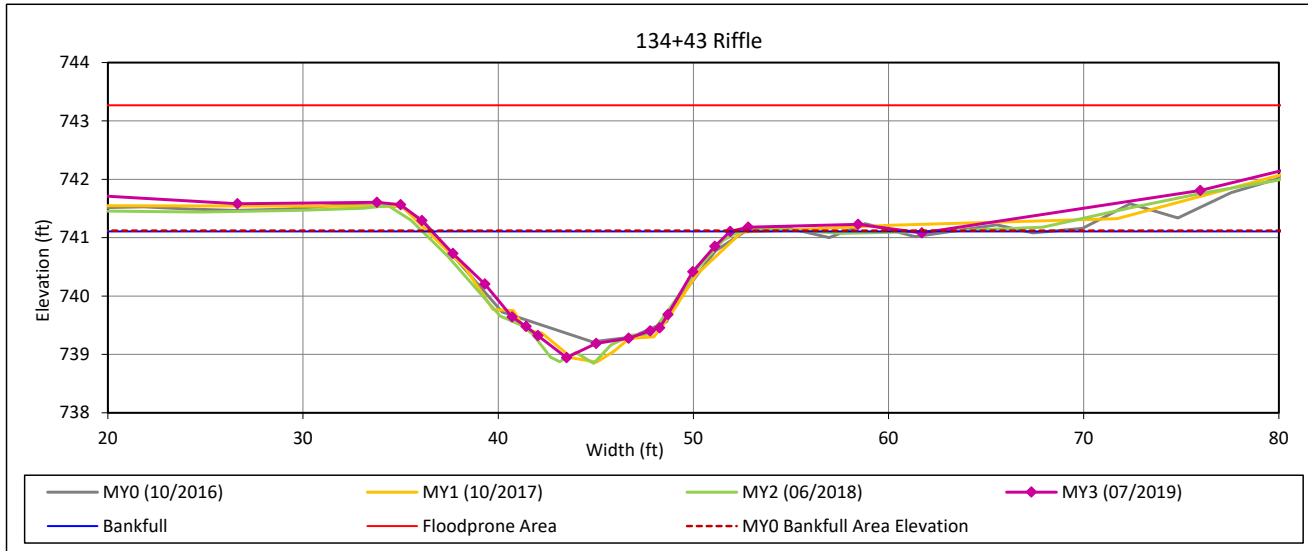
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 11 - Candy Creek Reach 2



#### Bankfull Dimensions

19.6	x-section area (ft.sq.)
15.3	width (ft)
1.3	mean depth (ft)
2.2	max depth (ft)
16.0	wetted perimeter (ft)
1.2	hydraulic radius (ft)
11.9	width-depth ratio
82.8	W flood prone area (ft)
5.4	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

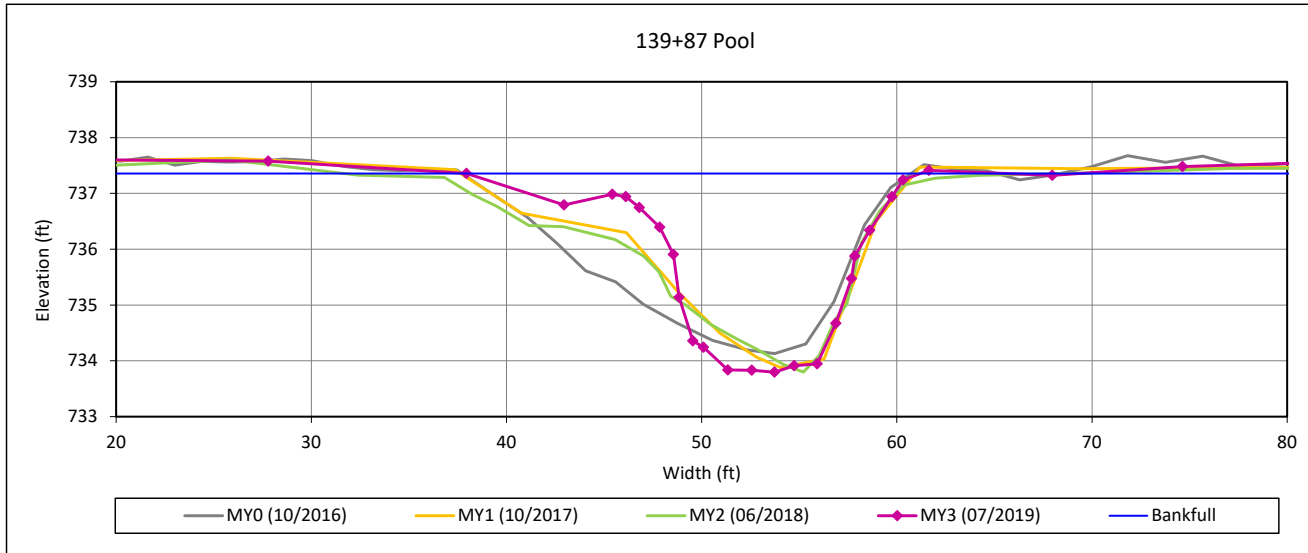
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 12 - Candy Creek Reach 2



#### Bankfull Dimensions

36.1	x-section area (ft.sq.)
23.2	width (ft)
1.6	mean depth (ft)
3.6	max depth (ft)
25.7	wetted perimeter (ft)
1.4	hydraulic radius (ft)
15.0	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

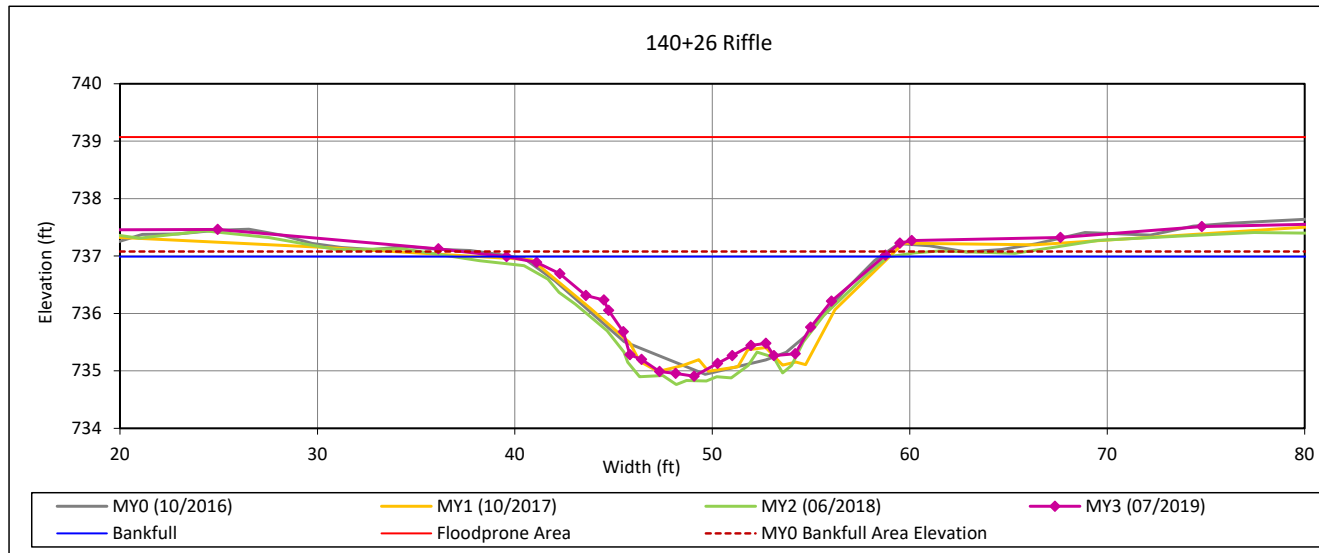
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 13 - Candy Creek Reach 2



#### Bankfull Dimensions

21.6	x-section area (ft.sq.)
19.1	width (ft)
1.1	mean depth (ft)
2.1	max depth (ft)
20.0	wetted perimeter (ft)
1.1	hydraulic radius (ft)
16.9	width-depth ratio
95.8	W flood prone area (ft)
5.0	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

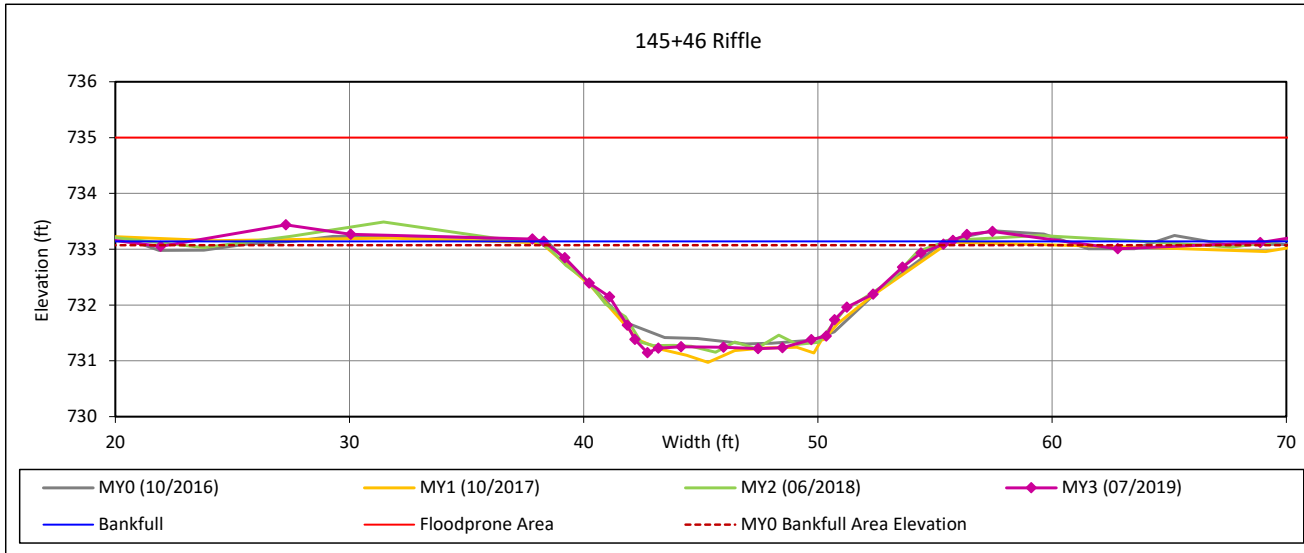
**Cross-Section Plots**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Cross-Section 14 - Candy Creek Reach 2**



Bankfull Dimensions

22.0	x-section area (ft.sq.)
17.4	width (ft)
1.3	mean depth (ft)
2.0	max depth (ft)
18.2	wetted perimeter (ft)
1.2	hydraulic radius (ft)
13.7	width-depth ratio
86.5	W flood prone area (ft)
5.0	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

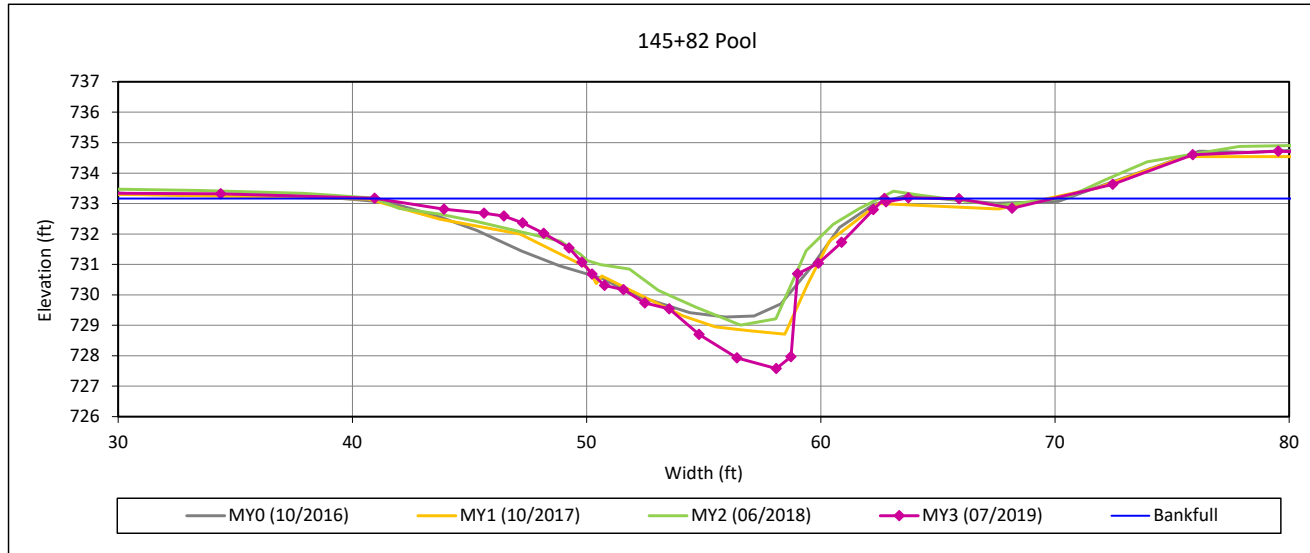
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 15 - Candy Creek Reach 2



#### Bankfull Dimensions

48.6	x-section area (ft.sq.)
21.7	width (ft)
2.2	mean depth (ft)
5.6	max depth (ft)
26.3	wetted perimeter (ft)
1.9	hydraulic radius (ft)
9.7	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

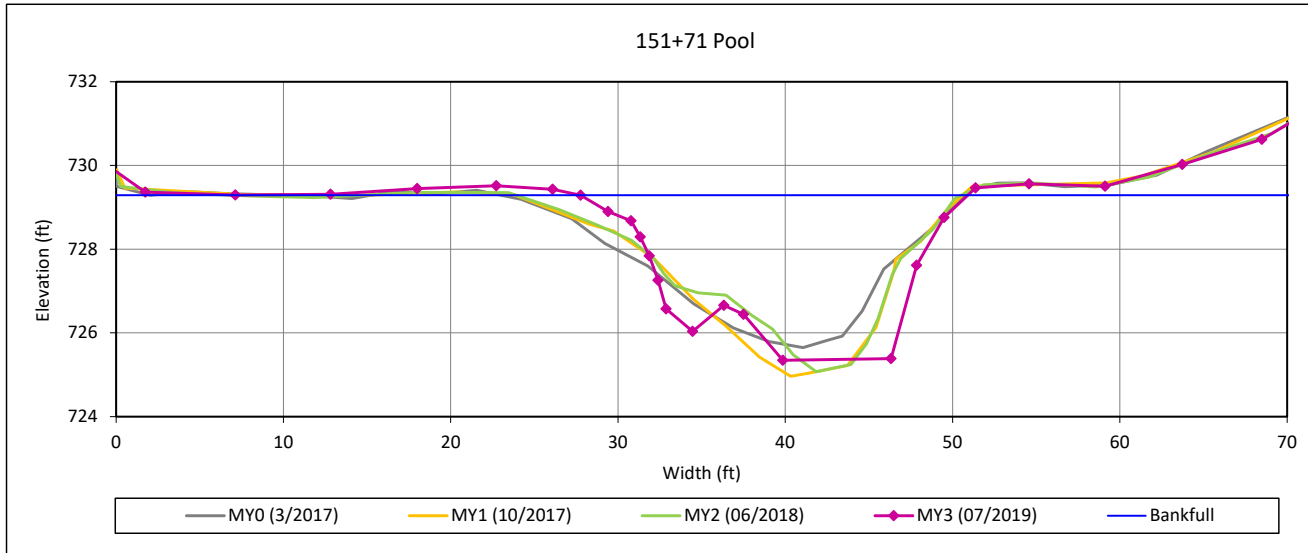
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

### Cross-Section 16 - Candy Creek Reach 3



#### Bankfull Dimensions

57.4	x-section area (ft.sq.)
23.1	width (ft)
2.5	mean depth (ft)
3.9	max depth (ft)
26.2	wetted perimeter (ft)
2.2	hydraulic radius (ft)
9.3	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

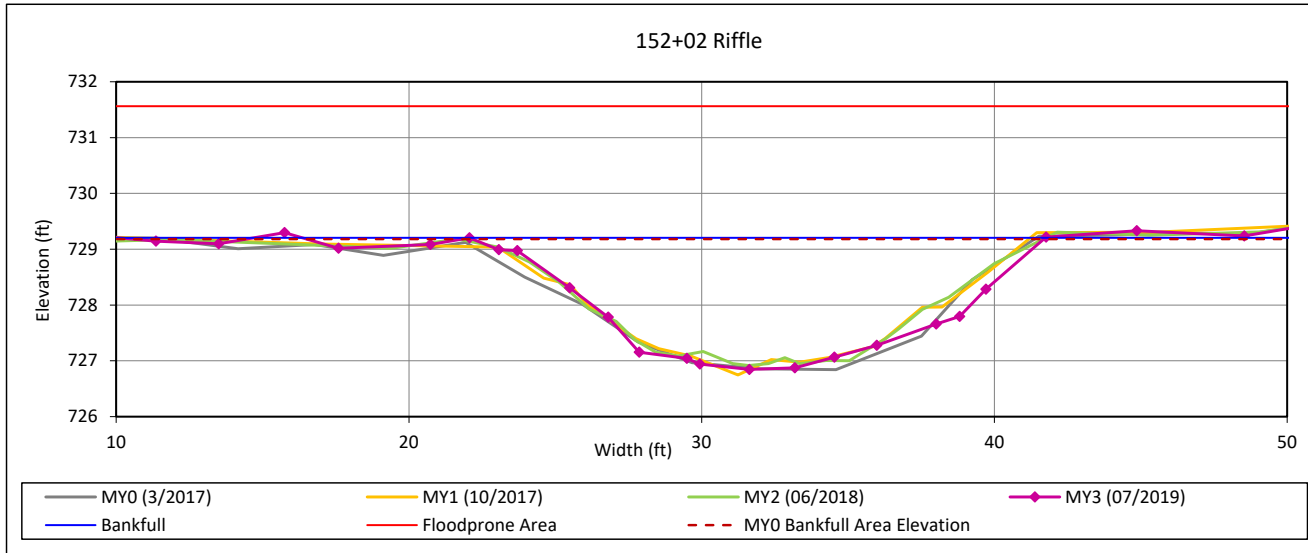
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

### Cross-Section 17 - Candy Creek Reach 3



#### Bankfull Dimensions

29.2	x-section area (ft.sq.)
19.7	width (ft)
1.5	mean depth (ft)
2.4	max depth (ft)
20.5	wetted perimeter (ft)
1.4	hydraulic radius (ft)
13.2	width-depth ratio
53.7	W flood prone area (ft)
2.7	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



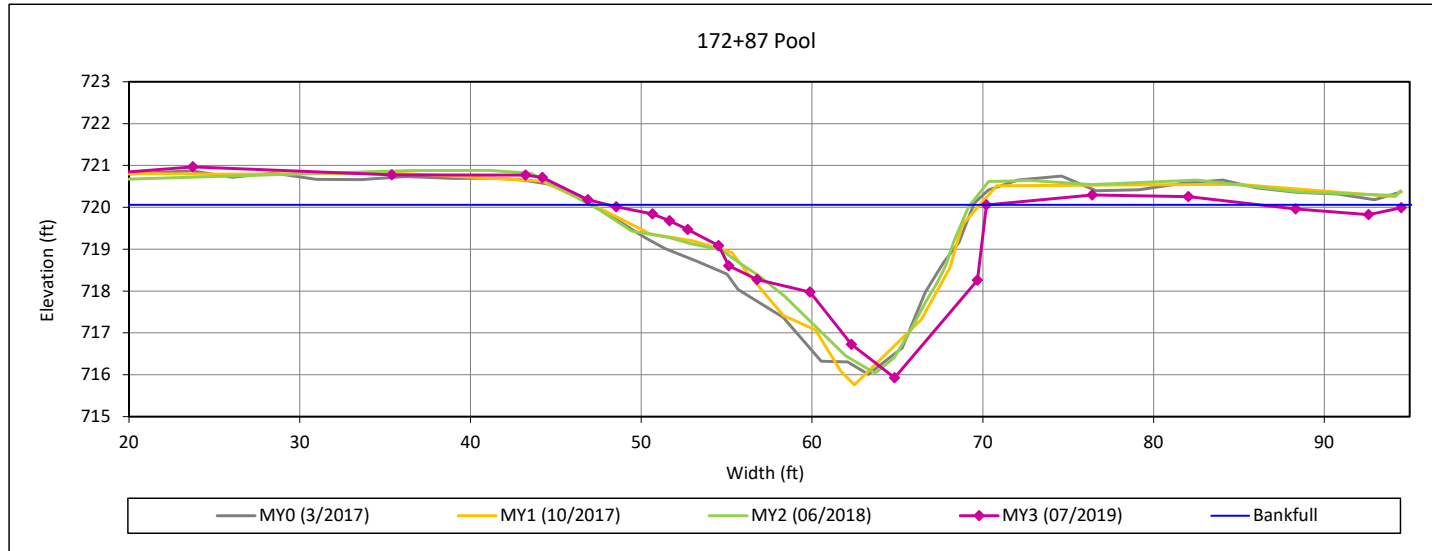
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 18 - Candy Creek Reach 4



#### Bankfull Dimensions

42.8	x-section area (ft.sq.)
22.2	width (ft)
1.9	mean depth (ft)
4.1	max depth (ft)
24.8	wetted perimeter (ft)
1.7	hydraulic radius (ft)
11.5	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

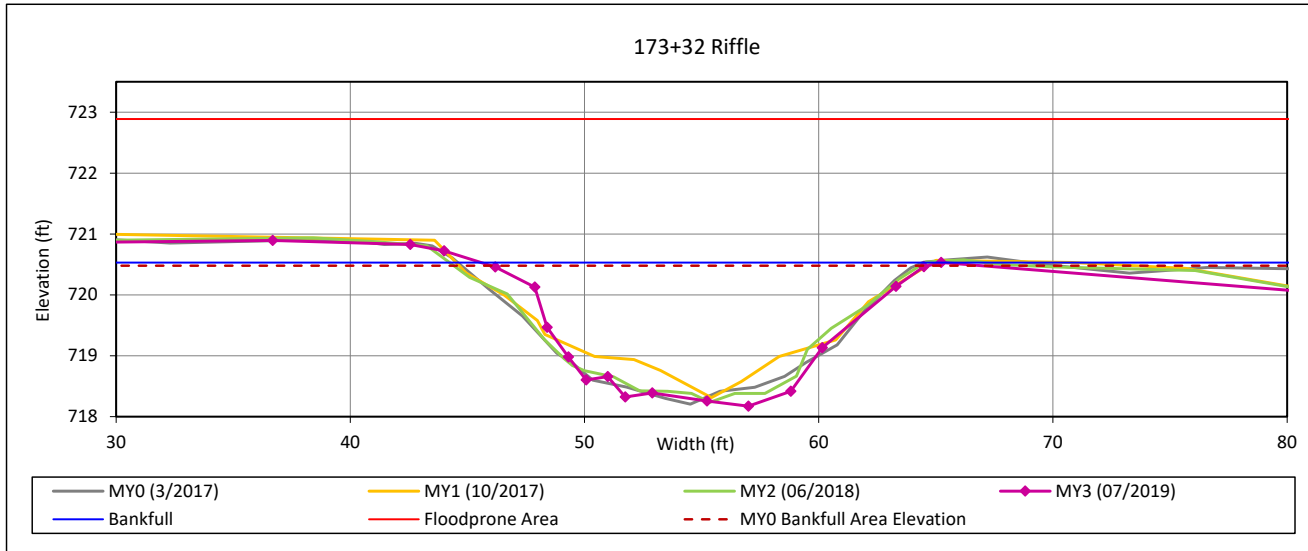
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

### Cross-Section 19 - Candy Creek Reach 4



#### Bankfull Dimensions

27.9	x-section area (ft.sq.)
19.6	width (ft)
1.4	mean depth (ft)
2.4	max depth (ft)
20.7	wetted perimeter (ft)
1.3	hydraulic radius (ft)
13.8	width-depth ratio
85.9	W flood prone area (ft)
4.4	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

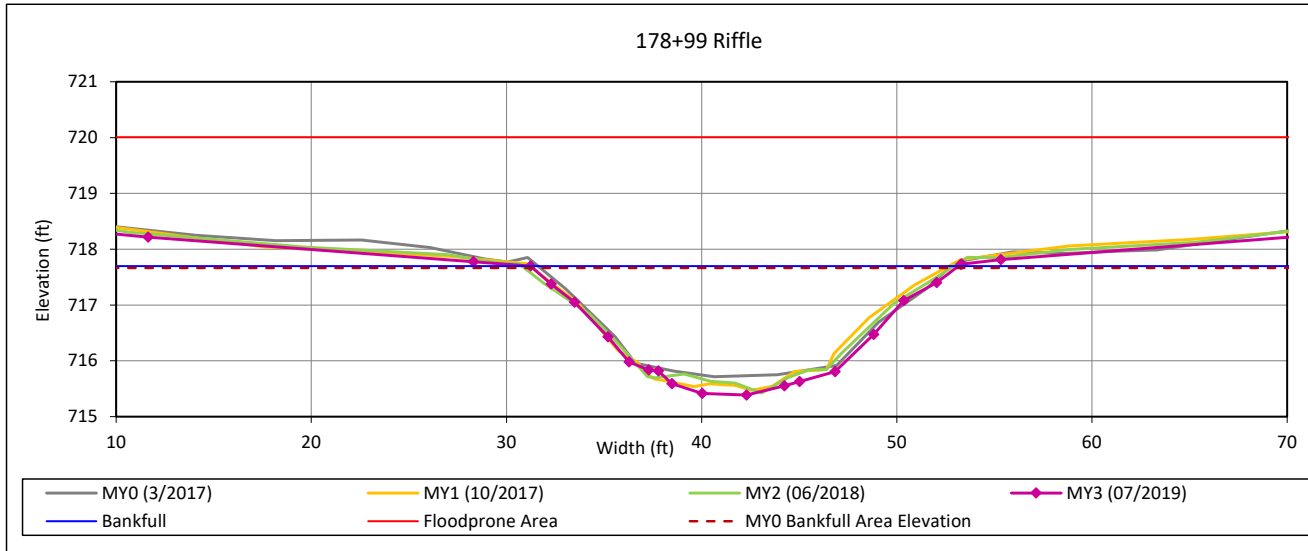
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 20 - Candy Creek Reach 4



#### Bankfull Dimensions

31.7	x-section area (ft.sq.)
21.9	width (ft)
1.4	mean depth (ft)
2.3	max depth (ft)
22.6	wetted perimeter (ft)
1.4	hydraulic radius (ft)
15.2	width-depth ratio
100.4	W flood prone area (ft)
4.6	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

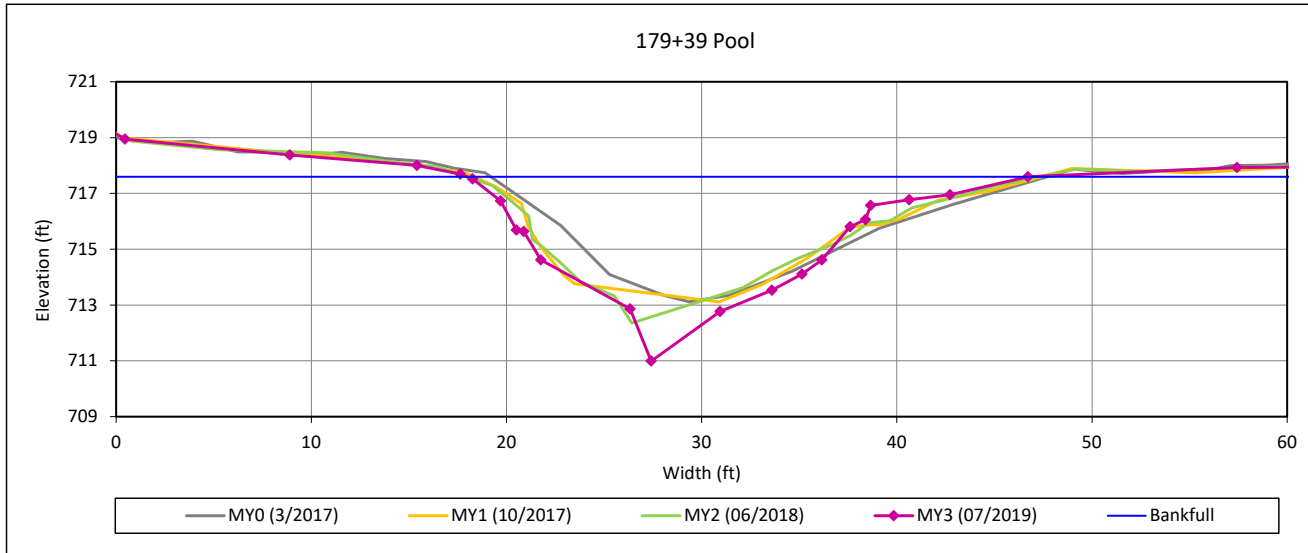
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 21 - Candy Creek Reach 4



#### Bankfull Dimensions

79.3	x-section area (ft.sq.)
28.7	width (ft)
2.8	mean depth (ft)
6.6	max depth (ft)
32.9	wetted perimeter (ft)
2.4	hydraulic radius (ft)
10.4	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

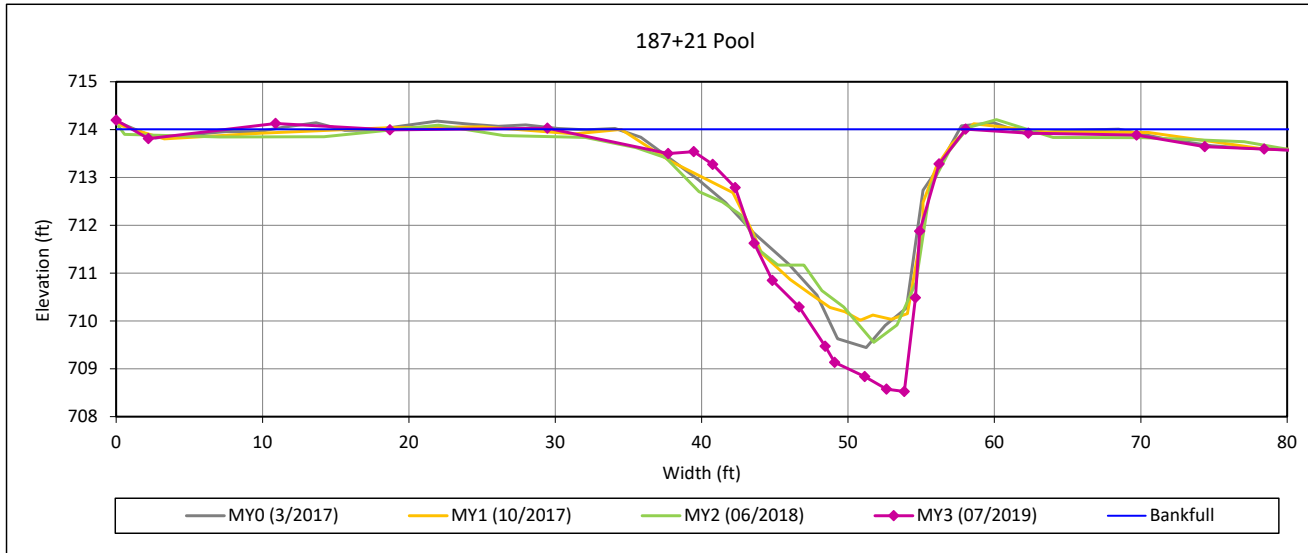
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 22 - Candy Creek Reach 4



#### Bankfull Dimensions

59.2	x-section area (ft.sq.)
28.3	width (ft)
2.1	mean depth (ft)
5.5	max depth (ft)
32.7	wetted perimeter (ft)
1.8	hydraulic radius (ft)
13.5	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

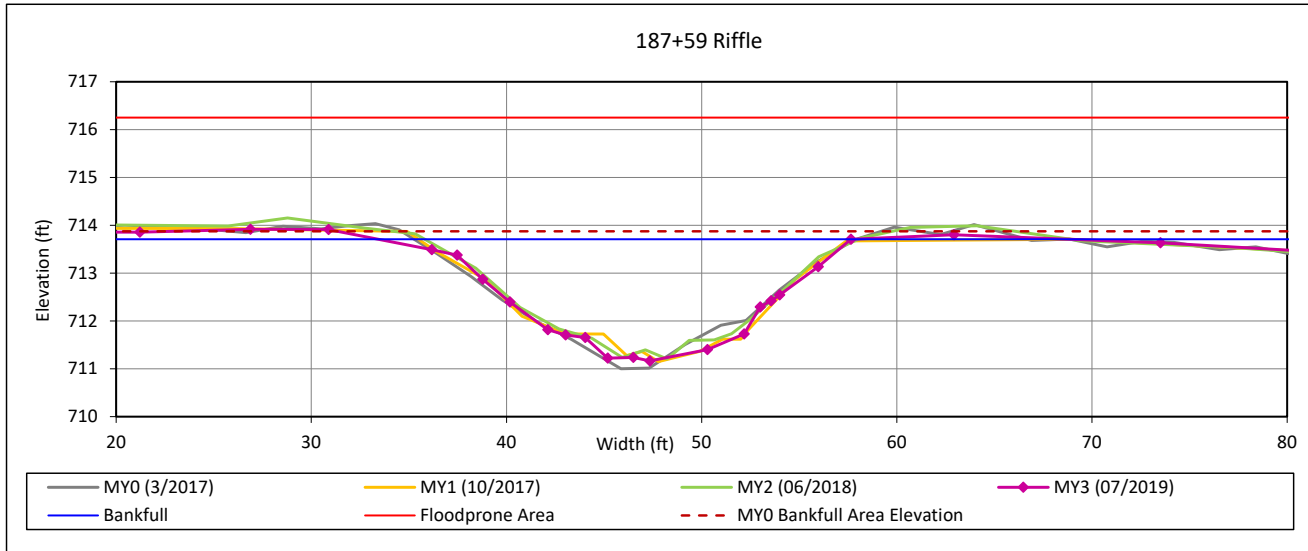
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 23 - Candy Creek Reach 4



#### Bankfull Dimensions

33.9	x-section area (ft.sq.)
24.2	width (ft)
1.4	mean depth (ft)
2.5	max depth (ft)
25.0	wetted perimeter (ft)
1.4	hydraulic radius (ft)
17.3	width-depth ratio
90.0	W flood prone area (ft)
3.7	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

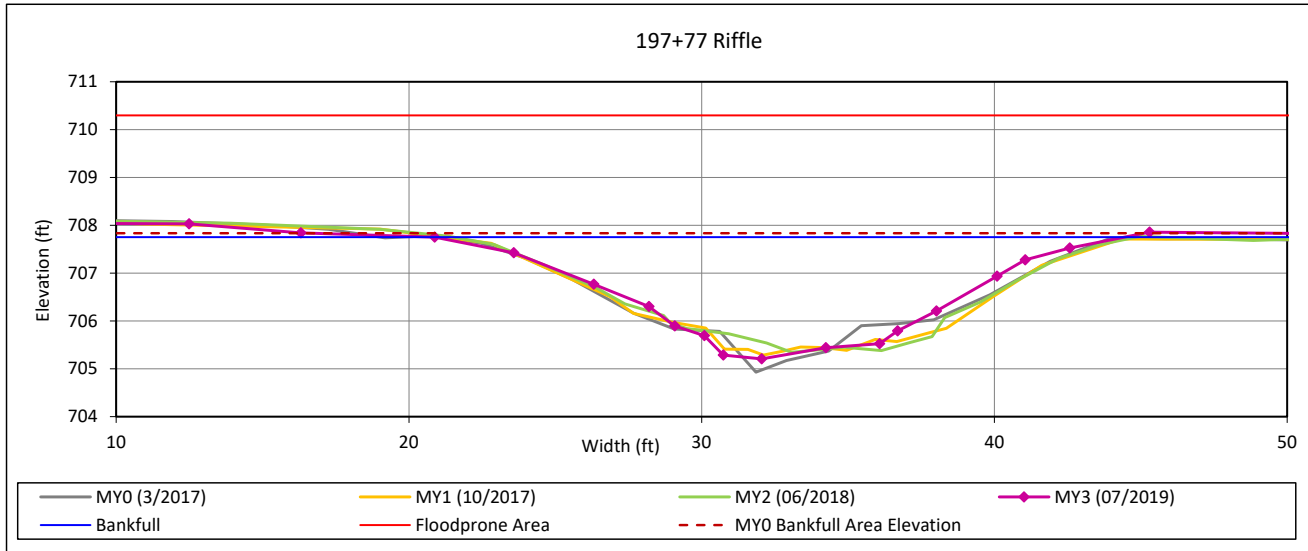
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 24 - Candy Creek Reach 4



#### Bankfull Dimensions

29.6	x-section area (ft.sq.)
23.6	width (ft)
1.3	mean depth (ft)
2.5	max depth (ft)
24.3	wetted perimeter (ft)
1.2	hydraulic radius (ft)
18.8	width-depth ratio
58.8	W flood prone area (ft)
2.5	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

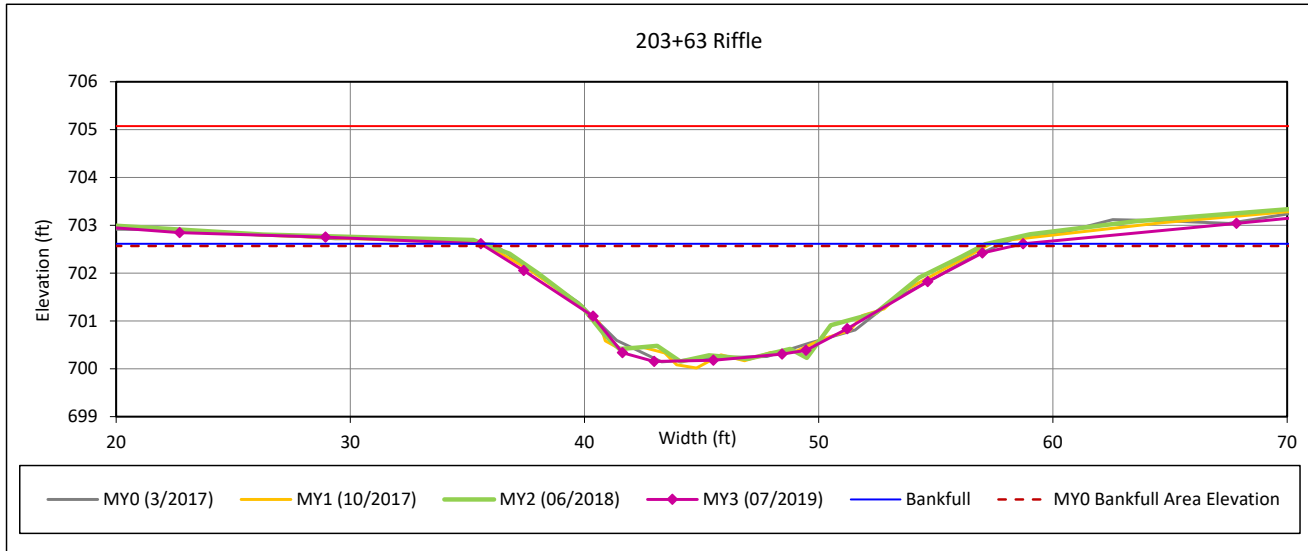
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 25 - Candy Creek Reach 4



