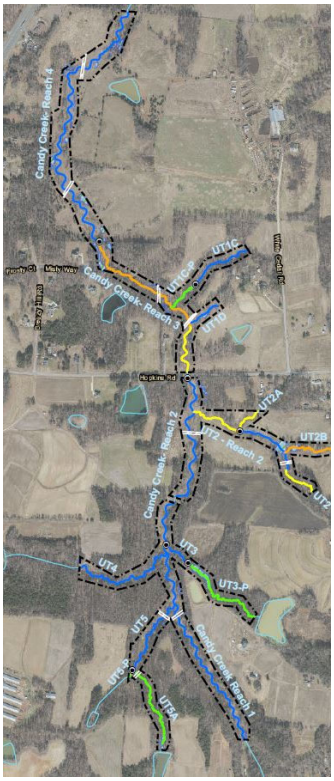





MONITORING YEAR 5 ANNUAL REPORT

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
RFP Number 16-005568

Cape Fear River Basin HUC 03030002

Data Collection Period: May - October 2021
Draft Submission Date: December 6, 2021
Final Submission Date: February 18, 2022

PREPARED FOR:

NC Environmental Quality

NC Department of Environmental Quality
Division of Mitigation Services
1652 Mail Service Center
Raleigh, NC27699-1652

February 18, 2022

Kelly Phillips
Project Manager
NCDEQ – Division of Mitigation Services
610 East Center Avenue
Suite 301
Mooresville, NC 28115

RE: **Draft Monitoring Year 5 Report Comments**
Candy Creek Mitigation Site (DMS #96315)
Cape Fear River Basin 03030002, Guilford County
Contract No. 005794

Dear Mr. Phillips:

Wildlands Engineering, Inc. (Wildlands) has reviewed the Division of Mitigation Services (DMS) comments from the Draft Monitoring Year 5 report for the Candy Creek Mitigation Project. The report has been updated to reflect those comments. DMS' comments and observations from the report are listed below and noted in **bold**. Wildlands' response to those comments are noted in *Italics*.

DMS' comment: Cover Sheet: Please add the river basin and the HUC# (Cape Fear River Basin HUC 03030002) to the cover sheet.

Wildlands' response: The cover sheet now includes "Cape Fear River Basin HUC 03030002".

DMS' comment: Section 1.2.4 Hydrology Assessment: Please address the gage repair as soon as possible to support the MY6 monitoring. Include a summary of the gage status in the upcoming repair summary in preparation for the credit release meeting.

Wildlands' response: The gages on UT1D and UT2 were replaced in 2021. Wildlands will check the calibration of each probe in 2022, early in MY6. The results of the calibration check (and the repairs discussed below) will be described in a written summary that will be sent to DMS for inclusion in the report before it is submitted to the IRT for the Credit Release Meeting. Section 1.2.4 Hydrology Assessment was updated and now describes this process.

Section 1.2.5 Adaptive Management Plan: Please provide DMS with summary information of the upcoming site repairs as described in 6.b. of the July 7, 2021 IRT Credit Release Site Walk Meeting Minutes.

Wildlands' response: The text in Section 1.2.5 Adaptive Management Plan was updated to say that machine repairs are scheduled for Candy Creek Reach 3 and UT1D for early in 2022. The right bank of Candy Creek Reach 3 will be reshaped to stop the outward erosion of the pool; the step-pool structures along UT1D will be reinstalled to stop the stream from piping underneath and preventing additional structure failures. Once these repairs are completed, the work will be described in a written summary that will be sent to DMS for inclusion in the report before it is submitted to the IRT for the Credit Release Meeting. The MY6 report will also describe the repairs that were completed, and will include a photolog, as discussed in the July 7, 2021 IRT Credit Release Site Walk. Current photos are provided in the Areas of Concern Photographs (Appendix 2).

Visual Assessment Tables: Please include the date that the project was visually assessed at the top of each table.

Wildlands' response: The Visual Stream Morphology Stability Assessment Tables (Tables 5a-5m) and the Vegetation Conditions Assessment Table (Table 6) were updated to include the date when the site was last assessed.

DMS' comment: Digital files:

a. **Please ensure that the stream areas of concern values reported in Table 5 reflect the submitted spatial data. For example, there are 2 aggradation features submitted for UT5 with a combined length of 130 ft, whereas Table 5m reports 3 segments with a length of 110 ft.**

Wildlands' response: The submitted geodatabase, the associated figures (Figures 3.0-3.7), and the associated assessment tables (Tables 5a-5m) were checked and corrected so that the feature counts now match. For example, Table 5m now reports 2 segments of aggradation totaling 130ft, as shown in Figure 3.1; and the one structural issue for Overall Integrity on Candy Creek Reach 4 is now drawn on Figure 3.7. Where bed or structure issues overlap with an existing issue, notes were added to the attribute tables rather than adding additional features to the maps. For example, one of the aggradation issues mapped on UT4 and shown in Figure 3.2 and Table 5l, corresponds to two riffle condition-substrate and 1 pool condition-depth issues, which is now indicated in the attribute table.

b. **The submitted CVS mdb does not generate a Table 7 export or simple export that reproduces the values reported in Table 9. Please review these data and ensure that the submitted mdb supports Table 9.**

Wildlands' response: Volunteer stems that were present for more than 2 years were added to the stem counts of several vegetation plots. However, the CVS export table function does not include these added stems in all of the exported tables.

In the exported Table 7*, the "Stem Count" totals failed to include the new, permanent volunteers that were added to the plots this year; therefore, it does not match the report table 9 that was submitted.*

In the exported Simple Table*, the following differences from report Table 9 occurred:*

- *Under the "Plots" worksheet: "Planted Living Stems" and "Total Living Stems" are identical to the data in report Table 9. In the CVS database, the "Source" of the added permanent volunteers was corrected to "Unknown". With this adjustment, the "Planted Living Stems EXCLUDING Live Stakes" and the "Total Living Stems EXCLUDING Live Stakes" columns are also identical to the data in report Table 9.*
- *In the "Planted Stems by Plot and Spp" worksheet, the "TOT:" totals are all identical to submitted report Table 9.*
- *The "TOT:" totals in the "All Stems by Plot and Spp" worksheet don't match report Table 9 because dead stems are included in the totals.*

The submitted report Table 9 was not adjusted as it accurately reflects the stems that were counted. While the totals do not match the exported Table 7, *the table does match the stem counts in some of the auto-populated worksheets in the exported* Simple Table*. Therefore, the data and submitted mdb support what is shown in Table 9.*

Enclosed, please find two (2) hard copies and one (1) electronic pdf copy of the Final Monitoring Report on USB along with the all of the digital files. Please note that Wildlands received an email confirmation from Kristie Corson on January 28, 2022, that she had received the updated bond for Task 10 (MY5) and

that it has been approved. Wildlands is requesting an email confirmation from DMS that we may invoice for Task 10 upon the receipt of the Final Monitoring Year 5 Annual Report for the Candy Creek Mitigation Site.

Please contact me at 704-332-7754 x110 or ksuggs@wildlandseng.com if you have any questions.

Sincerely,

Kristi Suggs
Senior Environmental Scientist

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 (warm) stream credits 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 restoration goals for all streams within HUC 03030002; 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 between 2017 and 2021. Monitoring Year (MY) 5 assessments and site visits were completed between May and October 2021 to assess the conditions of the project.

Overall, the majority of the Site has met the required stream, vegetation, and hydrology success criteria for MY5, and is on track to meet in MY7. The trees have more than doubled in height since they were measured in MY3 and 98% (39/40) plots are meeting the stem density criteria. Stream problem areas throughout the Site are minimal with few erosional areas. Repairs are planned for early 2022 to repair bank erosion along Candy Creek Reach 3 and a series of structures along UT1D. The sediment influx reported during MY4 was documented as starting to move through the system and is naturally stabilizing. Aggregational areas will continue to be assessed in future monitoring years.

The stream hydrology assessment criteria of having at least two bankfull events in separate monitoring years for each reach has been met. The stream flow gage established on the upstream, intermittent section of UT1D exceeded the minimum 30 consecutive day hydrologic baseflow criteria.

Areas of invasive species were treated between 2017 and 2020 and currently make up approximately 1.7% of the total easement area. Three areas of mowing encroachment were documented along Candy Creek Reaches 1 and 3 and were addressed in MY5 with no additional mowing has been observed. Additional shrubs and trees will be planted in the previously mowed areas early in 2022. Visual assessment surveys indicate that the majority of the Site is stable and functioning as intended and the riparian buffer is well vegetated and intact.

TABLE OF CONTENTS

APPENDICES

APPENDICES (cont.)

Section 1: PROJECT OVERVIEW

The Site is located in Guilford County, 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 (warm) stream credits. 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.

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 NCDMS' Cape Fear River Basin Restoration Priorities (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 5 Data Assessment

Annual monitoring and quarterly site-visits were conducted during MY5 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.

See Appendix 2 for the visual stability assessment tables, Integrated Current Condition Plan View (CCPV) maps, and reference photographs.

1.2.1 Stream Assessment

Morphological surveys for MY5 were conducted in May 2021. The majority of the 48 cross-sections indicate that the streams within the Site are stable and functioning as designed. The bank height ratios range between 0.8 and 1.1. There is some point bar development in the pools and the small changes generally indicate a trend towards stability.

Cross-section 15 shows slight outward migration of the channel with some erosion on the right bank, but this bank is fully stabilized with mature black willows (*Salix nigra*). The profile for cross-section 18 on Candy Reach 4 shows the beaver lodge that was created during the end of 2019. The beavers were trapped, and the dam was removed (as reported in the MY4 report), and the profile has remained stable. While UT2 (cross-sections 31-Reach 1, and 34-35-Reach 2) shows some aggradation both in the stream and in the floodplain, the streams have maintained a low bank height ratio of 0.9 because the thalweg of the stream channel has also risen.

Pebble counts were conducted in May of 2021 and are included in Appendix 4, but they will not be conducted during the remaining monitoring years due to the new guidance from the IRT and an email confirmation with the DMS project manager (Personal communication, Phillips 2021). Reachwide pebble counts indicate only minor changes in the sediment transport and substrate composition for all streams on the Site.

Large storms resulted in a large sand load in the streams, and the fining of the substrate was discussed in the MY4 report, during the July 2021 IRT site walk in July, and is reflected in the MY5 sediment data. The sand load is suspected to have originated from the large agricultural fields in the watershed and is expected to flush slowly through the stream system. In MY5, four cross sections on UT2R2, UT2A, UT4 and UT5 show a shift towards smaller particles in the riffles. However, more than half of the aggradation observed in MY4 sediment has flushed through the system. The amount of aggradation along UT5, for example, has decreased from 260 feet to 130 feet, meaning 87% of the reach is stable and performing as intended. As was noted during the Site walk in July, the stream is actively sorting the sediment and shallow pools still exist. The aggradation along UT2 Reach 2 is occurring where the valley slope flattens

and the stream loses the power to fully flush the sediment through. However, the thalweg for the UT2 channel has remained stable and indicates that the channel is still moving sediment as was intended in the design. While UT2R2, UT2A, UT4 and UT5 have areas of aggradation and the pools may continue to scour during large rain events, these tributaries are stable and accessing the floodplain as designed at the reach scale. Refer to the section 1.2.2. for further discussion.

Across the site, much of the erosion previously documented is stabilizing as the woody vegetation matures along the banks; more than 99% of the banks are stable with only 115 feet of bank erosion documented this year. Bank erosion was observed only 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. There are very few areas that indicate instability for the streams throughout the project in MY5. Visual assessments in subsequent monitoring years will continue to monitor these areas.

Refer to the Appendix 2 for the Visual Stream Morphology Stability Assessment Table and Appendix 4 for the morphological data.

1.2.2 Stream Areas of Concern

The Stream Photographs and Areas of Concern Photographs are shown in Appendix 2. The aggradation throughout the Site has improved since MY4. As shown in the Areas of Concern Photographs, the upstream extend of Candy Creek Reach 1 shows a coarsening of the riffle substrate, and the mid-channel bar along Reach 2 cleared out and reverted to the woody riffle as designed; the aggradation along Reach 3 is converting into a point bar below the tail of the riffle; and UT5 shows less aggradation throughout the reach.

There is still some erosion on the outside bend of a pool along Candy Creek Reach 3, and this area is scheduled for a bank repair in early 2022. The series of structures along UT1D have not naturally filled with sediment, although the banks have remained stable; these structures are scheduled to be reinstalled in early 2022, which was discussed during the IRT site walk in July.

A beaver colonized the upstream portion of Candy Creek Reach 2 and built a dam on the main stem. A contractor trapped the beaver and removed the dam in November of 2021.