#### Bankfull Dimensions

33.9	x-section area (ft.sq.)
23.2	width (ft)
1.5	mean depth (ft)
2.5	max depth (ft)
23.9	wetted perimeter (ft)
1.4	hydraulic radius (ft)
15.8	width-depth ratio
85.8	W flood prone area (ft)
3.7	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



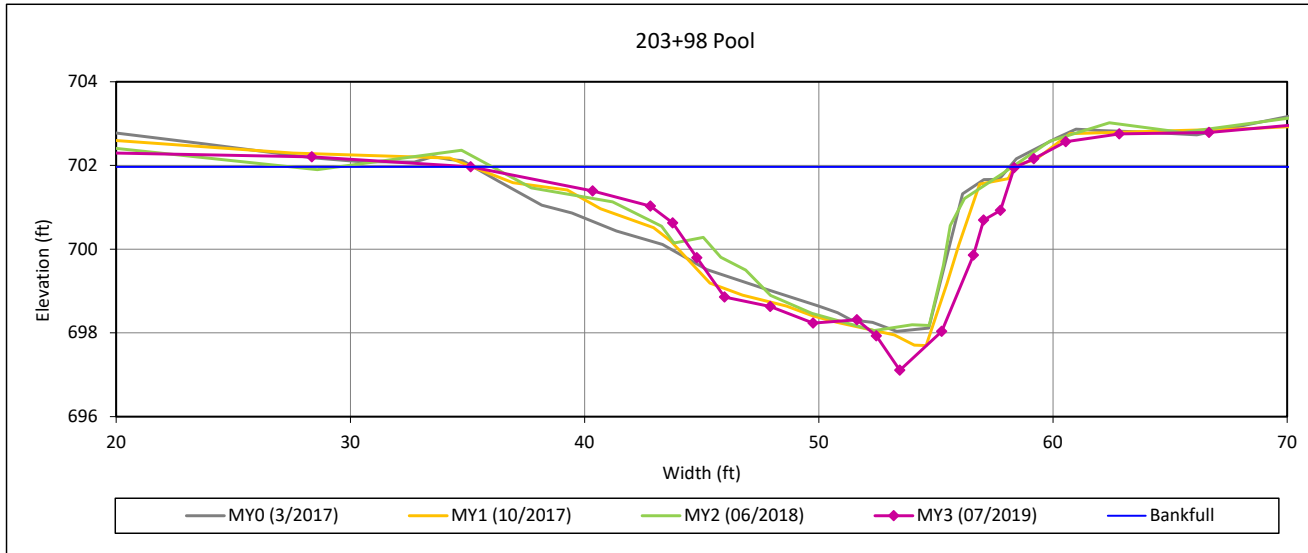
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 26 - Candy Creek Reach 4



#### Bankfull Dimensions

50.5	x-section area (ft.sq.)
23.3	width (ft)
2.2	mean depth (ft)
4.9	max depth (ft)
26.8	wetted perimeter (ft)
1.9	hydraulic radius (ft)
10.7	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

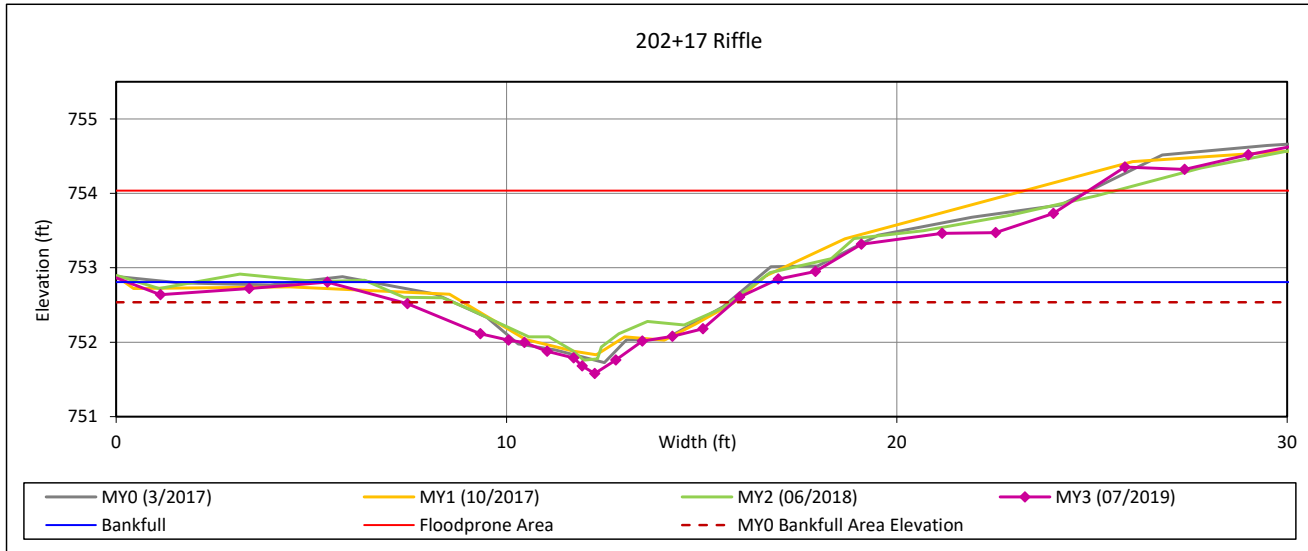
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 27 - UT1C



#### Bankfull Dimensions

6.7	x-section area (ft.sq.)
11.4	width (ft)
0.6	mean depth (ft)
1.2	max depth (ft)
11.7	wetted perimeter (ft)
0.6	hydraulic radius (ft)
19.4	width-depth ratio
24.9	W flood prone area (ft)
2.2	entrenchment ratio
1.3	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

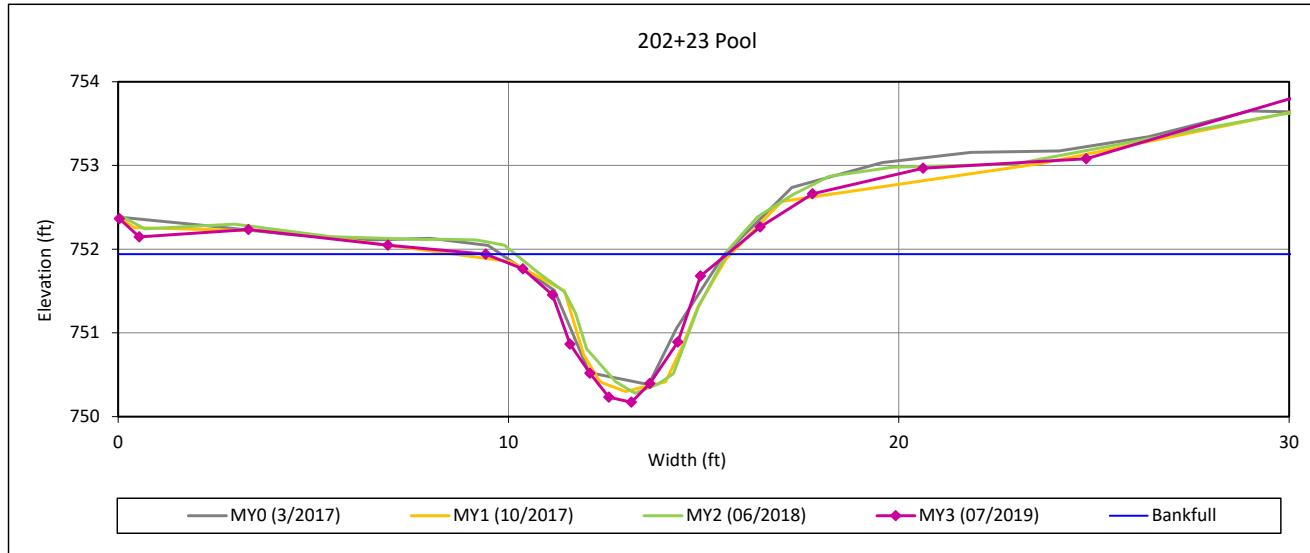
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

### Cross-Section 28 - UT1C



#### Bankfull Dimensions

5.3	x-section area (ft.sq.)
6.2	width (ft)
0.9	mean depth (ft)
1.8	max depth (ft)
7.4	wetted perimeter (ft)
0.7	hydraulic radius (ft)
7.3	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

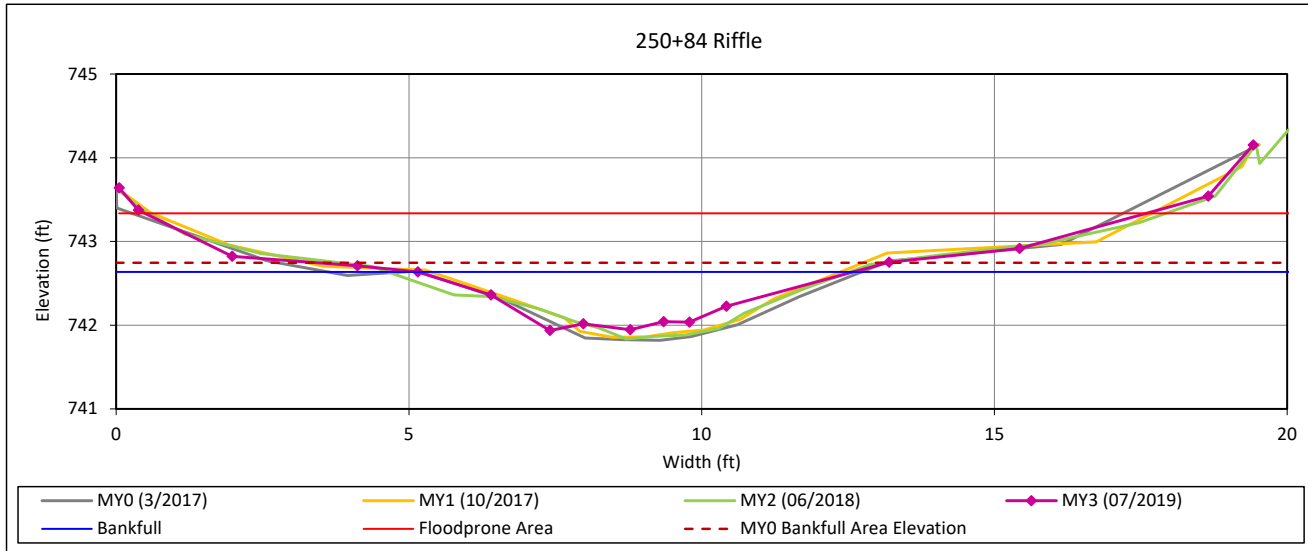
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 29 - UT1D



#### Bankfull Dimensions

3.0	x-section area (ft.sq.)
7.4	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
7.6	wetted perimeter (ft)
0.4	hydraulic radius (ft)
18.7	width-depth ratio
17.1	W flood prone area (ft)
2.3	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

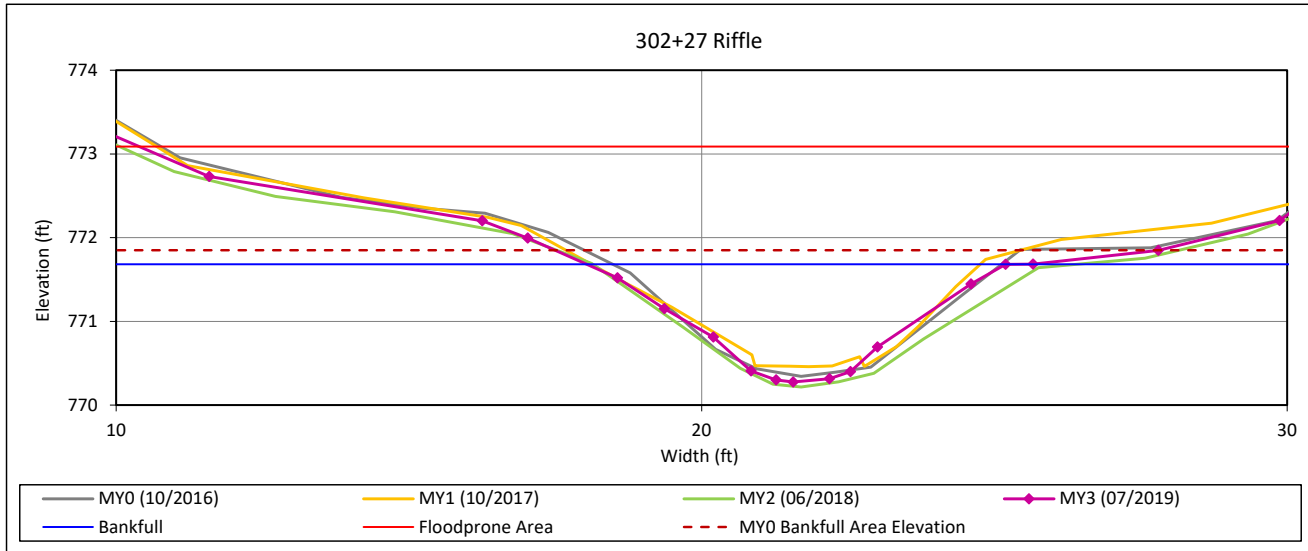
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 30 - UT2 Reach 1



#### Bankfull Dimensions

5.5	x-section area (ft.sq.)
7.2	width (ft)
0.8	mean depth (ft)
1.4	max depth (ft)
7.8	wetted perimeter (ft)
0.7	hydraulic radius (ft)
9.3	width-depth ratio
21.2	W flood prone area (ft)
3.0	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

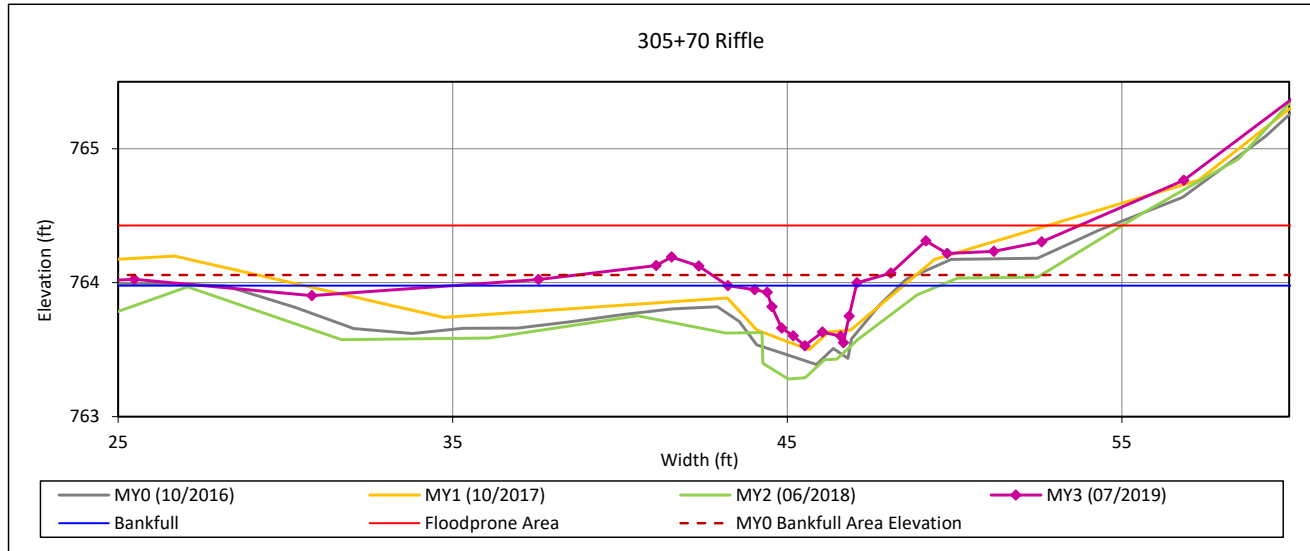
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 31 - UT2 Reach 1



#### Bankfull Dimensions

0.9	x-section area (ft.sq.)
3.8	width (ft)
0.2	mean depth (ft)
0.4	max depth (ft)
4.1	wetted perimeter (ft)
0.2	hydraulic radius (ft)
16.5	width-depth ratio
48.1	W flood prone area (ft)
12.5	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

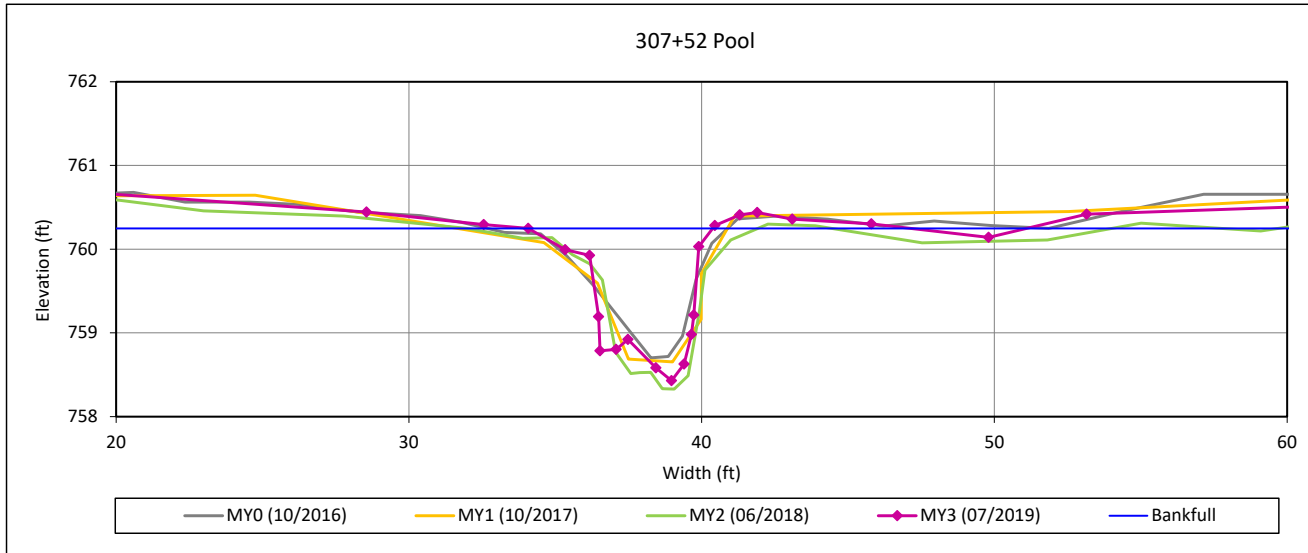
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 32 - UT2 Reach 1



#### Bankfull Dimensions

5.7	x-section area (ft.sq.)
6.3	width (ft)
0.9	mean depth (ft)
1.8	max depth (ft)
8.4	wetted perimeter (ft)
0.7	hydraulic radius (ft)
6.9	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

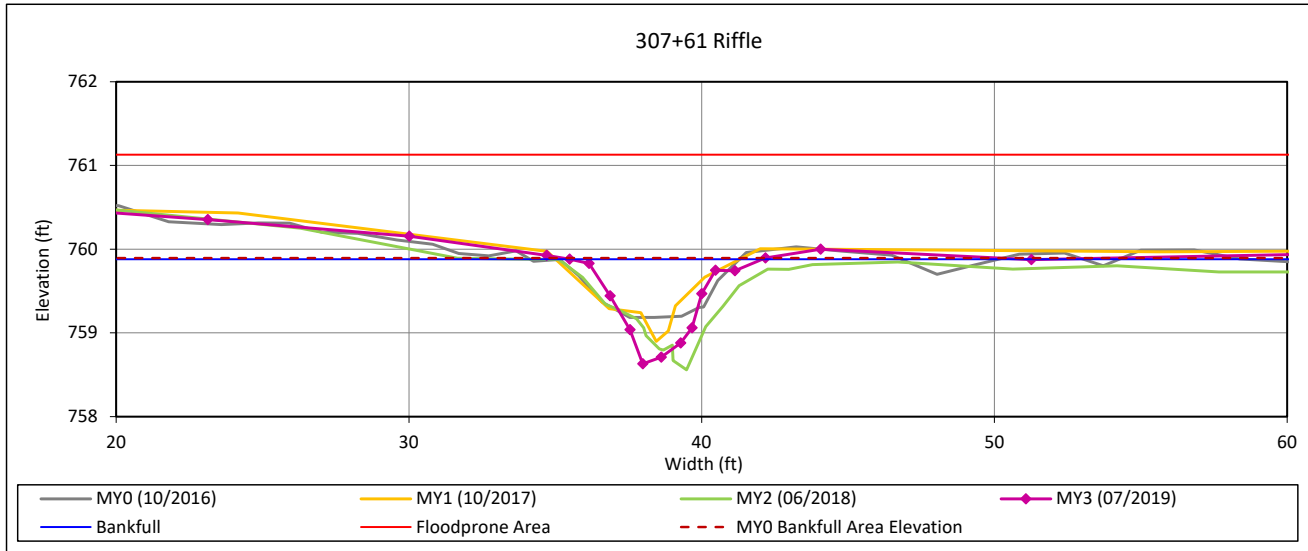
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 33 - UT2 Reach 1



#### Bankfull Dimensions

3.4	x-section area (ft.sq.)
6.6	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
7.3	wetted perimeter (ft)
0.5	hydraulic radius (ft)
12.8	width-depth ratio
78.1	W flood prone area (ft)
11.8	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



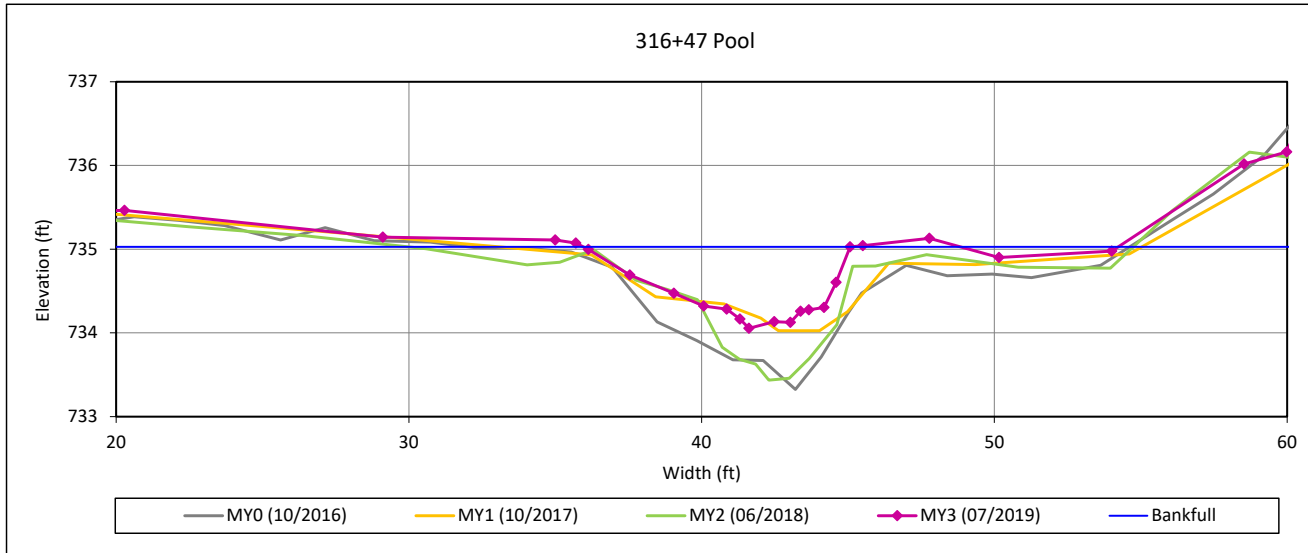
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 34 - UT2 Reach 2



#### Bankfull Dimensions

5.3	x-section area (ft.sq.)
9.1	width (ft)
0.6	mean depth (ft)
1.0	max depth (ft)
9.5	wetted perimeter (ft)
0.6	hydraulic radius (ft)
15.6	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

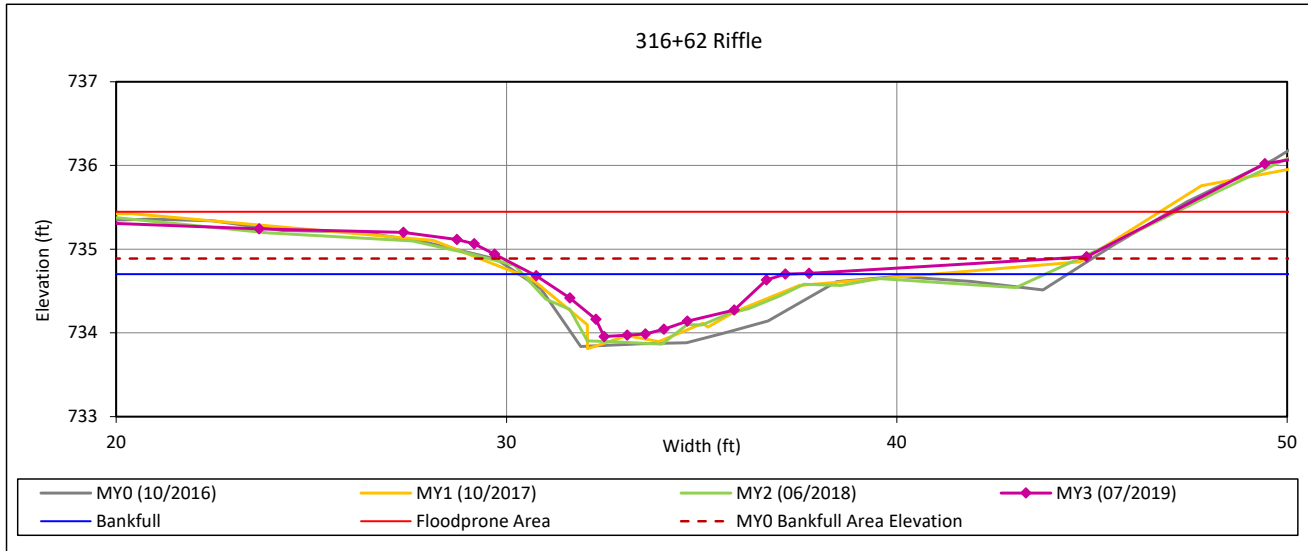
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 35 - UT2 Reach 2



#### Bankfull Dimensions

2.8	x-section area (ft.sq.)
6.5	width (ft)
0.4	mean depth (ft)
0.7	max depth (ft)
6.7	wetted perimeter (ft)
0.4	hydraulic radius (ft)
14.8	width-depth ratio
37.9	W flood prone area (ft)
5.9	entrenchment ratio
0.8	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

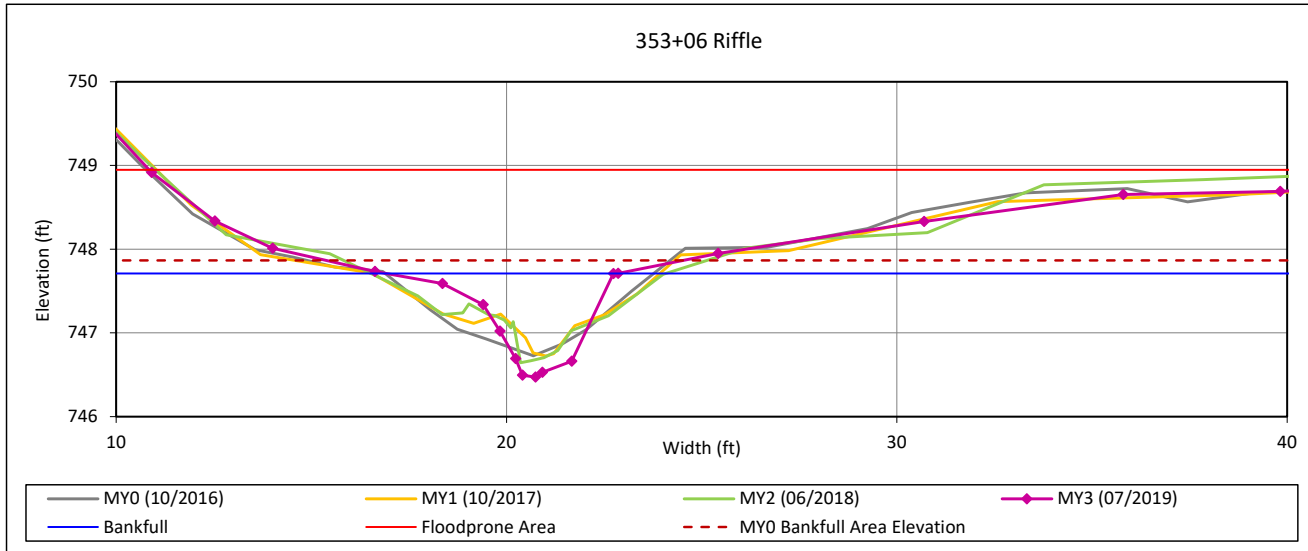
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 36 - UT2A



#### Bankfull Dimensions

3.1	x-section area (ft.sq.)
5.9	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
6.7	wetted perimeter (ft)
0.5	hydraulic radius (ft)
11.2	width-depth ratio
38.2	W flood prone area (ft)
6.4	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

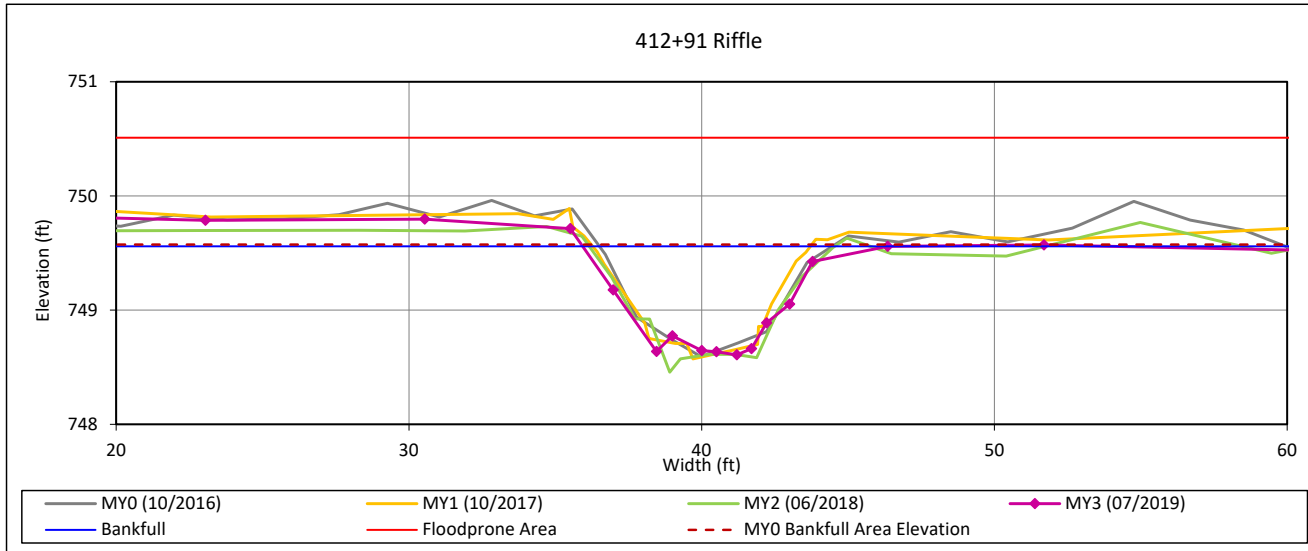
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

### Cross-Section 37 - UT3



#### Bankfull Dimensions

5.3	x-section area (ft.sq.)
10.4	width (ft)
0.5	mean depth (ft)
1.0	max depth (ft)
10.8	wetted perimeter (ft)
0.5	hydraulic radius (ft)
20.3	width-depth ratio
67.3	W flood prone area (ft)
6.5	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

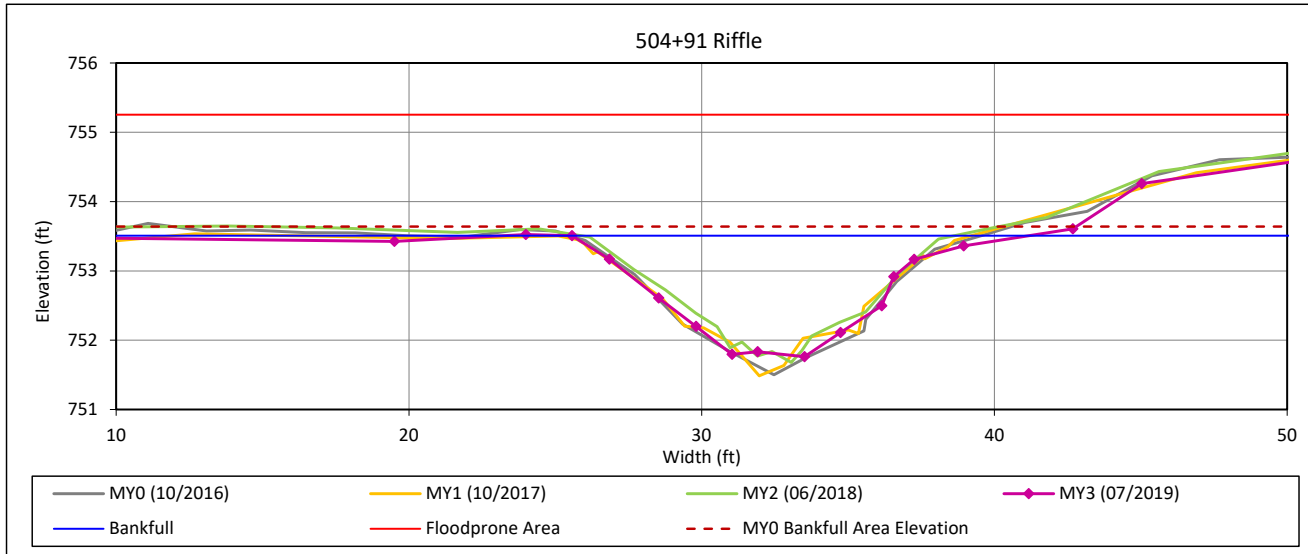
**Cross-Section Plots**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Cross-Section 38 - UT4**



**Bankfull Dimensions**

13.6	x-section area (ft.sq.)
15.6	width (ft)
0.9	mean depth (ft)
1.7	max depth (ft)
16.2	wetted perimeter (ft)
0.8	hydraulic radius (ft)
17.9	width-depth ratio
58.0	W flood prone area (ft)
3.7	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

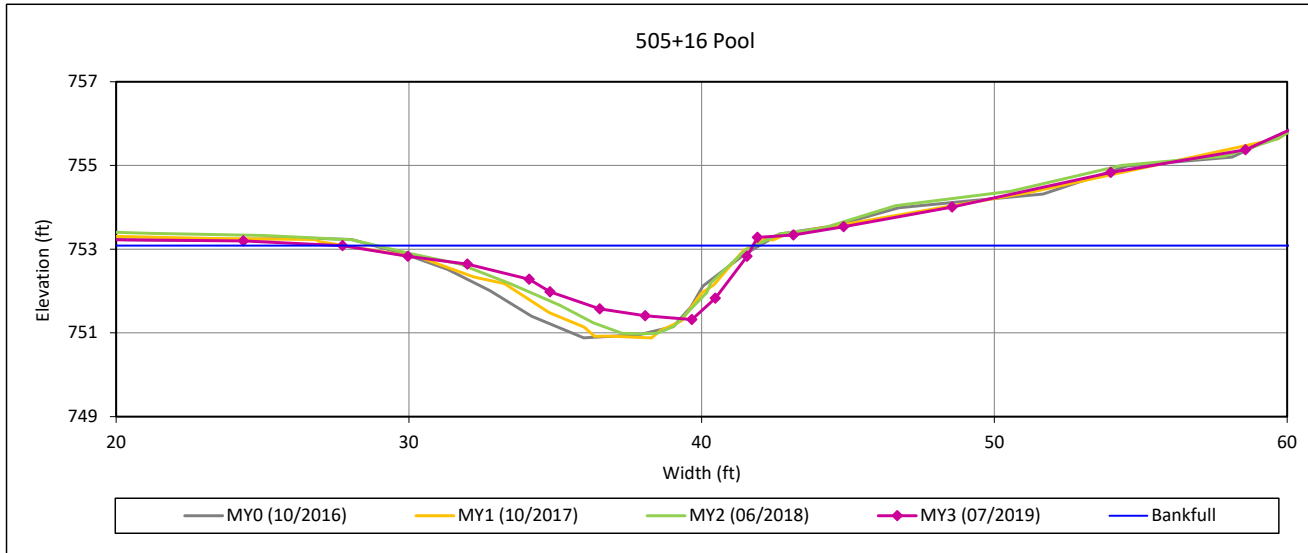
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 39 - UT4



#### Bankfull Dimensions

12.5	x-section area (ft.sq.)
14.0	width (ft)
0.9	mean depth (ft)
1.8	max depth (ft)
14.9	wetted perimeter (ft)
0.8	hydraulic radius (ft)
15.7	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

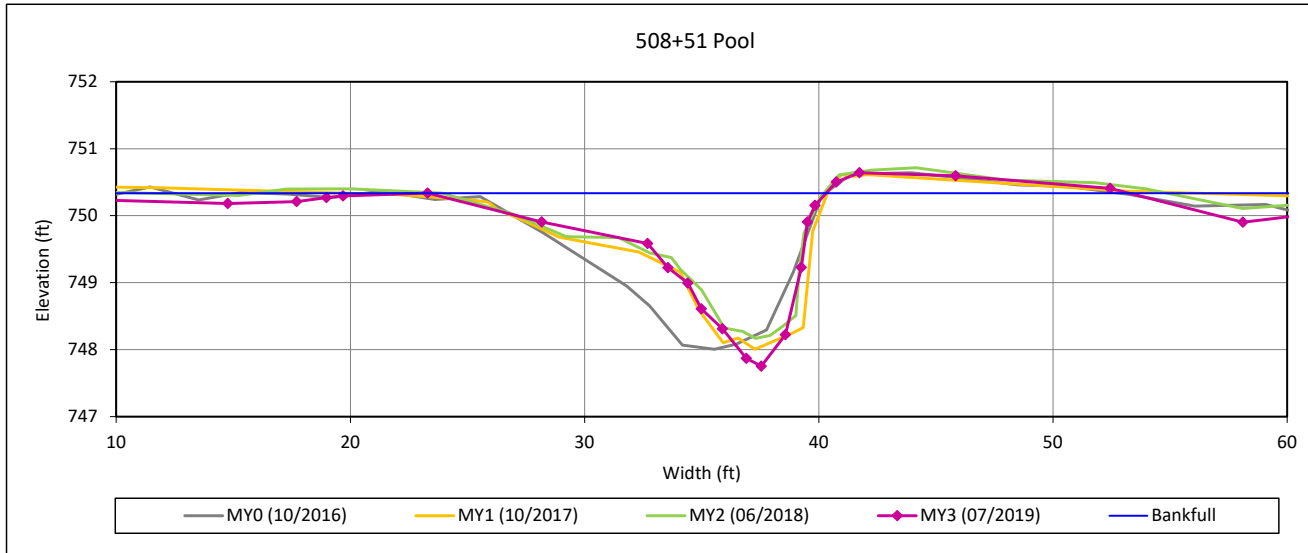
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 40 - UT4



#### Bankfull Dimensions

15.9	x-section area (ft.sq.)
17.0	width (ft)
0.9	mean depth (ft)
2.6	max depth (ft)
18.6	wetted perimeter (ft)
0.9	hydraulic radius (ft)
18.2	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

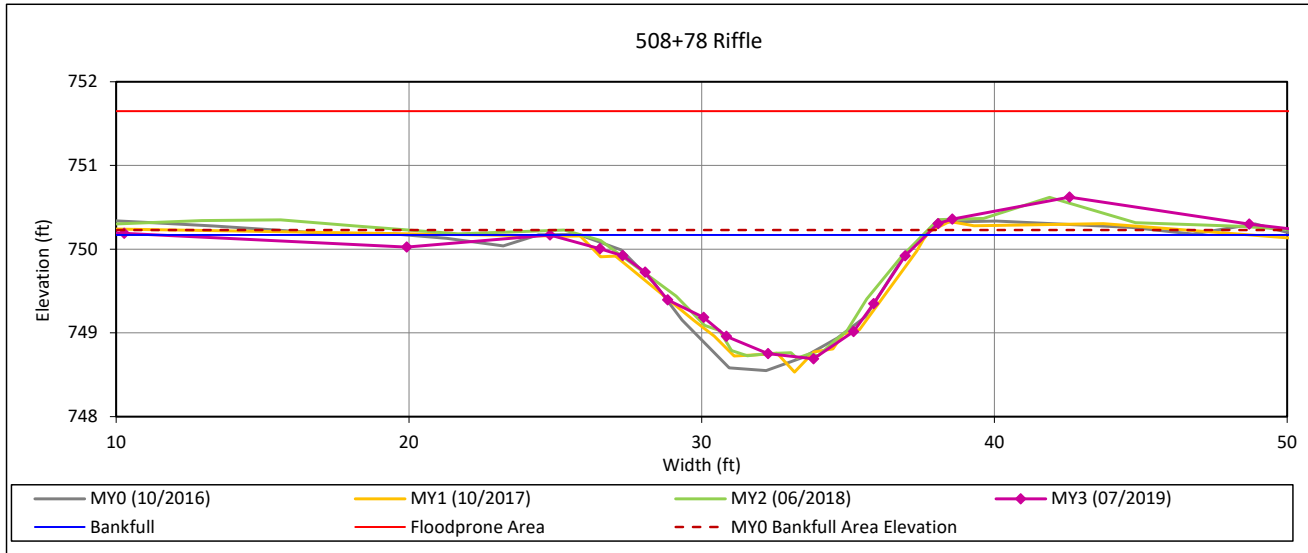
**Cross-Section Plots**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Cross-Section 41 - UT4**



**Bankfull Dimensions**

10.2	x-section area (ft.sq.)
12.9	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
13.3	wetted perimeter (ft)
0.8	hydraulic radius (ft)
16.1	width-depth ratio
69.1	W flood prone area (ft)
5.4	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream



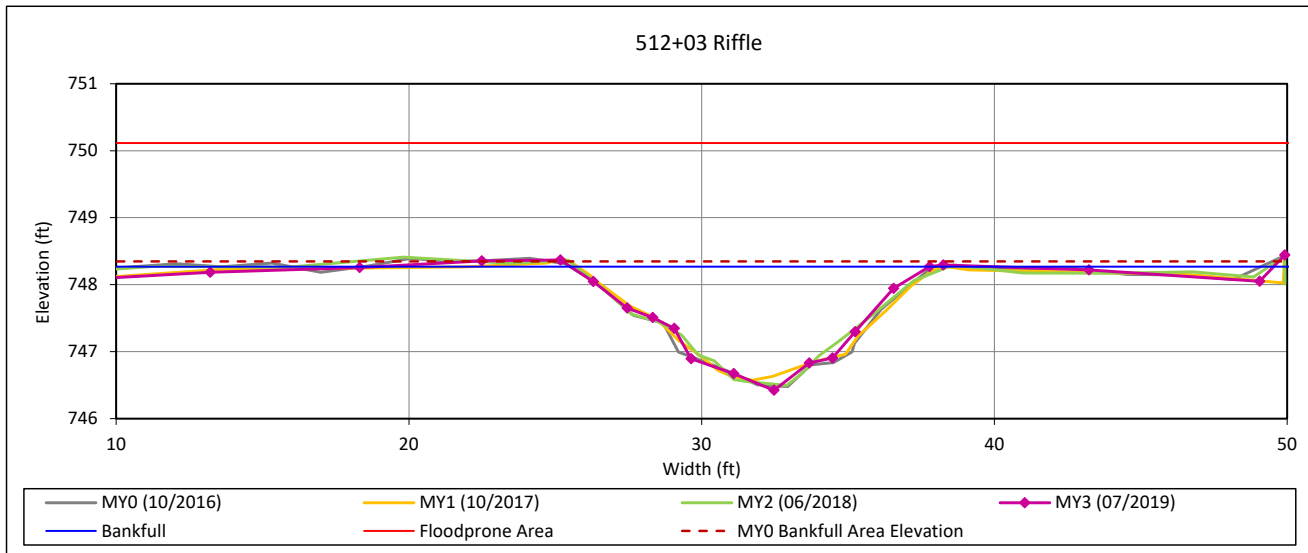
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 42 - UT4



#### Bankfull Dimensions

12.0	x-section area (ft.sq.)
12.3	width (ft)
1.0	mean depth (ft)
1.8	max depth (ft)
12.9	wetted perimeter (ft)
0.9	hydraulic radius (ft)
12.5	width-depth ratio
49.9	W flood prone area (ft)
4.1	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

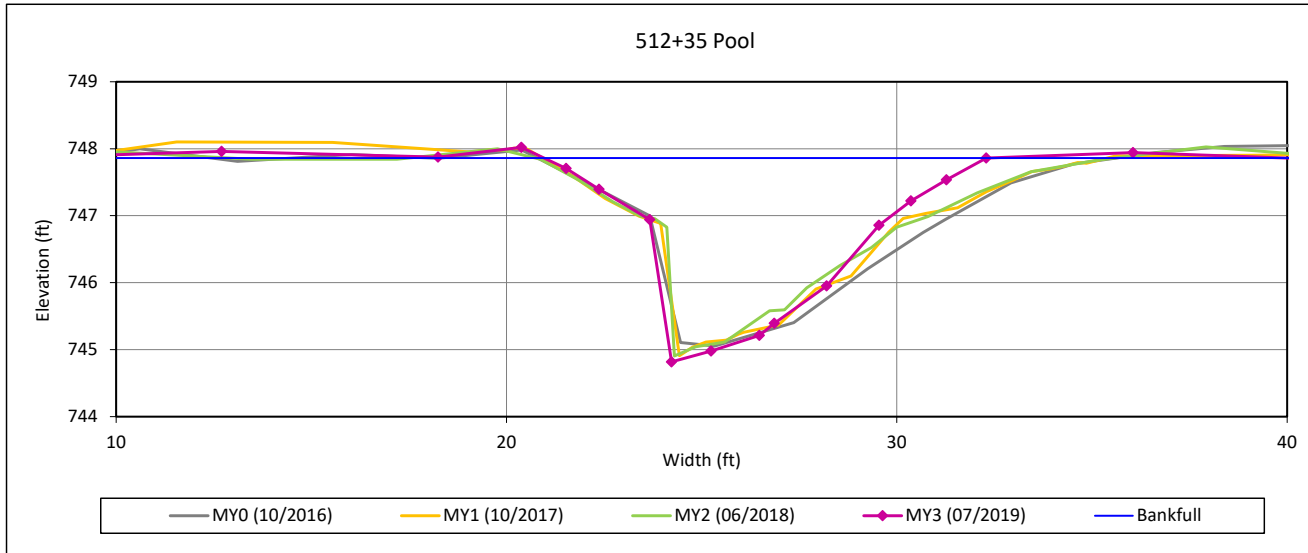
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 43 - UT4



#### Bankfull Dimensions

15.9	x-section area (ft.sq.)
11.3	width (ft)
1.4	mean depth (ft)
3.0	max depth (ft)
13.8	wetted perimeter (ft)
1.2	hydraulic radius (ft)
8.1	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

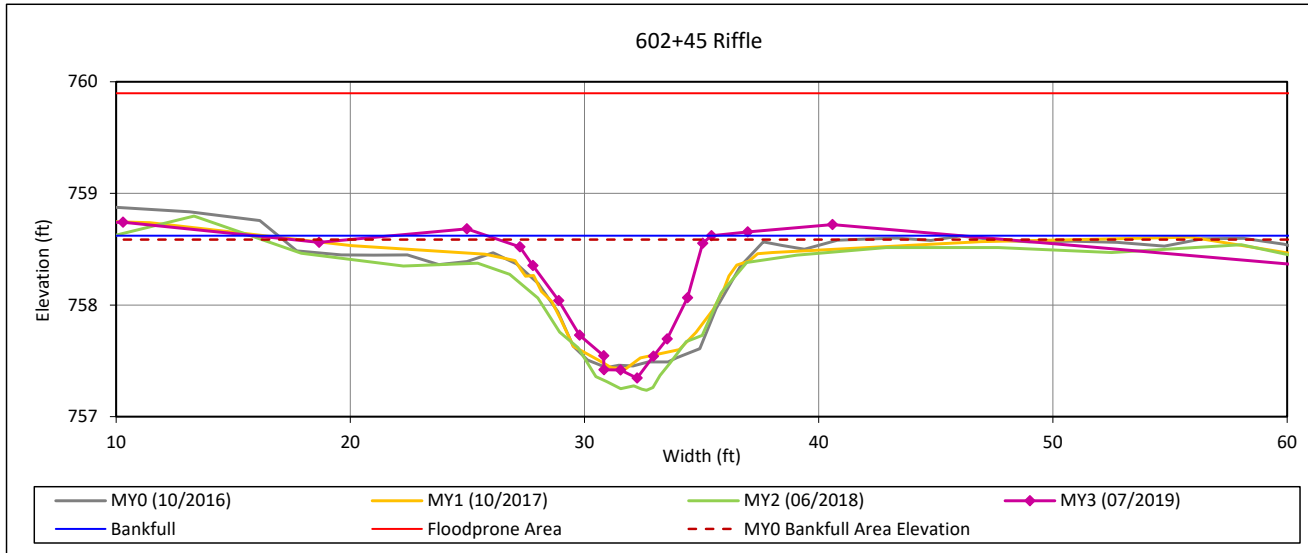
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 44 - UT5



#### Bankfull Dimensions

6.3	x-section area (ft.sq.)
9.6	width (ft)
0.7	mean depth (ft)
1.3	max depth (ft)
10.1	wetted perimeter (ft)
0.6	hydraulic radius (ft)
14.5	width-depth ratio
82.3	W flood prone area (ft)
8.6	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

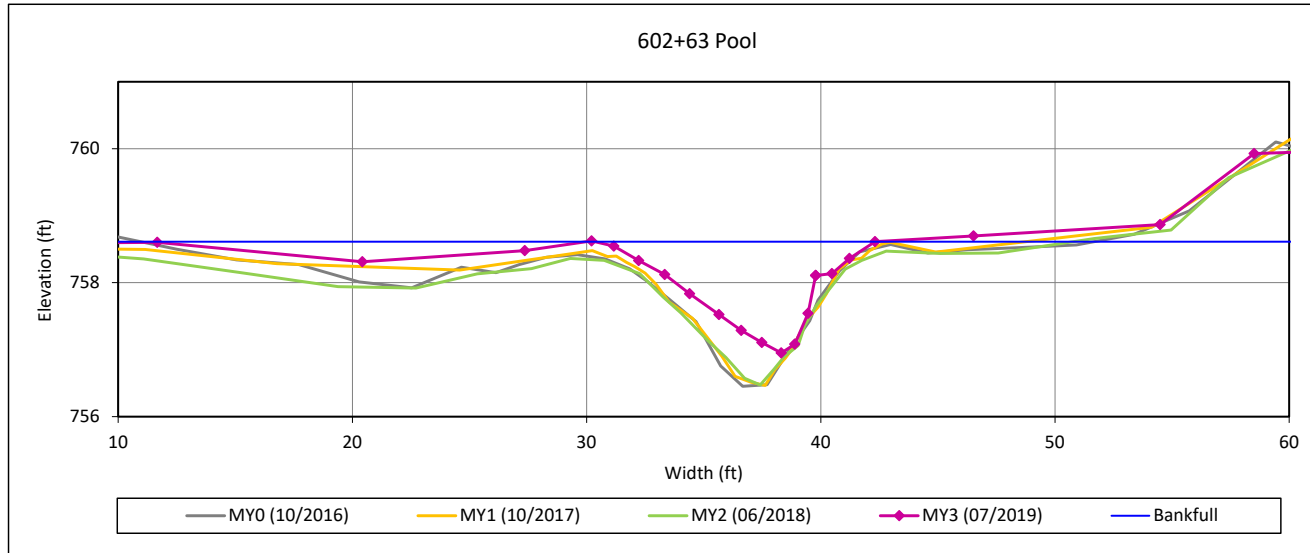
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 45 - UT5



#### Bankfull Dimensions

8.9	x-section area (ft.sq.)
12.0	width (ft)
0.7	mean depth (ft)
1.7	max depth (ft)
12.7	wetted perimeter (ft)
0.7	hydraulic radius (ft)
16.2	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

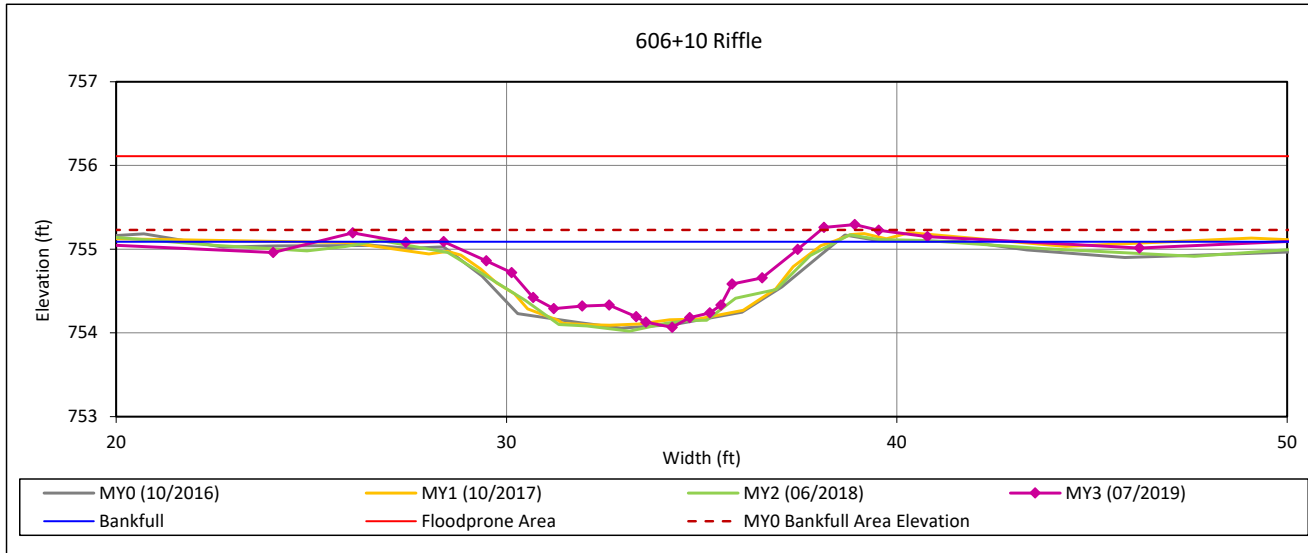
**Cross-Section Plots**

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

**Cross-Section 46 - UT5**



**Bankfull Dimensions**

5.5	x-section area (ft.sq.)
9.3	width (ft)
0.6	mean depth (ft)
1.0	max depth (ft)
9.7	wetted perimeter (ft)
0.6	hydraulic radius (ft)
15.8	width-depth ratio
56.0	W flood prone area (ft)
6.0	entrenchment ratio
0.9	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

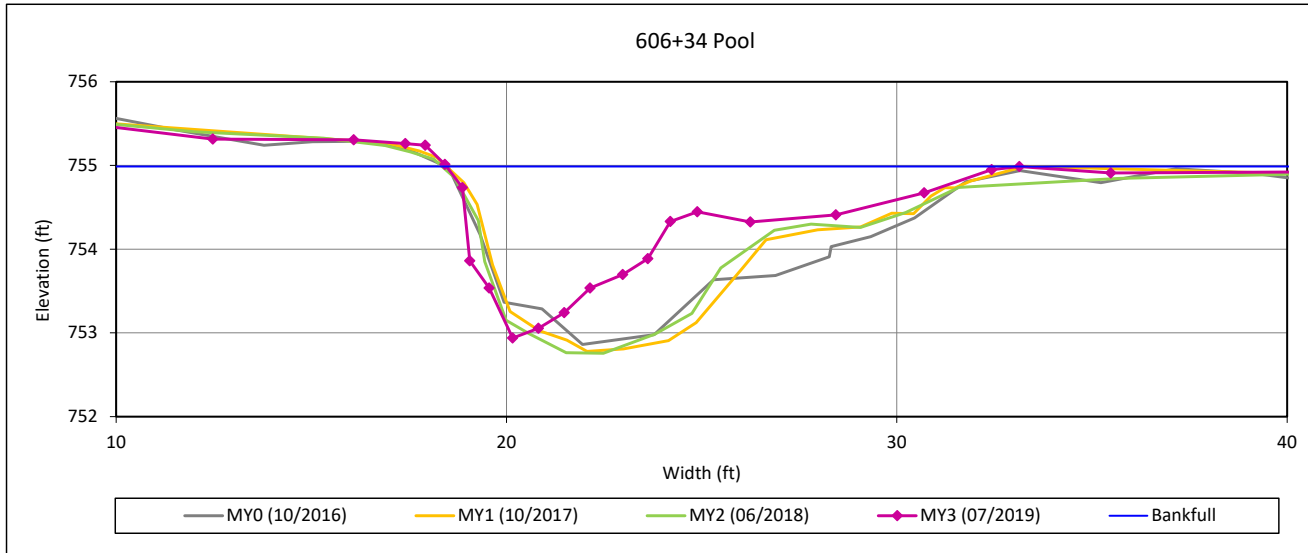
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 47 - UT5



#### Bankfull Dimensions

11.8	x-section area (ft.sq.)
14.7	width (ft)
0.8	mean depth (ft)
2.0	max depth (ft)
16.1	wetted perimeter (ft)
0.7	hydraulic radius (ft)
18.3	width-depth ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

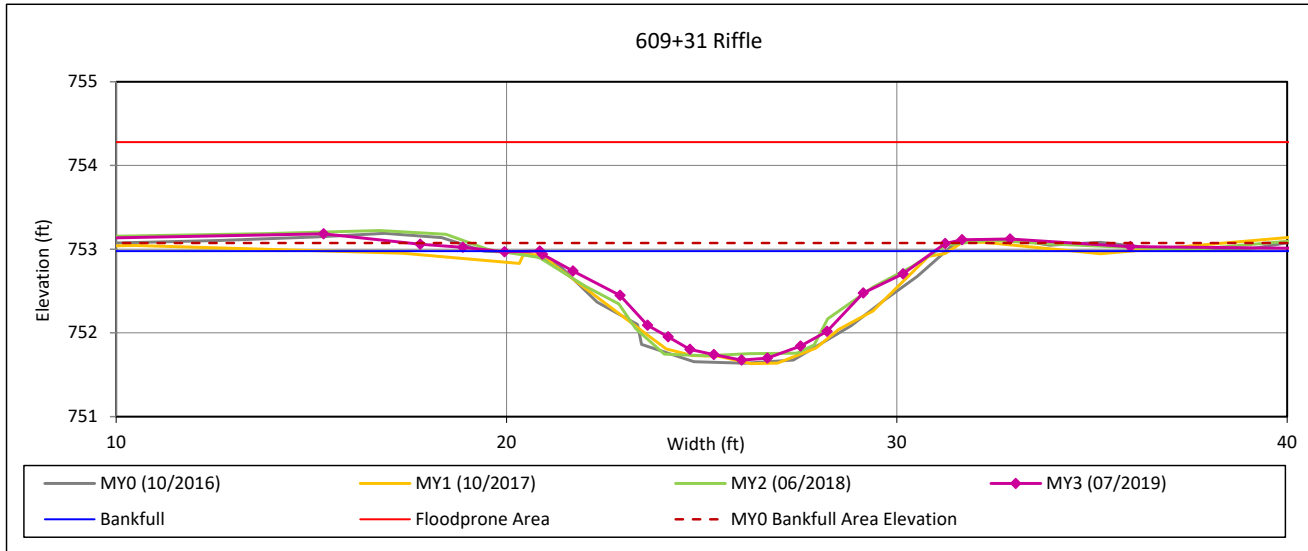
### Cross-Section Plots

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

#### Cross-Section 48 - UT5



#### Bankfull Dimensions

7.6	x-section area (ft.sq.)
10.1	width (ft)
0.8	mean depth (ft)
1.3	max depth (ft)
10.5	wetted perimeter (ft)
0.7	hydraulic radius (ft)
13.5	width-depth ratio
53.8	W flood prone area (ft)
5.3	entrenchment ratio
1.0	low bank height ratio

Survey Date: 07/2019

Field Crew: Wildlands Engineering



View Downstream

**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

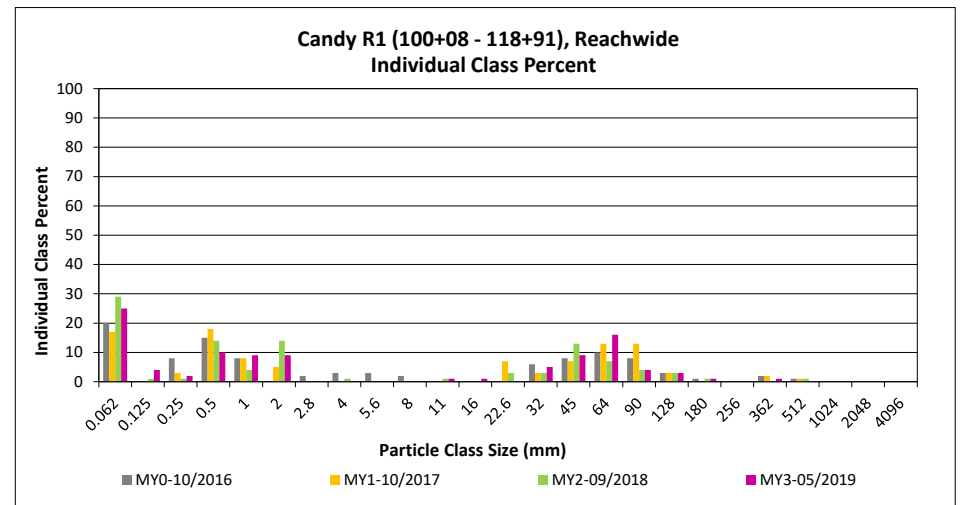
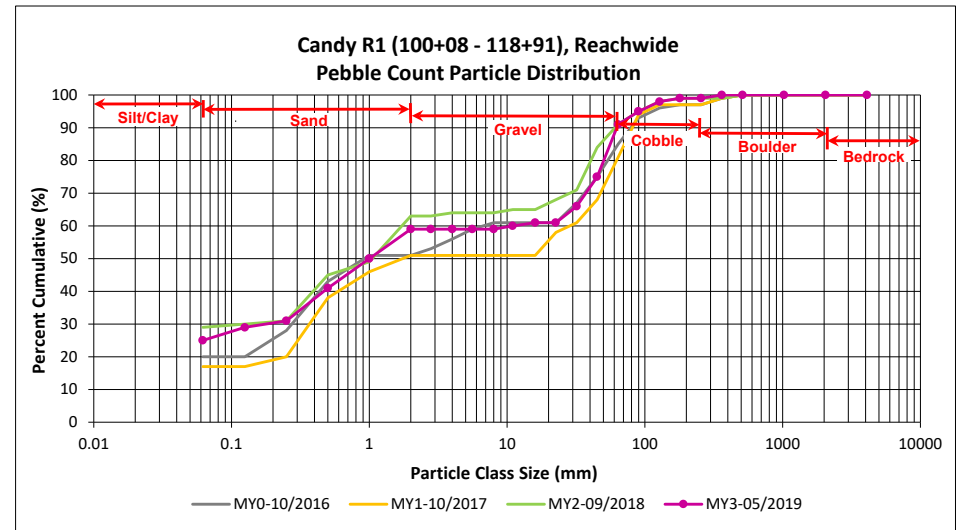
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R1 (100+08 - 118+91), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	3	22	25	25	25
<b>SAND</b>	Very fine	0.062	0.125		4	4	4	29	
	Fine	0.125	0.250		2	2	2	31	
	Medium	0.25	0.50	1	9	10	10	41	
	Coarse	0.5	1.0	2	7	9	9	50	
	Very Coarse	1.0	2.0	6	3	9	9	59	
<b>GRAVEL</b>	Very Fine	2.0	2.8					59	
	Very Fine	2.8	4.0					59	
	Fine	4.0	5.6					59	
	Fine	5.6	8.0					59	
	Medium	8.0	11.0		1	1	1	60	
	Medium	11.0	16.0	1		1	1	61	
	Coarse	16.0	22.6					61	
	Coarse	22.6	32	4	1	5	5	66	
	Very Coarse	32	45	9		9	9	75	
	Very Coarse	45	64	16		16	16	91	
<b>COBBLE</b>	Small	64	90	4		4	4	95	
	Small	90	128	3		3	3	98	
	Large	128	180	1		1	1	99	
	Large	180	256					99	
<b>BOULDER</b>	Small	256	362		1	1	1	100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.3
D <sub>50</sub> =	1.0
D <sub>84</sub> =	54.9
D <sub>95</sub> =	90.0
D <sub>100</sub> =	362.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

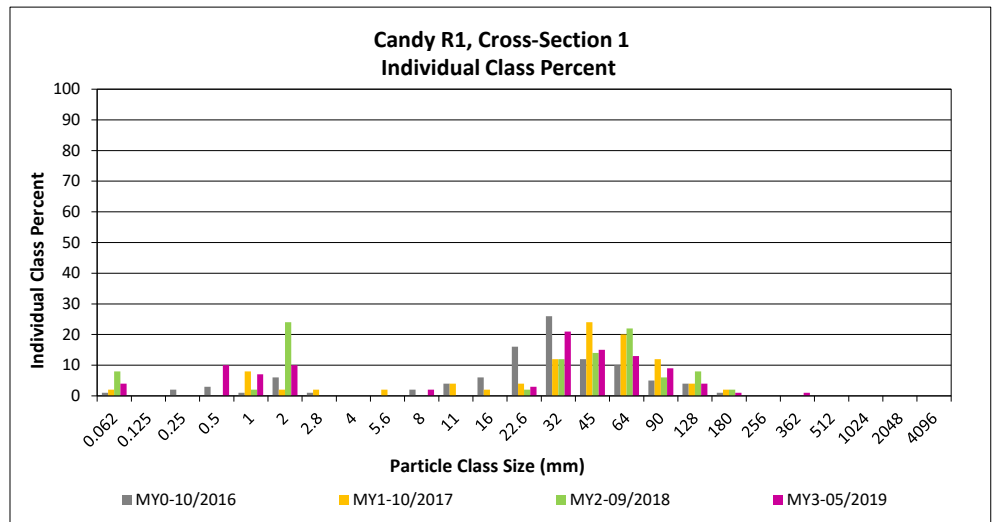
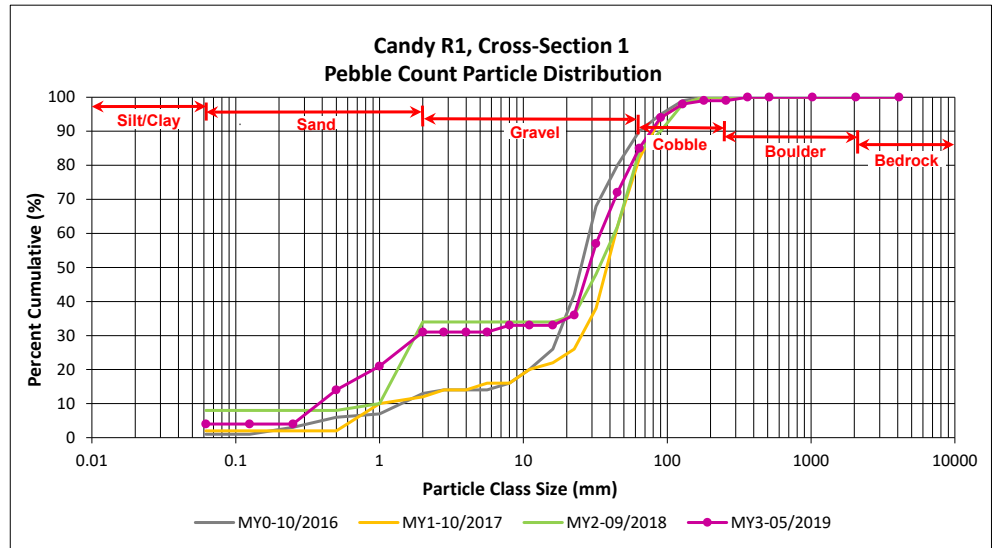
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R1, Cross-Section 1**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	4	4	4
<b>SAND</b>	Very fine	0.062	0.125			4
	Fine	0.125	0.250			4
	Medium	0.25	0.50	10	10	14
	Coarse	0.5	1.0	7	7	21
	Very Coarse	1.0	2.0	10	10	31
<b>GRAVEL</b>	Very Fine	2.0	2.8			31
	Very Fine	2.8	4.0			31
	Fine	4.0	5.6			31
	Fine	5.6	8.0	2	2	33
	Medium	8.0	11.0			33
	Medium	11.0	16.0			33
	Coarse	16.0	22.6	3	3	36
	Coarse	22.6	32	21	21	57
	Very Coarse	32	45	15	15	72
	Very Coarse	45	64	13	13	85
<b>COBBLE</b>	Small	64	90	9	9	94
	Small	90	128	4	4	98
	Large	128	180	1	1	99
	Large	180	256			99
<b>BOULDER</b>	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 1	
Channel materials (mm)	
D <sub>16</sub> =	0.6
D <sub>35</sub> =	20.1
D <sub>50</sub> =	28.5
D <sub>84</sub> =	62.3
D <sub>95</sub> =	98.3
D <sub>100</sub> =	362.0



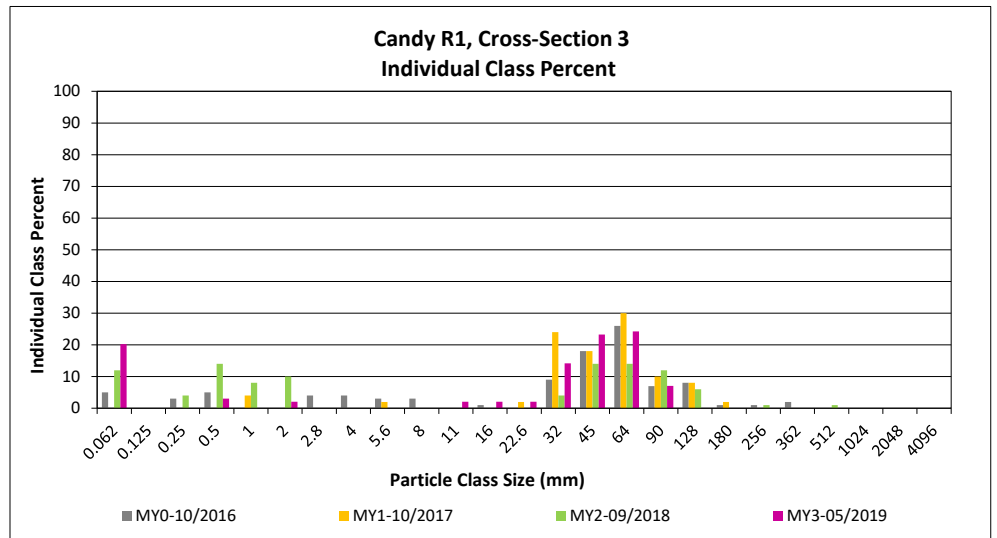
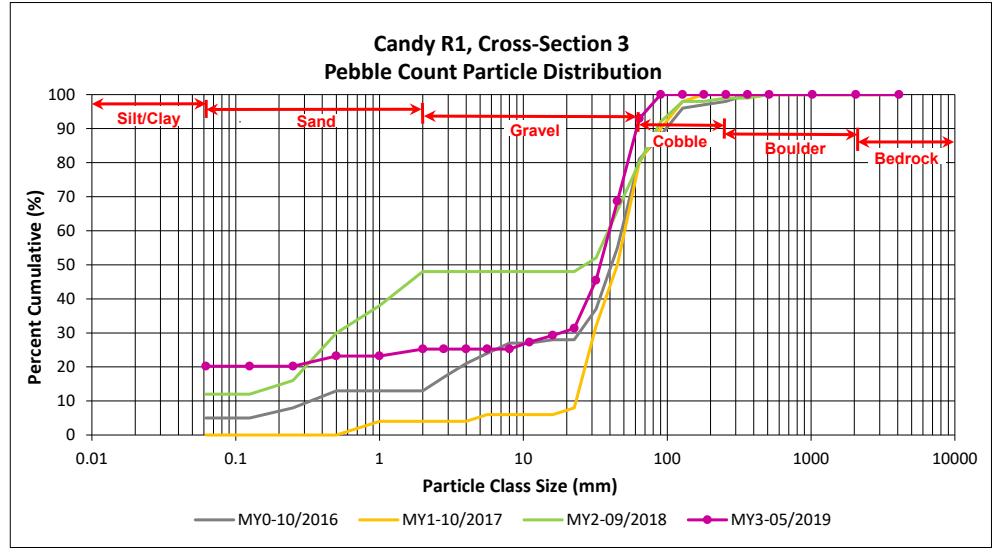
**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site  
 DMS Project No. 96315  
 Monitoring Year 3 - 2019

**Candy R1, Cross-Section 3**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	20	20	20
<b>SAND</b>	Very fine	0.062	0.125			20
	Fine	0.125	0.250			20
	Medium	0.25	0.50	3	3	23
	Coarse	0.5	1.0			23
	Very Coarse	1.0	2.0	2	2	25
<b>GRAVEL</b>	Very Fine	2.0	2.8			25
	Very Fine	2.8	4.0			25
	Fine	4.0	5.6			25
	Fine	5.6	8.0			25
	Medium	8.0	11.0	2	2	27
	Medium	11.0	16.0	2	2	29
	Coarse	16.0	22.6	2	2	31
	Coarse	22.6	32	14	14	45
	Very Coarse	32	45	23	23	69
	Very Coarse	45	64	24	24	93
<b>COBBLE</b>	Small	64	90	7	7	100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
<b>BEDROCK</b>	Bedrock	2048	>2048			100
<b>Total</b>				<b>99</b>	<b>100</b>	<b>100</b>

Cross-Section 3	
Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	24.7
D <sub>50</sub> =	34.2
D <sub>84</sub> =	56.2
D <sub>95</sub> =	70.7
D <sub>100</sub> =	90.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

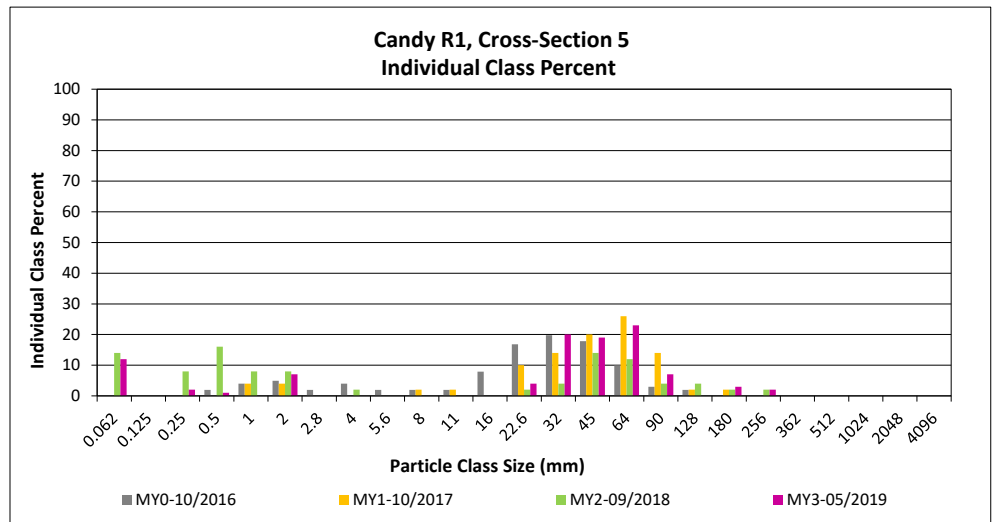
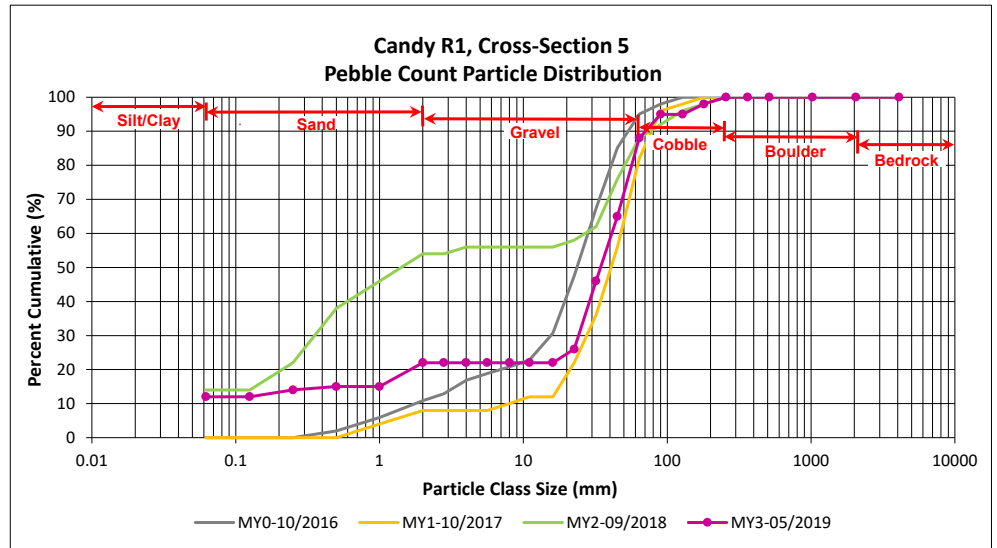
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R1, Cross-Section 5**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	12	12	12
<b>SAND</b>	Very fine	0.062	0.125			12
	Fine	0.125	0.250	2	2	14
	Medium	0.25	0.50	1	1	15
	Coarse	0.5	1.0			15
	Very Coarse	1.0	2.0	7	7	22
<b>GRAVEL</b>	Very Fine	2.0	2.8			22
	Very Fine	2.8	4.0			22
	Fine	4.0	5.6			22
	Fine	5.6	8.0			22
	Medium	8.0	11.0			22
	Medium	11.0	16.0			22
	Coarse	16.0	22.6	4	4	26
	Coarse	22.6	32	20	20	46
	Very Coarse	32	45	19	19	65
	Very Coarse	45	64	23	23	88
<b>COBBLE</b>	Small	64	90	7	7	95
	Small	90	128			95
	Large	128	180	3	3	98
	Large	180	256	2	2	100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 5 Channel materials (mm)	
D <sub>16</sub> =	1.1
D <sub>35</sub> =	26.4
D <sub>50</sub> =	34.4
D <sub>84</sub> =	60.2
D <sub>95</sub> =	90.0
D <sub>100</sub> =	256.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