1.2.3 Vegetative Assessment

The MY5 vegetative survey was completed in September 2021. Fourteen plots (5, 6, 12, 15, 17, 18, 20, 22, 30, 33, 37-40) included volunteers that were present for more than two growing seasons which now count towards the total stem density. The added stems include the following species: red maple (*Acer rubrum),* river birch (*Betula nigra),* persimmon (*Diospyros virginiana),* green ash (*Fraxinus pennsylvanica),* spicebush (*Lindera benzoin),* tulip poplar (*Liriodendron tulipifera),* sycamore (*Platanus occidentalis),* willow oak *(Quercus phellos),* black willow (*Salix nigra),* and elderberry (*Sambucus canadensis)*.

Vegetation monitoring resulted in a stem density range of 202 to 526 planted stems per acre, with a Site average of 414 planted stems per acre. The average stem height was 259 cm (8.5 ft), which is more than double the height of the trees in MY3. 98% of vegetation plots met the MY5 interim density requirement of 260 stems per acre, an improvement of 18% from the number of plots which met the MY3 criteria. Only plot 35 did not meet the MY5 criteria and is not on track to meet the final project criteria. The five surviving stems have a good vigor, but the plot is in a small area of low stem density. This low visual stem density is likely due to the combination of the plot being placed fully in a wetland and having a closed mature canopy around the plot. This area represents only 0.2% of the planted acreage. This area will continue to be monitored but it is not representative of the entire site and is not a major concern.

Refer to Appendix 2 for Vegetation Plot Photographs and Appendix 3 for the Vegetation Plot Criteria Attainment Table and the Vegetation Plot Data.

1.2.3.1 Vegetative Areas of Concern

The Site consists of 62 acres within the conservation easement, including 32 acres of planted trees. Most of the Site is performing well, with only one area of low stem density and one bare area observed, accounting for only 0.4% of the Site. Invasive plant populations were observed on only 1.7% of the Site. Except for the new patch of kudzu along Candy Creek Reach 4 (which will be treated in MY6), the areas of invasive vegetation have not expanded from the previous year and do not represent a significant damage to the project's performance. Locations of the areas described below are depicted in Figures 3.1 - 3.7. Invasive species will continue to be monitored and controlled as necessary.

1.2.4 Hydrology Assessment

MY5 had slightly lower amounts of rainfall than average and only had one rain event greater than 1.5 inches. Nevertheless, except for Candy Creek Reach 2, each reach recorded at least one bankfull event. The gage on UT3 had a dramatic stream rise in January through March; the large data spikes do not appear to correspond with rainfall events, but there is a correlation between the spikes and freezing temperatures (analysis not shown). Wildlands contacted In-Situ on 11/18/2021 to confirm the findings. Based on the discussion with in-situ it is likely that these are the result of ice forming on the probes leading the gage to malfunction during this time (Haynes 2021). For more information, please refer to the UT3 plot footnote in Appendix 5. No spikes are being counted toward a bankfull event on UT3 in MY5. The probe will be calibrated in early MY6 to confirm accurate readings, or it will be replaced. While the gage on UT3 did not log a bankfull event, the manual crest gage did, and this was confirmed by recent sand deposits just beyond the top of bank (refer to Hydrology Photographs in Appendix 5).

The gages on UT2 and UT1D were replaced on June 4, 2021. All gages except Candy Creek R2 recorded at least one bankfull event in MY5. All stream reaches have met the project's bankfull criteria of two or more bankfull events in separate years.

All other probes for Candy Creek R2, R4, UT1C, UT1D, UT2, UT2A, UT4 and UT5 experienced gage malfunctions in the early part of MY5 due to unknown reasons. The data that was logged during this period is not displayed on the stream gage plots and does not count towards the recorded bankfull events for MY5. All probes will be checked, calibrated, or replaced in early 2022 to ensure accurate data collection for the upcoming monitoring year. The results of the calibration check will be described in a written summary that will be sent to DMS for inclusion in the report before it is submitted to the IRT for the Credit Release Meeting.

UT1D has also met the project's criteria of seasonal flow being recorded for at least 30 consecutive days during the seven-year monitoring period; even with the gage malfunction, the gage still registered 132 consecutive days above the thalweg. Refer to Appendix 5 for hydrologic summary data and plots.

1.2.5 Adaptive Management Plan

As was discussed during the IRT site walk in July, machine repairs are scheduled for Candy Creek Reach 3 and UT1D for early in 2022. The right bank of Candy Creek Reach 3 will be reshaped to stop the outward erosion of the pool; the step-pool structures along UT1D will be reinstalled to stop the stream from piping underneath and preventing additional structure failure. Once these repairs are completed, the work will be described in a written summary that will be sent to DMS for inclusion in the report before it is submitted to the IRT for the Credit Release Meeting. The MY6 report will also describe the repairs that were completed and will include a photolog, as discussed in the July 7, 2021 IRT Credit Release Site Walk. Photos of the two areas are currently shown in the Areas of Concern Photographs (Appendix 2).

A beaver colonized the upstream portion of Candy Creek Reach 2 and built a dam on the main stem. A contractor trapped the beaver and removed the dam in November of 2021.

The aggradation throughout the rest of the stream system, and the small areas of bank erosion will continue to be monitored but are expected to stabilize as the vegetation along the bank matures.

The bare area along the left floodplain of UT2 will be addressed one more time with seed and amendments during MY6; however, it was noted during the IRT walk in 2021 that this area is small and not representative of the entire project and is slowly starting to revegetate.

Invasive treatments will continue in MY6, focusing on the treatment of the kudzu (*Pueraria montana*), especially along Candy Creek Reach 4.

Three areas of mowing encroachment were mapped and discussed previously with the IRT. The encroachment totals 0.07 acres and 0.1% of the easement acreage. As shown in the Areas of Concern Photographs, tape was added to mark the easement boundary and mowing has ceased. These areas will be supplementally planted with trees and shrubs before the 2022 growing season, at which point these areas will be considered resolved.

1.3 Monitoring Year 5 Summary

The Candy Creek Mitigation Site is on track to meet monitoring success criteria for geomorphology, hydrology, and vegetation performance standards. Overall, the Site is in good condition and is performing as intended. All vegetation plots except for plot 35 exceeded the MY5 interim requirement of 260 planted stems per acre, and the stem heights more than doubled from two years ago. All of the streams have met their bankfull criteria and the intermittent reach if UT1D has exceeded the 30-days of consecutive flow criteria. Most of the banks and structures are stable and functioning. Repairs are planned for early 2022 to repair bank erosion along Candy Creek Reach 3 and a series of structures along UT1D. Invasive species will continue to be monitored, but they currently occupy less than 2% of the Site; the kudzu will continue to be treated in MY6. The sediment influx reported during MY4 was documented as starting to move through the system and no action is required to further address this. The bare area along UT2 has improved from the previous year and is expected to be resolved during MY6 after another application of amendments. The three areas of encroachment documented this year were marked off with horse tape and mowing has ceased; additional trees and shrubs will be planted in these areas early in 2022. Visual assessment surveys indicate that the majority of the Site is stable and functioning as intended and the riparian buffer is well vegetated and intact.

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. All raw data supporting the tables and figures in the appendices are available from DMS upon request.

Section 2: METHODOLOGY

Geomorphic data collection follows the standards outlined in *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. 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.

Haynes, Kaylie. Phone conversation. 18 November 2021.

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

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.

Phillips, K. Email correspondence. 18 November 2021.

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.

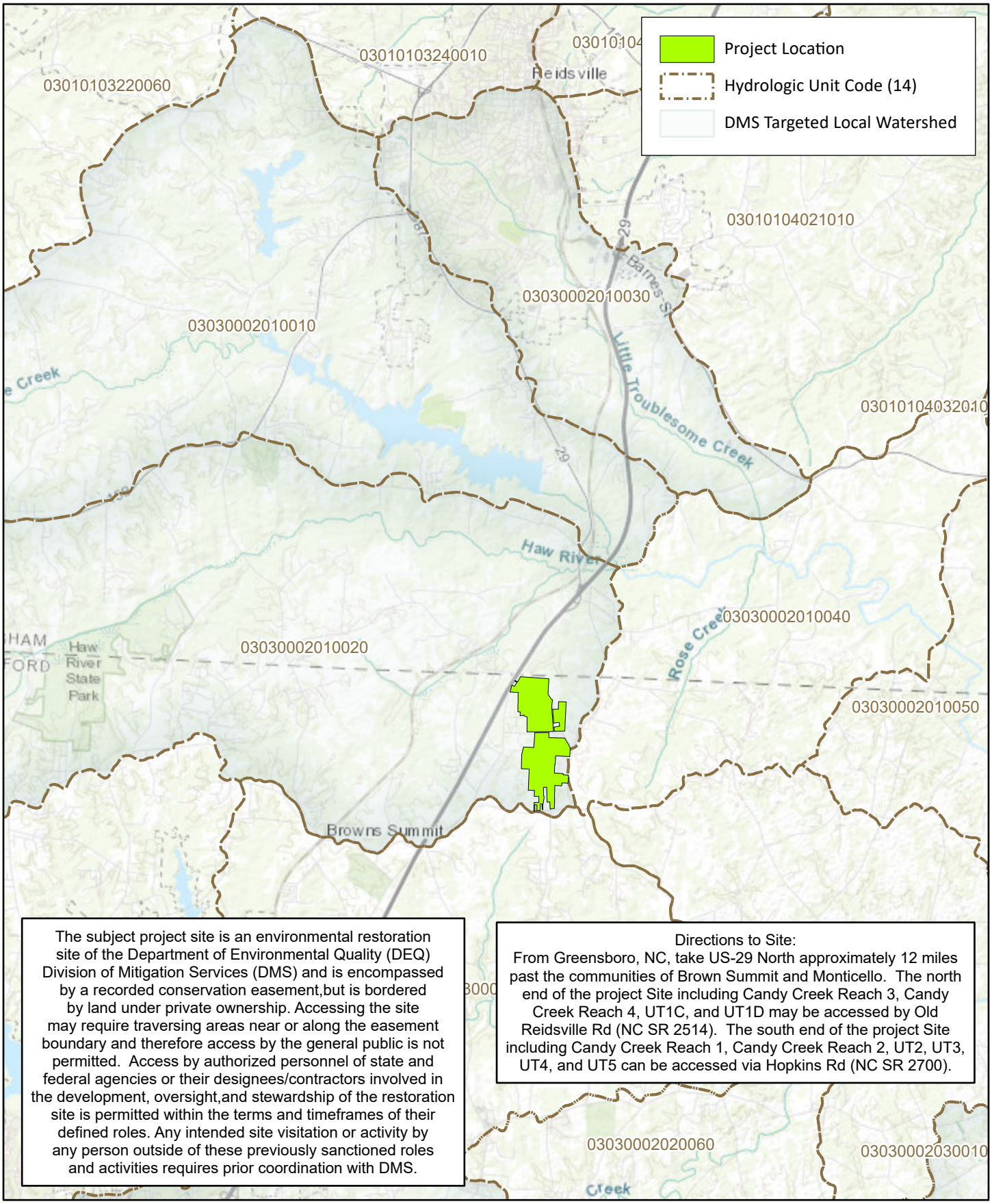
Spec Sheet Reference: Rugged TROLL Registered 100 and 200 Data Loggers, In-Situ Registered, Fort Collins, CO, Jan 2021. https://insitu.com/pub/media/support/documents/Rugged_TROLL_100_and_200_Data_Loggers.pdf (accessed Nov 18, 2021)

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

Wildlands Engineering, Inc. 2016. Candy Creek Mitigation Site Mitigation Plan. NCDMS, Raleigh, NC.

APPENDIX 1. General Figures and Tables



The subject project site is an environmental restoration site of the Department of Environmental Quality (DEQ) Division of Mitigation Services (DMS) and is encompassed by a recorded conservation easement,but is bordered by land under private ownership. Accessing the site may require traversing areas near or along the easement boundary and therefore access by the general public is not permitted. Access by authorized personnel of state and federal agencies or their designees/contractors involved in the development, oversight,and stewardship of the restoration site is permitted within the terms and timeframes of their defined roles. Any intended site visitation or activity by any person outside of these previously sanctioned roles and activities requires prior coordination with DMS.

Directions to Site:
From Greensboro, NC, take US-29 North approximately 12 miles past the communities of Brown Summit and Monticello. The north end of the project Site including Candy Creek Reach 3, Candy Creek Reach 4, UT1C, and UT1D may be accessed by Old Reidsville Rd (NC SR 2514). The south end of the project Site including Candy Creek Reach 1, Candy Creek Reach 2, UT2, UT3, UT4, and UT5 can be accessed via Hopkins Rd (NC SR 2700).