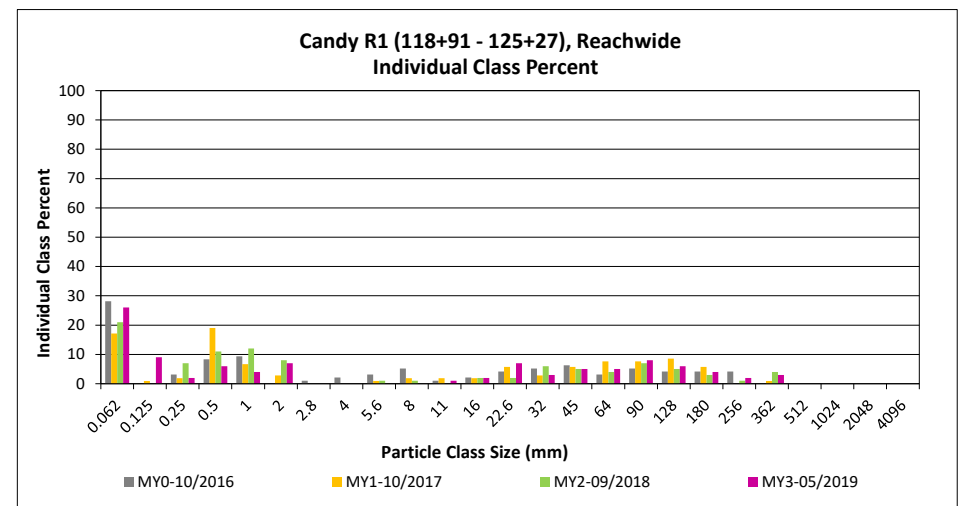
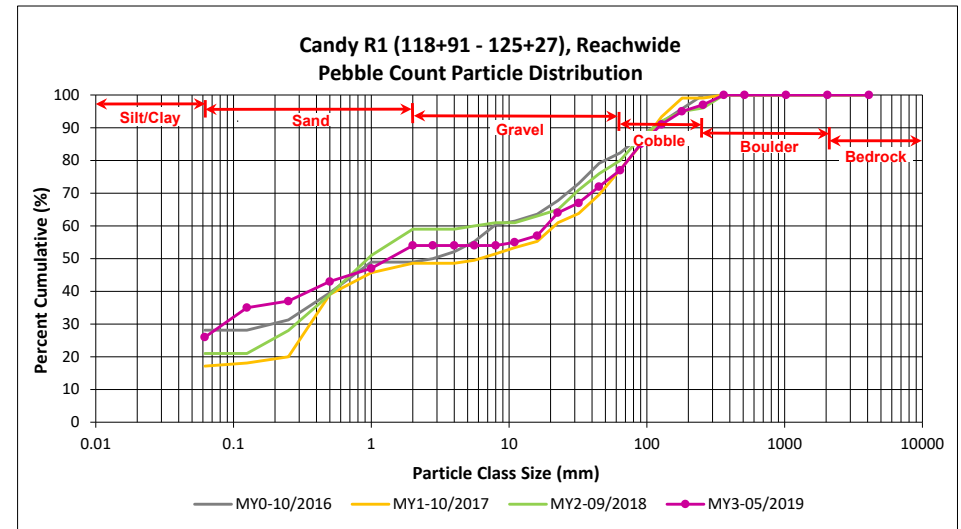
DMS Project No. 96315

Monitoring Year 3 - 2019

#### Candy R1 (118+91 - 125+27), Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	2	24	26	26	26
<b>SAND</b>	Very fine	0.062	0.125		9	9	9	35	
	Fine	0.125	0.250		2	2	2	37	
	Medium	0.25	0.50		6	6	6	43	
	Coarse	0.5	1.0		4	4	4	47	
	Very Coarse	1.0	2.0	3	4	7	7	54	
<b>GRAVEL</b>	Very Fine	2.0	2.8					54	
	Very Fine	2.8	4.0					54	
	Fine	4.0	5.6					54	
	Fine	5.6	8.0					54	
	Medium	8.0	11.0	1		1	1	55	
	Medium	11.0	16.0	2		2	2	57	
	Coarse	16.0	22.6	7		7	7	64	
	Coarse	22.6	32	3		3	3	67	
	Very Coarse	32	45	5		5	5	72	
	Very Coarse	45	64	5		5	5	77	
<b>COBBLE</b>	Small	64	90	8		8	8	85	
	Small	90	128	6		6	6	91	
	Large	128	180	4		4	4	95	
	Large	180	256	2		2	2	97	
<b>BOULDER</b>	Small	256	362	2	1	3	3	100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.1
D <sub>50</sub> =	1.3
D <sub>84</sub> =	86.2
D <sub>95</sub> =	180.0
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

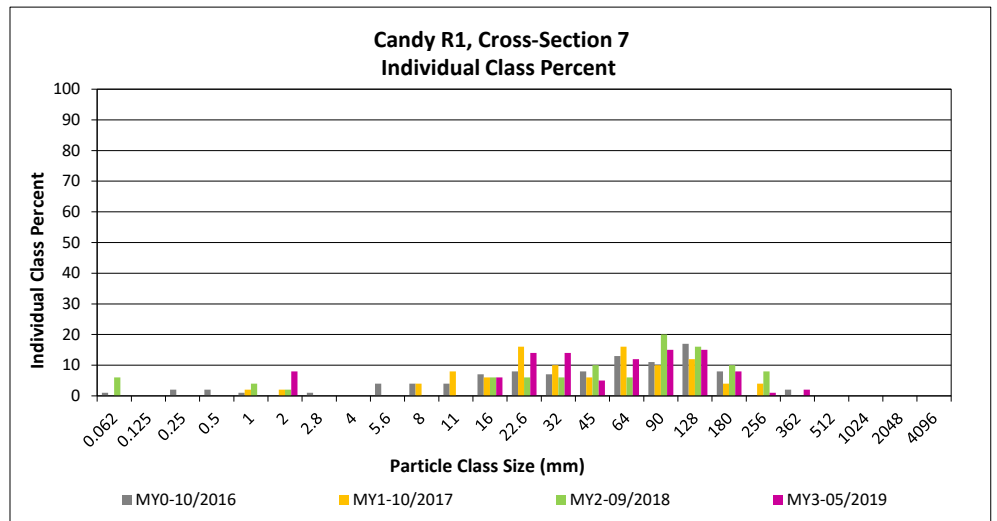
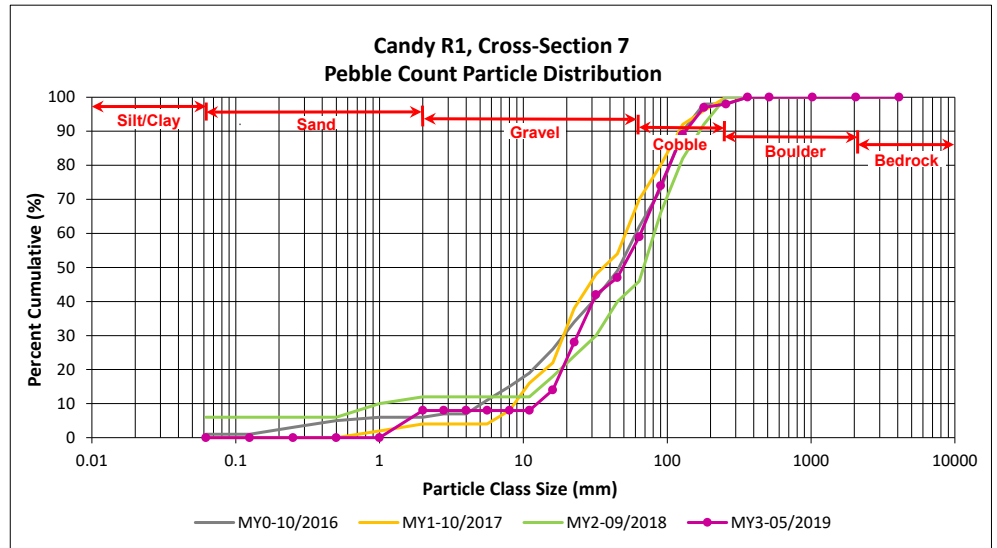
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R1, Cross-Section 7**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0			0
	Very Coarse	1.0	2.0	8	8	8
<b>GRAVEL</b>	Very Fine	2.0	2.8			8
	Very Fine	2.8	4.0			8
	Fine	4.0	5.6			8
	Fine	5.6	8.0			8
	Medium	8.0	11.0			8
	Medium	11.0	16.0	6	6	14
	Coarse	16.0	22.6	14	14	28
	Coarse	22.6	32	14	14	42
	Very Coarse	32	45	5	5	47
	Very Coarse	45	64	12	12	59
<b>COBBLE</b>	Small	64	90	15	15	74
	Small	90	128	15	15	89
	Large	128	180	8	8	97
	Large	180	256	1	1	98
<b>BOULDER</b>	Small	256	362	2	2	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 7 Channel materials (mm)	
D <sub>16</sub> =	16.8
D <sub>35</sub> =	26.9
D <sub>50</sub> =	49.1
D <sub>84</sub> =	113.8
D <sub>95</sub> =	165.3
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

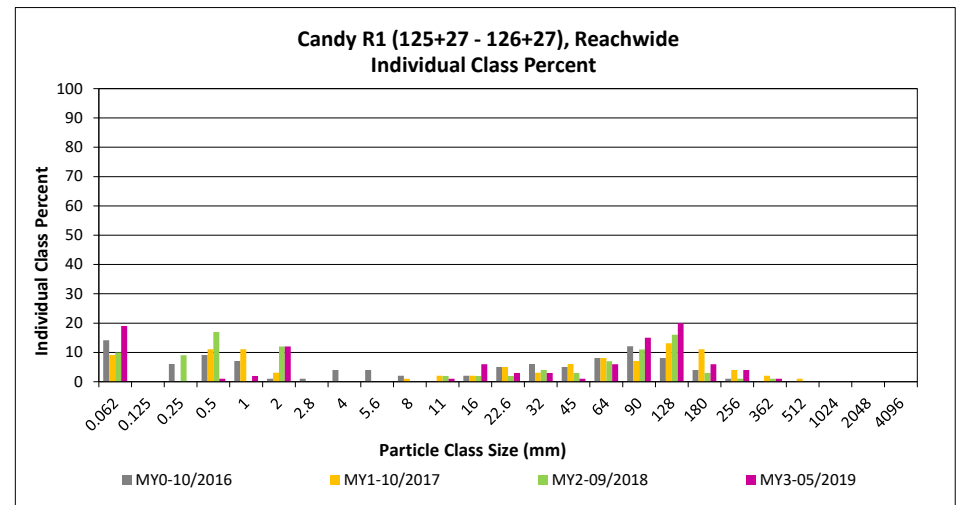
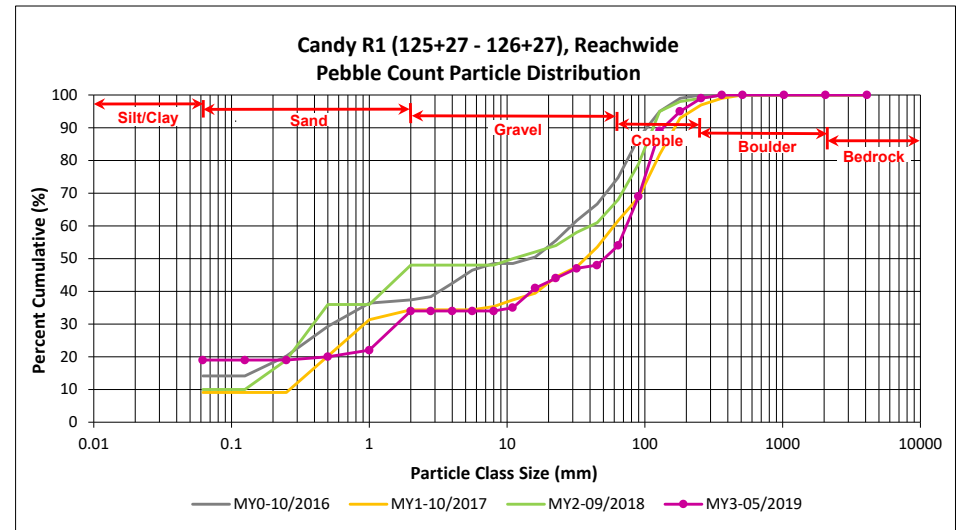
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R1 (125+27 - 126+27), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	3	16	19	19
<b>SAND</b>	Very fine	0.062	0.125					19
	Fine	0.125	0.250					19
	Medium	0.25	0.50	1		1	1	20
	Coarse	0.5	1.0		2	2	2	22
	Very Coarse	1.0	2.0		12	12	12	34
<b>GRAVEL</b>	Very Fine	2.0	2.8					34
	Very Fine	2.8	4.0					34
	Fine	4.0	5.6					34
	Fine	5.6	8.0					34
	Medium	8.0	11.0		1	1	1	35
	Medium	11.0	16.0	3	3	6	6	41
	Coarse	16.0	22.6	2	1	3	3	44
	Coarse	22.6	32	3		3	3	47
	Very Coarse	32	45	1		1	1	48
	Very Coarse	45	64	6		6	6	54
<b>COBBLE</b>	Small	64	90	15		15	15	69
	Small	90	128	20		20	20	89
	Large	128	180	6		6	6	95
	Large	180	256	4		4	4	99
<b>BOULDER</b>	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>65</b>	<b>35</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	11.0
D <sub>50</sub> =	50.6
D <sub>84</sub> =	117.2
D <sub>95</sub> =	180.0
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

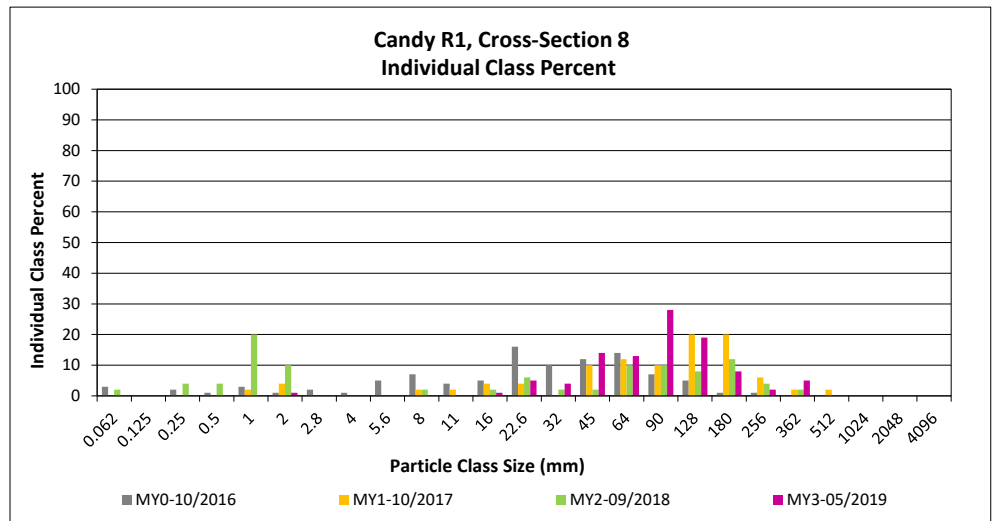
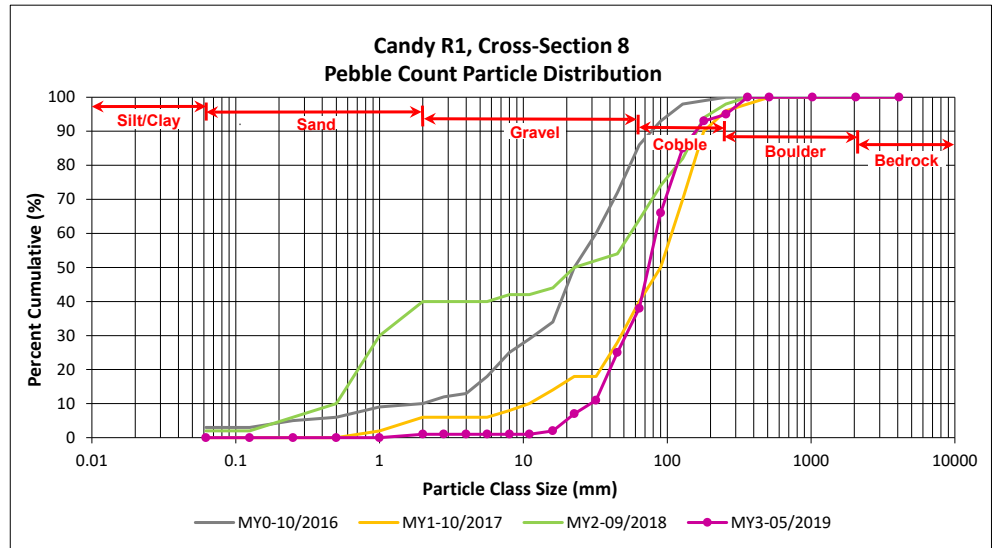
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R1, Cross-Section 8

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay				0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0			0
	Very Coarse	1.0	2.0	1	1	1
<b>GRAVEL</b>	Very Fine	2.0	2.8			1
	Very Fine	2.8	4.0			1
	Fine	4.0	5.6			1
	Fine	5.6	8.0			1
	Medium	8.0	11.0			1
	Medium	11.0	16.0	1	1	2
	Coarse	16.0	22.6	5	5	7
	Coarse	22.6	32	4	4	11
	Very Coarse	32	45	14	14	25
	Very Coarse	45	64	13	13	38
<b>COBBLE</b>	Small	64	90	28	28	66
	Small	90	128	19	19	85
	Large	128	180	8	8	93
	Large	180	256	2	2	95
<b>BOULDER</b>	Small	256	362	5	5	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 8	
Channel materials (mm)	
D <sub>16</sub> =	36.1
D <sub>35</sub> =	59.0
D <sub>50</sub> =	74.1
D <sub>84</sub> =	125.6
D <sub>95</sub> =	256.0
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

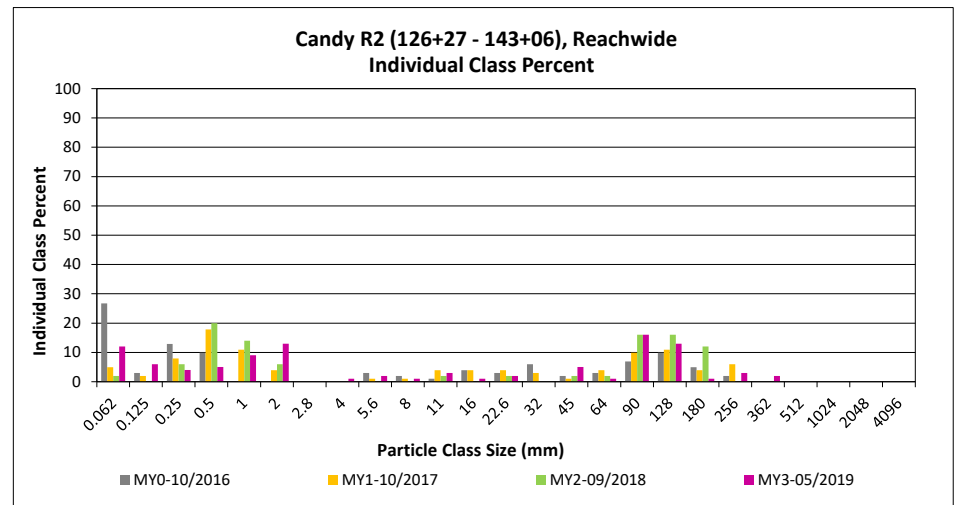
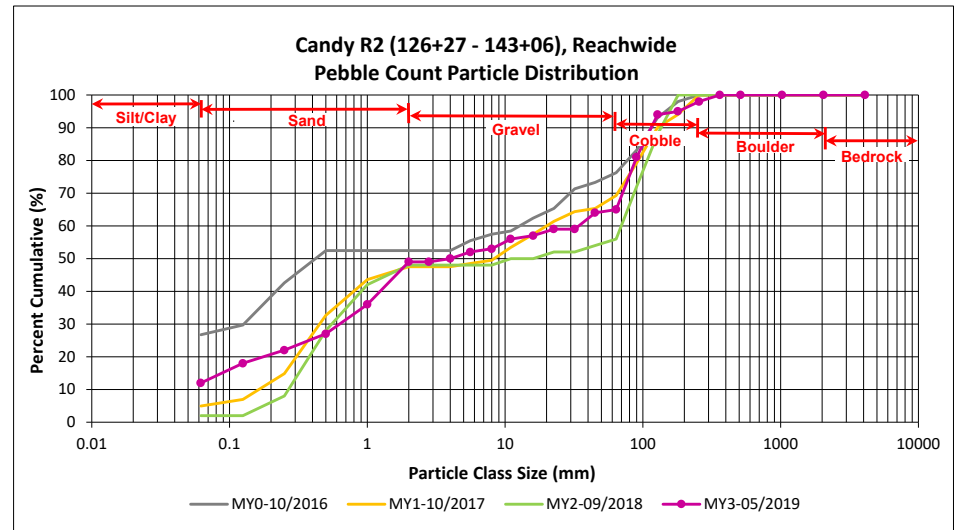
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R2 (126+27 - 143+06), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		12	12	12	12
<b>SAND</b>	Very fine	0.062	0.125		6	6	6	18	
	Fine	0.125	0.250		4	4	4	22	
	Medium	0.25	0.50	1	4	5	5	27	
	Coarse	0.5	1.0	1	8	9	9	36	
	Very Coarse	1.0	2.0	1	12	13	13	49	
<b>GRAVEL</b>	Very Fine	2.0	2.8					49	
	Very Fine	2.8	4.0		1	1	1	50	
	Fine	4.0	5.6	1	1	2	2	52	
	Fine	5.6	8.0	1		1	1	53	
	Medium	8.0	11.0	2	1	3	3	56	
	Medium	11.0	16.0	1		1	1	57	
	Coarse	16.0	22.6	2		2	2	59	
	Coarse	22.6	32					59	
	Very Coarse	32	45	5		5	5	64	
	Very Coarse	45	64	1		1	1	65	
<b>COBBLE</b>	Small	64	90	16		16	16	81	
	Small	90	128	13		13	13	94	
	Large	128	180	1		1	1	95	
	Large	180	256	3		3	3	98	
<b>BOULDER</b>	Small	256	362	1	1	2	2	100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	0.1
D <sub>35</sub> =	0.9
D <sub>50</sub> =	4.0
D <sub>84</sub> =	97.6
D <sub>95</sub> =	180.0
D <sub>100</sub> =	362.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

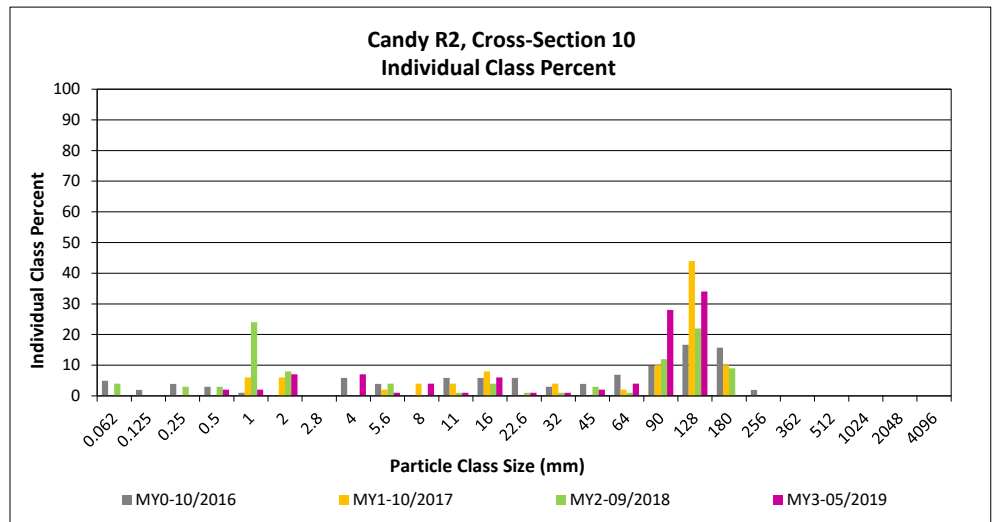
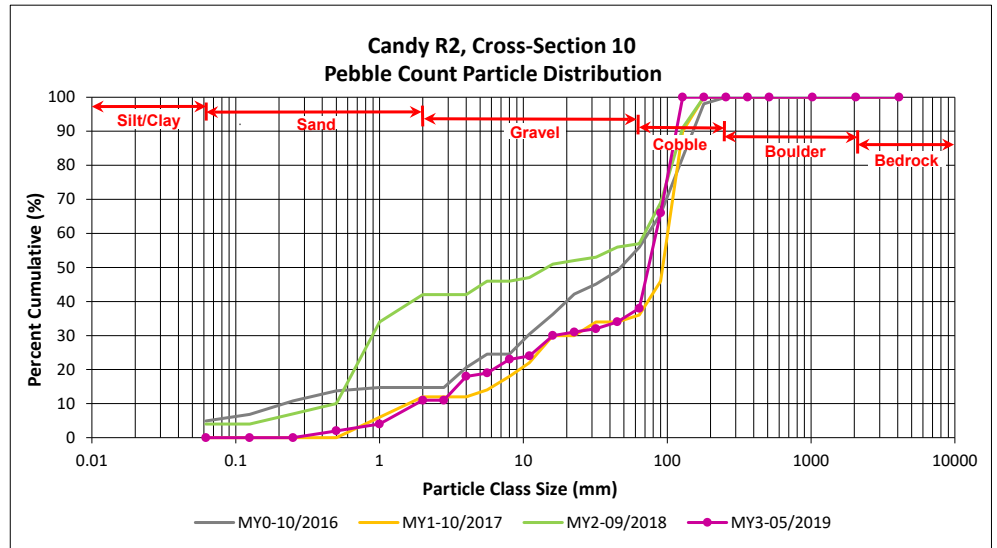
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R2, Cross-Section 10

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50	2	2	2
	Coarse	0.5	1.0	2	2	4
	Very Coarse	1.0	2.0	7	7	11
<b>GRAVEL</b>	Very Fine	2.0	2.8			11
	Very Fine	2.8	4.0	7	7	18
	Fine	4.0	5.6	1	1	19
	Fine	5.6	8.0	4	4	23
	Medium	8.0	11.0	1	1	24
	Medium	11.0	16.0	6	6	30
	Coarse	16.0	22.6	1	1	31
	Coarse	22.6	32	1	1	32
	Very Coarse	32	45	2	2	34
	Very Coarse	45	64	4	4	38
<b>COBBLE</b>	Small	64	90	28	28	66
	Small	90	128	34	34	100
	Large	128	180			100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 10 Channel materials (mm)	
D <sub>16</sub> =	3.6
D <sub>35</sub> =	49.1
D <sub>50</sub> =	74.1
D <sub>84</sub> =	108.4
D <sub>95</sub> =	121.5
D <sub>100</sub> =	128.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

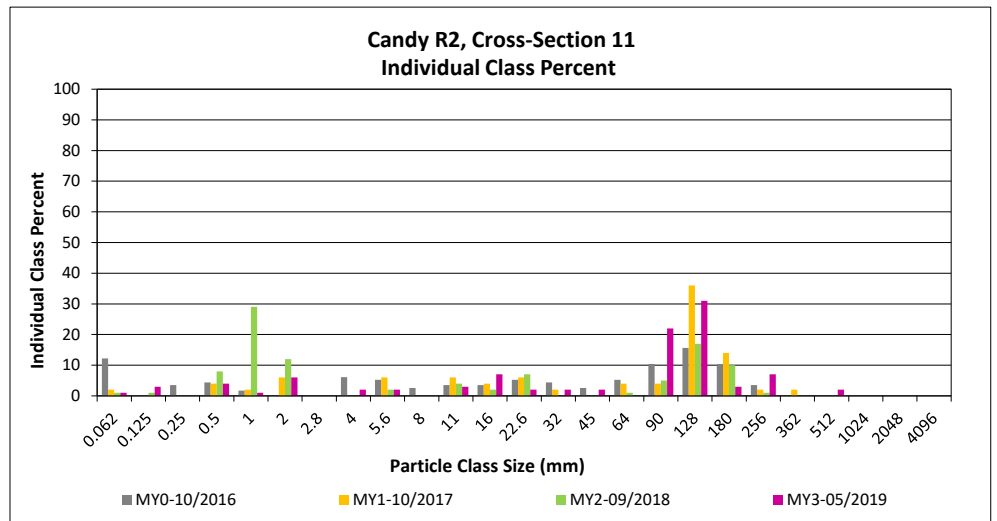
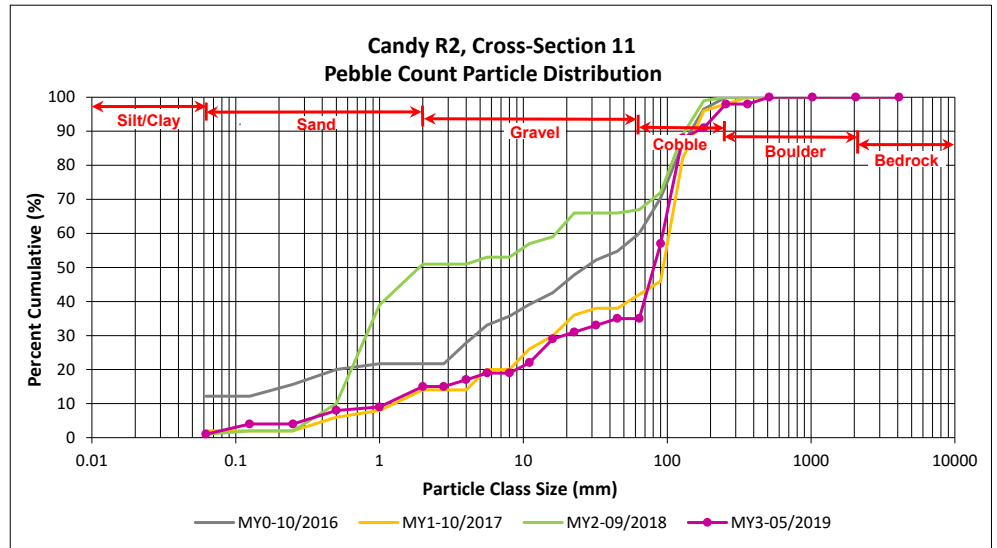
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R2, Cross-Section 11

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	1	1	1
<b>SAND</b>	Very fine	0.062	0.125	3	3	4
	Fine	0.125	0.250			4
	Medium	0.25	0.50	4	4	8
	Coarse	0.5	1.0	1	1	9
	Very Coarse	1.0	2.0	6	6	15
<b>GRAVEL</b>	Very Fine	2.0	2.8			15
	Very Fine	2.8	4.0	2	2	17
	Fine	4.0	5.6	2	2	19
	Fine	5.6	8.0			19
	Medium	8.0	11.0	3	3	22
	Medium	11.0	16.0	7	7	29
	Coarse	16.0	22.6	2	2	31
	Coarse	22.6	32	2	2	33
	Very Coarse	32	45	2	2	35
	Very Coarse	45	64			35
<b>COBBLE</b>	Small	64	90	22	22	57
	Small	90	128	31	31	88
	Large	128	180	3	3	91
	Large	180	256	7	7	98
<b>BOULDER</b>	Small	256	362			98
	Small	362	512	2	2	100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 11 Channel materials (mm)	
D <sub>16</sub> =	3.3
D <sub>35</sub> =	45.0
D <sub>50</sub> =	80.7
D <sub>84</sub> =	122.3
D <sub>95</sub> =	220.1
D <sub>100</sub> =	512.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

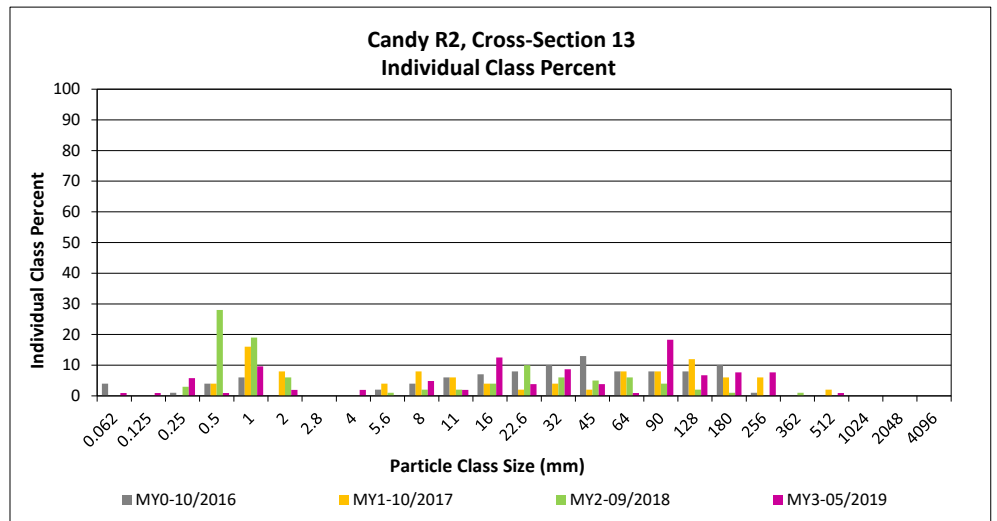
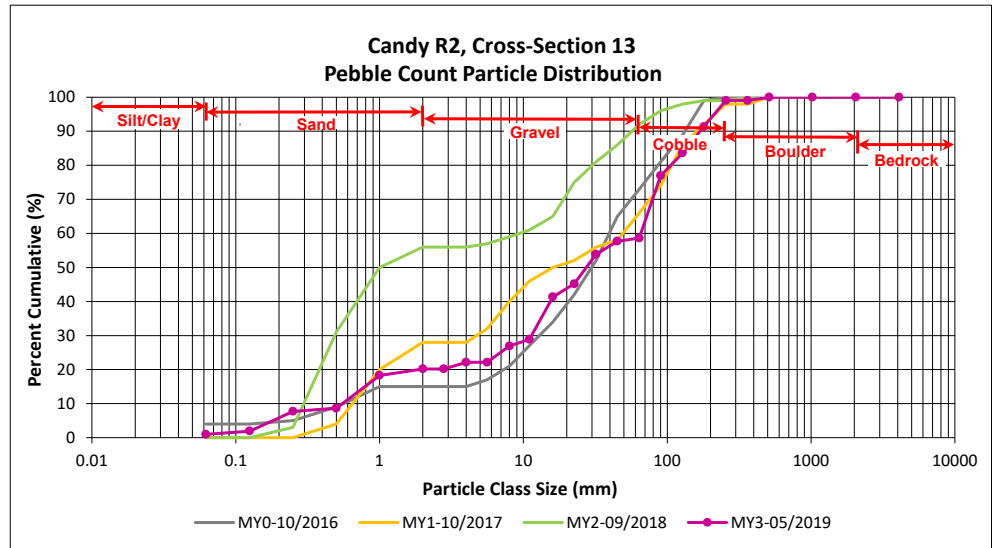
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R2, Cross-Section 13**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	1	1	1
<b>SAND</b>	Very fine	0.062	0.125	1	1	2
	Fine	0.125	0.250	6	6	8
	Medium	0.25	0.50	1	1	9
	Coarse	0.5	1.0	10	10	18
	Very Coarse	1.0	2.0	2	2	20
<b>GRAVEL</b>	Very Fine	2.0	2.8			20
	Very Fine	2.8	4.0	2	2	22
	Fine	4.0	5.6			22
	Fine	5.6	8.0	5	5	27
	Medium	8.0	11.0	2	2	29
	Medium	11.0	16.0	13	13	41
	Coarse	16.0	22.6	4	4	45
	Coarse	22.6	32	9	9	54
	Very Coarse	32	45	4	4	58
	Very Coarse	45	64	1	1	59
<b>COBBLE</b>	Small	64	90	19	18	77
	Small	90	128	7	7	84
	Large	128	180	8	8	91
	Large	180	256	8	8	99
<b>BOULDER</b>	Small	256	362			99
	Small	362	512	1	1	100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>104</b>	<b>100</b>	<b>100</b>

Cross-Section 13 Channel materials (mm)	
D <sub>16</sub> =	0.8
D <sub>35</sub> =	13.2
D <sub>50</sub> =	27.4
D <sub>84</sub> =	130.0
D <sub>95</sub> =	212.8
D <sub>100</sub> =	512.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

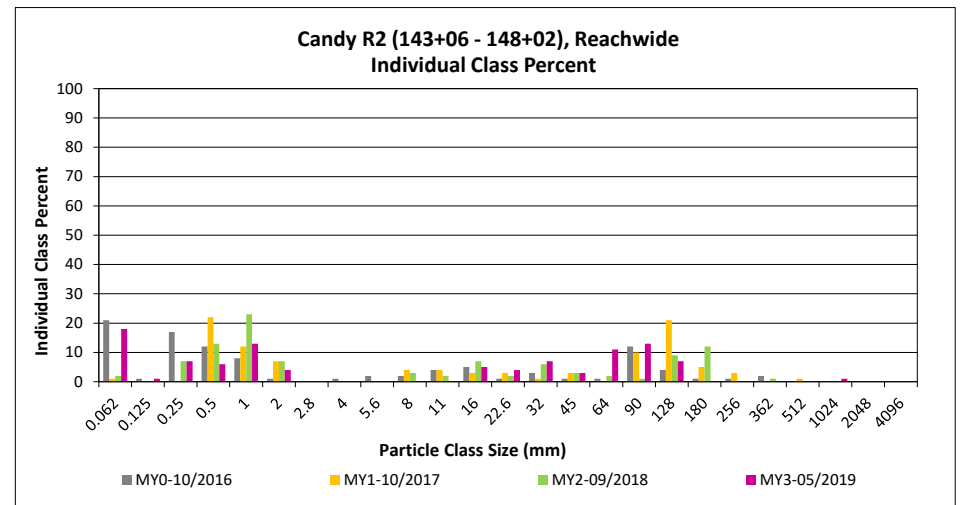
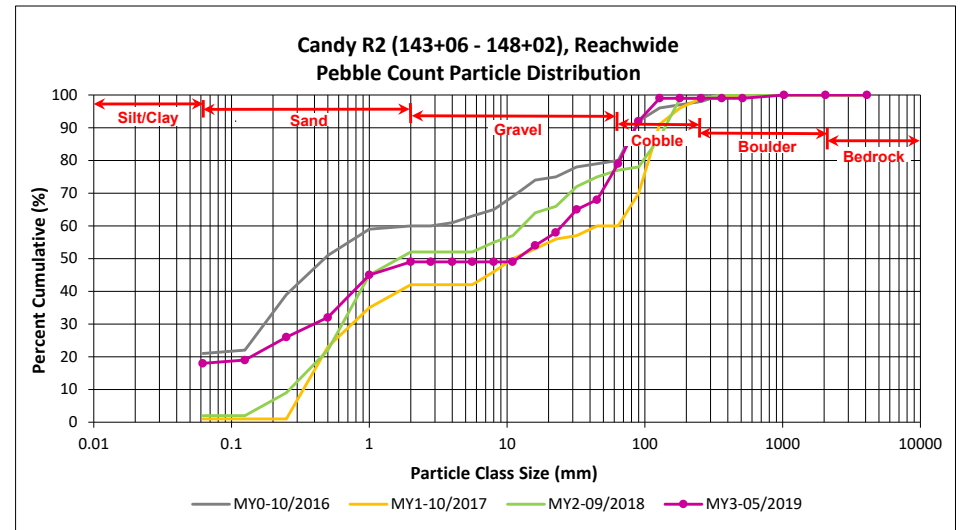
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R2 (143+06 - 148+02), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		18	18	18	18
<b>SAND</b>	Very fine	0.062	0.125	1		1	1	19	
	Fine	0.125	0.250	1	6	7	7	26	
	Medium	0.25	0.50	1	5	6	6	32	
	Coarse	0.5	1.0	1	12	13	13	45	
	Very Coarse	1.0	2.0		4	4	4	49	
<b>GRAVEL</b>	Very Fine	2.0	2.8					49	
	Very Fine	2.8	4.0					49	
	Fine	4.0	5.6					49	
	Fine	5.6	8.0					49	
	Medium	8.0	11.0					49	
	Medium	11.0	16.0	3	2	5	5	54	
	Coarse	16.0	22.6	4		4	4	58	
	Coarse	22.6	32	4	3	7	7	65	
	Very Coarse	32	45	3		3	3	68	
	Very Coarse	45	64	11		11	11	79	
<b>COBBLE</b>	Small	64	90	13		13	13	92	
	Small	90	128	7		7	7	99	
	Large	128	180					99	
	Large	180	256					99	
<b>BOULDER</b>	Small	256	362					99	
	Small	362	512					99	
	Medium	512	1024	1		1	1	100	
<b>BEDROCK</b>	Large/Very Large	1024	2048					100	
	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.6
D <sub>50</sub> =	11.9
D <sub>84</sub> =	73.0
D <sub>95</sub> =	104.7
D <sub>100</sub> =	1024.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

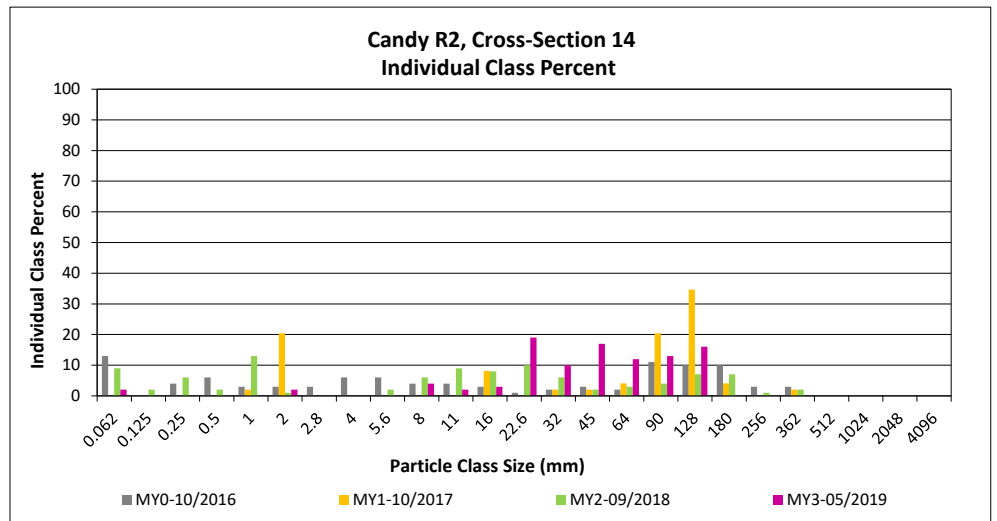
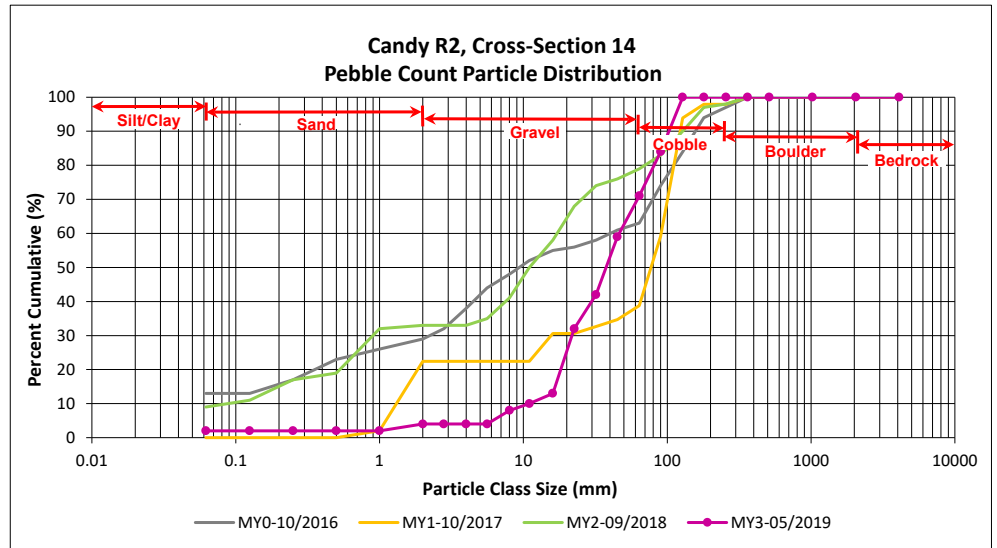
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R2, Cross-Section 14

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	2	2	2
<b>SAND</b>	Very fine	0.062	0.125			2
	Fine	0.125	0.250			2
	Medium	0.25	0.50			2
	Coarse	0.5	1.0			2
	Very Coarse	1.0	2.0	2	2	4
<b>GRAVEL</b>	Very Fine	2.0	2.8			4
	Very Fine	2.8	4.0			4
	Fine	4.0	5.6			4
	Fine	5.6	8.0	4	4	8
	Medium	8.0	11.0	2	2	10
	Medium	11.0	16.0	3	3	13
	Coarse	16.0	22.6	19	19	32
	Coarse	22.6	32	10	10	42
	Very Coarse	32	45	17	17	59
	Very Coarse	45	64	12	12	71
<b>COBBLE</b>	Small	64	90	13	13	84
	Small	90	128	16	16	100
	Large	128	180			100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 14 Channel materials (mm)	
D <sub>16</sub> =	16.9
D <sub>35</sub> =	25.1
D <sub>50</sub> =	37.6
D <sub>84</sub> =	90.0
D <sub>95</sub> =	114.7
D <sub>100</sub> =	128.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

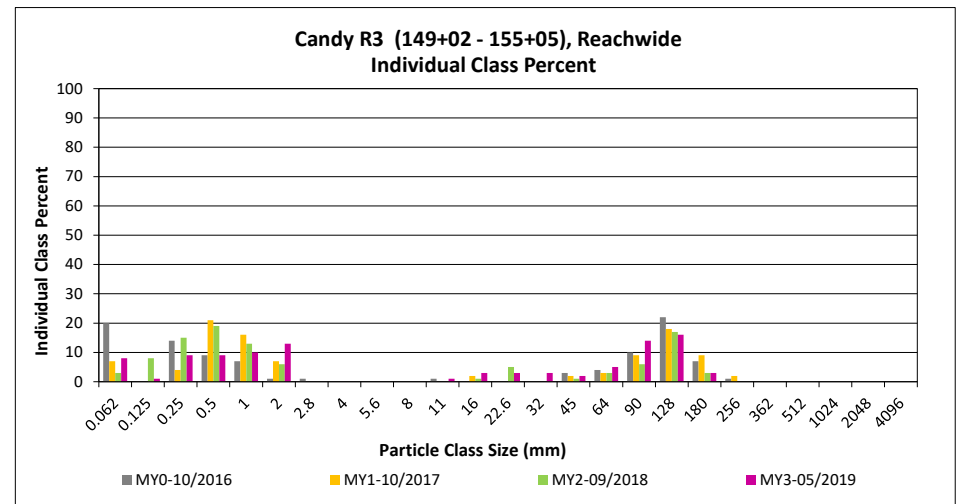
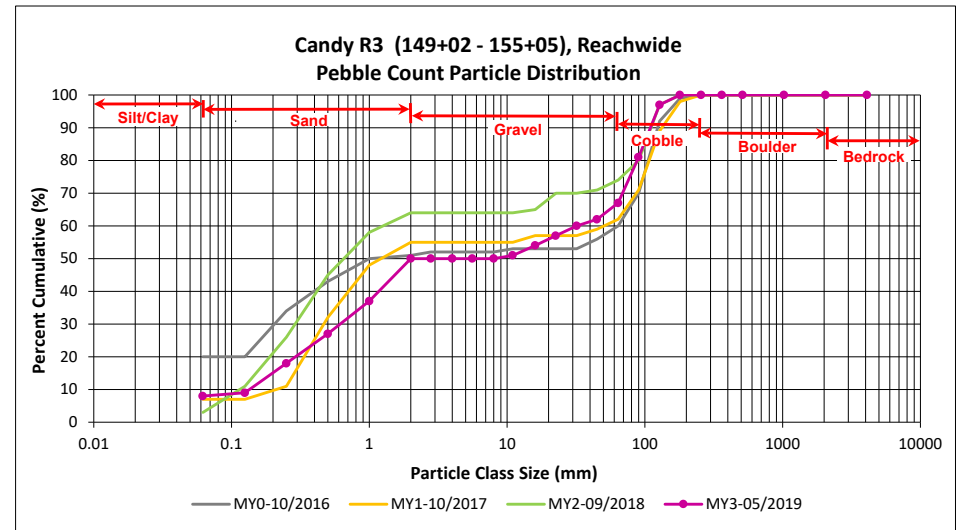
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R3 (149+02 - 155+05), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		8	8	8	8
<b>SAND</b>	Very fine	0.062	0.125		1	1	1	9	
	Fine	0.125	0.250		9	9	9	18	
	Medium	0.25	0.50		9	9	9	27	
	Coarse	0.5	1.0		10	10	10	37	
	Very Coarse	1.0	2.0	4	9	13	13	50	
<b>GRAVEL</b>	Very Fine	2.0	2.8					50	
	Very Fine	2.8	4.0					50	
	Fine	4.0	5.6					50	
	Fine	5.6	8.0					50	
	Medium	8.0	11.0	1		1	1	51	
	Medium	11.0	16.0	2	1	3	3	54	
	Coarse	16.0	22.6	2	1	3	3	57	
	Coarse	22.6	32	1	2	3	3	60	
	Very Coarse	32	45	2		2	2	62	
	Very Coarse	45	64	5		5	5	67	
<b>COBBLE</b>	Small	64	90	14		14	14	81	
	Small	90	128	16		16	16	97	
	Large	128	180	3		3	3	100	
	Large	180	256					100	
<b>BOULDER</b>	Small	256	362					100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	0.2
D <sub>35</sub> =	0.9
D <sub>50</sub> =	2.0
D <sub>84</sub> =	96.1
D <sub>95</sub> =	122.5
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

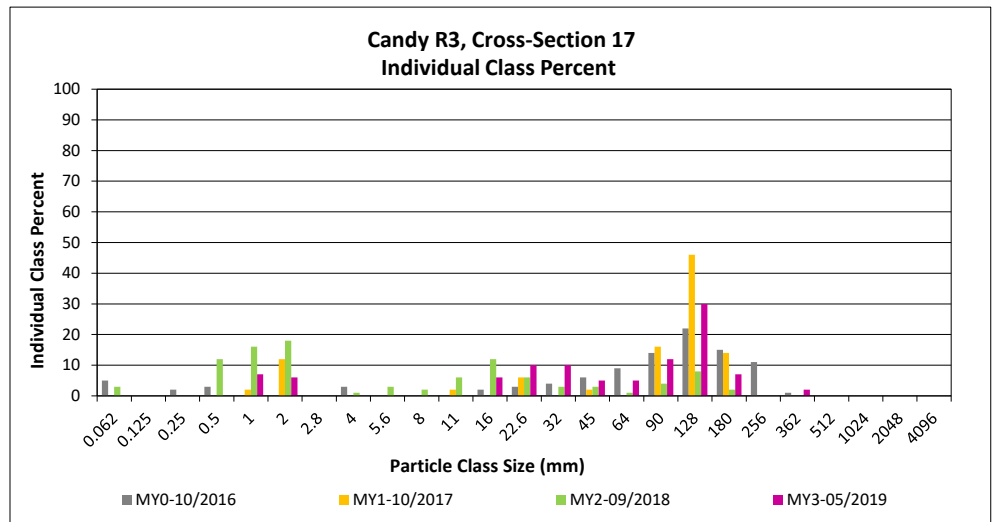
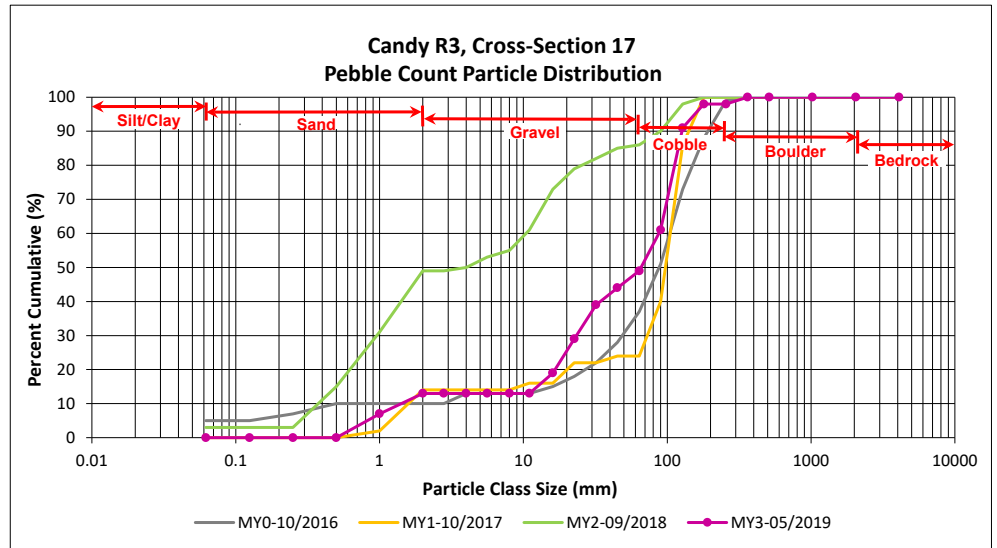
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R3, Cross-Section 17

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0	7	7	7
	Very Coarse	1.0	2.0	6	6	13
<b>GRAVEL</b>	Very Fine	2.0	2.8			13
	Very Fine	2.8	4.0			13
	Fine	4.0	5.6			13
	Fine	5.6	8.0			13
	Medium	8.0	11.0			13
	Medium	11.0	16.0	6	6	19
	Coarse	16.0	22.6	10	10	29
	Coarse	22.6	32	10	10	39
	Very Coarse	32	45	5	5	44
	Very Coarse	45	64	5	5	49
<b>COBBLE</b>	Small	64	90	12	12	61
	Small	90	128	30	30	91
	Large	128	180	7	7	98
	Large	180	256			98
<b>BOULDER</b>	Small	256	362	2	2	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 17 Channel materials (mm)	
D <sub>16</sub> =	13.3
D <sub>35</sub> =	27.8
D <sub>50</sub> =	65.8
D <sub>84</sub> =	117.9
D <sub>95</sub> =	155.5
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

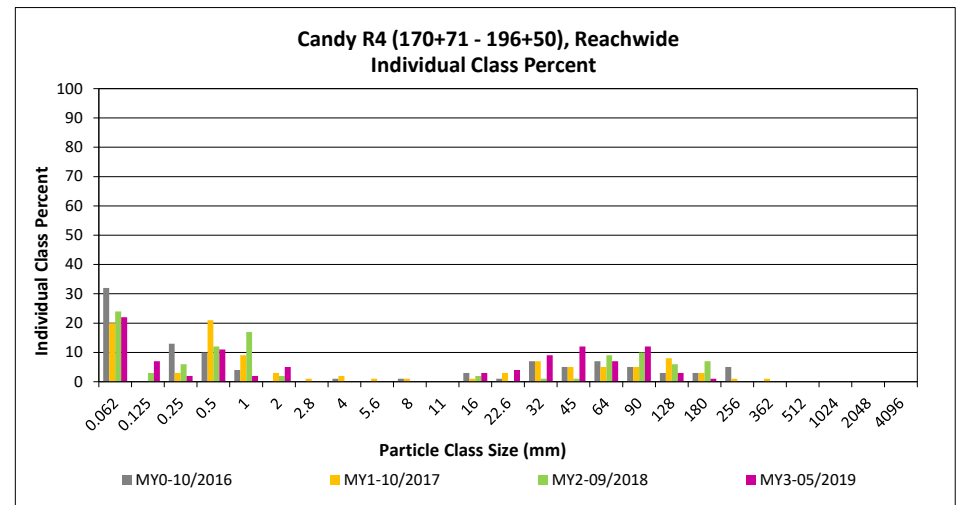
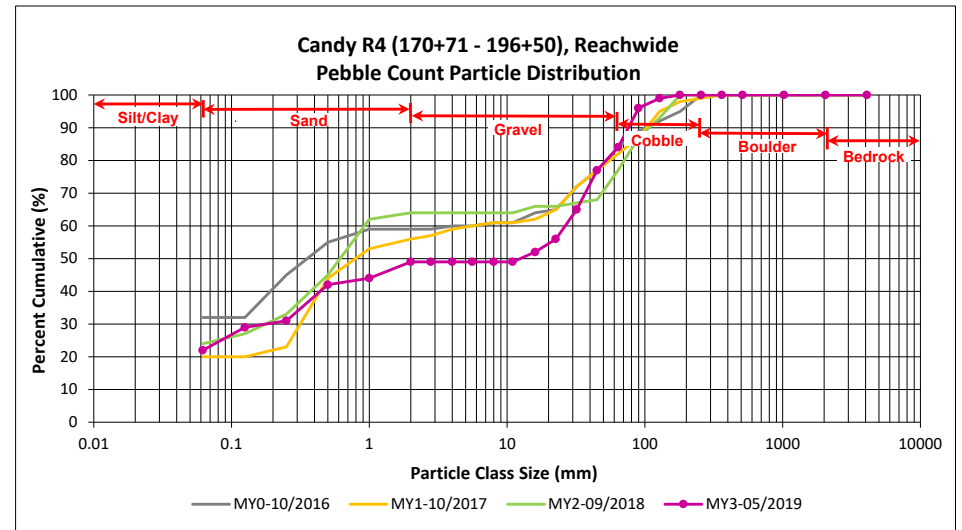
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R4 (170+71 - 196+50), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		22	22	22	22
<b>SAND</b>	Very fine	0.062	0.125		7	7	7	29	
	Fine	0.125	0.250	1	1	2	2	31	
	Medium	0.25	0.50	1	10	11	11	42	
	Coarse	0.5	1.0		2	2	2	44	
	Very Coarse	1.0	2.0		5	5	5	49	
<b>GRAVEL</b>	Very Fine	2.0	2.8					49	
	Very Fine	2.8	4.0					49	
	Fine	4.0	5.6					49	
	Fine	5.6	8.0					49	
	Medium	8.0	11.0					49	
	Medium	11.0	16.0	3		3	3	52	
	Coarse	16.0	22.6	4		4	4	56	
	Coarse	22.6	32	6	3	9	9	65	
	Very Coarse	32	45	12		12	12	77	
	Very Coarse	45	64	7		7	7	84	
<b>COBBLE</b>	Small	64	90	12		12	12	96	
	Small	90	128	3		3	3	99	
	Large	128	180	1		1	1	100	
	Large	180	256					100	
<b>BOULDER</b>	Small	256	362					100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.3
D <sub>50</sub> =	12.5
D <sub>84</sub> =	64.0
D <sub>95</sub> =	87.5
D <sub>100</sub> =	180.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

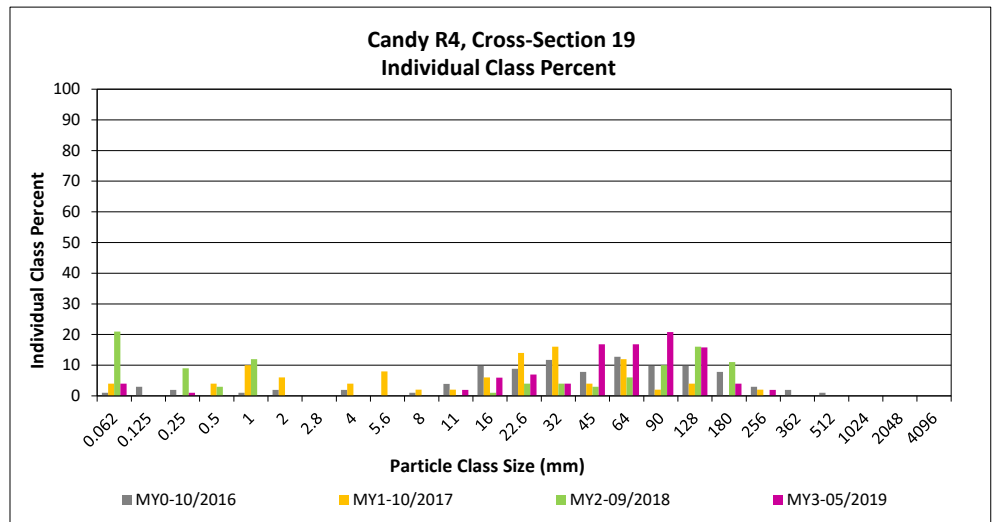
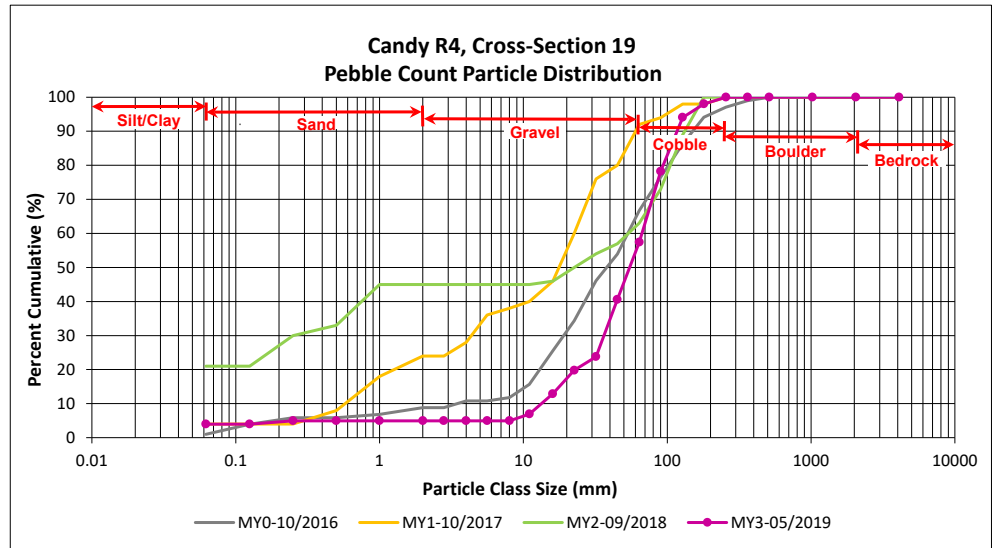
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R4, Cross-Section 19**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	4	4	4
<b>SAND</b>	Very fine	0.062	0.125			4
	Fine	0.125	0.250	1	1	5
	Medium	0.25	0.50			5
	Coarse	0.5	1.0			5
	Very Coarse	1.0	2.0			5
<b>GRAVEL</b>	Very Fine	2.0	2.8			5
	Very Fine	2.8	4.0			5
	Fine	4.0	5.6			5
	Fine	5.6	8.0			5
	Medium	8.0	11.0	2	2	7
	Medium	11.0	16.0	6	6	13
	Coarse	16.0	22.6	7	7	20
	Coarse	22.6	32	4	4	24
	Very Coarse	32	45	17	17	41
	Very Coarse	45	64	17	17	57
<b>COBBLE</b>	Small	64	90	21	21	78
	Small	90	128	16	16	94
	Large	128	180	4	4	98
	Large	180	256	2	2	100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>101</b>	<b>100</b>	<b>100</b>

Cross-Section 19 Channel materials (mm)	
D <sub>16</sub> =	18.7
D <sub>35</sub> =	40.2
D <sub>50</sub> =	54.8
D <sub>84</sub> =	102.3
D <sub>95</sub> =	138.8
D <sub>100</sub> =	256.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

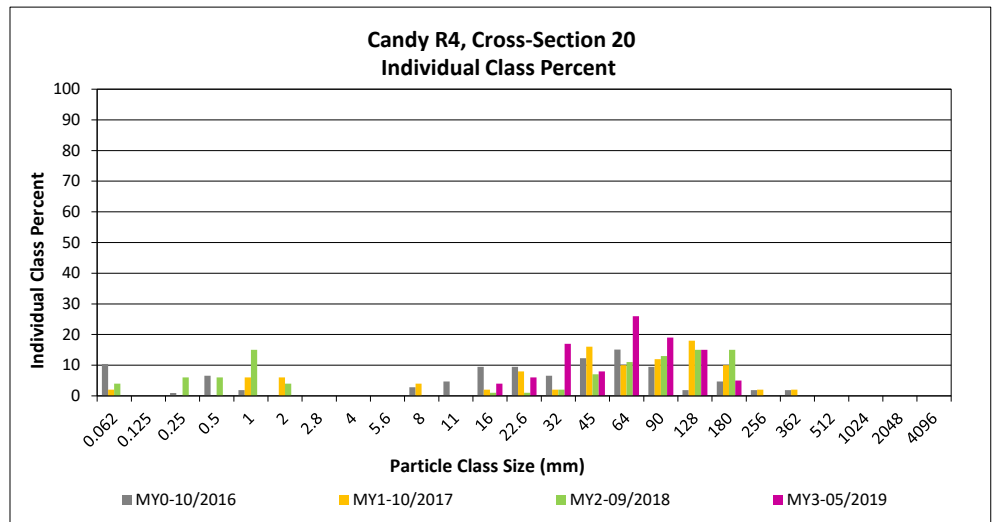
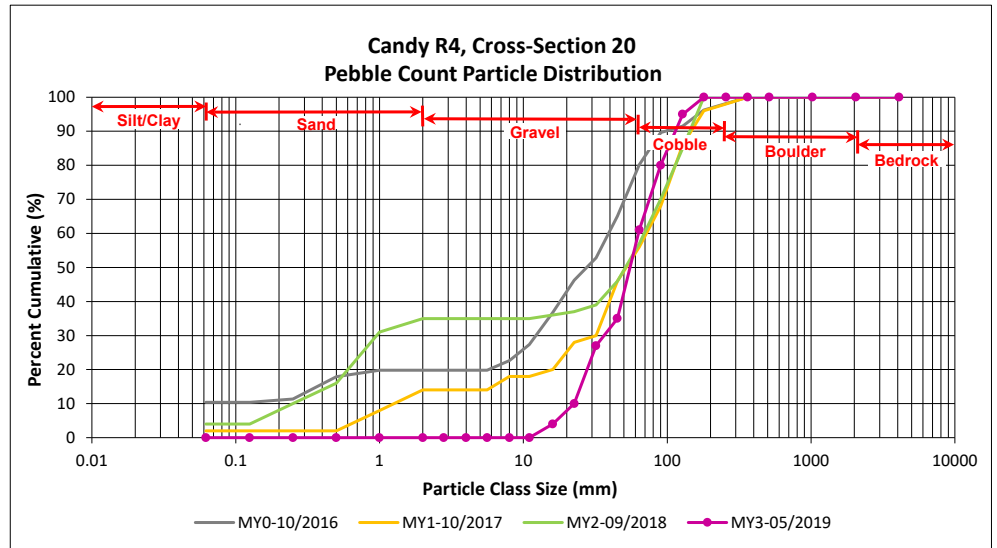
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R4, Cross-Section 20**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0			0
	Very Coarse	1.0	2.0			0
<b>GRAVEL</b>	Very Fine	2.0	2.8			0
	Very Fine	2.8	4.0			0
	Fine	4.0	5.6			0
	Fine	5.6	8.0			0
	Medium	8.0	11.0			0
	Medium	11.0	16.0	4	4	4
	Coarse	16.0	22.6	6	6	10
	Coarse	22.6	32	17	17	27
	Very Coarse	32	45	8	8	35
	Very Coarse	45	64	26	26	61
<b>COBBLE</b>	Small	64	90	19	19	80
	Small	90	128	15	15	95
	Large	128	180	5	5	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 20 Channel materials (mm)	
D <sub>16</sub> =	25.6
D <sub>35</sub> =	45.0
D <sub>50</sub> =	55.1
D <sub>84</sub> =	98.9
D <sub>95</sub> =	128.0
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

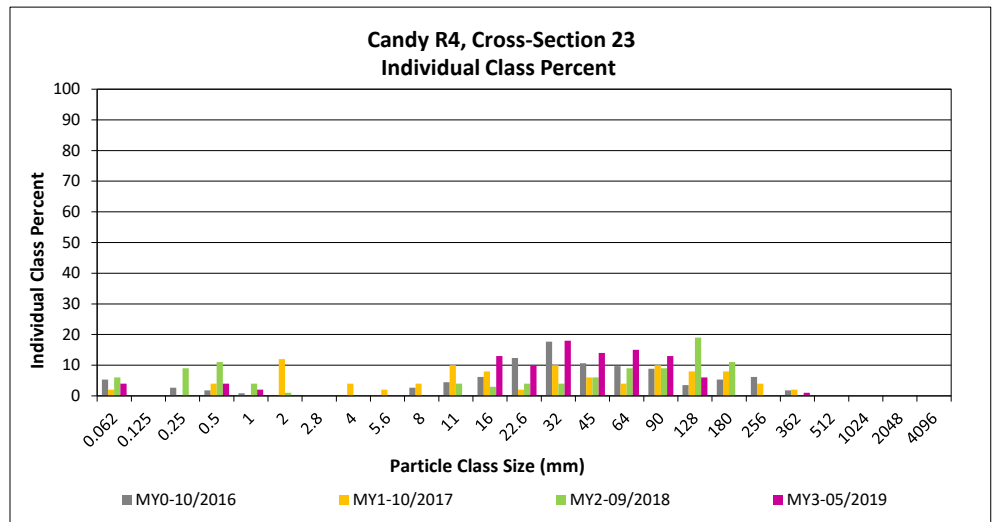
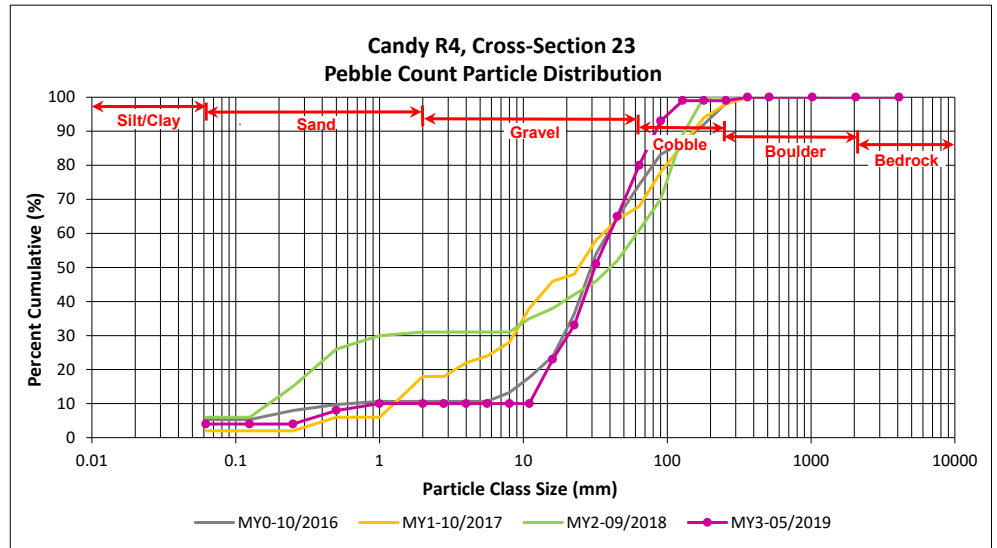
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R4, Cross-Section 23**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	4	4	4
<b>SAND</b>	Very fine	0.062	0.125			4
	Fine	0.125	0.250			4
	Medium	0.25	0.50	4	4	8
	Coarse	0.5	1.0	2	2	10
	Very Coarse	1.0	2.0			10
<b>GRAVEL</b>	Very Fine	2.0	2.8			10
	Very Fine	2.8	4.0			10
	Fine	4.0	5.6			10
	Fine	5.6	8.0			10
	Medium	8.0	11.0			10
	Medium	11.0	16.0	13	13	23
	Coarse	16.0	22.6	10	10	33
	Coarse	22.6	32	18	18	51
	Very Coarse	32	45	14	14	65
	Very Coarse	45	64	15	15	80
<b>COBBLE</b>	Small	64	90	13	13	93
	Small	90	128	6	6	99
	Large	128	180			99
	Large	180	256			99
<b>BOULDER</b>	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 23 Channel materials (mm)	
D <sub>16</sub> =	13.1
D <sub>35</sub> =	23.5
D <sub>50</sub> =	31.4
D <sub>84</sub> =	71.1
D <sub>95</sub> =	101.2
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

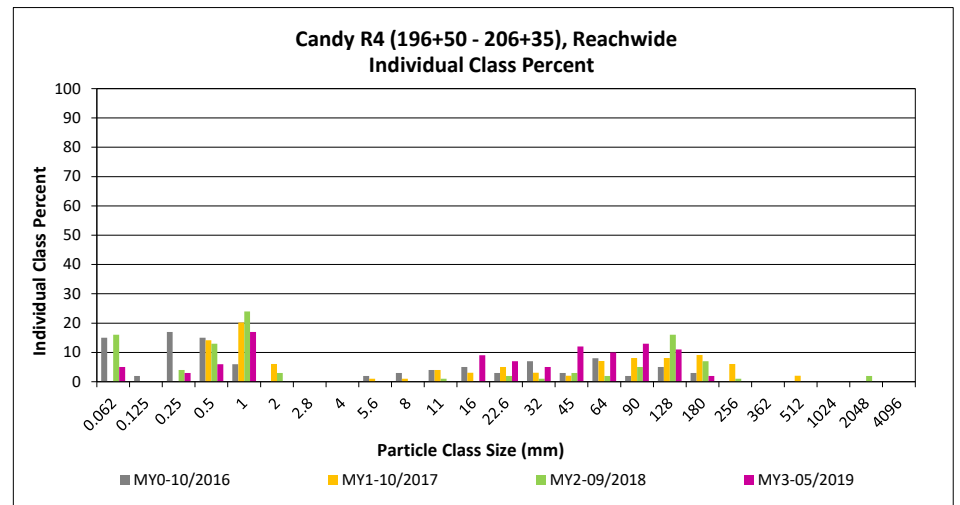
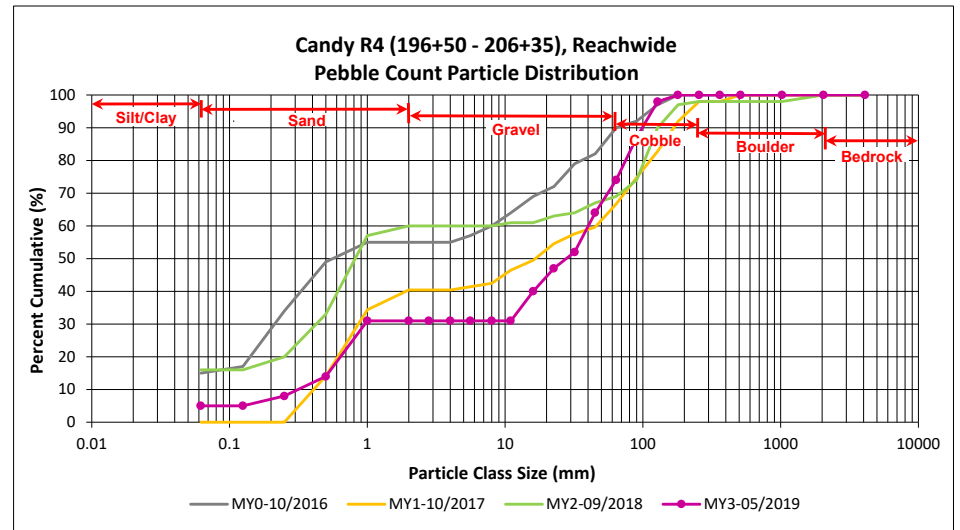
DMS Project No. 96315