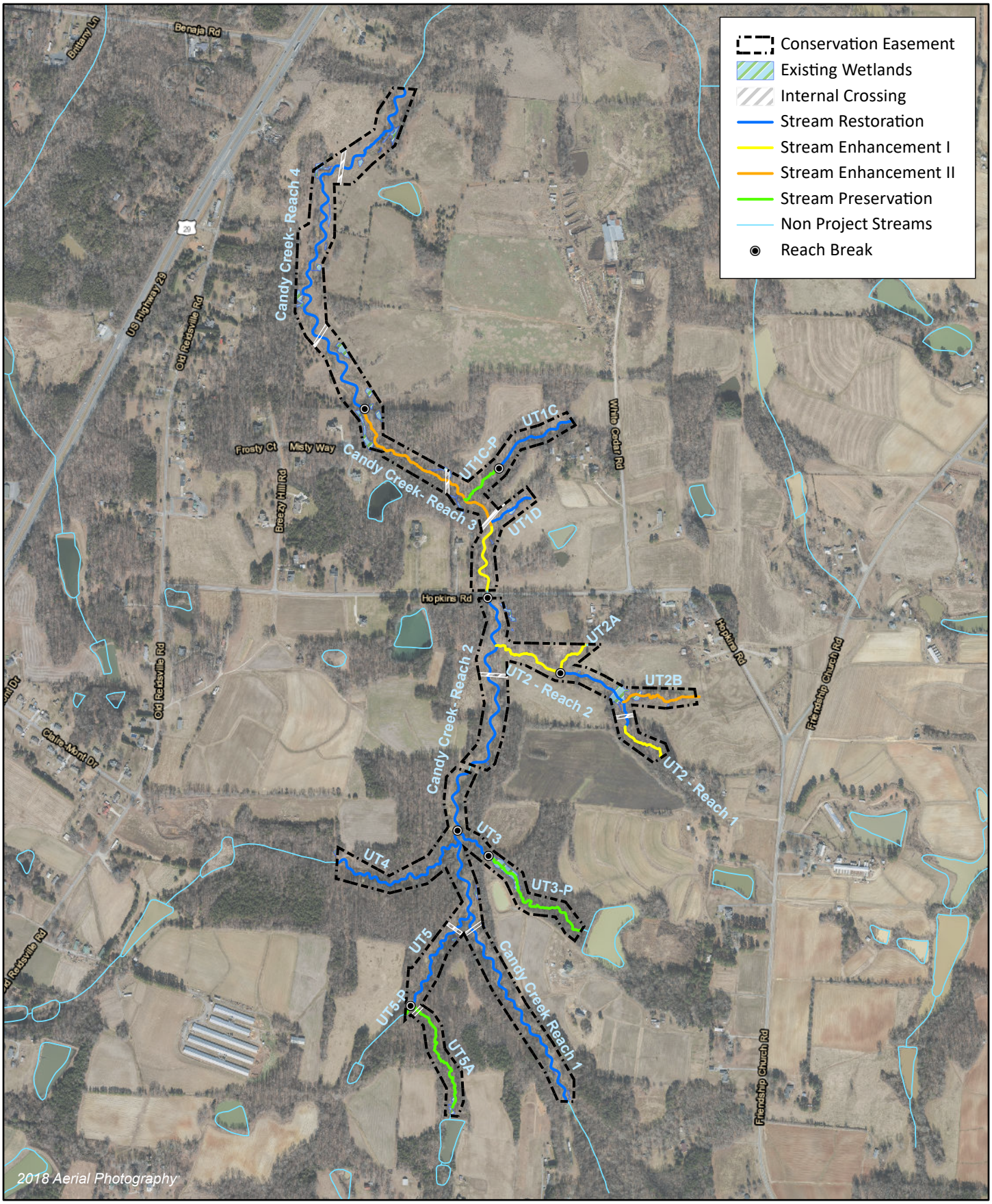
WILDLANDS ENGINEERING

Environmental Quality

0 1.75 3.5 Miles

N

Figure 1 Project Vicinity Map
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC



WILDLANDS ENGINEERING

Environmental Quality

0 1,000 2,000 Feet

N

Figure 2 Project Components/Assets Map
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC

Table 1. Project Components and Mitigation Credits

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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)
STREAMS							
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 (ac)		Non-Riparian Wetland (ac)	Buffer (sqft)	Upland (ac)
		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 5 - 2021

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[1]		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			
Stream Maintenance		August 2019	
Invasive Species Treatment		September 2019	
Additional easement marker installed		September 2019	
Year 3 Monitoring	Vegetation Survey	September 2019	December 2019
	Stream Survey	October 2019	December 2019
Stream Maintenance		Jan - May 2020	
Invasive Species Treatment		April - October 2020	
Year 4 Monitoring		October 2020	December 2020
Additional easement markings installed (horse tape)		August 2021	
Year 5 Monitoring	Stream Survey	May 2021	December 2021
	Vegetation Survey	September 2021	
Beaver trapped, dam removed		November 2021	
Stream Maintenance			
Encroachment Replanting			
Year 6 Monitoring			
Year 7 Monitoring	Stream Survey		
	Vegetation Survey		

[1]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 5 - 2021

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

Table 4. Project Information and Attributes

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

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

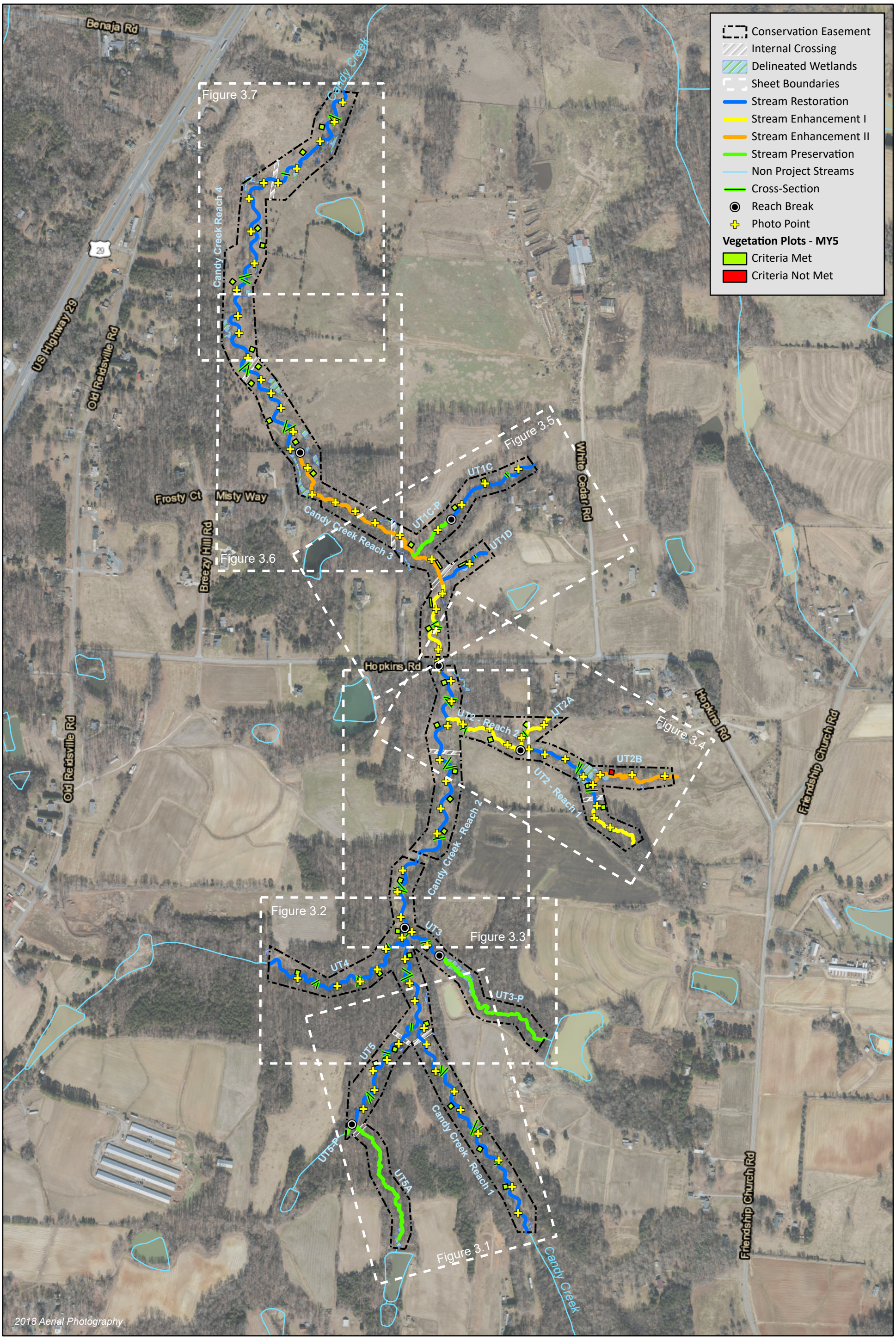
Project Watershed Summary Information	
Physiographic Province	Inner Piedmont Belt of the Piedmont Physiographic Province
River Basin	Cape Fear
USGS Hydrologic Unit 8-digit	03030002
USGS Hydrologic Unit 14-digit	03030002010020
DWR Sub-basin	03-06-01
Project Drainiage Area (acres)	937
Project Drainage 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 Desription (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	3%			

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 Desription (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	1%								

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



WILDLANDS ENGINEERING

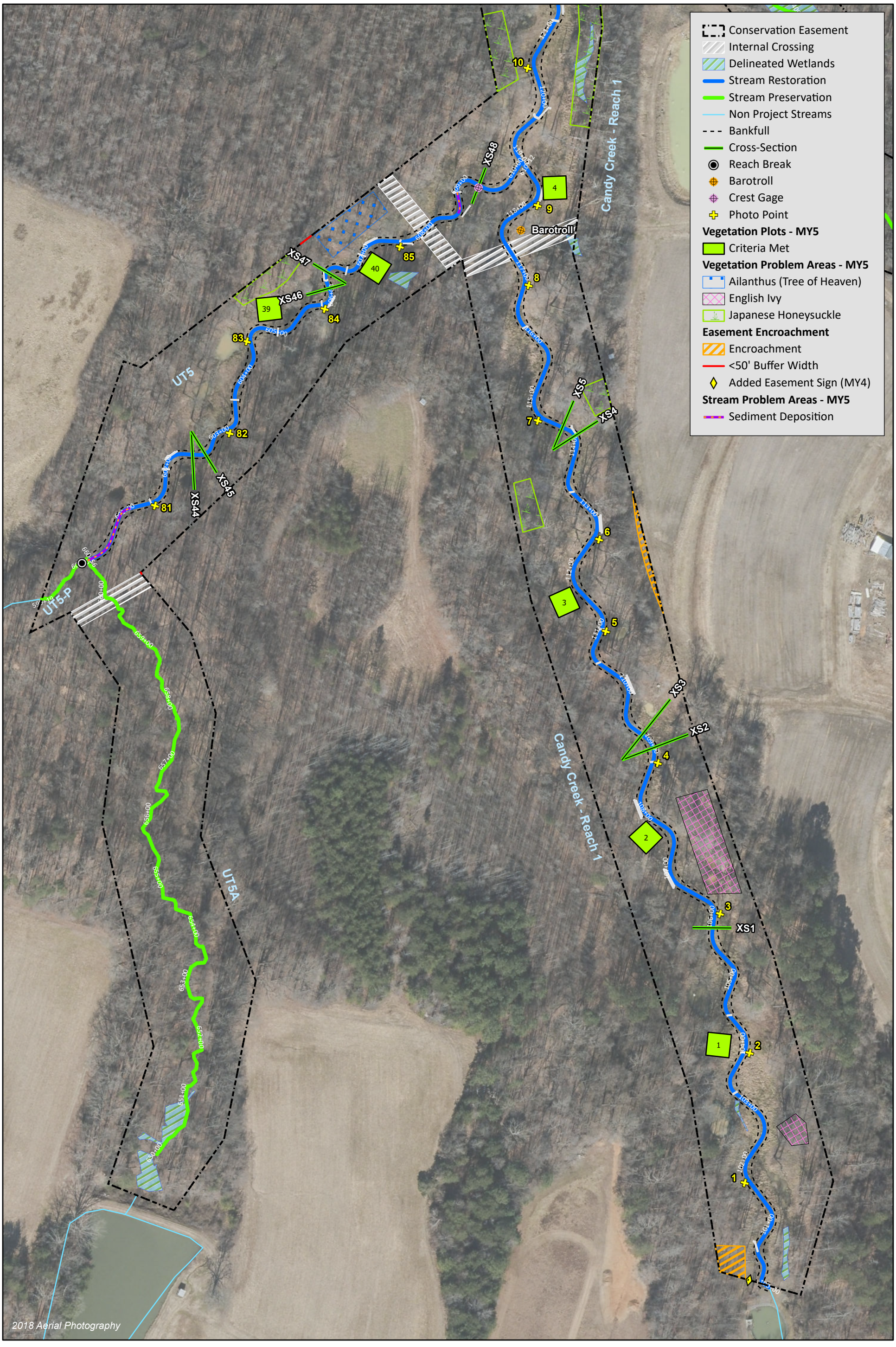
Environmental Quality

0 600 1,200 Feet

N

Figure 3.0 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Guilford County, NC