Monitoring Year 3 - 2019

**Candy R4 (196+50 - 206+35), Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		5	5	5	5
<b>SAND</b>	Very fine	0.062	0.125					5	5
	Fine	0.125	0.250		3	3	3	8	8
	Medium	0.25	0.50		6	6	6	14	14
	Coarse	0.5	1.0	1	16	17	17	31	31
	Very Coarse	1.0	2.0					31	31
<b>GRAVEL</b>	Very Fine	2.0	2.8					31	31
	Very Fine	2.8	4.0					31	31
	Fine	4.0	5.6					31	31
	Fine	5.6	8.0					31	31
	Medium	8.0	11.0					31	31
	Medium	11.0	16.0	4	5	9	9	40	40
	Coarse	16.0	22.6	5	2	7	7	47	47
	Coarse	22.6	32	5		5	5	52	52
	Very Coarse	32	45	6	6	12	12	64	64
	Very Coarse	45	64	6	4	10	10	74	74
<b>COBBLE</b>	Small	64	90	10	3	13	13	87	87
	Small	90	128	11		11	11	98	98
	Large	128	180	2		2	2	100	100
	Large	180	256					100	100
<b>BOULDER</b>	Small	256	362					100	100
	Small	362	512					100	100
	Medium	512	1024					100	100
	Large/Very Large	1024	2048					100	100
<b>BEDROCK</b>	Bedrock	2048	>2048					100	100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	0.5
D <sub>35</sub> =	13.0
D <sub>50</sub> =	27.8
D <sub>84</sub> =	83.2
D <sub>95</sub> =	116.3
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

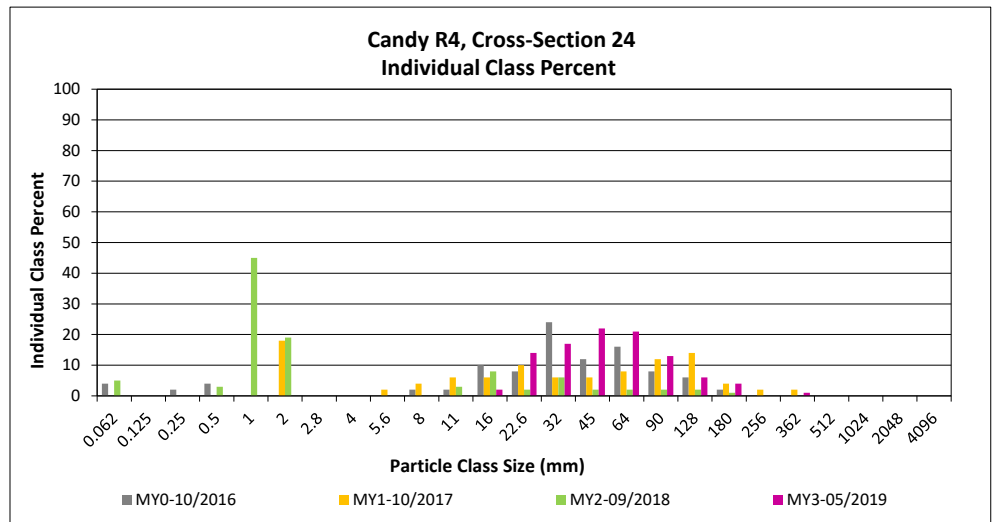
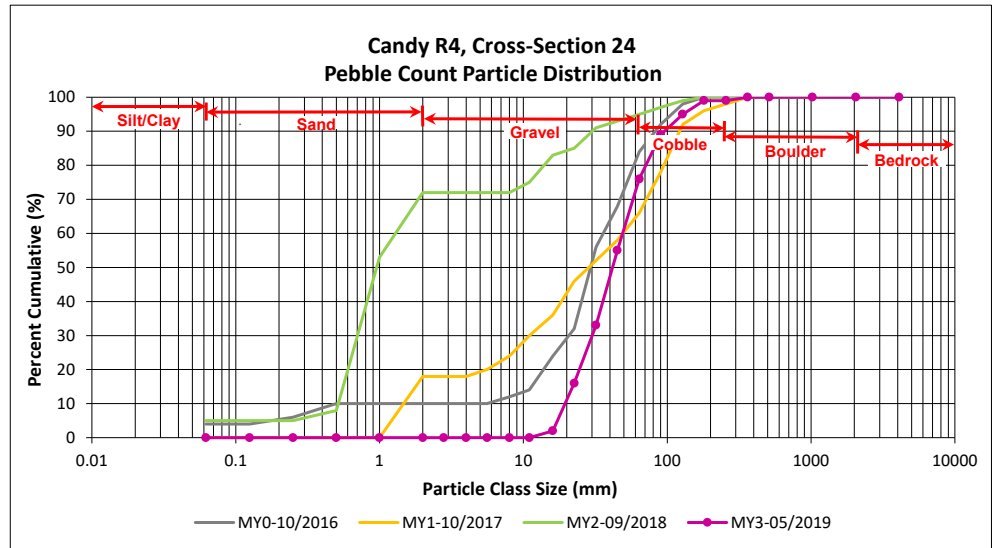
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R4, Cross-Section 24

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0			0
	Very Coarse	1.0	2.0			0
<b>GRAVEL</b>	Very Fine	2.0	2.8			0
	Very Fine	2.8	4.0			0
	Fine	4.0	5.6			0
	Fine	5.6	8.0			0
	Medium	8.0	11.0			0
	Medium	11.0	16.0	2	2	2
	Coarse	16.0	22.6	14	14	16
	Coarse	22.6	32	17	17	33
	Very Coarse	32	45	22	22	55
	Very Coarse	45	64	21	21	76
<b>COBBLE</b>	Small	64	90	13	13	89
	Small	90	128	6	6	95
	Large	128	180	4	4	99
	Large	180	256			99
<b>BOULDER</b>	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 24 Channel materials (mm)	
D <sub>16</sub> =	22.6
D <sub>35</sub> =	33.0
D <sub>50</sub> =	41.6
D <sub>84</sub> =	78.9
D <sub>95</sub> =	128.0
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

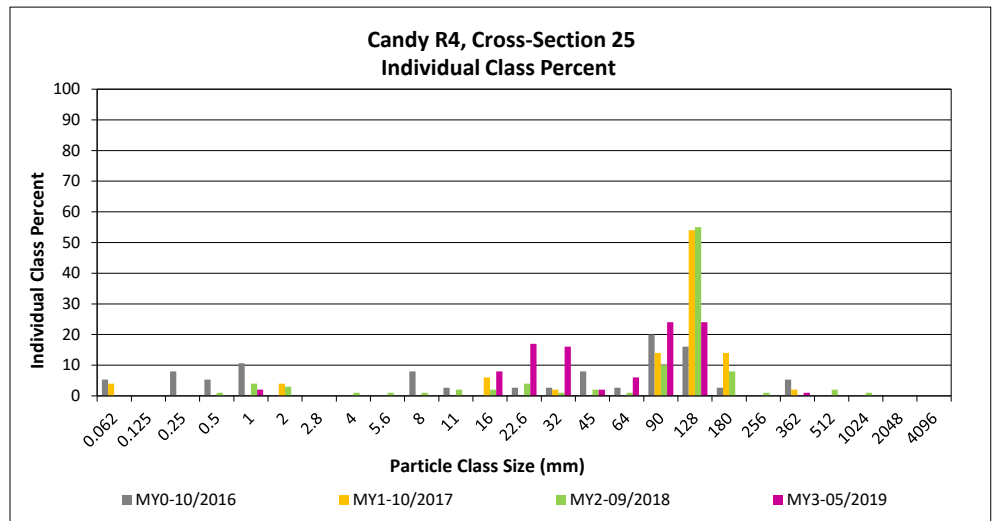
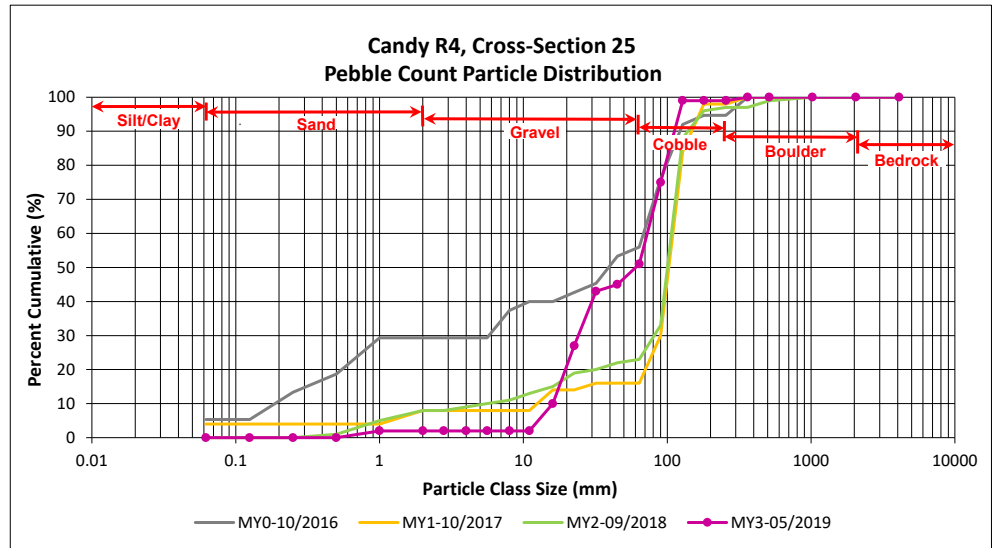
DMS Project No. 96315

Monitoring Year 3 - 2019

Candy R4, Cross-Section 25

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0	2	2	2
	Very Coarse	1.0	2.0			2
<b>GRAVEL</b>	Very Fine	2.0	2.8			2
	Very Fine	2.8	4.0			2
	Fine	4.0	5.6			2
	Fine	5.6	8.0			2
	Medium	8.0	11.0			2
	Medium	11.0	16.0	8	8	10
	Coarse	16.0	22.6	17	17	27
	Coarse	22.6	32	16	16	43
	Very Coarse	32	45	2	2	45
	Very Coarse	45	64	6	6	51
<b>COBBLE</b>	Small	64	90	24	24	75
	Small	90	128	24	24	99
	Large	128	180			99
	Large	180	256			99
<b>BOULDER</b>	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 25 Channel materials (mm)	
D <sub>16</sub> =	18.1
D <sub>35</sub> =	26.9
D <sub>50</sub> =	60.4
D <sub>84</sub> =	102.7
D <sub>95</sub> =	120.7
D <sub>100</sub> =	362.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

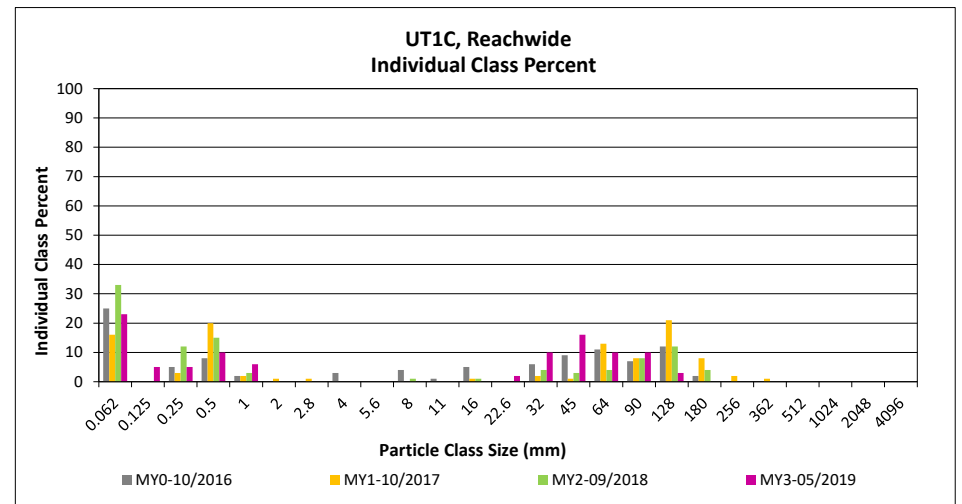
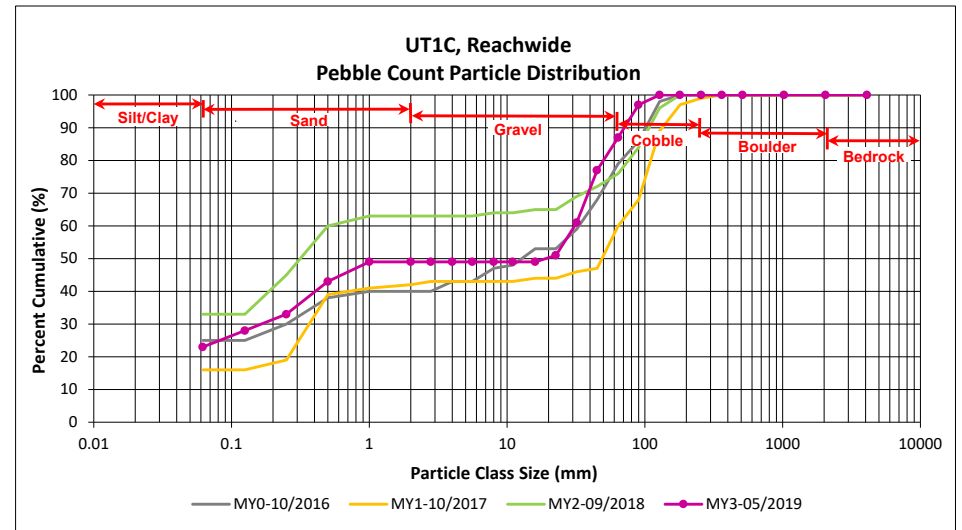
DMS Project No. 96315

Monitoring Year 3 - 2019

#### UT1C, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	2	21	23	23	23
<b>SAND</b>	Very fine	0.062	0.125		5	5	5	5	28
	Fine	0.125	0.250		5	5	5	5	33
	Medium	0.25	0.50		10	10	10	10	43
	Coarse	0.5	1.0		6	6	6	6	49
	Very Coarse	1.0	2.0						49
<b>GRAVEL</b>	Very Fine	2.0	2.8						49
	Very Fine	2.8	4.0						49
	Fine	4.0	5.6						49
	Fine	5.6	8.0						49
	Medium	8.0	11.0						49
	Medium	11.0	16.0						49
	Coarse	16.0	22.6	2		2	2	2	51
	Coarse	22.6	32	9	1	10	10	10	61
	Very Coarse	32	45	14	2	16	16	16	77
	Very Coarse	45	64	10		10	10	10	87
<b>COBBLE</b>	Small	64	90	10		10	10	10	97
	Small	90	128	3		3	3	3	100
	Large	128	180						100
<b>BOULDER</b>	Large	180	256						100
	Small	256	362						100
<b>BOULDER</b>	Small	362	512						100
	Medium	512	1024						100
	Large/Very Large	1024	2048						100
<b>BEDROCK</b>	Bedrock	2048	>2048						100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.3
D <sub>50</sub> =	19.0
D <sub>84</sub> =	57.6
D <sub>95</sub> =	84.1
D <sub>100</sub> =	128.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

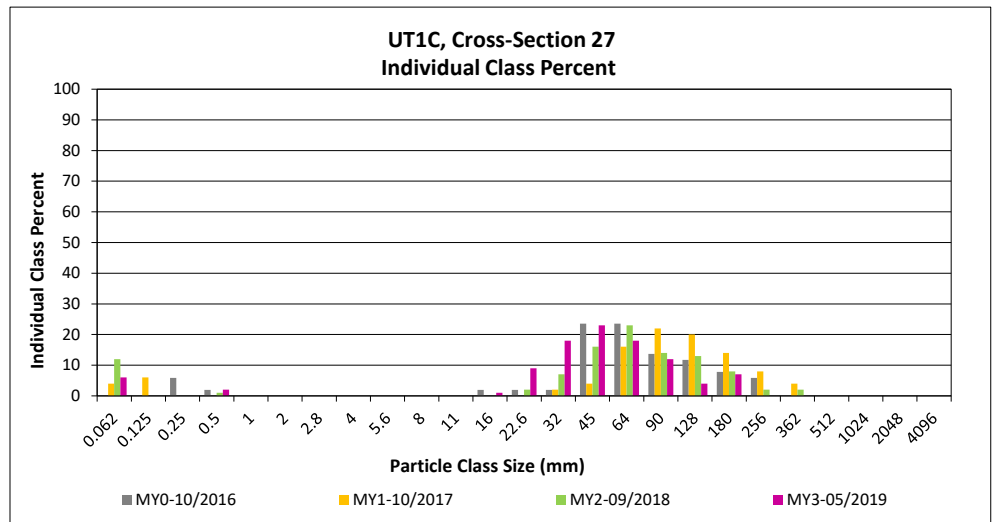
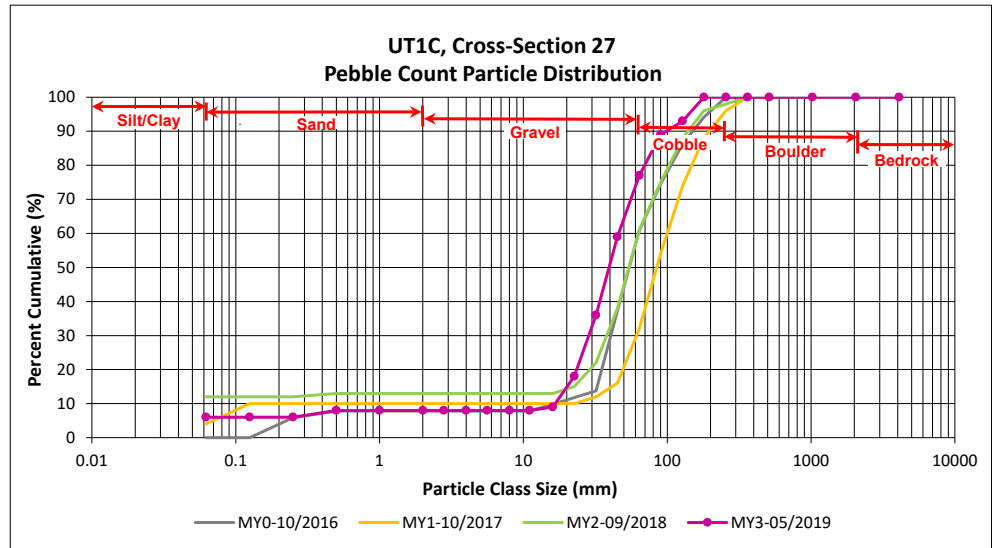
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1C, Cross-Section 27**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	6	6	6
<b>SAND</b>	Very fine	0.062	0.125			6
	Fine	0.125	0.250			6
	Medium	0.25	0.50	2	2	8
	Coarse	0.5	1.0			8
	Very Coarse	1.0	2.0			8
<b>GRAVEL</b>	Very Fine	2.0	2.8			8
	Very Fine	2.8	4.0			8
	Fine	4.0	5.6			8
	Fine	5.6	8.0			8
	Medium	8.0	11.0			8
	Medium	11.0	16.0	1	1	9
	Coarse	16.0	22.6	9	9	18
	Coarse	22.6	32	18	18	36
	Very Coarse	32	45	23	23	59
	Very Coarse	45	64	18	18	77
<b>COBBLE</b>	Small	64	90	12	12	89
	Small	90	128	4	4	93
	Large	128	180	7	7	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 27 Channel materials (mm)	
D <sub>16</sub> =	20.9
D <sub>35</sub> =	31.4
D <sub>50</sub> =	39.4
D <sub>84</sub> =	78.1
D <sub>95</sub> =	141.1
D <sub>100</sub> =	180.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

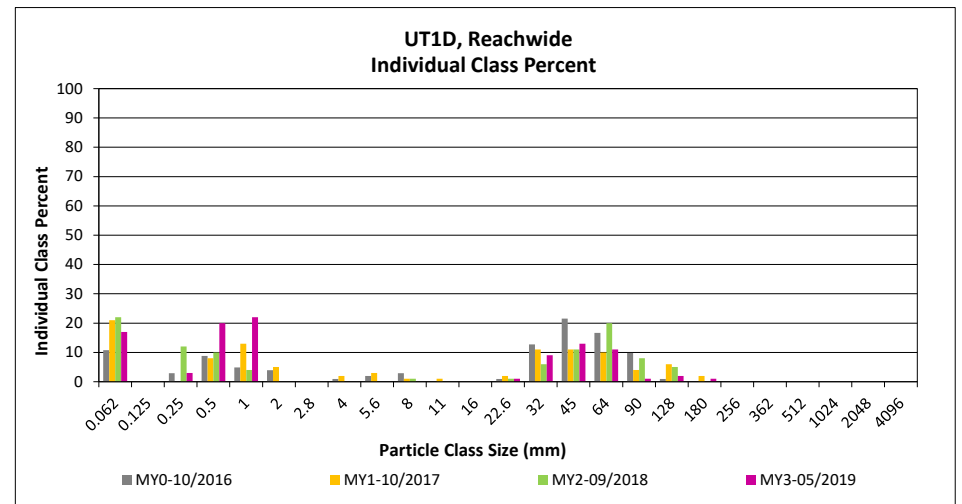
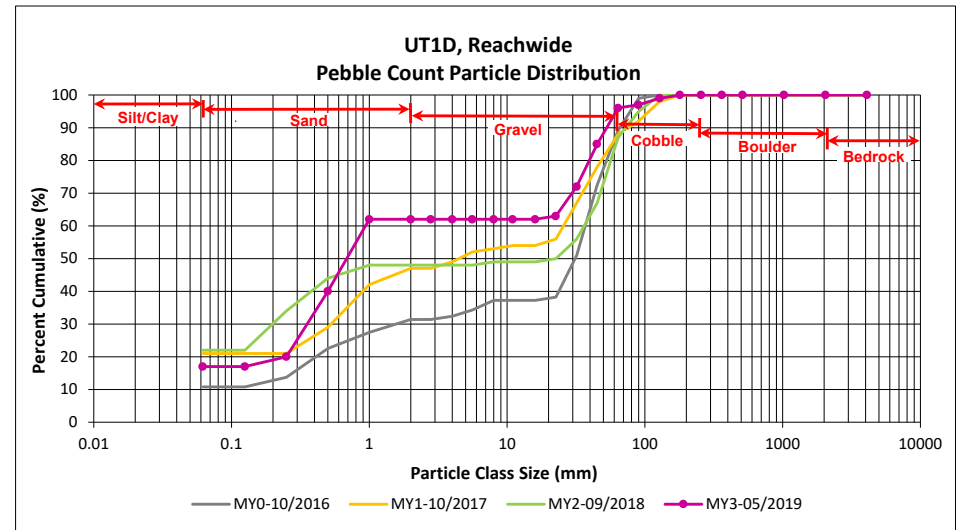
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1D, Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	2	15	17	17
<b>SAND</b>	Very fine	0.062	0.125					17
	Fine	0.125	0.250		3	3	3	20
	Medium	0.25	0.50	5	15	20	20	40
	Coarse	0.5	1.0	10	12	22	22	62
	Very Coarse	1.0	2.0					62
<b>GRAVEL</b>	Very Fine	2.0	2.8					62
	Very Fine	2.8	4.0					62
	Fine	4.0	5.6					62
	Fine	5.6	8.0					62
	Medium	8.0	11.0					62
	Medium	11.0	16.0					62
	Coarse	16.0	22.6	1		1	1	63
	Coarse	22.6	32	7	2	9	9	72
	Very Coarse	32	45	11	2	13	13	85
	Very Coarse	45	64	10	1	11	11	96
<b>COBBLE</b>	Small	64	90	1		1	1	97
	Small	90	128	2		2	2	99
	Large	128	180	1		1	1	100
	Large	180	256					100
<b>BOULDER</b>	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.4
D <sub>50</sub> =	0.7
D <sub>84</sub> =	43.8
D <sub>95</sub> =	62.0
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

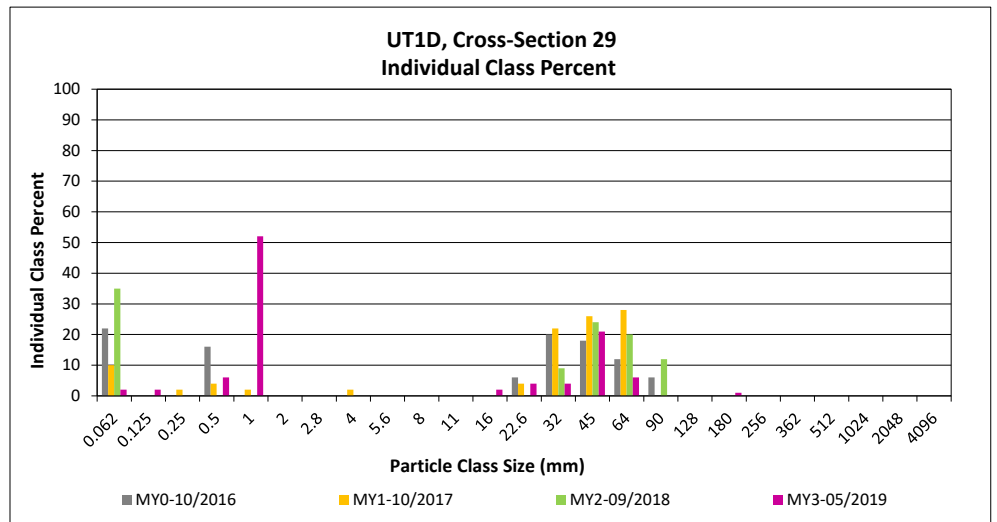
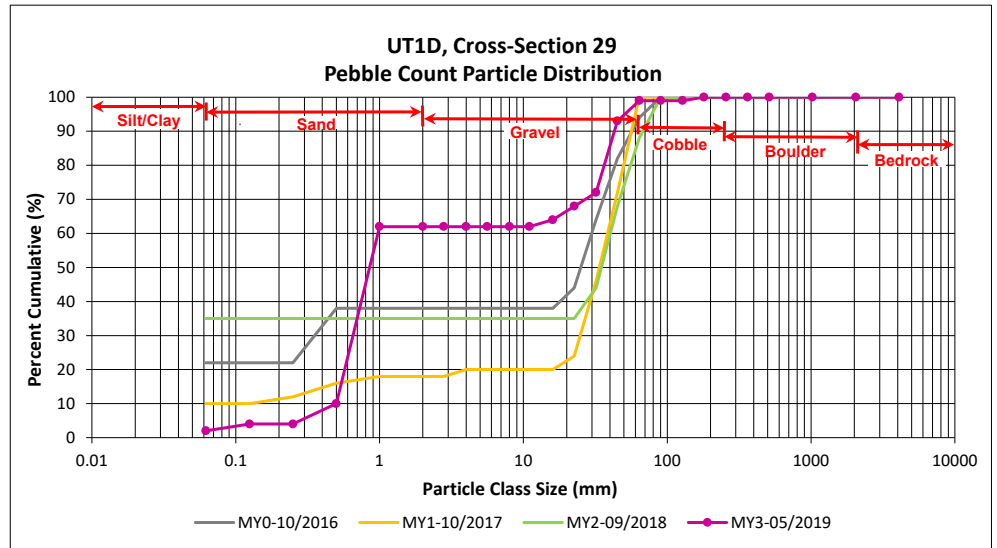
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT1D, Cross-Section 29**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	2	2	2
<b>SAND</b>	Very fine	0.062	0.125	2	2	4
	Fine	0.125	0.250			4
	Medium	0.25	0.50	6	6	10
	Coarse	0.5	1.0	52	52	62
	Very Coarse	1.0	2.0			62
<b>GRAVEL</b>	Very Fine	2.0	2.8			62
	Very Fine	2.8	4.0			62
	Fine	4.0	5.6			62
	Fine	5.6	8.0			62
	Medium	8.0	11.0			62
	Medium	11.0	16.0	2	2	64
	Coarse	16.0	22.6	4	4	68
	Coarse	22.6	32	4	4	72
	Very Coarse	32	45	21	21	93
	Very Coarse	45	64	6	6	99
<b>COBBLE</b>	Small	64	90			99
	Small	90	128			99
	Large	128	180	1	1	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 29 Channel materials (mm)	
D <sub>16</sub> =	0.5
D <sub>35</sub> =	0.7
D <sub>50</sub> =	0.9
D <sub>84</sub> =	38.9
D <sub>95</sub> =	50.6
D <sub>100</sub> =	180.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

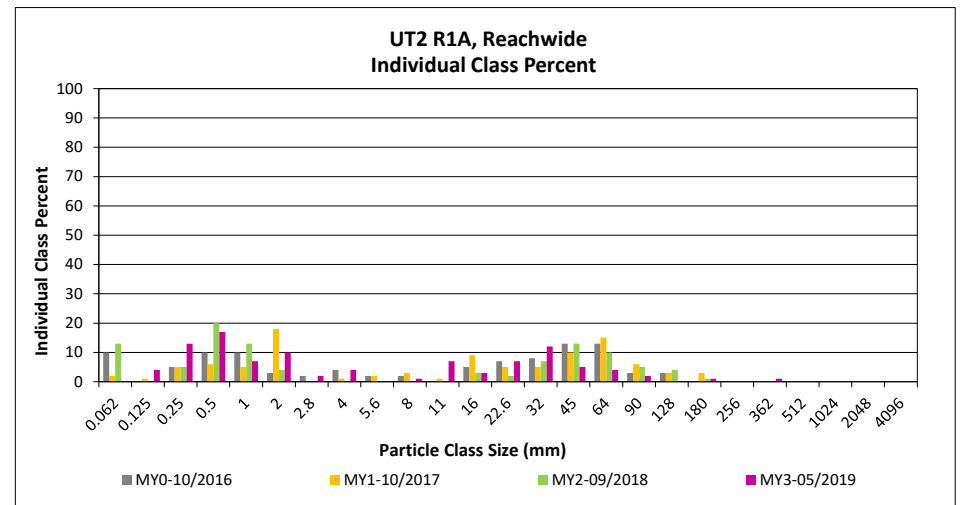
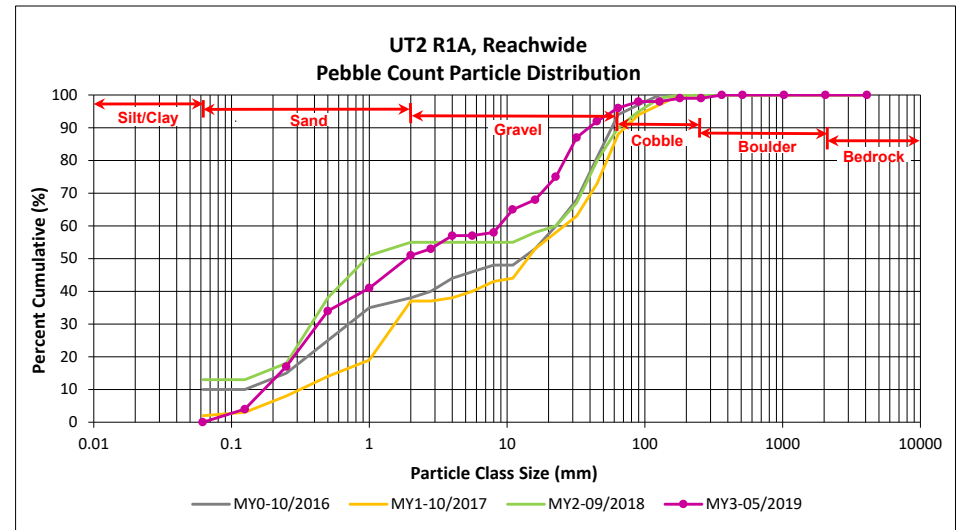
DMS Project No. 96315

Monitoring Year 3 - 2019

#### UT2 R1A, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062				0
<b>SAND</b>	Very fine	0.062	0.125		4	4	4	4
	Fine	0.125	0.250	3	10	13	13	17
	Medium	0.25	0.50	5	12	17	17	34
	Coarse	0.5	1.0	1	6	7	7	41
	Very Coarse	1.0	2.0	3	7	10	10	51
<b>GRAVEL</b>	Very Fine	2.0	2.8		2	2	2	53
	Very Fine	2.8	4.0	2	2	4	4	57
	Fine	4.0	5.6					57
	Fine	5.6	8.0	1		1	1	58
	Medium	8.0	11.0	3	4	7	7	65
	Medium	11.0	16.0	3		3	3	68
	Coarse	16.0	22.6	6	1	7	7	75
	Coarse	22.6	32	11	1	12	12	87
	Very Coarse	32	45	5		5	5	92
	Very Coarse	45	64	4		4	4	96
<b>COBBLE</b>	Small	64	90	2		2	2	98
	Small	90	128					98
	Large	128	180	1		1	1	99
	Large	180	256					99
<b>BOULDER</b>	Small	256	362		1	1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide	
Channel materials (mm)	
D <sub>16</sub> =	0.2
D <sub>35</sub> =	0.6
D <sub>50</sub> =	1.9
D <sub>84</sub> =	29.3
D <sub>95</sub> =	58.6
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

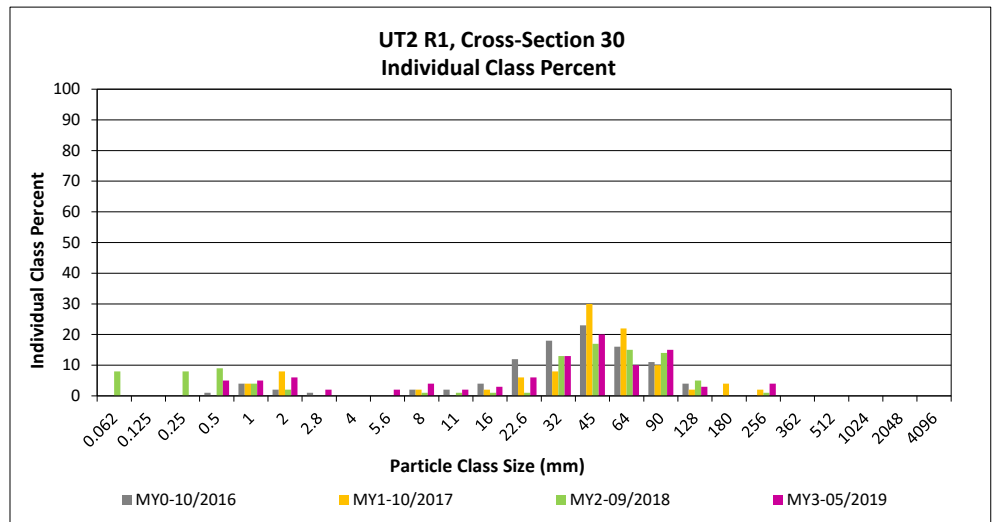
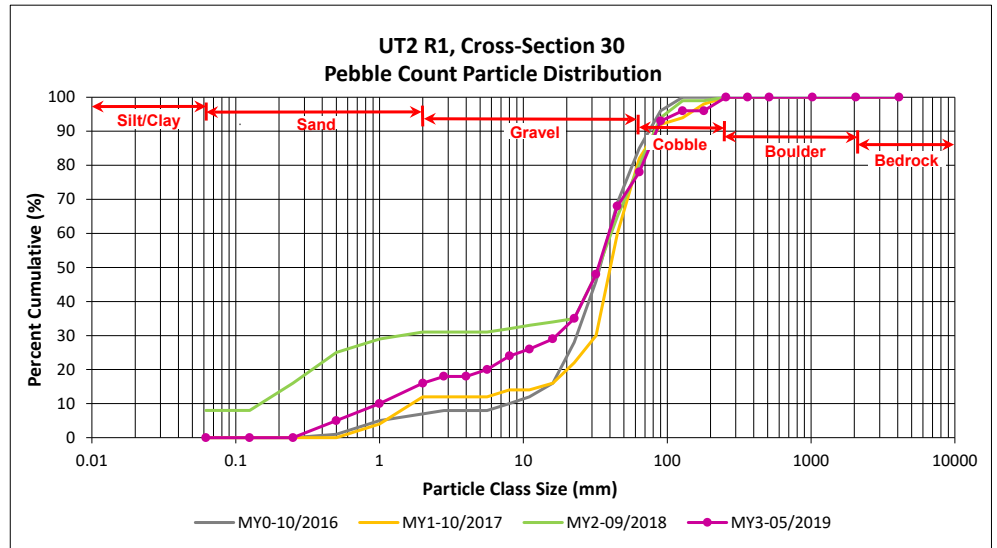
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 R1, Cross-Section 30**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50	5	5	5
	Coarse	0.5	1.0	5	5	10
	Very Coarse	1.0	2.0	6	6	16
<b>GRAVEL</b>	Very Fine	2.0	2.8	2	2	18
	Very Fine	2.8	4.0			18
	Fine	4.0	5.6	2	2	20
	Fine	5.6	8.0	4	4	24
	Medium	8.0	11.0	2	2	26
	Medium	11.0	16.0	3	3	29
	Coarse	16.0	22.6	6	6	35
	Coarse	22.6	32	13	13	48
	Very Coarse	32	45	20	20	68
	Very Coarse	45	64	10	10	78
<b>COBBLE</b>	Small	64	90	15	15	93
	Small	90	128	3	3	96
	Large	128	180			96
	Large	180	256	4	4	100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 30 Channel materials (mm)	
D <sub>16</sub> =	2.0
D <sub>35</sub> =	22.6
D <sub>50</sub> =	33.1
D <sub>84</sub> =	73.4
D <sub>95</sub> =	113.8
D <sub>100</sub> =	256.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

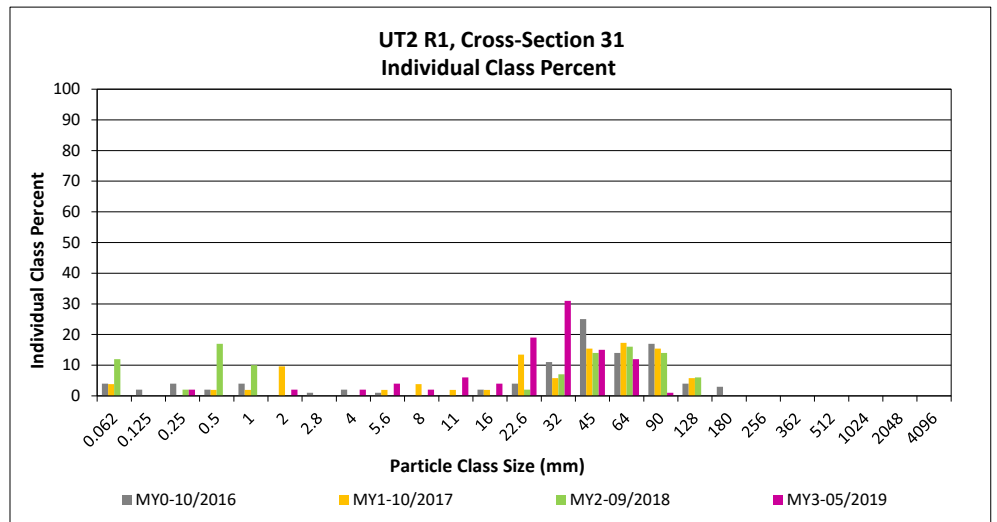
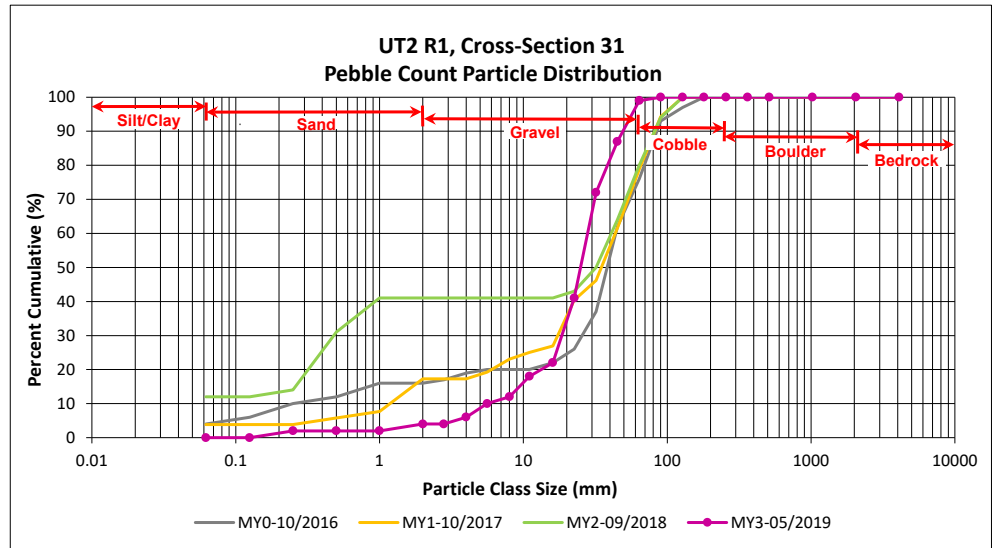
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 R1, Cross-Section 31**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250	2	2	2
	Medium	0.25	0.50			2
	Coarse	0.5	1.0			2
	Very Coarse	1.0	2.0	2	2	4
<b>GRAVEL</b>	Very Fine	2.0	2.8			4
	Very Fine	2.8	4.0	2	2	6
	Fine	4.0	5.6	4	4	10
	Fine	5.6	8.0	2	2	12
	Medium	8.0	11.0	6	6	18
	Medium	11.0	16.0	4	4	22
	Coarse	16.0	22.6	19	19	41
	Coarse	22.6	32	31	31	72
	Very Coarse	32	45	15	15	87
	Very Coarse	45	64	12	12	99
<b>COBBLE</b>	Small	64	90	1	1	100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 31 Channel materials (mm)	
D <sub>16</sub> =	9.9
D <sub>35</sub> =	20.3
D <sub>50</sub> =	25.0
D <sub>84</sub> =	42.0
D <sub>95</sub> =	56.9
D <sub>100</sub> =	90.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