WILDLANDS ENGINEERING

Environmental Quality

0 125 250 Feet

Figure 3.1 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC

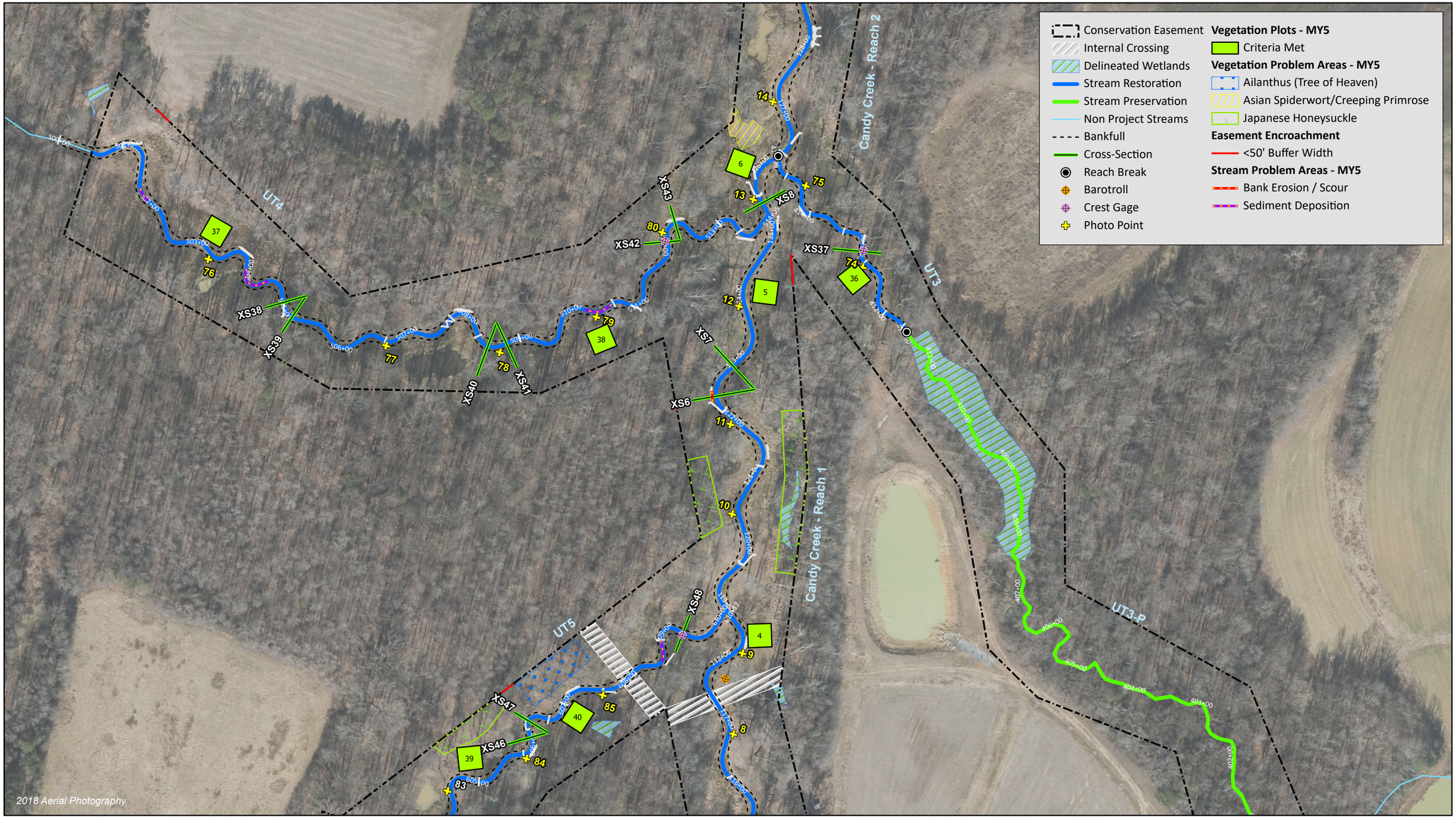
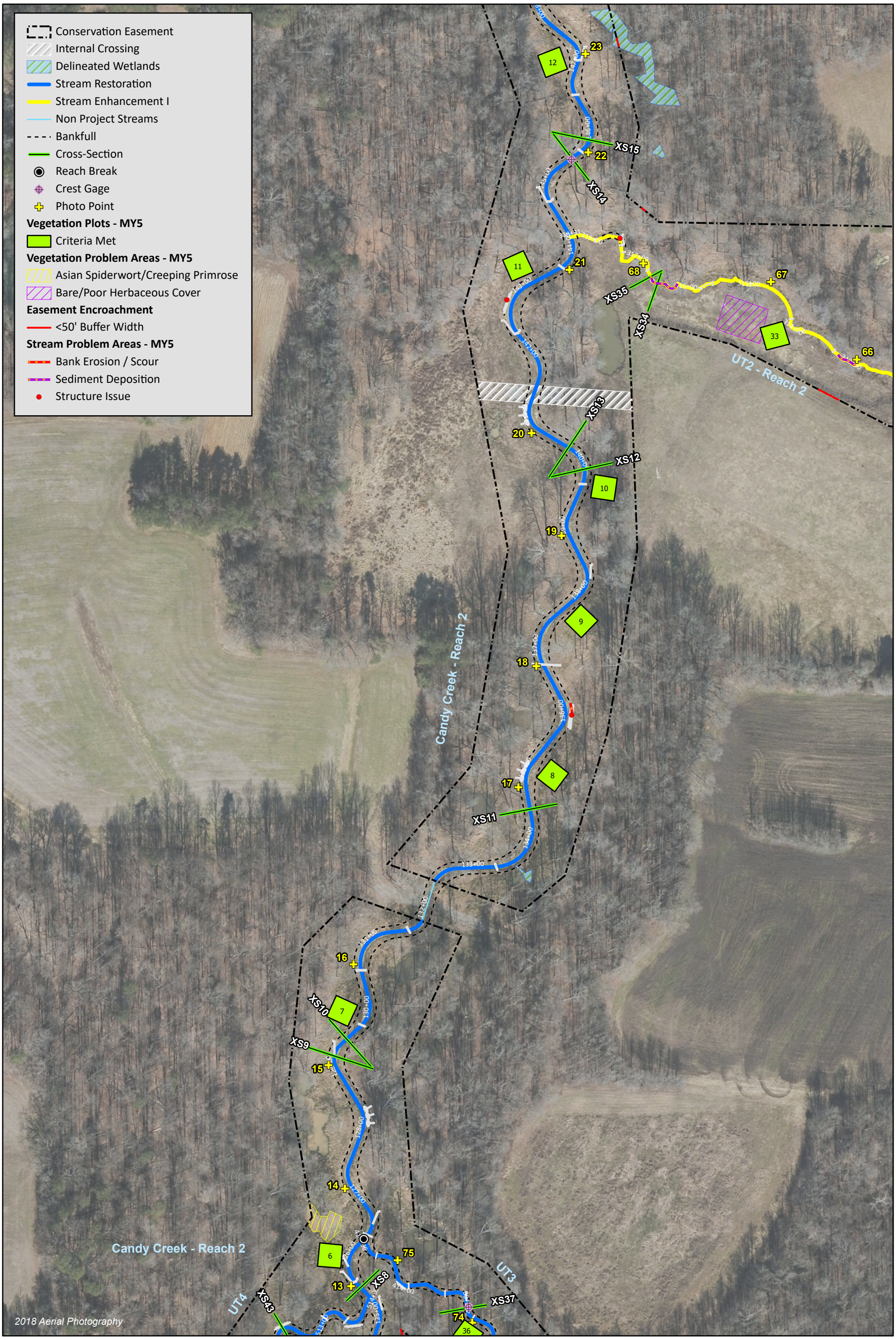


Figure 3.2 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Guilford County, NC



WILDLANDS ENGINEERING

Environmental Quality

0 125 250 Feet

Figure 3.3 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC

Conservation Easement
Internal Crossing
Delineated Wetlands
Stream Restoration
Stream Enhancement I
Stream Enhancement II
Non Project Streams
Bankfull
Cross-Section
Reach Break
Crest Gage
Photo Point

Vegetation Plots - MY5
Criteria Met
Criteria Not Met

Vegetation Problem Areas - MY5
Bare/Poor Herbaceous Cover
Low Stem Density

Easement Encroachment
Encroachment
<50' Buffer Width

Stream Problem Areas - MY5
Bank Erosion / Scour
Sediment Deposition
Structure Issue

Candy Creek - Reach 3
Hopkins
UT2A
UT2B
UT2 - Reach 1
UT2 - Reach 2
Candy Creek - Reach 2
XS16
XS15
XS14
XS13
XS12
XS36
XS35
XS34
XS33
XS32
XS31
XS30
2018 Aerial Photography

WILDLANDS ENGINEERING
NC Environmental Quality

0 125 250 Feet

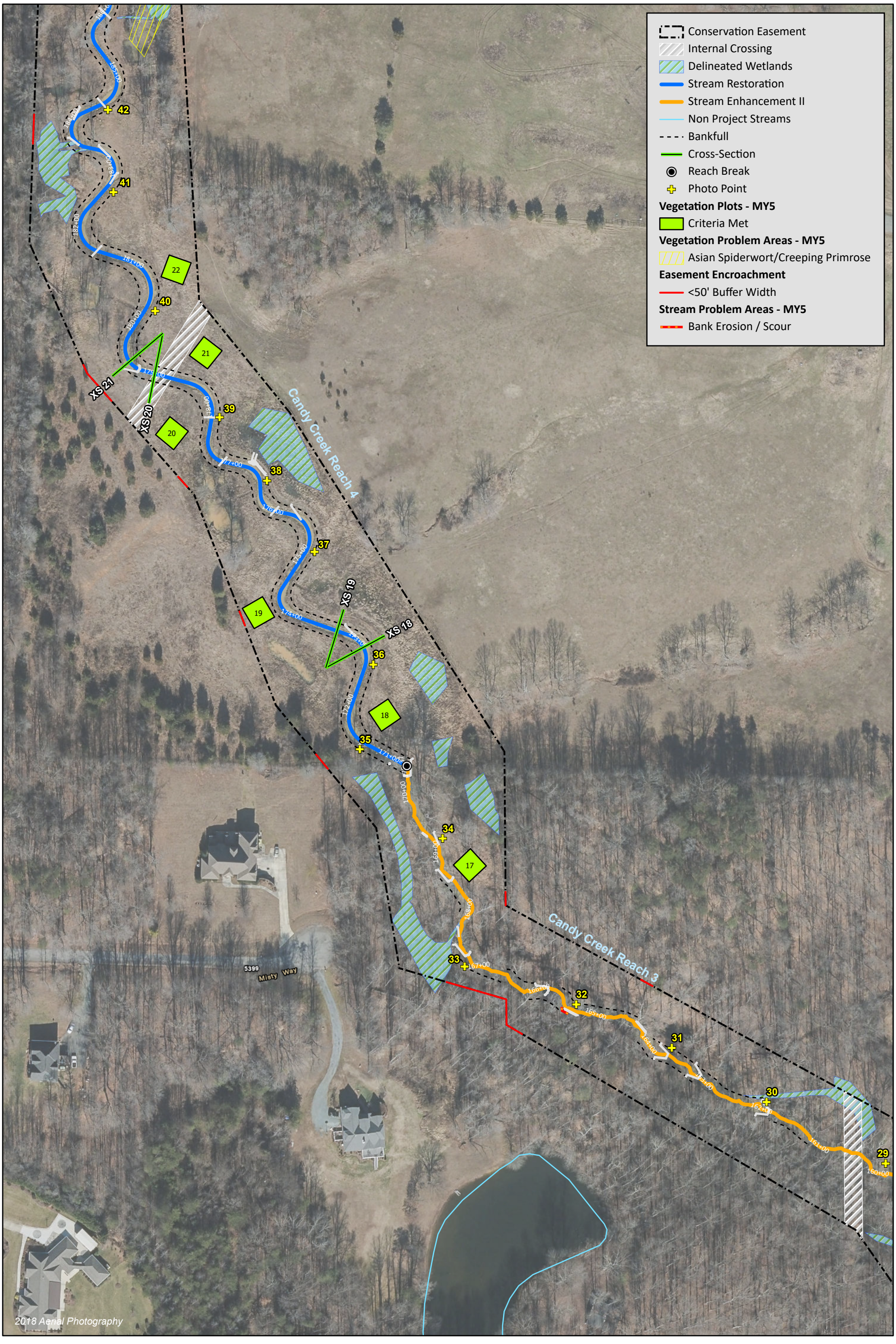
Figure 3.4 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC

WILDLANDS ENGINEERING

Environmental Quality

0 125 250 Feet

Figure 3.5 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021
Guilford County, NC



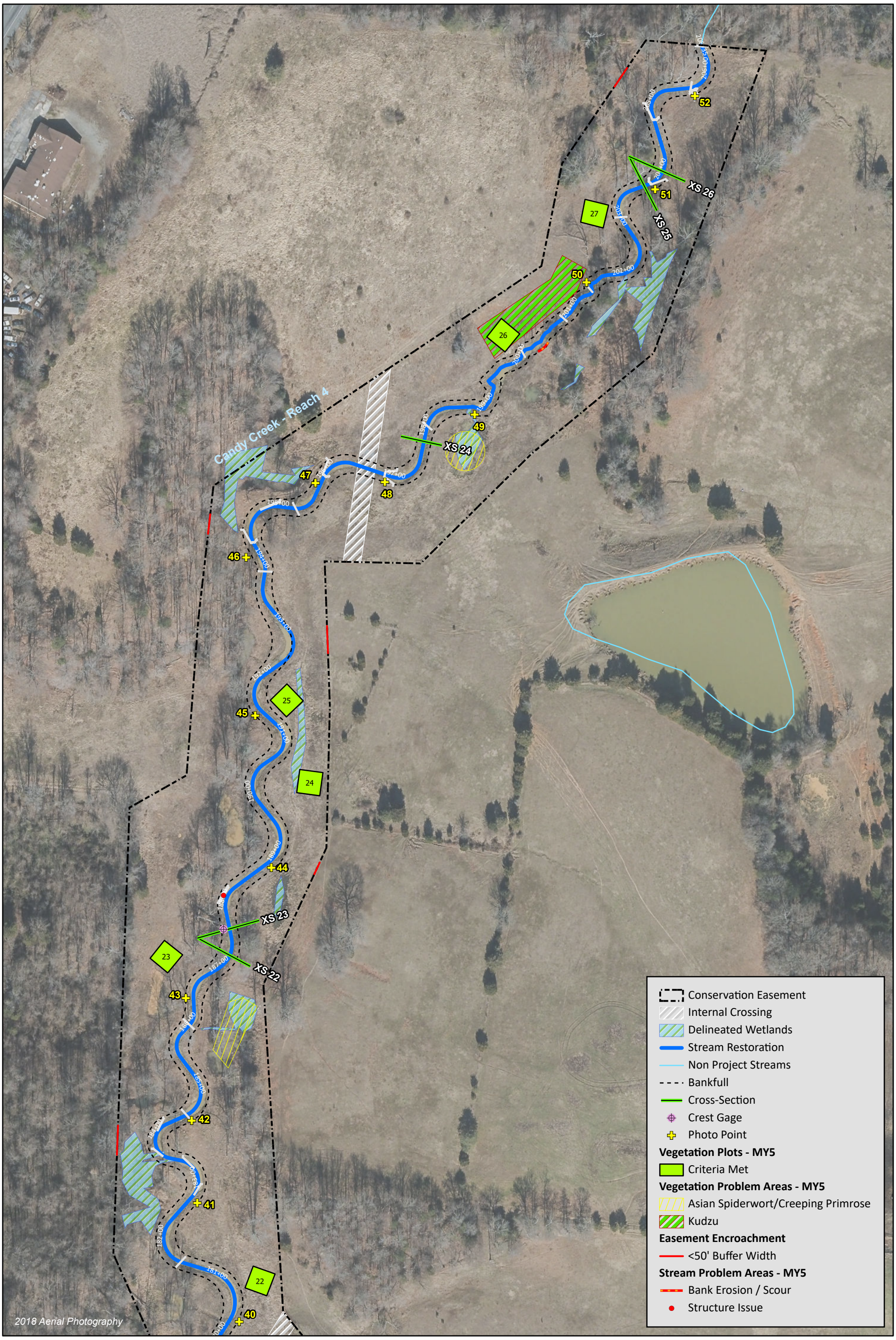
WILDLANDS ENGINEERING

Environmental Quality

0 125 250 Feet

Figure 3.6 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Guilford County, NC



WILDLANDS ENGINEERING

Environmental Quality

Figure 3.7 Integrated Current Condition Plan View
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Guilford County, NC

Table 5a. Visual Stream Morphology Stability Assessment Table

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

Candy Creek Reach 1 (2,619 LF)

Last assessed on 10/19/2021

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	15	>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%
				Totals	1	15	>99%	0	0	>99%
3. Engineered Structures[1]	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%			

[1]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 5 - 2021

Candy Creek Reach 2 (2,215 LF)

Last assessed on 10/19/2021

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	24	24			100%			
		Length Appropriate	24	24			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	24	24			100%			
		Thalweg centering at downstream of meander bend (Glide)	24	24			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			1	20	>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%
				Totals	1	20	>99%	0	0	>99%
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	27	29			93%			
	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%.	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%			

[1]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 5 - 2021

Candy Creek Reach 3 (2,135 LF)

Last assessed on 10/14/2021

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.			2	45	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			1	15	>99%	0	0	>99%
				Totals	3	60	99%	0	0	99%
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	35	35			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%.	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%			

[1]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 5 - 2021

Candy Creek Reach 4 (3,564 LF)

Last assessed on 10/14/2021

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%			
		Length Appropriate	39	39			100%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	38	38			100%			
		Thalweg centering at downstream of meander bend (Glide)	39	39			100%			
2. Bank	1. Scoured/Eroded	Bank lacking vegetative cover resulting simply from poor growth and/or scour and erosion.			1	20	>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%
				Totals	1	20	>99%	0	0	>99%
3. Engineered Structures[1]	1. Overall Integrity	Structures physically intact with no dislodged boulders or logs.	55	56			98%			
	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.	22	22			100%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	38	38			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	38	38			100%			

[1]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 5 - 2021

UT1C (728 LF)
Last assessed on 10/14/2021

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.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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.	20	22			91%			
	3. Bank Protection	Bank erosion within the structures extent of influence does not exceed 15%.	7	7			100%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	7	7			100%			

[1]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 5 - 2021

UT1D (379 LF)
Last assessed on 10/14/2021

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.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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.	25	29			86%			
	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%			

[1]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 5 - 2021

UT2 Reach 1 (1,188 LF)

Last assessed on 10/14/2021

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.			0	0	100%	0	0	100%
	2. Undercut	Banks undercut/overhanging to the extent that mass wasting appears likely. Does NOT include undercuts that are modest, appear sustainable and are providing habitat.			0	0	100%	0	0	100%
	3. Mass Wasting	Bank slumping, calving, or collapse			0	0	100%	0	0	100%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			

[1]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 5 - 2021

UT2 Reach 2 (643 LF)

Last assessed on 10/14/2021

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			2	80	88%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	5	6			83%			
	3. Meander Pool Condition	Depth Sufficient	5	7			71%			
		Length Appropriate	6	7			86%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	6	7			86%			
		Thalweg centering at downstream of meander bend (Glide)	6	7			86%			
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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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.	7	8			88%			
	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%			

[1]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 5 - 2021

UT2A (353 LF)

Last assessed on 10/14/2021

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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			

[1]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 5 - 2021

UT2B (657 LF)
Last assessed on 10/14/2021

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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			

[1]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 5 - 2021

UT3 (346 LF)
Last assessed on 10/19/2021

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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			

[1]Excludes constructed riffles since they are evaluated in channel category.

Table 5l. Visual Stream Morphology Stability Assessment Table

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT4 (1,356 LF)
Last assessed on 10/19/2021

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			3	110	92%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	28	32			88%			
	3. Meander Pool Condition	Depth Sufficient	28	30			93%			
		Length Appropriate	29	30			97%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	29	30			97%			
		Thalweg centering at downstream of meander bend (Glide)	29	30			97%			
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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			

[1]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 5 - 2021

UT5 (1,012 LF)
Last assessed on 10/19/2021

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			2	130	87%			
		Degradation			0	0	100%			
	2. Riffle Condition	Texture/Substrate	19	21			90%			
	3. Meander Pool Condition	Depth Sufficient	19	21			90%			
		Length Appropriate	19	21			90%			
	4. Thalweg Position	Thalweg centering at upstream of meander bend (Run)	19	21			90%			
		Thalweg centering at downstream of meander bend (Glide)	19	21			90%			
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%
				Totals	0	0	100%	0	0	100%
3. Engineered Structures[1]	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%			
	4. Habitat	Pool forming structures maintaining ~Max Pool Depth : Bankfull Depth ≥ 1.6 Rootwads/logs providing some cover at baseflow.	11	12			92%			

[1]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 5 - 2021

Last assessed on 10/19/2021

Planted Acreage **32**

Vegetation Category	Definitions	Mapping Threshold (Ac)	Number of Polygons	Combined Acreage	% of Planted Acreage
Bare Areas	Very limited cover of both woody and herbaceous material.	0.1	1	0.07	0.2%
Low Stem Density Areas	Woody stem densities clearly below target levels based on MY3, 5, or 7 stem count criteria.	0.1	1	0.05	0.2%
		Total	**2**	**0.1**	**0.4%**
Areas of Poor Growth Rates or Vigor	Areas with woody stems of a size class that are obviously small given the monitoring year.	0.25 Ac	0	0	0%
		Cumulative Total	**2**	**0.1**	**0.4%**

Easement Acreage **62**

Vegetation Category	Definitions	Mapping Threshold (SF)	Number of Polygons	Combined Acreage	% of Easement Acreage
Invasive Areas of Concern[1]	Areas of points (if too small to render as polygons at map scale).	1,000	12	1.08	1.7%
Easement Encroachment Areas	Areas of points (if too small to render as polygons at map scale).	none	3	0.07	0.1%

[1] Asian Spiderwort/Creeping Primrose was counted as one polygon because each individual polygon would have been to small to meet the minimum mapping threshold.

STREAM PHOTOGRAPHS

Candy Creek
Monitoring Year 5

	
PHOTO POINT 1 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 1** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 2 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 2** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 3 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 3** Candy Creek R1 – downstream *(5/24/2021)*

	
PHOTO POINT 4 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 4** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 5 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 5** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 6 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 6** Candy Creek R1 – downstream *(5/24/2021)*

	
PHOTO POINT 7 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 7** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 8 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 8** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 9 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 9** Candy Creek R1 – downstream *(5/24/2021)*

	
PHOTO POINT 10 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 10** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 11 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 11** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 12 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 12** Candy Creek R1 – downstream *(5/24/2021)*

	
PHOTO POINT 13 Candy Creek R1 – upstream *(5/24/2021)*	**PHOTO POINT 13** Candy Creek R1 – downstream *(5/24/2021)*
	
PHOTO POINT 14 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 14** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 15 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 15** Candy Creek R2 – downstream *(5/24/2021)*

	
PHOTO POINT 16 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 16** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 17 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 17** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 18 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 18** Candy Creek R2 – downstream *(5/24/2021)*

	
PHOTO POINT 19 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 19** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 20 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 20** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 21 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 21** Candy Creek R2 – downstream *(5/24/2021)*

	
PHOTO POINT 22 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 22** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 23 Candy Creek R2 – upstream *(5/24/2021)*	**PHOTO POINT 23** Candy Creek R2 – downstream *(5/24/2021)*
	
PHOTO POINT 24A Candy Creek R2 – upstream *(10/19/2021)*	**PHOTO POINT 24A** Candy Creek R2 – downstream *(10/19/2021)*

	
PHOTO POINT 24 Candy Creek R2 – upstream *(10/19/2021)*	**PHOTO POINT 24** Candy Creek R3 – downstream *(10/19/2021)*
	
PHOTO POINT 24B Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 24B** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 25 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 25** Candy Creek R3 – downstream *(5/20/2021)*

	
PHOTO POINT 26 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 26** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 27 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 27** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 28 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 28** Candy Creek R3 – downstream *(5/20/2021)*

	
PHOTO POINT 29 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 29** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 30 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 30** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 31 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 31** Candy Creek R3 – downstream *(5/20/2021)*

	
PHOTO POINT 32 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 32** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 33 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 33** Candy Creek R3 – downstream *(5/20/2021)*
	