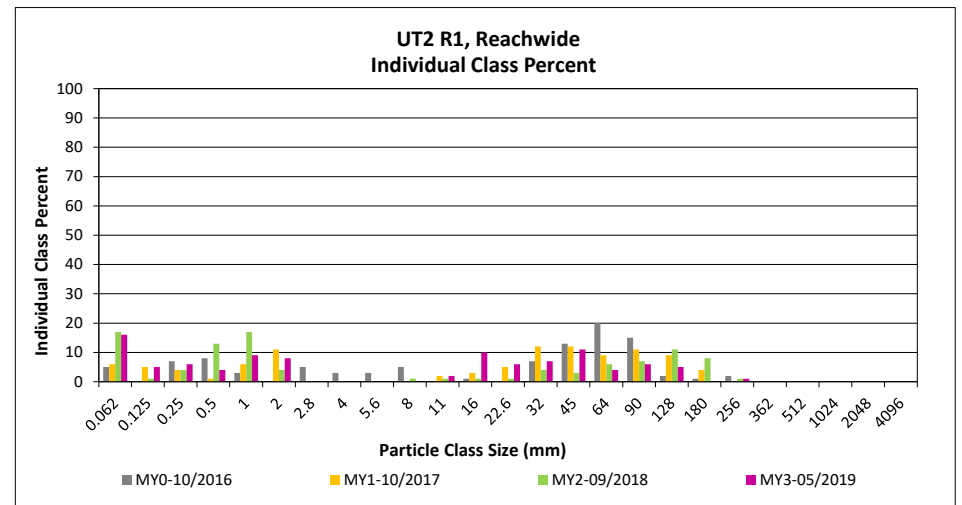
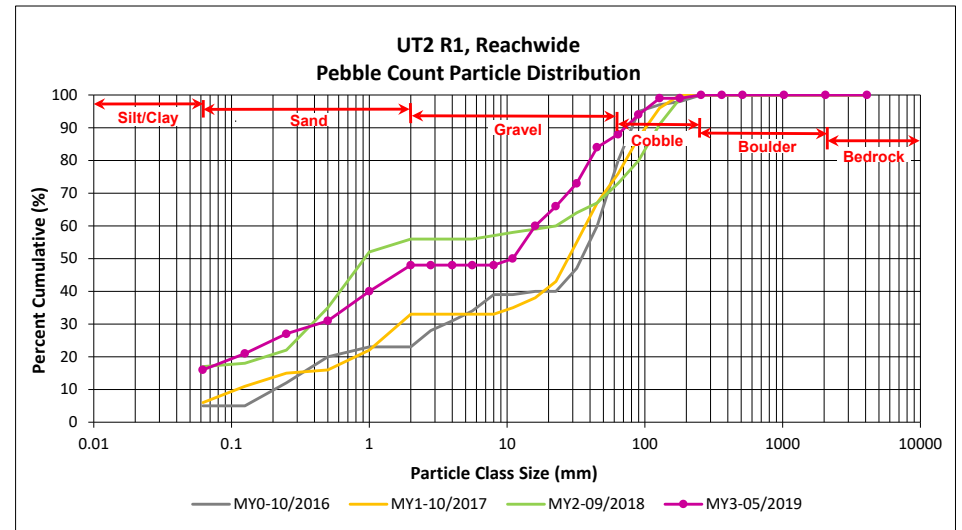
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 R1, Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	1	15	16	16
<b>SAND</b>	Very fine	0.062	0.125		5	5	5	21
	Fine	0.125	0.250	1	5	6	6	27
	Medium	0.25	0.50		4	4	4	31
	Coarse	0.5	1.0		9	9	9	40
	Very Coarse	1.0	2.0	2	6	8	8	48
<b>GRAVEL</b>	Very Fine	2.0	2.8					48
	Very Fine	2.8	4.0					48
	Fine	4.0	5.6					48
	Fine	5.6	8.0					48
	Medium	8.0	11.0	2		2	2	50
	Medium	11.0	16.0	7	3	10	10	60
	Coarse	16.0	22.6	6		6	6	66
	Coarse	22.6	32	7		7	7	73
	Very Coarse	32	45	11		11	11	84
	Very Coarse	45	64	3	1	4	4	88
<b>COBBLE</b>	Small	64	90	5	1	6	6	94
	Small	90	128	4	1	5	5	99
	Large	128	180					99
	Large	180	256	1		1	1	100
<b>BOULDER</b>	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.7
D <sub>50</sub> =	11.0
D <sub>84</sub> =	45.0
D <sub>95</sub> =	96.6
D <sub>100</sub> =	256.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

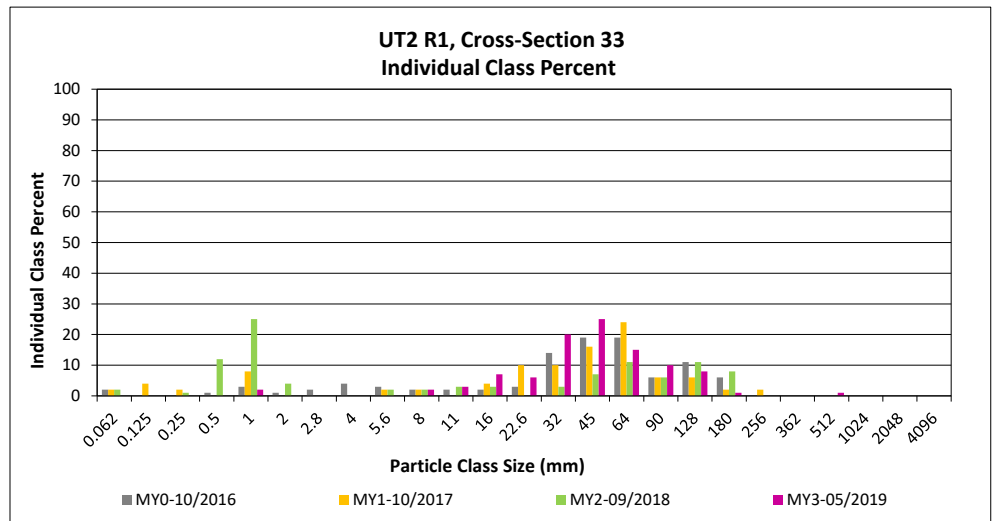
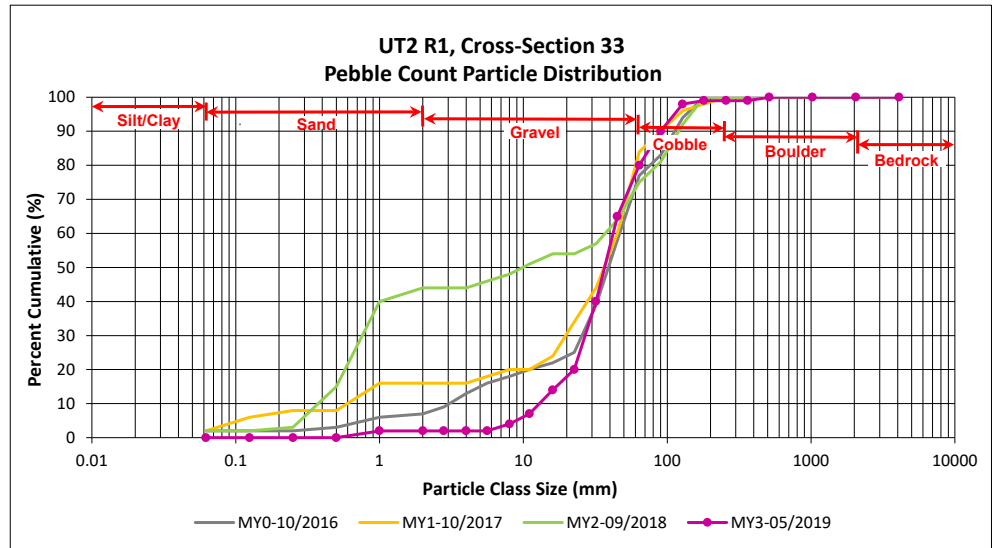
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 R1, Cross-Section 33**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0	2	2	2
	Very Coarse	1.0	2.0			2
<b>GRAVEL</b>	Very Fine	2.0	2.8			2
	Very Fine	2.8	4.0			2
	Fine	4.0	5.6			2
	Fine	5.6	8.0	2	2	4
	Medium	8.0	11.0	3	3	7
	Medium	11.0	16.0	7	7	14
	Coarse	16.0	22.6	6	6	20
	Coarse	22.6	32	20	20	40
	Very Coarse	32	45	25	25	65
	Very Coarse	45	64	15	15	80
<b>COBBLE</b>	Small	64	90	10	10	90
	Small	90	128	8	8	98
	Large	128	180	1	1	99
	Large	180	256			99
<b>BOULDER</b>	Small	256	362			99
	Small	362	512	1	1	100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 33 Channel materials (mm)	
D <sub>16</sub> =	18.0
D <sub>35</sub> =	29.3
D <sub>50</sub> =	36.7
D <sub>84</sub> =	73.4
D <sub>95</sub> =	112.2
D <sub>100</sub> =	512.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

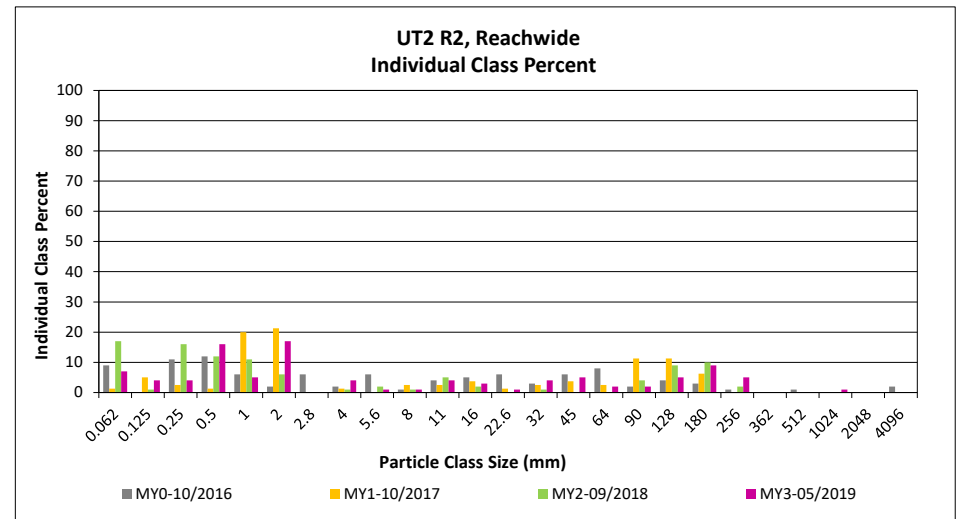
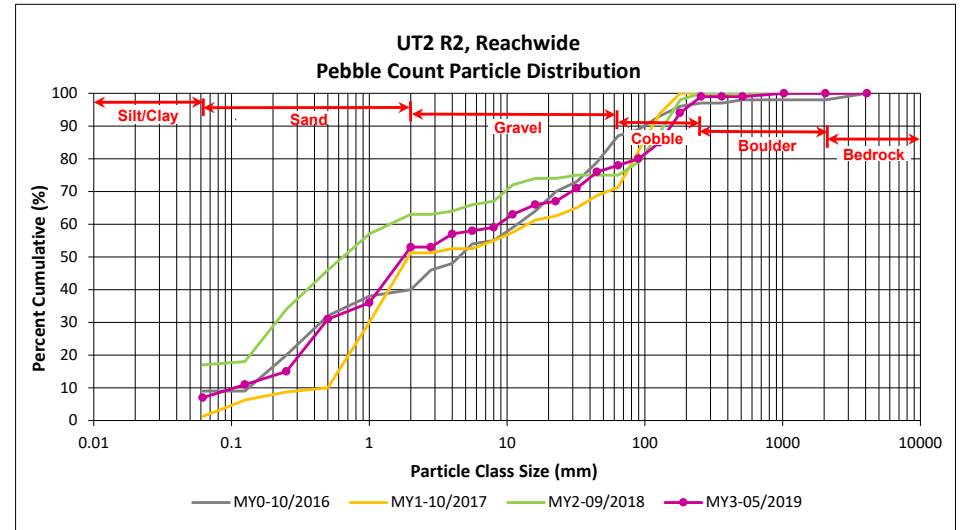
DMS Project No. 96315

Monitoring Year 3 - 2019

#### UT2 R2, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062		7	7	7	7
<b>SAND</b>	Very fine	0.062	0.125		4	4	4	11	
	Fine	0.125	0.250		4	4	4	15	
	Medium	0.25	0.50	2	14	16	16	31	
	Coarse	0.5	1.0		5	5	5	36	
	Very Coarse	1.0	2.0	8	9	17	17	53	
<b>GRAVEL</b>	Very Fine	2.0	2.8					53	
	Very Fine	2.8	4.0	1	3	4	4	57	
	Fine	4.0	5.6		1	1	1	58	
	Fine	5.6	8.0	1		1	1	59	
	Medium	8.0	11.0	3	1	4	4	63	
	Medium	11.0	16.0	3		3	3	66	
	Coarse	16.0	22.6	1		1	1	67	
	Coarse	22.6	32	4		4	4	71	
	Very Coarse	32	45	4	1	5	5	76	
	Very Coarse	45	64	2		2	2	78	
<b>COBBLE</b>	Small	64	90	2		2	2	80	
	Small	90	128	5		5	5	85	
	Large	128	180	8	1	9	9	94	
<b>BOULDER</b>	Large	180	256	5		5	5	99	
	Small	256	362					99	
<b>BECK</b>	Small	362	512					99	
	Medium	512	1024	1		1	1	100	
<b>BECK</b>	Large/Very Large	1024	2048					100	
	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	0.3
D <sub>35</sub> =	0.9
D <sub>50</sub> =	1.8
D <sub>84</sub> =	119.3
D <sub>95</sub> =	193.1
D <sub>100</sub> =	1024.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

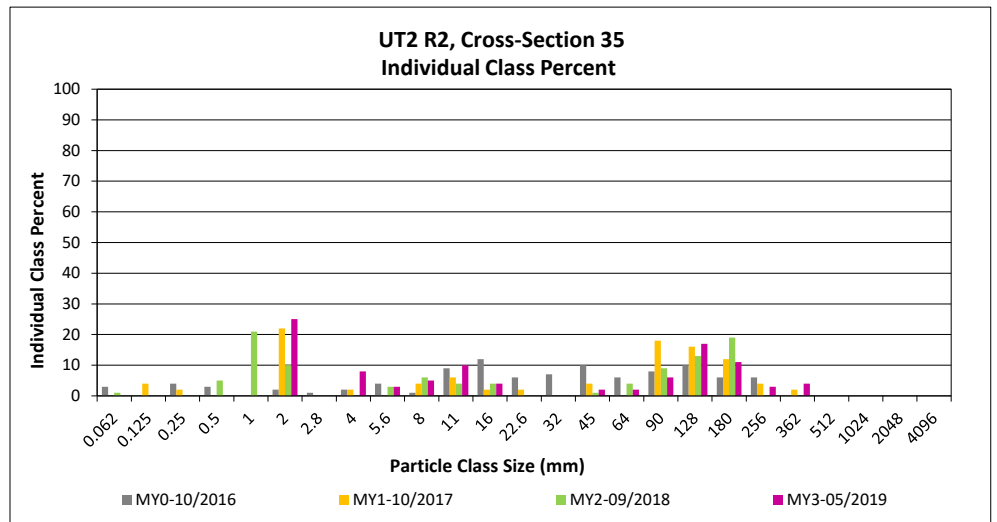
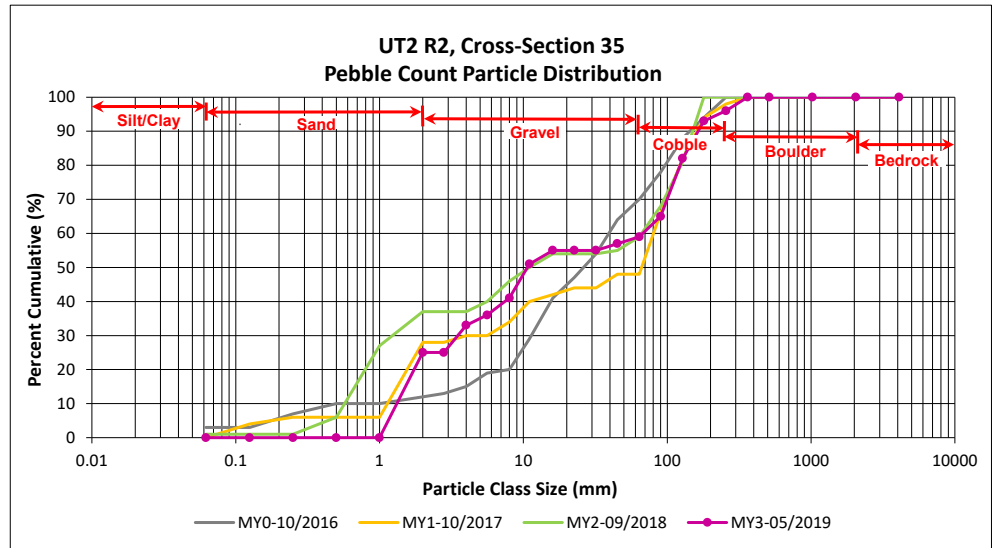
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT2 R2, Cross-Section 35**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062			0
<b>SAND</b>	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50			0
	Coarse	0.5	1.0			0
	Very Coarse	1.0	2.0	25	25	25
<b>GRAVEL</b>	Very Fine	2.0	2.8	8	8	33
	Very Fine	2.8	4.0	3	3	36
	Fine	4.0	5.6	5	5	41
	Fine	5.6	8.0	10	10	51
	Medium	8.0	11.0	4	4	55
	Medium	11.0	16.0	4	4	55
	Coarse	16.0	22.6	2	2	57
	Coarse	22.6	32	2	2	57
	Very Coarse	32	45	2	2	59
	Very Coarse	45	64	2	2	59
<b>COBBLE</b>	Small	64	90	6	6	65
	Small	90	128	17	17	82
	Large	128	180	11	11	93
	Large	180	256	3	3	96
<b>BOULDER</b>	Small	256	362	4	4	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 35 Channel materials (mm)	
D <sub>16</sub> =	1.6
D <sub>35</sub> =	5.0
D <sub>50</sub> =	10.7
D <sub>84</sub> =	136.2
D <sub>95</sub> =	227.6
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

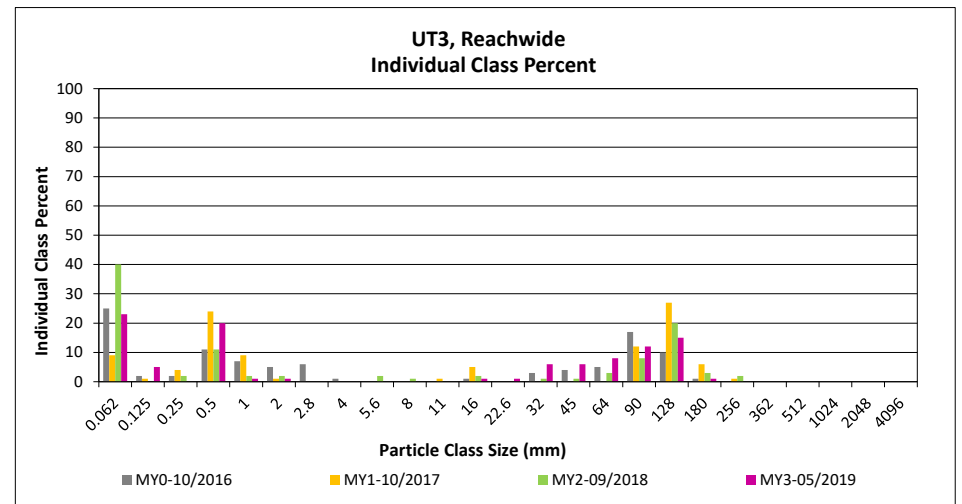
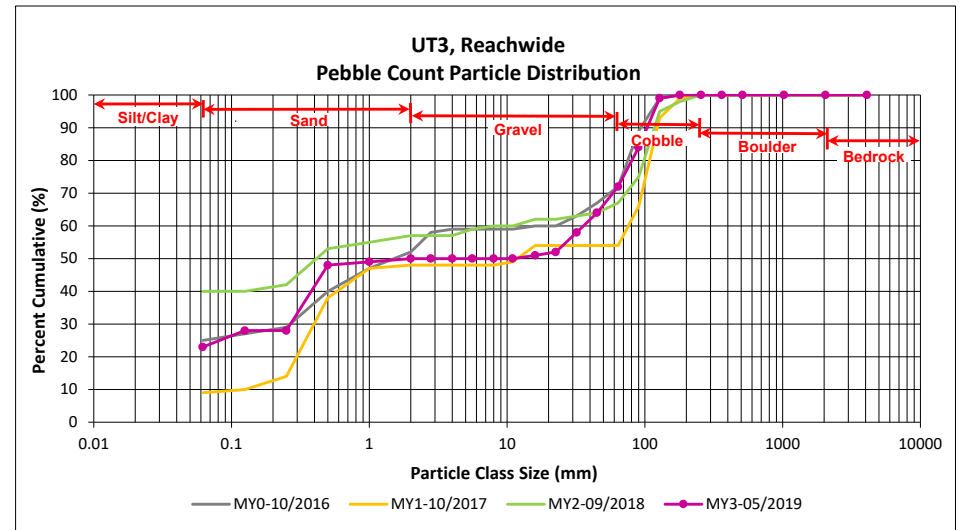
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT3, Reachwide**

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	1	22	23	23	23
<b>SAND</b>	Very fine	0.062	0.125		5	5	5	28	28
	Fine	0.125	0.250						28
	Medium	0.25	0.50		20	20	20	48	48
	Coarse	0.5	1.0	1		1	1	49	49
	Very Coarse	1.0	2.0	1		1	1	50	50
<b>GRAVEL</b>	Very Fine	2.0	2.8					50	50
	Very Fine	2.8	4.0					50	50
	Fine	4.0	5.6					50	50
	Fine	5.6	8.0					50	50
	Medium	8.0	11.0					50	50
	Medium	11.0	16.0	1		1	1	51	51
	Coarse	16.0	22.6	1		1	1	52	52
	Coarse	22.6	32	5	1	6	6	58	58
	Very Coarse	32	45	6		6	6	64	64
	Very Coarse	45	64	7	1	8	8	72	72
<b>COBBLE</b>	Small	64	90	12		12	12	84	84
	Small	90	128	14	1	15	15	99	99
	Large	128	180	1		1	1	100	100
	Large	180	256					100	100
<b>BOULDER</b>	Small	256	362					100	100
	Small	362	512					100	100
	Medium	512	1024					100	100
	Large/Very Large	1024	2048					100	100
<b>BEDROCK</b>	Bedrock	2048	>2048					100	100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.3
D <sub>50</sub> =	2.0
D <sub>84</sub> =	90.0
D <sub>95</sub> =	116.5
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

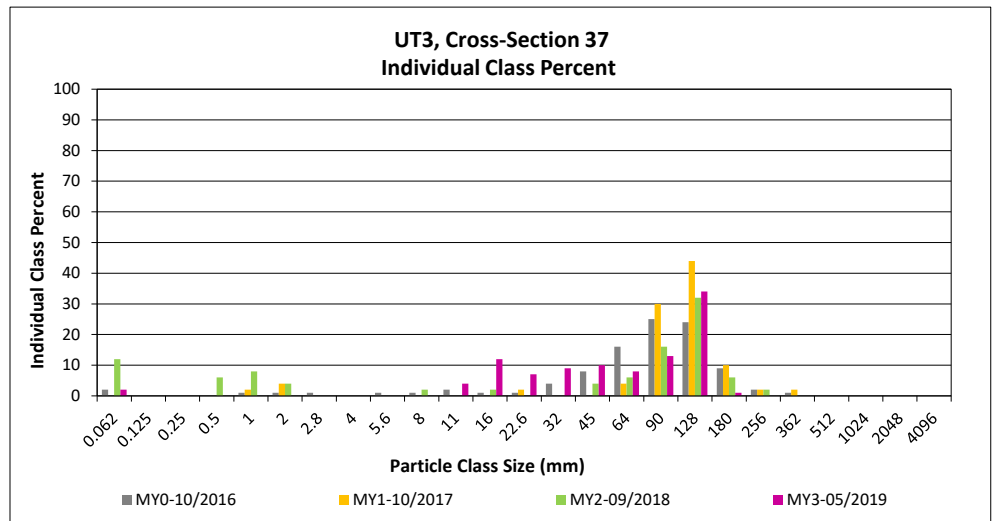
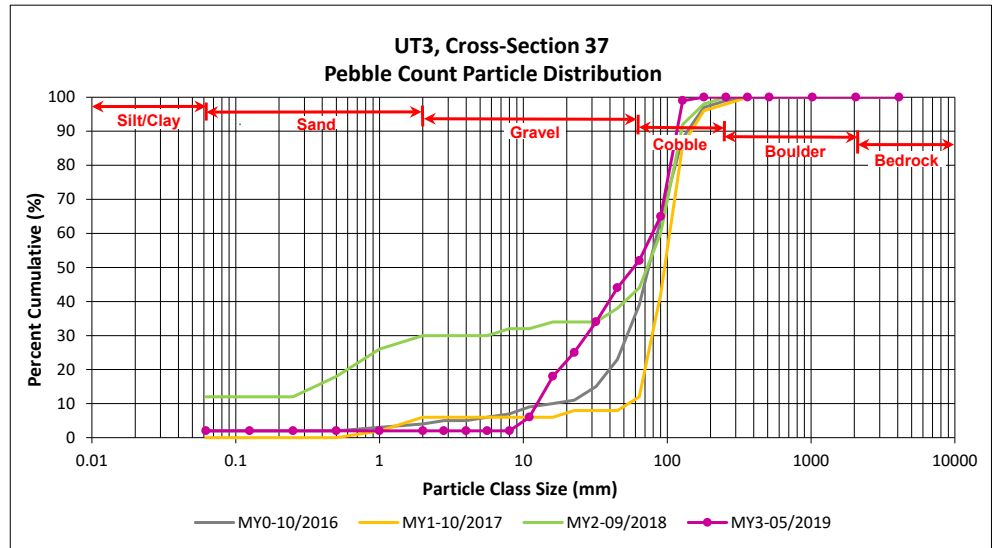
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT3, Cross-Section 37**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	2	2	2
<b>SAND</b>	Very fine	0.062	0.125			2
	Fine	0.125	0.250			2
	Medium	0.25	0.50			2
	Coarse	0.5	1.0			2
	Very Coarse	1.0	2.0			2
<b>GRAVEL</b>	Very Fine	2.0	2.8			2
	Very Fine	2.8	4.0			2
	Fine	4.0	5.6			2
	Fine	5.6	8.0			2
	Medium	8.0	11.0	4	4	6
	Medium	11.0	16.0	12	12	18
	Coarse	16.0	22.6	7	7	25
	Coarse	22.6	32	9	9	34
	Very Coarse	32	45	10	10	44
	Very Coarse	45	64	8	8	52
<b>COBBLE</b>	Small	64	90	13	13	65
	Small	90	128	34	34	99
	Large	128	180	1	1	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 37	
Channel materials (mm)	
D <sub>16</sub> =	15.0
D <sub>35</sub> =	33.1
D <sub>50</sub> =	58.6
D <sub>84</sub> =	109.6
D <sub>95</sub> =	122.8
D <sub>100</sub> =	180.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

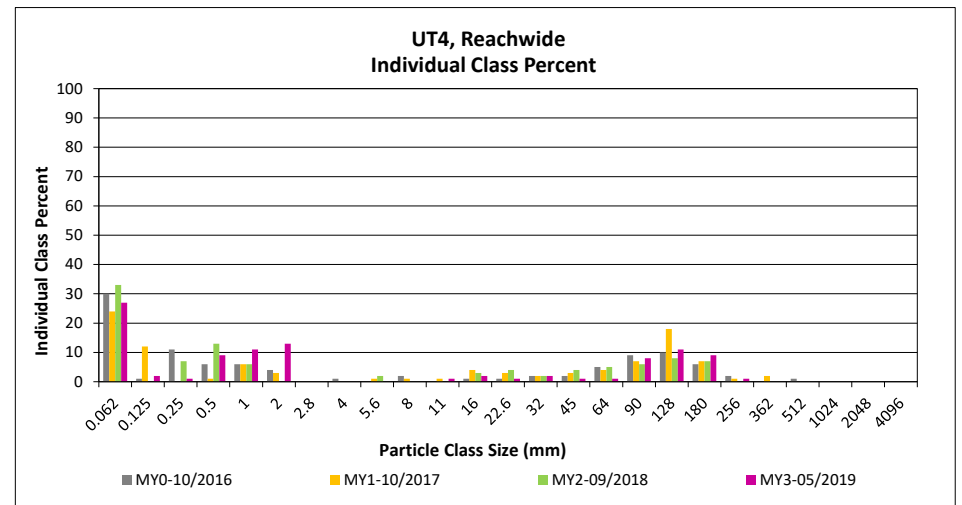
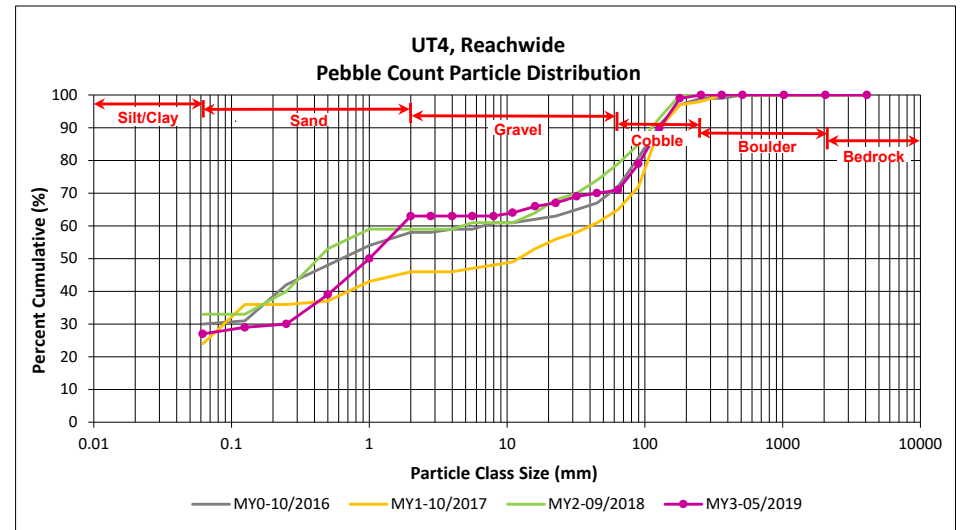
DMS Project No. 96315

Monitoring Year 3 - 2019

#### UT4, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary		
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative	
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	2	25	27	27	27
<b>SAND</b>	Very fine	0.062	0.125	1	1	2	2	29	
	Fine	0.125	0.250		1	1	1	30	
	Medium	0.25	0.50		9	9	9	39	
	Coarse	0.5	1.0	1	10	11	11	50	
	Very Coarse	1.0	2.0	9	4	13	13	63	
<b>GRAVEL</b>	Very Fine	2.0	2.8					63	
	Very Fine	2.8	4.0					63	
	Fine	4.0	5.6					63	
	Fine	5.6	8.0					63	
	Medium	8.0	11.0	1		1	1	64	
	Medium	11.0	16.0	2		2	2	66	
	Coarse	16.0	22.6	1		1	1	67	
	Coarse	22.6	32	2		2	2	69	
	Very Coarse	32	45	1		1	1	70	
	Very Coarse	45	64	1		1	1	71	
<b>COBBLE</b>	Small	64	90	8		8	8	79	
	Small	90	128	11		11	11	90	
	Large	128	180	9		9	9	99	
	Large	180	256	1		1	1	100	
<b>BOULDER</b>	Small	256	362					100	
	Small	362	512					100	
	Medium	512	1024					100	
	Large/Very Large	1024	2048					100	
<b>BEDROCK</b>	Bedrock	2048	>2048					100	
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>	

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.4
D <sub>50</sub> =	1.0
D <sub>84</sub> =	105.6
D <sub>95</sub> =	154.7
D <sub>100</sub> =	256.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

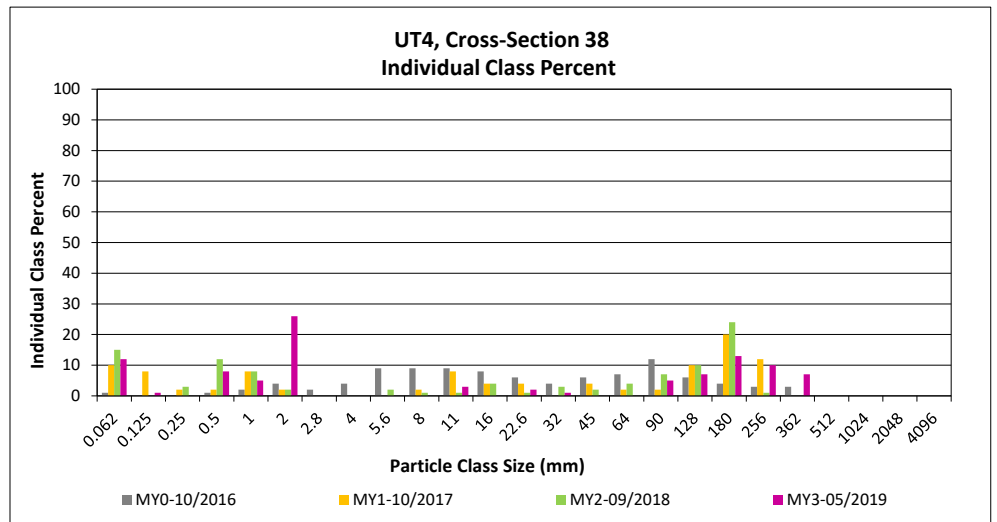
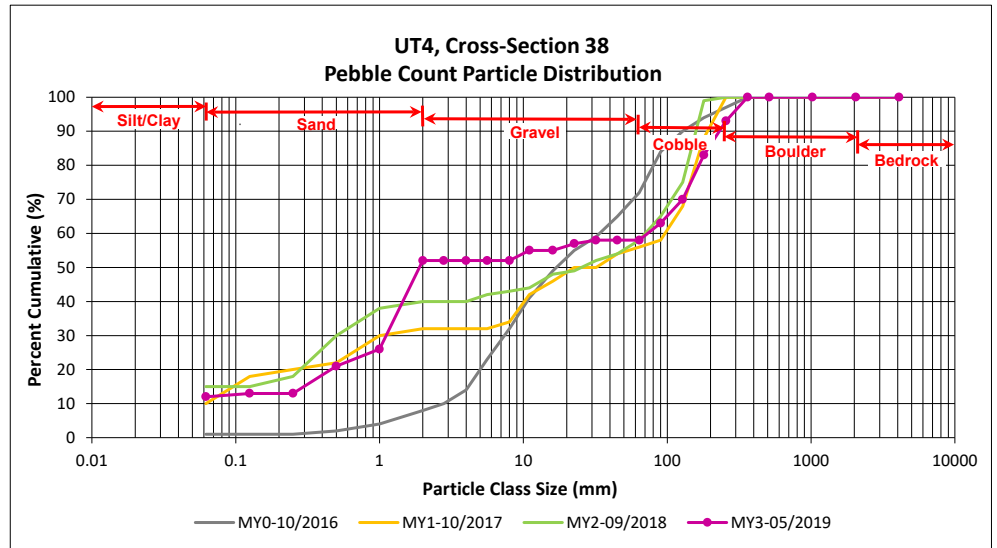
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT4, Cross-Section 38**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	12	12	12
<b>SAND</b>	Very fine	0.062	0.125	1	1	13
	Fine	0.125	0.250			13
	Medium	0.25	0.50	8	8	21
	Coarse	0.5	1.0	5	5	26
	Very Coarse	1.0	2.0	26	26	52
<b>GRAVEL</b>	Very Fine	2.0	2.8			52
	Very Fine	2.8	4.0			52
	Fine	4.0	5.6			52
	Fine	5.6	8.0			52
	Medium	8.0	11.0	3	3	55
	Medium	11.0	16.0			55
	Coarse	16.0	22.6	2	2	57
	Coarse	22.6	32	1	1	58
	Very Coarse	32	45			58
	Very Coarse	45	64			58
<b>COBBLE</b>	Small	64	90	5	5	63
	Small	90	128	7	7	70
	Large	128	180	13	13	83
	Large	180	256	10	10	93
<b>BOULDER</b>	Small	256	362	7	7	100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 38	
Channel materials (mm)	
D <sub>16</sub> =	0.3
D <sub>35</sub> =	1.3
D <sub>50</sub> =	1.9
D <sub>84</sub> =	186.5
D <sub>95</sub> =	282.6
D <sub>100</sub> =	362.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