PHOTO POINT 34 Candy Creek R3 – upstream *(5/20/2021)*	**PHOTO POINT 34** Candy Creek R3 – downstream *(5/20/2021)*

	
PHOTO POINT 35 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 35** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 36 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 36** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 37 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 37** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 38 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 38** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 39 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 39** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 40 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 40** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 41 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 41** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 42 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 42** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 43 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 43** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 44 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 44** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 45 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 45** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 46 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 46** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 47 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 47** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 48 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 48** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 49 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 49** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 50 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 50** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 51 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 51** Candy Creek R4 – downstream *(5/20/2021)*
	
PHOTO POINT 52 Candy Creek R4 – upstream *(5/20/2021)*	**PHOTO POINT 52** Candy Creek R4 – downstream *(5/20/2021)*

	
PHOTO POINT 53 UT1C – upstream *(5/20/2021)*	**PHOTO POINT 53** UT1C – downstream *(5/20/2021)*
	
PHOTO POINT 54 UT1C – upstream *(5/20/2021)*	**PHOTO POINT 54** UT1C – downstream *(5/20/2021)*
	
PHOTO POINT 55 UT1C – upstream *(5/20/2021)*	**PHOTO POINT 55** UT1C – downstream *(5/20/2021)*

	
PHOTO POINT 56 UT1C – upstream *(5/20/2021)*	**PHOTO POINT 56** UT1C – downstream *(5/20/2021)*
	
PHOTO POINT 57 UT1D – upstream *(5/20/2021)*	**PHOTO POINT 57** UT1D – downstream *(5/20/2021)*
	
PHOTO POINT 58 UT2 R1 – upstream *(5/20/2021)*	**PHOTO POINT 58** UT2 R1 – downstream *(5/20/2021)*

	
PHOTO POINT 59 UT2 R1 – upstream *(5/20/2021)*	**PHOTO POINT 59** UT2 R1 – downstream *(5/20/2021)*
	
PHOTO POINT 60 UT2 R1 – upstream *(5/20/2021)*	**PHOTO POINT 60** UT2 R1 – downstream *(5/20/2021)*
	
PHOTO POINT 61 UT2 R1 – upstream *(5/24/2021)*	**PHOTO POINT 61** UT2 R1 – downstream *(5/24/2021)*

	
PHOTO POINT 62 UT2 R1 – upstream *(5/24/2021)*	**PHOTO POINT 62** UT2 R1 – downstream *(5/24/2021)*
	
PHOTO POINT 63 UT2 R1 – upstream *(5/24/2021)*	**PHOTO POINT 63** UT2 R1 – downstream *(5/24/2021)*
	
PHOTO POINT 64 UT2 R1 – upstream *(5/24/2021)*	**PHOTO POINT 64** UT2 R1 – downstream *(5/24/2021)*

	
PHOTO POINT 65 UT2 R1 – upstream *(5/24/2021)*	**PHOTO POINT 65** UT2 R1 – downstream *(5/24/2021)*
	
PHOTO POINT 66 UT2 R2 – upstream *(5/24/2021)*	**PHOTO POINT 66** UT2 R2 – downstream *(5/24/2021)*
	
PHOTO POINT 67 UT2 R2 – upstream *(5/24/2021)*	**PHOTO POINT 67** UT2 R2 – downstream *(5/24/2021)*

	
PHOTO POINT 68 UT2 R2 – upstream *(5/24/2021)*	**PHOTO POINT 68** UT2 R2 – downstream *(5/24/2021)*
	
PHOTO POINT 69 UT2A – upstream *(5/24/2021)*	**PHOTO POINT 69** UT2A – downstream *(5/24/2021)*
	
PHOTO POINT 70 UT2A – upstream *(5/24/2021)*	**PHOTO POINT 70** UT2A – downstream *(5/24/2021)*

	
PHOTO POINT 71 UT2B – upstream *(5/20/2021)*	**PHOTO POINT 71** UT2B – downstream *(5/20/2021)*
	
PHOTO POINT 72 UT2B – upstream *(5/24/2021)*	**PHOTO POINT 72** UT2B – downstream *(5/24/2021)*
	
PHOTO POINT 73 UT2B – upstream *(5/24/2021)*	**PHOTO POINT 73** UT2B – downstream *(5/24/2021)*

	
PHOTO POINT 74 UT3 – upstream *(5/24/2021)*	**PHOTO POINT 74** UT3 – downstream *(5/24/2021)*
	
PHOTO POINT 75 UT3 – upstream *(5/24/2021)*	**PHOTO POINT 75** UT3 – downstream *(5/24/2021)*
	
PHOTO POINT 76 UT4 – upstream *(5/24/2021)*	**PHOTO POINT 76** UT4 – downstream *(5/24/2021)*

	
PHOTO POINT 77 UT4 – upstream *(5/24/2021)*	**PHOTO POINT 77** UT4 – downstream *(5/24/2021)*
	
PHOTO POINT 78 UT4 – upstream *(5/24/2021)*	**PHOTO POINT 78** UT4 – downstream *(5/24/2021)*
	
PHOTO POINT 79 UT4 – upstream *(5/24/2021)*	**PHOTO POINT 79** UT4 – downstream *(5/24/2021)*

	
PHOTO POINT 80 UT4 – upstream *(5/24/2021)*	**PHOTO POINT 80** UT4 – downstream *(5/24/2021)*
	
PHOTO POINT 81 UT5 – upstream *(5/24/2021)*	**PHOTO POINT 81** UT5 – downstream *(5/24/2021)*
	
PHOTO POINT 82 UT5 – upstream *(5/24/2021)*	**PHOTO POINT 82** UT5 – downstream *(5/24/2021)*

	
PHOTO POINT 83 UT5 – upstream *(5/24/2021)*	**PHOTO POINT 83** UT5 – downstream *(5/24/2021)*
	
PHOTO POINT 84 UT5 – upstream *(5/24/2021)*	**PHOTO POINT 84** UT5 – downstream *(5/24/2021)*
	
PHOTO POINT 85 UT5 **–** upstream *(5/24/2021)*	**PHOTO POINT 85** UT5 **–** downstream *(5/24/2021)*

VEGETATION PHOTOGRAPHS

Monitoring Year 5

	
Vegetation Plot 1 *(9/16/2021)*	**Vegetation Plot 2** *(9/16/2021)*
	
Vegetation Plot 3 *(9/16/2021)*	**Vegetation Plot 4** *(9/16/2021)*
	
Vegetation Plot 5 *(9/24/2021)*	**Vegetation Plot 6** *(9/16/2021)*

Vegetation Plot 7 *(9/24/2021)*

Vegetation Plot 8 *(9/24/2021)*

Vegetation Plot 9 *(9/24/2021)*

Vegetation Plot 10 *(9/24/2021)*

Vegetation Plot 11 *(9/14/2021)*

Vegetation Plot 12 *(9/14/2021)*

Vegetation Plot 13 *(9/9/2021)*

Vegetation Plot 14 *(9/9/2021)*

Vegetation Plot 15 *(9/9/2021)*

Vegetation Plot 16 *(9/9/2021)*

Vegetation Plot 17 *(9/9/2021)*

Vegetation Plot 18 *(9/9/2021)*

	
Vegetation Plot 19 *(9/14/2021)*	**Vegetation Plot 20** *(9/14/2021)*
	
Vegetation Plot 21 *(9/14/2021)*	**Vegetation Plot 22** *(9/14/2021)*
	
Vegetation Plot 23 *(9/14/2021)*	**Vegetation Plot 24** *(9/14/2021)*

Vegetation Plot 25 *(9/14/2021)*

Vegetation Plot 26 *(9/14/2021)*

Vegetation Plot 27 *(9/14/2021)*

Vegetation Plot 28 *(9/9/2021)*

Vegetation Plot 29 *(9/9/2021)*

Vegetation Plot 30 *(9/9/2021)*

Vegetation Plot 31 *(9/14/2021)*

Vegetation Plot 32 *(9/14/2021)*

Vegetation Plot 33 *(9/14/2021)*

Vegetation Plot 34 *(9/14/2021)*

Vegetation Plot 35 *(9/14/2021)*

Vegetation Plot 36 *(9/16/2021)*

	
Vegetation Plot 37 *(9/24/2021)*	**Vegetation Plot 38** *(9/24/2021)*
	
Vegetation Plot 39 *(9/24/2021)*	**Vegetation Plot 40** *(9/24/2021)*

AREAS OF CONCERN PHOTOGRAPHS

Monitoring Year 5

Candy Creek Reach 1 - Easement encroachment at upstream extent, LB (Sta. 100+00-100+60) (10/19/2021)

Candy Creek Reach 1 - Easement encroachment, RB (Sta. 111+00-113+00) (10/19/2021)

Candy Creek Reach 3 - Easement encroachment at Hopkins Road, LB (Sta. 149+00-150+00) (10/19/2021)

Candy Creek Reach 3 - Bank erosion, RB (Sta. 151+70-152+00) (05/20/2021)

UT1D - Failed structures (Sta. 253+00) (05/20/2021)

IMPROVED AREAS OF CONCERN PHOTOGRAPHS

Monitoring Year 5

	
Candy Creek Reach 1 - stream aggradation (Sta. 100+20-101+50) (10/07/2020)	Candy Creek Reach 1 - Improved stream aggradation (Sta. 100+20-101+50) (5/6/2021)
	
Candy Creek R2 - stream aggradation (Sta. 140+50-140+65) (10/07/2020)	Candy Creek R2 - Improved stream aggradation (Sta. 140+50-140+65) (05/13/2021)
	
Candy Creek R3 - stream aggradation (Sta. 156+10-156+40) (05/13/2020)	Candy Creek R3 - Improved stream aggradation; point bar development (Sta. 156+10-156+40) (05/20/2021)

	
UT5 - stream aggradation (Sta. 603+70-604+70) (10/19/2020)	UT5 - Improved stream aggradation (Sta. 603+70-604+70) (05/06/2021)

APPENDIX 3. Vegetation Plot Data

Table 7. Vegetation Plot Criteria Attainment Table

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Plot	Success Criteria Met (Y/N)	Tract Mean
1	Y	98%
2	Y	
3	Y	
4	Y	
5	Y	
6	Y	
7	Y	
8	Y	
9	Y	
10	Y	
11	Y	
12	Y	
13	Y	
14	Y	
15	Y	
16	Y	
17	Y	
18	Y	
19	Y	
20	Y	
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	Y	

Table 8. CVS Vegetation Plot Metadata

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Report Prepared By	Jeffrey Turner
Date Prepared	10/28/2021
Database Name	Candy Creek MY5 CVS-v2.5.0.mdb
Database Location	Q:\ActiveProjects\005-02145 Candy Creek\Monitoring\Monitoring Year 5 (2021)\Vegetation Assessment
Computer Name	JEFF-PC
File Size	87818240
DESCRIPTION OF WORKSHEETS IN THIS DOCUMENT----------	
Metadata	Description of database file, the report worksheets, and a summary of project(s) and project data.
Project Planted	Each project is listed with its PLANTED stems per acre, for each year. This excludes live stakes.
Project Total Stems	Each project is listed with its TOTAL stems per acre, for each year. This includes live stakes, all planted stems, and all natural/volunteer stems.
Plots	List of plots surveyed with location and summary data (live stems, dead stems, missing, etc.).
Vigor	Frequency distribution of vigor classes for stems for all plots.
Vigor by Spp	Frequency distribution of vigor classes listed by species.
Damage	List of most frequent damage classes with number of occurrences and percent of total stems impacted by each.
Damage by Spp	Damage values tallied by type for each species.
Damage by Plot	Damage values tallied by type for each plot.
Planted Stems by Plot and Spp	A matrix of the count of PLANTED living stems of each species for each plot; dead and missing stems are excluded.
ALL Stems by Plot and Spp	A matrix of the count of total living stems of each species (planted and natural volunteers combined) for each plot; dead and missing stems are excluded.
PROJECT SUMMARY----------	
Project Code	96315
Project Name	Candy Creek Mitigation Site
Sampled Plots	40

Table 9a. Planted and Total Stems
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

			Current Plot Data (MY5 2021)																									
Scientific Name	**Common Name**	**Species Type**	**Vegetation Plot 1**			**Vegetation Plot 2**			**Vegetation Plot 3**			**Vegetation Plot 4**			**Vegetation Plot 5**			**Vegetation Plot 6**			**Vegetation Plot 7**			**Vegetation Plot 8**			**Vegetation Plot 9**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree																										
Acer rubrum	Red Maple	Tree																				1						
Ailanthus altissima	Tree-of-Heaven	Exotic																										
Alnus serrulata	Tag Alder, Smooth Alder	Shrub Tree												8														
Betula nigra	River Birch, Red Birch	Tree	3	3	6	2	2	2	2	2	2	2	2	2	2	2	2				1	1	1	1	1	1	2	2	2
Carya	Hickory	Tree																										
Carya ovata	Common Shagbark Hickory	Tree																										
Castanea dentata	American Chestnut	Tree																										
Cercis canadensis	Redbud	Shrub Tree																										
Diospyros virginiana	American Persimmon	Tree																										
Fagus grandifolia	American Beech	Tree																										
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	1	1	1	2	2	2	3	3	3	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Hamamelis virginiana	Witch-hazel	Shrub Tree																										
Juniperus virginiana	Eastern Red Cedar	Tree																										
Lindera benzoin	Northern Spicebush	Shrub Tree																										
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree									15			6												2			20
Liriodendron tulipifera	Tulip Poplar	Tree			2			15			20				1	1	13			3			26			5			5
Morus rubra	Red Mulberry	Tree																										
Nyssa sylvatica	Sour Gum, Black Gum	Tree																										
Pinus strobus	Eastern White Pine	Tree																										
Pinus taeda	Loblolly Pine	Tree																										
Platanus occidentalis	Sycamore, Plane-tree	Tree	2	2	4	2	2	5	2	2	2	1	1	1	1	1	2	3	3	3	1	1	2	3	3	3	1	1	1
Prunus caroliniana	Carolina Laurel Cherry	Shrub Tree																										
Prunus serotina	Black Cherry	Shrub Tree																										
Quercus alba	White Oak	Tree																										
Quercus falcata	Southern Red Oak	Tree																										
Quercus lyrata	Overcup Oak	Tree																										
Quercus michauxii	Swamp Chestnut Oak	Tree	1	1	1	1	1	1				2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	2	2	2
Quercus pagoda	Cherrybark Oak	Tree									1																1	1	1
Quercus phellos	Willow Oak	Tree	3	3	3	2	2	2	1	1	1	2	2	2	2	2	2	1	1	1	3	3	3	2	2	2	2	2	2
Quercus rubra	Northern Red Oak	Tree																										
Rhus copallinum	Winged Sumac	Shrub Tree																										
Rhus typhina	Staghorn Sumac	Shrub																										
Salix nigra	Black Willow	Tree						3			5						1									4			
Salix sericea	Silky Willow	Shrub Tree																										
Sambucus canadensis	Common Elderberry	Shrub Tree																										
Sambucus nigra	European Elder	Shrub Tree																										
Ulmus alata	Winged Elm	Tree															4			3						4			1
Ulmus americana	American Elm	Tree																										
Ulmus rubra	Slippery Elm, Red Elm	Tree																										
	Stem count		10	10	17	9	9	30	8	8	49	9	9	23	10	10	28	8	8	14	10	10	38	10	10	25	11	11	37
	Size (ares)		1			1			1			1			1			1			1			1			1		
	Size (acres)		0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
	Species count		5	5	6	5	5	7	4	4	8	5	5	7	6	6	8	4	4	6	5	5	7	5	5	9	6	6	9
	Stems per acre		405	405	688	364	364	1,214	324	324	1,983	364	364	931	405	405	1,133	324	324	567	405	405	1,538	405	405	1,012	445	445	1,497

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 5 - 2021

			Current Plot Data (MY5 2021)																									
Scientific Name	**Common Name**	**Species Type**	**Vegetation Plot 10**			**Vegetation Plot 11**			**Vegetation Plot 12**			**Vegetation Plot 13**			**Vegetation Plot 14**			**Vegetation Plot 15**			**Vegetation Plot 16**			**Vegetation Plot 17**			**Vegetation Plot 18**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree			5																							
Acer rubrum	Red Maple	Tree																				1						1
Ailanthus altissima	Tree-of-Heaven	Exotic																										
Alnus serrulata	Tag Alder, Smooth Alder	Shrub Tree												2			2											
Betula nigra	River Birch, Red Birch	Tree				1	1	1				3	3	7	2	2	2	3	3	3	1	1	1				2	2	2
Carya	Hickory	Tree																										
Carya ovata	Common Shagbark Hickory	Tree																										
Castanea dentata	American Chestnut	Tree																										
Cercis canadensis	Redbud	Shrub Tree																										
Diospyros virginiana	American Persimmon	Tree							2	2	2											1						
Fagus grandifolia	American Beech	Tree																										
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	3	3	3	3	3	3	2	2	2	3	3	3	2	2	2	3	3	3	3	3	3	3	3	3	2	2	2
Hamamelis virginiana	Witch-hazel	Shrub Tree																										
Juniperus virginiana	Eastern Red Cedar	Tree																										
Lindera benzoin	Northern Spicebush	Shrub Tree																						1	1	1		
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree						27			2			16								1						6
Liriodendron tulipifera	Tulip Poplar	Tree			8			3	1	1	15			16			9	1	1	1			12					
Morus rubra	Red Mulberry	Tree																										
Nyssa sylvatica	Sour Gum, Black Gum	Tree																										
Pinus strobus	Eastern White Pine	Tree																										
Pinus taeda	Loblolly Pine	Tree						2																				
Platanus occidentalis	Sycamore, Plane-tree	Tree	3	3	12	1	1	1	1	1	1	2	2	10	3	3	3				2	2	14	2	2	2	2	2	2
Prunus caroliniana	Carolina Laurel Cherry	Shrub Tree																										
Prunus serotina	Black Cherry	Shrub Tree																										
Quercus alba	White Oak	Tree																										
Quercus falcata	Southern Red Oak	Tree																										
Quercus lyrata	Overcup Oak	Tree																										
Quercus michauxii	Swamp Chestnut Oak	Tree				2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	1	1	1	3	3	3
Quercus pagoda	Cherrybark Oak	Tree				2	2	2	1	1	1	1	1	1	1	1	1				1	1	1	1	1	1			
Quercus phellos	Willow Oak	Tree	3	3	3	3	3	3	1	1	1	1	1	1				1	1	1	2	2	2						
Quercus rubra	Northern Red Oak	Tree																										
Rhus copallinum	Winged Sumac	Shrub Tree																										
Rhus typhina	Staghorn Sumac	Shrub																										
Salix nigra	Black Willow	Tree							1	1	7																2	2	16
Salix sericea	Silky Willow	Shrub Tree																										
Sambucus canadensis	Common Elderberry	Shrub Tree									8							1	1	2			3	1	1	1			
Sambucus nigra	European Elder	Shrub Tree																										
Ulmus alata	Winged Elm	Tree			7						4																	
Ulmus americana	American Elm	Tree						1																				
Ulmus rubra	Slippery Elm, Red Elm	Tree																										
	Stem count		9	9	38	12	12	45	11	11	45	12	12	58	10	10	21	10	10	11	11	11	41	9	9	9	11	11	32
	Size (ares)		1			1			1			1			1			1			1			1			1		
	Size (acres)		0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
	Species count		3	3	6	6	6	10	8	8	11	6	6	9	5	5	7	6	6	6	6	6	11	6	6	6	5	5	7
	Stems per acre		364	364	1,538	486	486	1,821	445	445	1,821	486	486	2,347	405	405	850	405	405	445	445	445	1,659	364	364	364	445	445	1,295

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 5 - 2021

			Current Plot Data (MY5 2021)																									
Scientific Name	**Common Name**	**Species Type**	**Vegetation Plot 19**			**Vegetation Plot 20**			**Vegetation Plot 21**			**Vegetation Plot 22**			**Vegetation Plot 23**			**Vegetation Plot 24**			**Vegetation Plot 25**			**Vegetation Plot 26**			**Vegetation Plot 27**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree															1						1							
Acer rubrum	Red Maple	Tree				1	1	1						2																
Ailanthus altissima	Tree-of-Heaven	Exotic																												
Alnus serrulata	Tag Alder, Smooth Alder	Shrub Tree																												
Betula nigra	River Birch, Red Birch	Tree	2	2	2				1	1	1	2	2	4	2	2	7	2	2	3				1	1	1	2	2	2
Carya	Hickory	Tree																												
Carya ovata	Common Shagbark Hickory	Tree																												
Castanea dentata	American Chestnut	Tree																												
Cercis canadensis	Redbud	Shrub Tree																												
Diospyros virginiana	American Persimmon	Tree																												
Fagus grandifolia	American Beech	Tree																												
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	2	2	2	3	3	3	2	2	2	3	3	5	3	3	3	2	2	2	3	3	4	3	3	3	2	2	2
Hamamelis virginiana	Witch-hazel	Shrub Tree																												
Juniperus virginiana	Eastern Red Cedar	Tree																								1				
Lindera benzoin	Northern Spicebush	Shrub Tree																												
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			5			14			11			27			30			40			22						15
Liriodendron tulipifera	Tulip Poplar	Tree															7													
Morus rubra	Red Mulberry	Tree																												
Nyssa sylvatica	Sour Gum, Black Gum	Tree																												
Pinus strobus	Eastern White Pine	Tree									2																			
Pinus taeda	Loblolly Pine	Tree																												
Platanus occidentalis	Sycamore, Plane-tree	Tree	3	3	3	3	3	3	3	3	3	1	1	3	3	3	4				3	3	3	3	3	3	3	3	3
Prunus caroliniana	Carolina Laurel Cherry	Shrub Tree																												
Prunus serotina	Black Cherry	Shrub Tree																												
Quercus alba	White Oak	Tree																												
Quercus falcata	Southern Red Oak	Tree				1	1	1																						
Quercus lyrata	Overcup Oak	Tree																												
Quercus michauxii	Swamp Chestnut Oak	Tree	2	2	2	1	1	1	1	1	1				2	2	2	2	2	2	1	1	1	3	3	3	2	2	2
Quercus pagoda	Cherrybark Oak	Tree	1	1	1				2	2	2	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1
Quercus phellos	Willow Oak	Tree	2	2	2	1	1	1	1	1	1	3	3	3	2	2	2	3	3	4	2	2	2	2	2	2	1	1	1
Quercus rubra	Northern Red Oak	Tree																												
Rhus copallinum	Winged Sumac	Shrub Tree																								1				
Rhus typhina	Staghorn Sumac	Shrub																												
Salix nigra	Black Willow	Tree			10			57			8			13						1			6						
Salix sericea	Silky Willow	Shrub Tree																												
Sambucus canadensis	Common Elderberry	Shrub Tree																												
Sambucus nigra	European Elder	Shrub Tree																												
Ulmus alata	Winged Elm	Tree																		24			19			23			9
Ulmus americana	American Elm	Tree									13			21																
Ulmus rubra	Slippery Elm, Red Elm	Tree																												
Stem count			12	12	27	10	10	81	10	10	44	10	10	79	13	13	57	10	10	77	10	10	59	12	12	38	11	11	35
Size (ares)			1			1			1			1			1			1			1			1			1		
Size (acres)			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
Species count			6	6	8	6	6	8	6	6	10	5	5	9	6	6	9	5	5	8	5	5	9	5	5	9	6	6	8
Stems per acre			486	486	1,093	405	405	3,278	405	405	1,781	405	405	3,197	526	526	2,307	405	405	3,116	405	405	2,388	486	486	1,538	445	445	1,416