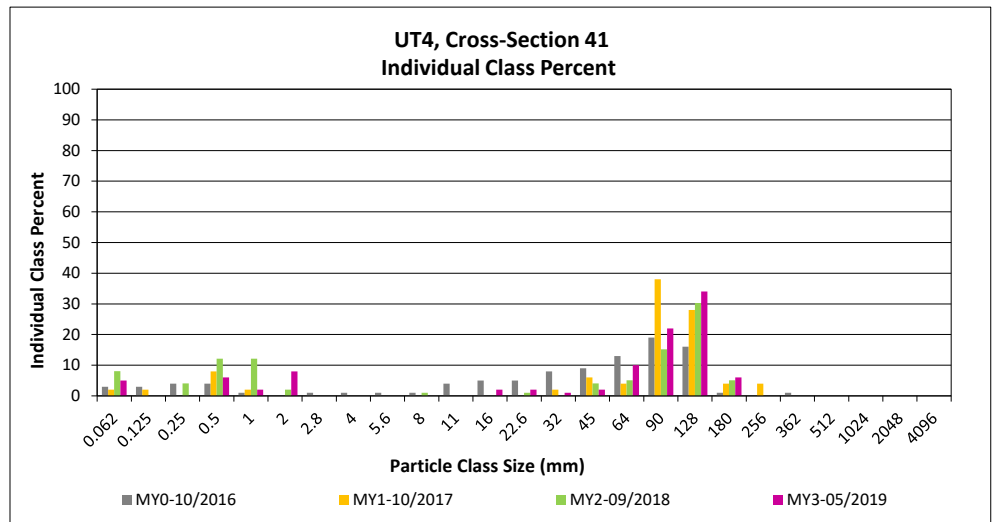
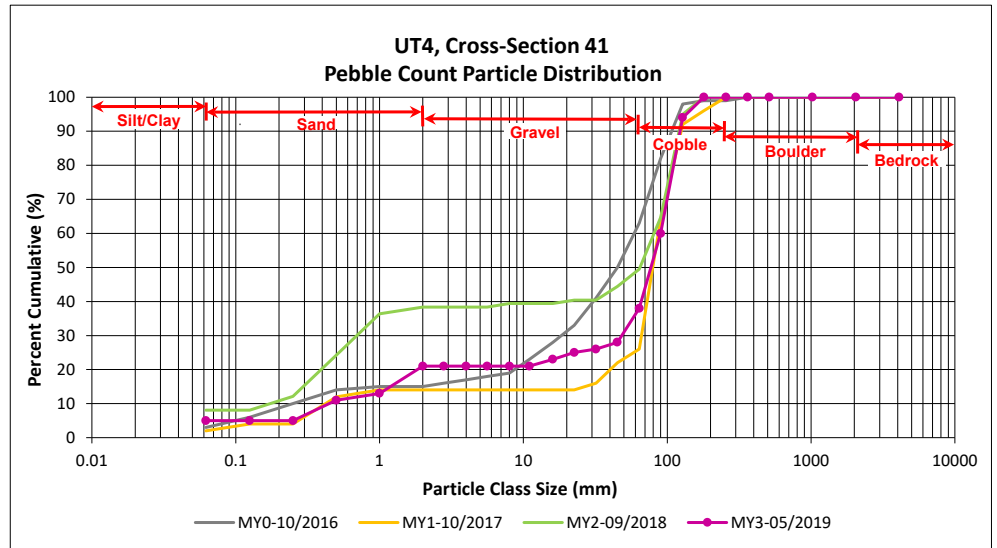
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT4, Cross-Section 41**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	5	5	5
<b>SAND</b>	Very fine	0.062	0.125			5
	Fine	0.125	0.250			5
	Medium	0.25	0.50	6	6	11
	Coarse	0.5	1.0	2	2	13
	Very Coarse	1.0	2.0	8	8	21
<b>GRAVEL</b>	Very Fine	2.0	2.8			21
	Very Fine	2.8	4.0			21
	Fine	4.0	5.6			21
	Fine	5.6	8.0			21
	Medium	8.0	11.0			21
	Medium	11.0	16.0	2	2	23
	Coarse	16.0	22.6	2	2	25
	Coarse	22.6	32	1	1	26
	Very Coarse	32	45	2	2	28
	Very Coarse	45	64	10	10	38
<b>COBBLE</b>	Small	64	90	22	22	60
	Small	90	128	34	34	94
	Large	128	180	6	6	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 41 Channel materials (mm)	
D <sub>16</sub> =	1.3
D <sub>35</sub> =	57.6
D <sub>50</sub> =	77.1
D <sub>84</sub> =	115.4
D <sub>95</sub> =	135.5
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

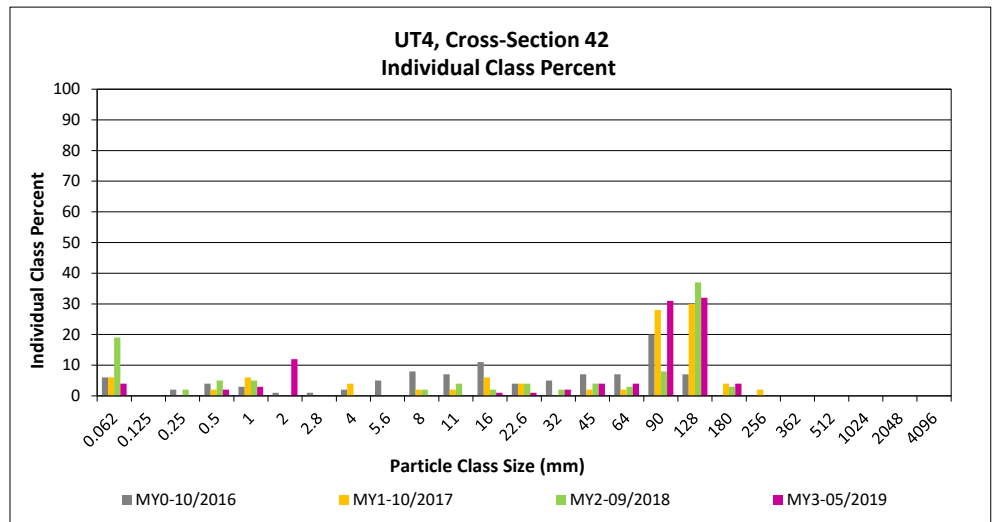
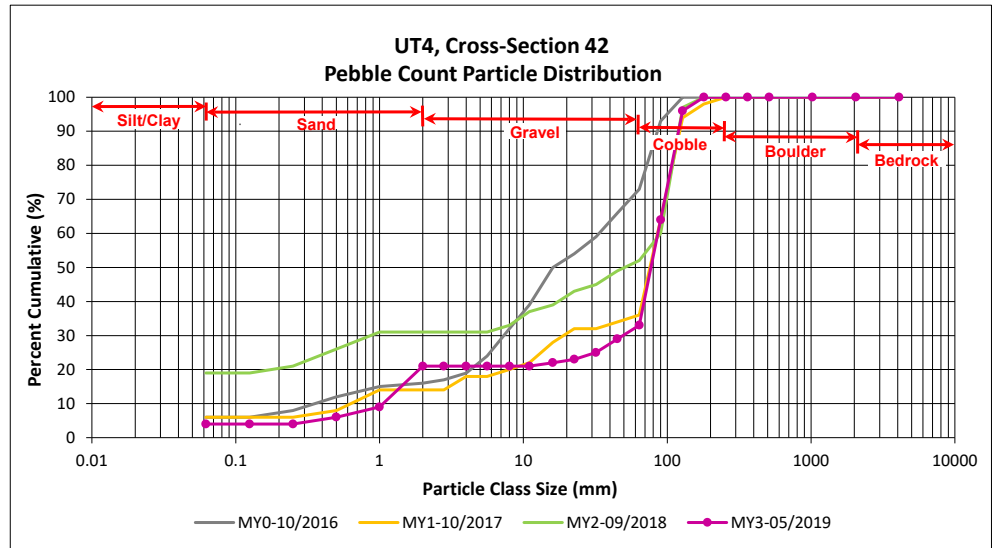
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT4, Cross-Section 42**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	4	4	4
<b>SAND</b>	Very fine	0.062	0.125			4
	Fine	0.125	0.250			4
	Medium	0.25	0.50	2	2	6
	Coarse	0.5	1.0	3	3	9
	Very Coarse	1.0	2.0	12	12	21
<b>GRAVEL</b>	Very Fine	2.0	2.8			21
	Very Fine	2.8	4.0			21
	Fine	4.0	5.6			21
	Fine	5.6	8.0			21
	Medium	8.0	11.0			21
	Medium	11.0	16.0	1	1	22
	Coarse	16.0	22.6	1	1	23
	Coarse	22.6	32	2	2	25
	Very Coarse	32	45	4	4	29
	Very Coarse	45	64	4	4	33
<b>COBBLE</b>	Small	64	90	31	31	64
	Small	90	128	32	32	96
	Large	128	180	4	4	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 43	
Channel materials (mm)	
D <sub>16</sub> =	1.5
D <sub>35</sub> =	65.4
D <sub>50</sub> =	77.2
D <sub>84</sub> =	112.2
D <sub>95</sub> =	126.6
D <sub>100</sub> =	180.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

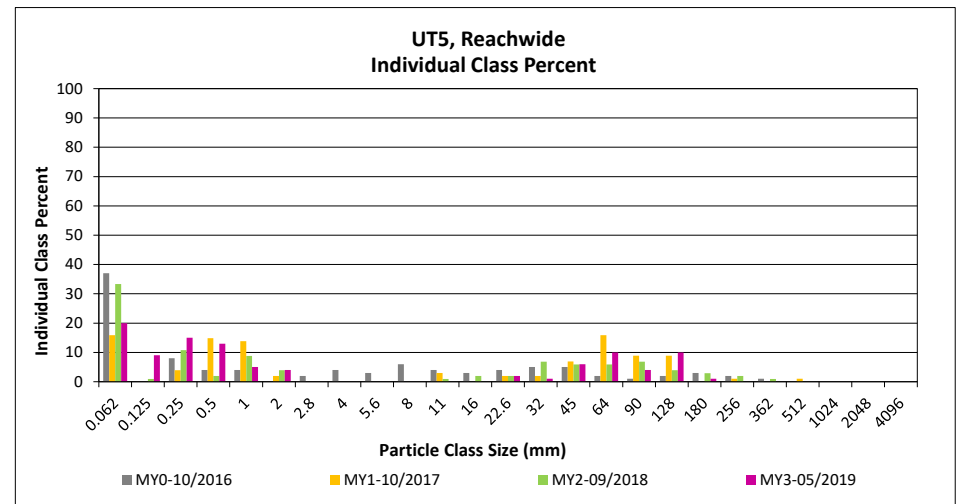
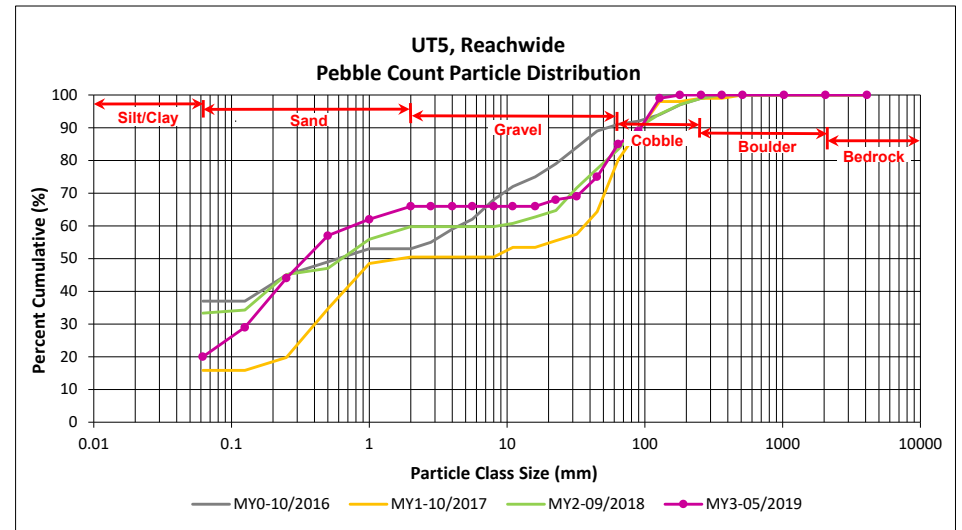
DMS Project No. 96315

Monitoring Year 3 - 2019

#### UT5, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	2	18	20	20
<b>SAND</b>	Very fine	0.062	0.125	2	7	9	9	29
	Fine	0.125	0.250	3	12	15	15	44
	Medium	0.25	0.50	4	9	13	13	57
	Coarse	0.5	1.0	1	4	5	5	62
	Very Coarse	1.0	2.0	4		4	4	66
<b>GRAVEL</b>	Very Fine	2.0	2.8					66
	Very Fine	2.8	4.0					66
	Fine	4.0	5.6					66
	Fine	5.6	8.0					66
	Medium	8.0	11.0					66
	Medium	11.0	16.0					66
	Coarse	16.0	22.6	2		2	2	68
	Coarse	22.6	32	1		1	1	69
	Very Coarse	32	45	6		6	6	75
	Very Coarse	45	64	10		10	10	85
<b>COBBLE</b>	Small	64	90	4		4	4	89
	Small	90	128	10		10	10	99
	Large	128	180	1		1	1	100
	Large	180	256					100
<b>BOULDER</b>	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.2
D <sub>50</sub> =	0.3
D <sub>84</sub> =	61.8
D <sub>95</sub> =	111.2
D <sub>100</sub> =	180.0





**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

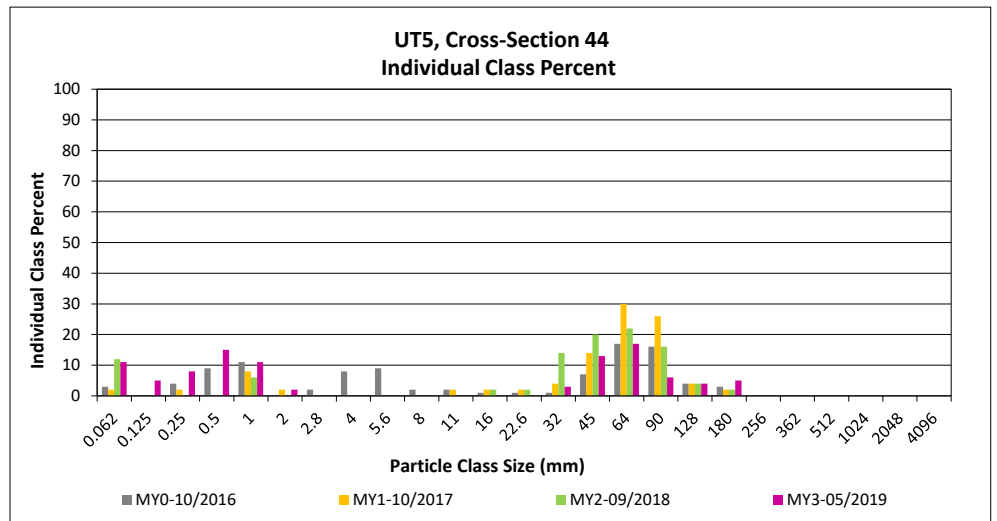
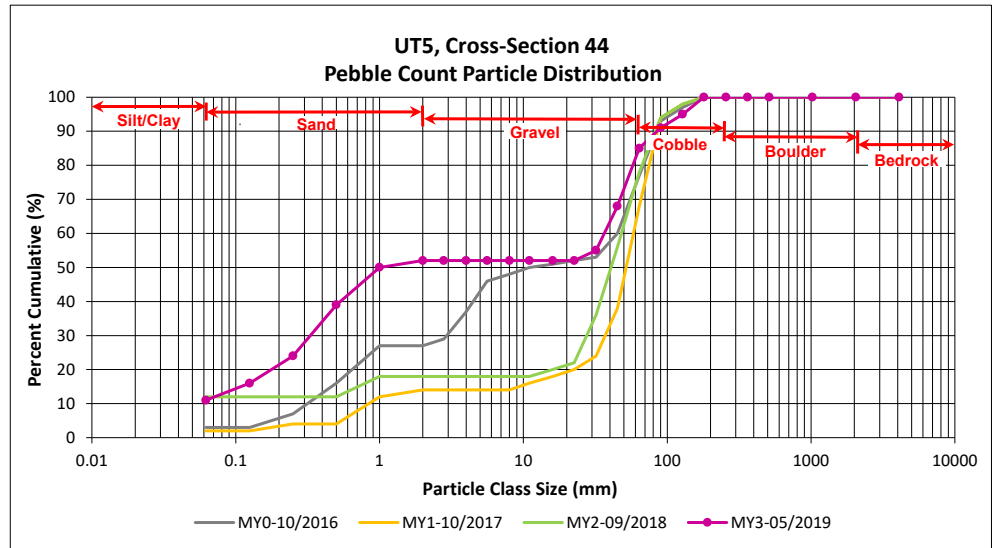
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT5, Cross-Section 44**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.000	0.062	11	11	11
<b>SAND</b>	Very fine	0.062	0.125	5	5	16
	Fine	0.125	0.250	8	8	24
	Medium	0.25	0.50	15	15	39
	Coarse	0.5	1.0	11	11	50
	Very Coarse	1.0	2.0	2	2	52
<b>GRAVEL</b>	Very Fine	2.0	2.8			52
	Very Fine	2.8	4.0			52
	Fine	4.0	5.6			52
	Fine	5.6	8.0			52
	Medium	8.0	11.0			52
	Medium	11.0	16.0			52
	Coarse	16.0	22.6			52
	Coarse	22.6	32	3	3	55
	Very Coarse	32	45	13	13	68
	Very Coarse	45	64	17	17	85
<b>COBBLE</b>	Small	64	90	6	6	91
	Small	90	128	4	4	95
	Large	128	180	5	5	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 44	
Channel materials (mm)	
D <sub>16</sub> =	0.1
D <sub>35</sub> =	0.4
D <sub>50</sub> =	1.0
D <sub>84</sub> =	62.7
D <sub>95</sub> =	128.0
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

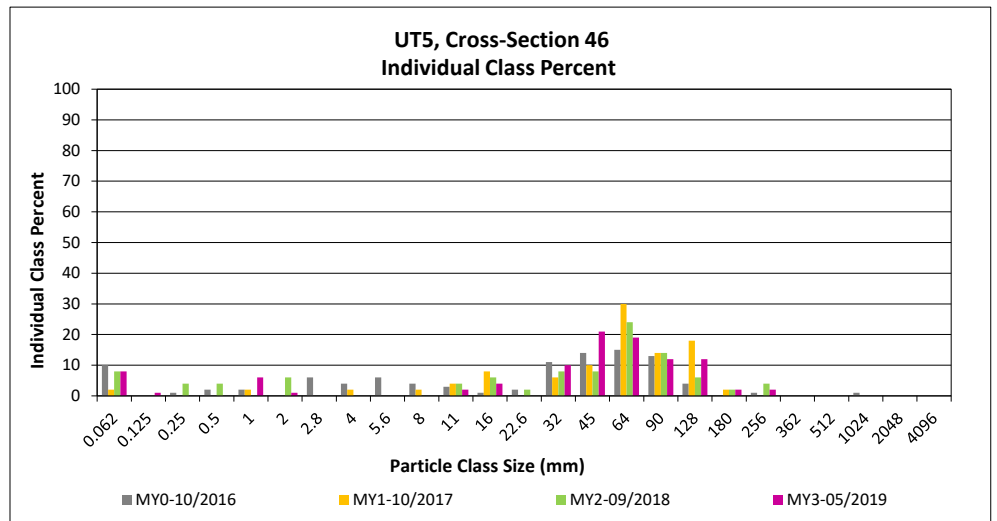
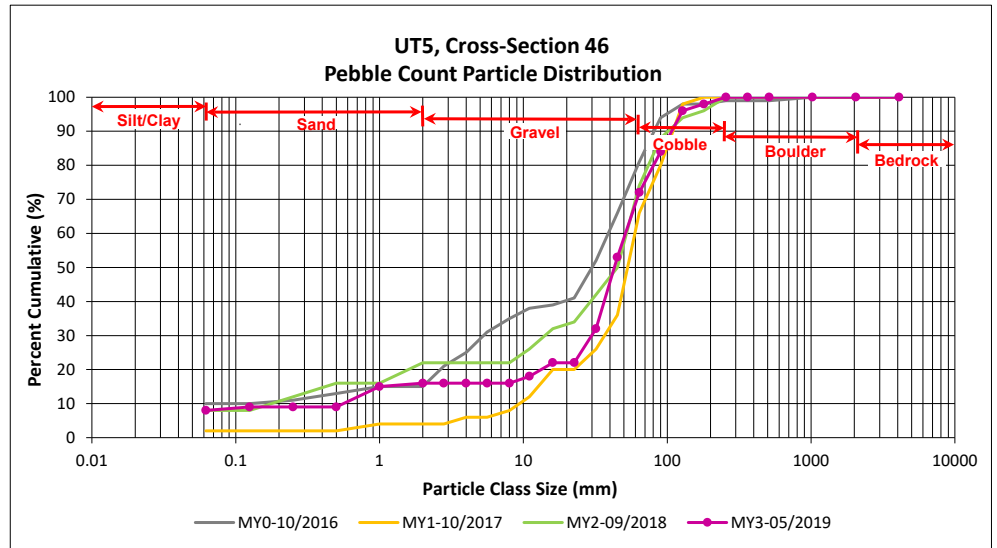
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT5, Cross-Section 46**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	8	8	8
<b>SAND</b>	Very fine	0.062	0.125	1	1	9
	Fine	0.125	0.250			9
	Medium	0.25	0.50			9
	Coarse	0.5	1.0	6	6	15
	Very Coarse	1.0	2.0	1	1	16
<b>GRAVEL</b>	Very Fine	2.0	2.8			16
	Very Fine	2.8	4.0			16
	Fine	4.0	5.6			16
	Fine	5.6	8.0			16
	Medium	8.0	11.0	2	2	18
	Medium	11.0	16.0	4	4	22
	Coarse	16.0	22.6			22
	Coarse	22.6	32	10	10	32
	Very Coarse	32	45	21	21	53
	Very Coarse	45	64	19	19	72
<b>COBBLE</b>	Small	64	90	12	12	84
	Small	90	128	12	12	96
	Large	128	180	2	2	98
	Large	180	256	2	2	100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 46 Channel materials (mm)	
D <sub>16</sub> =	2.0
D <sub>35</sub> =	33.6
D <sub>50</sub> =	42.9
D <sub>84</sub> =	90.0
D <sub>95</sub> =	124.3
D <sub>100</sub> =	256.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

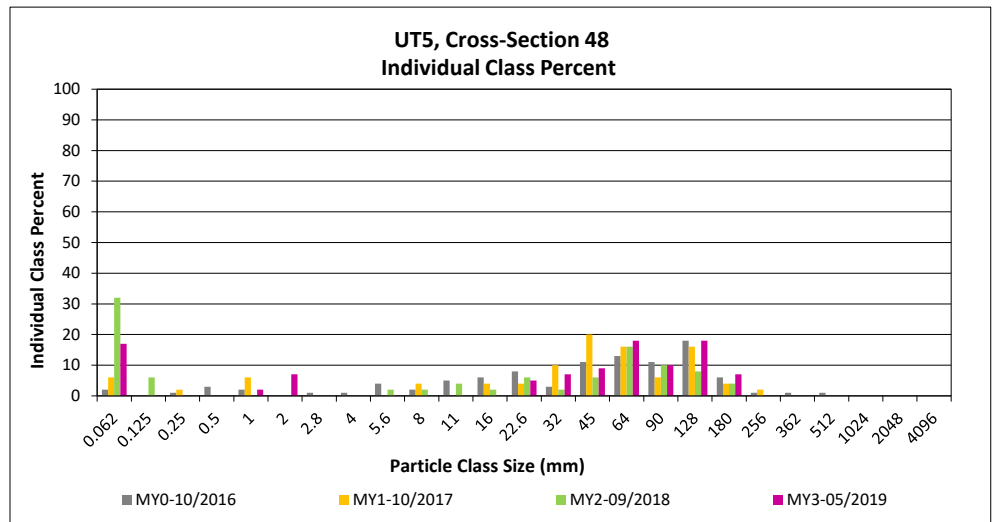
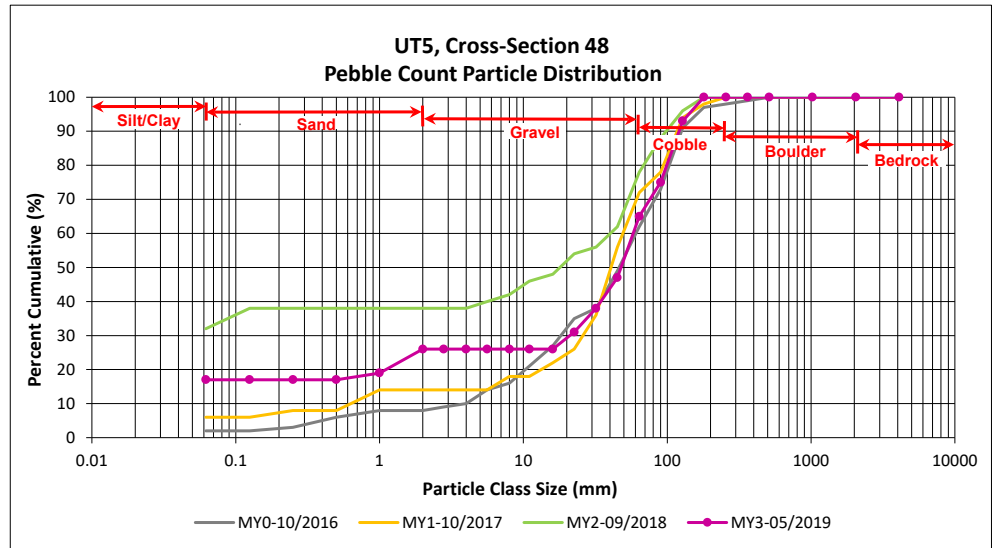
DMS Project No. 96315

Monitoring Year 3 - 2019

**UT5, Cross-Section 48**

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	17	17	17
<b>SAND</b>	Very fine	0.062	0.125			17
	Fine	0.125	0.250			17
	Medium	0.25	0.50			17
	Coarse	0.5	1.0	2	2	19
	Very Coarse	1.0	2.0	7	7	26
<b>GRAVEL</b>	Very Fine	2.0	2.8			26
	Very Fine	2.8	4.0			26
	Fine	4.0	5.6			26
	Fine	5.6	8.0			26
	Medium	8.0	11.0			26
	Medium	11.0	16.0			26
	Coarse	16.0	22.6	5	5	31
	Coarse	22.6	32	7	7	38
	Very Coarse	32	45	9	9	47
	Very Coarse	45	64	18	18	65
<b>COBBLE</b>	Small	64	90	10	10	75
	Small	90	128	18	18	93
	Large	128	180	7	7	100
	Large	180	256			100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 48	
Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	27.6
D <sub>50</sub> =	47.7
D <sub>84</sub> =	107.3
D <sub>95</sub> =	141.1
D <sub>100</sub> =	180.0



### Reachwide and Cross-Section Pebble Count Plots

Candy Creek Mitigation Site

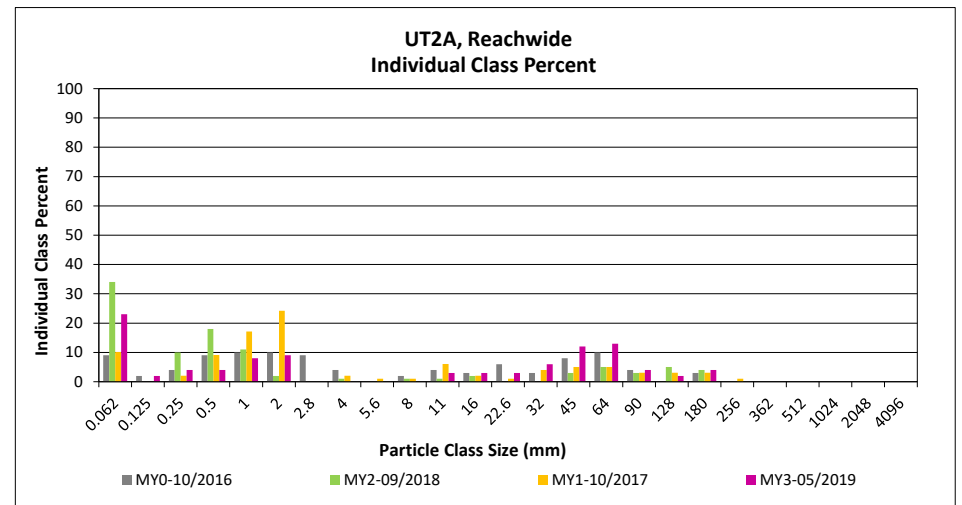
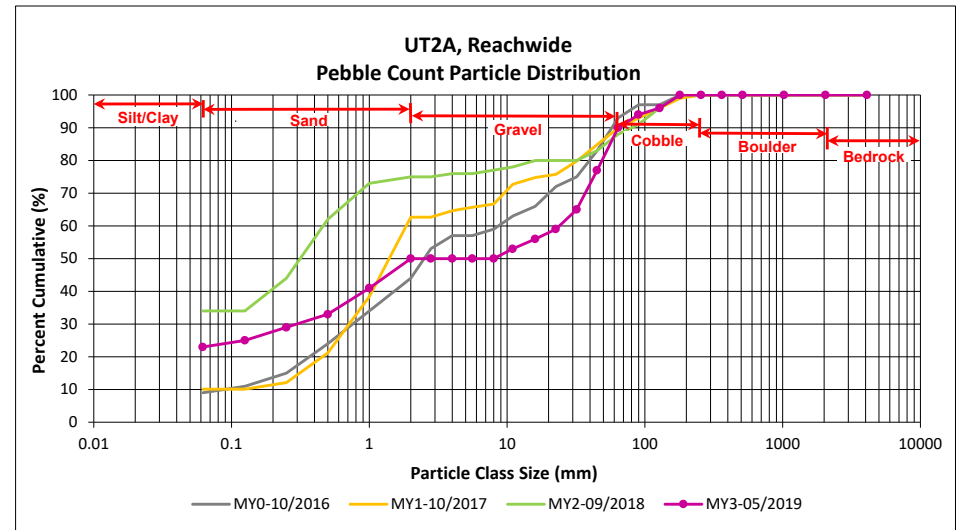
DMS Project No. 96315

Monitoring Year 3 - 2019

UT2A, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>		Silt/Clay	0.000	0.062	3	20	23	23
<b>SAND</b>	Very fine	0.062	0.125		2	2	2	25
	Fine	0.125	0.250		4	4	4	29
	Medium	0.25	0.50		4	4	4	33
	Coarse	0.5	1.0	4	4	8	8	41
	Very Coarse	1.0	2.0	7	2	9	9	50
<b>GRAVEL</b>	Very Fine	2.0	2.8					50
	Very Fine	2.8	4.0					50
	Fine	4.0	5.6					50
	Fine	5.6	8.0					50
	Medium	8.0	11.0	3		3	3	53
	Medium	11.0	16.0	2	1	3	3	56
	Coarse	16.0	22.6	2	1	3	3	59
	Coarse	22.6	32	3	3	6	6	65
	Very Coarse	32	45	7	5	12	12	77
	Very Coarse	45	64	10	3	13	13	90
<b>COBBLE</b>	Small	64	90	4		4	4	94
	Small	90	128	1	1	2	2	96
	Large	128	180	4		4	4	100
	Large	180	256					100
<b>BOULDER</b>	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
<b>BEDROCK</b>	Bedrock	2048	>2048					100
<b>Total</b>				<b>50</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>100</b>

Reachwide Channel materials (mm)	
D <sub>16</sub> =	Silt/Clay
D <sub>35</sub> =	0.6
D <sub>50</sub> =	2.0
D <sub>84</sub> =	54.4
D <sub>95</sub> =	107.3
D <sub>100</sub> =	180.0



**Reachwide and Cross-Section Pebble Count Plots**

Candy Creek Mitigation Site

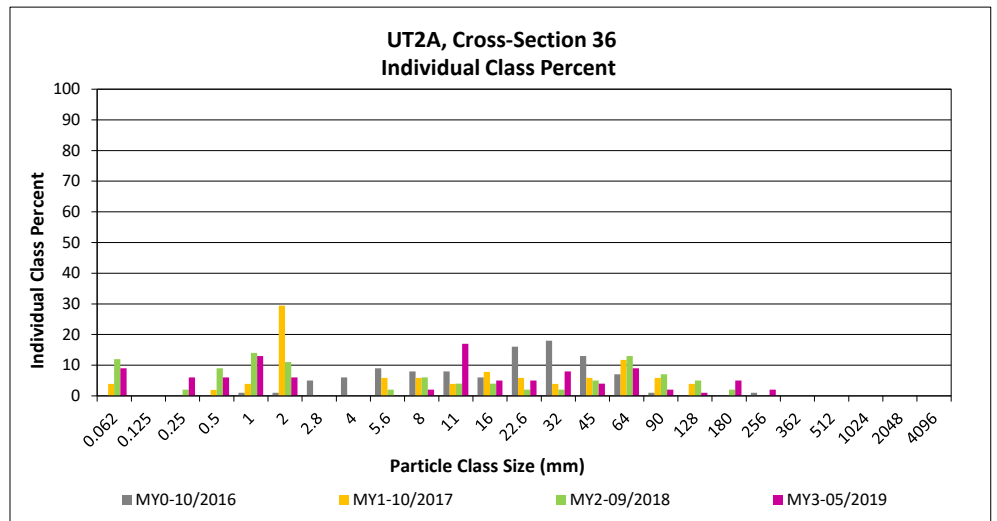
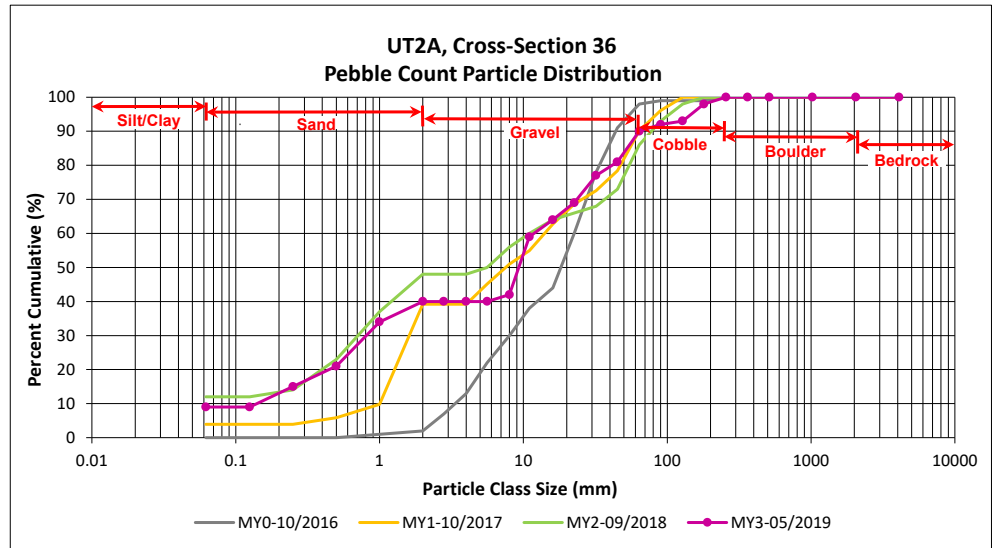
DMS Project No. 96315

**Monitoring Year 3 - 2019**

UT2A, Cross-Section 36

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
<b>SILT/CLAY</b>	Silt/Clay	0.062	0.062	9	9	9
<b>SAND</b>	Very fine	0.062	0.125			9
	Fine	0.125	0.250	6	6	15
	Medium	0.25	0.50	6	6	21
	Coarse	0.5	1.0	13	13	34
	Very Coarse	1.0	2.0	6	6	40
<b>GRAVEL</b>	Very Fine	2.0	2.8			40
	Very Fine	2.8	4.0			40
	Fine	4.0	5.6			40
	Fine	5.6	8.0	2	2	42
	Medium	8.0	11.0	17	17	59
	Medium	11.0	16.0	5	5	64
	Coarse	16.0	22.6	5	5	69
	Coarse	22.6	32	8	8	77
	Very Coarse	32	45	4	4	81
	Very Coarse	45	64	9	9	90
<b>COBBLE</b>	Small	64	90	2	2	92
	Small	90	128	1	1	93
	Large	128	180	5	5	98
	Large	180	256	2	2	100
<b>BOULDER</b>	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
<b>BEDROCK</b>	Large/Very Large	1024	2048			100
	Bedrock	2048	>2048			100
<b>Total</b>				<b>100</b>	<b>100</b>	<b>100</b>

Cross-Section 36 Channel materials (mm)	
D <sub>16</sub> =	0.3
D <sub>35</sub> =	1.1
D <sub>50</sub> =	9.3
D <sub>84</sub> =	50.6
D <sub>95</sub> =	146.7
D <sub>100</sub> =	256.0



## **APPENDIX 5. Hydrology Summary Data and Plot**

**Table 13. Verification of Bankfull Events**

Candy Creek Mitigation Site

DMS Project No. 96315

**Monitoring Year 3 - 2019**

Reach	Monitoring Year	Date of Occurrence	Method
Candy Creek Reach 2	MY2	10/11/2018	Automated Crest Gage
		1/21/2019	
	MY3	1/30/2019	
		2/23/2019	
		3/7/2019	
Candy Creek Reach 4	MY1	6/19/2017	Automated Crest Gage
	MY2	7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	2/23/2019	
UT1C	MY2	2/9/2018	Automated Crest Gage
		3/9/2018	
		10/22/2018	
	MY3	1/10/2019	
		1/16/2019	
		1/21/2019	
		1/31/2019	
UT2	MY2	1/27/2018	Automated Crest Gage
		7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	1/11/2019	
		1/21/2019	
		1/26/2019	
		1/30/2019	
UT2A	MY2	2/9/2018	Automated Crest Gage
	MY3	1/21/2019	
		1/27/2019	
UT3	MY2	10/11/2018	Automated Crest Gage
	MY3	1/21/2019	
UT4	MY2	1/31/2018	Automated Crest Gage
		7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	1/21/2019	
		2/23/2019	
		6/8/2019	
UT5	MY1	4/24/2017	Automated Crest Gage
		6/19/2017	
	MY2	1/31/2018	Automated Crest Gage
		2/6/2018	
		3/9/2018	
		7/30/2018	
		9/17/2018	
	10/11/2018		
	MY3	1/21/2019	
		1/26/2019	
		1/30/2019	
		2/23/2019	
8/8/2019			

### Stream Gage Plot

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 3 - 2019