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 5 - 2021

			Current Plot Data (MY5 2021)																									
Scientific Name	**Common Name**	**Species Type**	**Vegetation Plot 28**			**Vegetation Plot 29**			**Vegetation Plot 30**			**Vegetation Plot 31**			**Vegetation Plot 32**			**Vegetation Plot 33**			**Vegetation Plot 34**			**Vegetation Plot 35**			**Vegetation Plot 36**		
			PnoLS	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**	**PnoLS**	**P-all**	**T**
Acer negundo	Boxelder	Tree						2															9					
Acer rubrum	Red Maple	Tree																		8								
Ailanthus altissima	Tree-of-Heaven	Exotic																										
Alnus serrulata	Tag Alder, Smooth Alder	Shrub Tree																										
Betula nigra	River Birch, Red Birch	Tree	3	3	3			1	3	3	10							2	2	2	1	1	1				3	3	3
Carya	Hickory	Tree																										
Carya ovata	Common Shagbark Hickory	Tree																										
Castanea dentata	American Chestnut	Tree																										
Cercis canadensis	Redbud	Shrub Tree																										
Diospyros virginiana	American Persimmon	Tree																										
Fagus grandifolia	American Beech	Tree																										
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	4	4	5	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	1	1	2	2	2
Hamamelis virginiana	Witch-hazel	Shrub Tree																										
Juniperus virginiana	Eastern Red Cedar	Tree																										
Lindera benzoin	Northern Spicebush	Shrub Tree																										
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			12			4						50			1			20			30					
Liriodendron tulipifera	Tulip Poplar	Tree			16			34						30			1			10			34					
Morus rubra	Red Mulberry	Tree																										
Nyssa sylvatica	Sour Gum, Black Gum	Tree																										
Pinus strobus	Eastern White Pine	Tree																										
Pinus taeda	Loblolly Pine	Tree																					20					
Platanus occidentalis	Sycamore, Plane-tree	Tree	3	3	17	1	1	1	2	2	2	3	3	23	3	3	3	2	2	7	1	1	3	2	2	2	2	2	2
Prunus caroliniana	Carolina Laurel Cherry	Shrub Tree																										
Prunus serotina	Black Cherry	Shrub Tree																										
Quercus alba	White Oak	Tree																										
Quercus falcata	Southern Red Oak	Tree																										
Quercus lyrata	Overcup Oak	Tree																										
Quercus michauxii	Swamp Chestnut Oak	Tree			1	6	6	6	1	1	1	3	3	3	1	1	1	1	1	1	2	2	2	2	2	2			
Quercus pagoda	Cherrybark Oak	Tree							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				1	1	1
Quercus phellos	Willow Oak	Tree	2	2	2	2	2	2	1	1	1				2	2	2	2	2	2	3	3	3						
Quercus rubra	Northern Red Oak	Tree			8																								
Rhus copallinum	Winged Sumac	Shrub Tree												2			1												
Rhus typhina	Staghorn Sumac	Shrub																											
Salix nigra	Black Willow	Tree															3												
Salix sericea	Silky Willow	Shrub Tree																											
Sambucus canadensis	Common Elderberry	Shrub Tree																											
Sambucus nigra	European Elder	Shrub Tree																											
Ulmus alata	Winged Elm	Tree																					30						
Ulmus americana	American Elm	Tree																											
Ulmus rubra	Slippery Elm, Red Elm	Tree																											
	Stem count		12	12	64	10	10	51	11	11	18	10	10	112	10	10	16	11	11	54	11	11	136	5	5	5	8	8	8
	Size (ares)		1			1			1			1			1			1			1			1			1		
	Size (acres)		0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247			0.0247		
	Species count		4	4	8	4	4	8	6	6	6	4	4	7	5	5	9	6	6	9	6	6	11	3	3	3	4	4	4
	Stems per acre		486	486	2,590	405	405	2,064	445	445	728	405	405	4,532	405	405	647	445	445	2,185	445	445	5,504	202	202	202	324	324	324

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 5 - 2021

			Current Plot Data (MY5 2021)											
Scientific Name	Common Name	Species Type	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
Acer negundo	Boxelder	Tree			5						10			
Acer rubrum	Red Maple	Tree									6			3
Ailanthus altissima	Tree-of-Heaven	Exotic												
Alnus serrulata	Tag Alder, Smooth Alder	Shrub Tree												
Betula nigra	River Birch, Red Birch	Tree	1	1	1	1	1	1	2	2	2			
Carya	Hickory	Tree												
Carya ovata	Common Shagbark Hickory	Tree												
Castanea dentata	American Chestnut	Tree				1	1	1						
Cercis canadensis	Redbud	Shrub Tree												
Diospyros virginiana	American Persimmon	Tree												
Fagus grandifolia	American Beech	Tree												
Fraxinus pennsylvanica	Green Ash, Red Ash	Tree	2	2	2	4	4	4	3	3	3	1	1	1
Hamamelis virginiana	Witch-hazel	Shrub Tree												
Juniperus virginiana	Eastern Red Cedar	Tree												
Lindera benzoin	Northern Spicebush	Shrub Tree												
Liquidambar styraciflua	Sweet Gum, Red Gum	Tree			202			7			8			5
Liriodendron tulipifera	Tulip Poplar	Tree			9			11	2	2	27	2	2	48
Morus rubra	Red Mulberry	Tree												
Nyssa sylvatica	Sour Gum, Black Gum	Tree												
Pinus strobus	Eastern White Pine	Tree												
Pinus taeda	Loblolly Pine	Tree												
Platanus occidentalis	Sycamore, Plane-tree	Tree	4	4	4	2	2	2	1	1	1	4	4	5
Prunus caroliniana	Carolina Laurel Cherry	Shrub Tree												
Prunus serotina	Black Cherry	Shrub Tree												
Quercus alba	White Oak	Tree												
Quercus falcata	Southern Red Oak	Tree												
Quercus lyrata	Overcup Oak	Tree												
Quercus michauxii	Swamp Chestnut Oak	Tree	1	1	1	1	1	1				1	1	1
Quercus pagoda	Cherrybark Oak	Tree	1	1	1	1	1	1				1	1	1
Quercus phellos	Willow Oak	Tree	1	1	1				2	2	2	1	1	1
Quercus rubra	Northern Red Oak	Tree												
Rhus copallinum	Winged Sumac	Shrub Tree												
Rhus typhina	Staghorn Sumac	Shrub												
Salix nigra	Black Willow	Tree										1	1	1
Salix sericea	Silky Willow	Shrub Tree												7
Sambucus canadensis	Common Elderberry	Shrub Tree				1	1	1	1	1	1			
Sambucus nigra	European Elder	Shrub Tree												
Ulmus alata	Winged Elm	Tree			3			3			80			1
Ulmus americana	American Elm	Tree												
Ulmus rubra	Slippery Elm, Red Elm	Tree												
		Stem count	10	10	229	11	11	32	11	11	140	11	11	74
		Size (ares)	1			1			1			1		
		Size (acres)	0.0247			0.0247			0.0247			0.0247		
		Species count	6	6	10	7	7	10	6	6	10	7	7	11
		Stems per acre	405	405	9,267	445	445	1,295	445	445	5,666	445	445	2,995

Annual Means														
MY5 (2021)			MY3 (2019)			MY2 (2018)			MY1 (2017)			MY0 (2017)		
PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T	PnoLS	P-all	T
		33												
1	1	23			134			188			215			
					5									
		12						1						
55	55	78	44	44	75	47	47	70	67	67	92	98	98	98
					7									
								3						
1	1	1	1	1	1									
					2			2						
2	2	3			1			1						
											199			
103	103	107	101	101	102	103	103	104	105	105	105	107	107	107
					2									
		1			1									
1	1	1						1						
		598			1321			188			100			
7	7	380			518			444			319			
					2									
					7			1			11			
		2												
		22												
84	84	165	82	82	216	83	83	224	97	97	202	107	107	107
								1						
					5									
					2									
1	1	1	1	1	2									
								2						
59	59	60	62	62	62	68	68	68	97	97	97	109	109	109
25	25	27	29	29	29	36	36	37	63	63	63	75	75	75
62	62	63	61	61	63	70	70	70	93	93	93	107	107	107
		8												
		4			9			1			2			
					1									
4	4	135			96			8			31			
		7			31			35			1			
4	4	16			6			8						
					19									
		215			126			238						
		35			139			31						
					40									
409	409	1,997	381	381	3,024	407	407	1,726	522	522	1,530	603	603	603
40			40			40			40			40		
0.9884			0.9884			0.9884			0.9884			0.9884		
14	14	25	8	8	30	6	6	23	6	6	14	6	6	6
414	414	2,020	385	385	3,059	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 5 - 2021

Candy Creek Reach 1

		Pre-Restoration Condition		Reference Reach Data								Design						As-Built/Baseline					
Parameter	Gage	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
Dimension and Substrate - Shallow																							
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		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		1.0	1.2	1.8		2.3	
Bankfull Cross-sectional Area (ft^2)		12.1	12.3	32.9		25.0	34.6	16.3		17.8	19.7	8.2		13.2		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		18.4	25.3	18.6		14.3	
Entrenchment Ratio[1]		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[2]		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	
D50 (mm)		2.4																0.9		2.8		14.6	
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^3)																							
Pattern																							
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	
Substrate, Bed and Transport Parameters																							
Ri%/Ru%/P%/G%/S%	N/A																						
SC%/Sa%/G%/C%/B%/Be%																							
d16/d35/d50/d84/d95/d100		0.57/1.4/2.4/15.3/26/45		---		---		---		0.6/3.0/8.8/42.0/90/---								SC/0.35/0.9/62/114/512		SC/0.34/2.8/72/168/256		0.15/0.9/15/83/129/256	
Reach Shear Stress (Competency) lb/ft^2		0.73										0.45		0.45		0.45		0.28	0.41	0.40		0.63	
Max part size (mm) mobilized at bankfull																							
Stream Power (Capacity) W/m^2												---		---		---		---		---		---	
Additional Reach Parameters																							
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		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^2)		---		---		---		---		---		0.004	0.021	0.006	0.012	0.006		0.010		0.008		0.009	
Bankfull Slope (ft/ft)		---		---		---		---		---		0.012		0.009		0.005		0.010		0.009		0.008	

SC: Silt/Clay <0.062 mm diameter particles
(---): Data was not provided
N/A: Not Applicable
[1]Entrenchment Ratio is the flood prone width divided by the bankfull width
[2]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 5 - 2021

Candy Creek Reaches 2 and 3

		Pre-Restoration Condition				Reference Reach Data		Design						As-Built/Baseline					
Parameter	**Gage**	**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**
Dimension and Substrate - Riffle																			
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^2)		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[1]		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[2]		1.3	2.4	1.8	2.3			1.0		1.0		1.0		1.0		1.0		1.0	
D50 (mm)		0.8		N/A										0.4		0.5		1.0	
Riffle Length (ft)	N/A					See Table 10a		---		---		---		24	63	14	60	10	61
Riffle Slope (ft/ft)		0.005	0.010	N/A				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	3.9		3.5	
Pool Spacing (ft)		16	68	N/A				39	124	37	119	40	130	59	146	55	136	49	97
Pool Volume (ft^3)																			
Pattern																			
Channel Beltwidth (ft)	N/A	N/A		N/A		See Table 10a		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	
Substrate, Bed and Transport Parameters																			
Ri%/Ru%/P%/G%/S%	N/A					See Table 10a													
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^2		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^2								---		---		---		---		---		---	
Additional Reach Parameters																			
Drainage Area (SM)	N/A	1.08		1.26		See Table 10a		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 ($ft/ft)^2$		---		---				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		0.009		0.005	

SC: Silt/Clay <0.062 mm diameter particles
(---): Data was not provided
N/A: Not Applicable
[1]Entrenchment Ratio is the flood prone width divided by the bankfull width
[2]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 5 - 2021

Candy Creek Reach 4

		Pre-Restoration Condition		Reference Reach Data		Design				As-Built/Baseline			
Parameter	**Gage**	**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**
Dimension and Substrate - Riffle													
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
Bankfull Max Depth		1.8	2.1			2.2		2.0		2.1	2.9	2.5	2.9
Bankfull Cross-sectional Area (ft^2)		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[1]		1.5	1.5			3.5	8.0	3.5	6.0	7.1	11.6	6.1	6.7
Bank Height Ratio[2]		1.9	2.3			1.0		1.0		1.0		1.0	
D50 (mm)		2.2								0.4		0.6	
Riffle Length (ft)	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)						---		---		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^3)													
Pattern													
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
Substrate, Bed and Transport Parameters													
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^2		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^2						---		---		---		---	
Additional Reach Parameters													
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%		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 ($ft/ft)^2$		---				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
[1]Entrenchment Ratio is the flood prone width divided by the bankfull width
[2]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 5 - 2021

UT1C and UT1D

		Pre-Restoration Condition				Reference Reach Data								Design				As-Built/Baseline			
Parameter	Gage	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
Dimension and Substrate - Shallow																					
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^2)		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[1]		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[2]		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^3)																					
Pattern																					
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	
Substrate, Bed and Transport Parameters																					
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^2		2.70		0.39										0.31		0.50		0.84		1.48	
Max part size (mm) mobilized at bankfull																					
Stream Power (Capacity) W/m^2														---		---		---		---	
Additional Reach Parameters																					
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^2)		---		---		---		---		---		---		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
[1]Entrenchment Ratio is the flood prone width divided by the bankfull width
[2]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 5 - 2021

UT2 and UT2A

		Pre-Restoration Condition						Reference Reach Data		Design						As-Built/Baseline					
Parameter	**Gage**	**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**
Dimension and Substrate - Shallow																					
Bankfull Width (ft)		3.1	6.7	5.2		2.8				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	
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	
Bankfull Cross-sectional Area (ft^2)	N/A	2.4	3.0	3.3		1.2		See Table 10d		2.7		3.9		1.3		1.2	6.8	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	
Entrenchment Ratio[1]		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[2]		4.3	4.9	3.8		5.7				1.0		1.0		1.0		1.0		1.0		1.0	
D50 (mm)		0.1		N/A		N/A										34.6		4.5		2.5	
Riffle Length (ft)										---		---		---		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)	N/A							See Table 10d		---		---		---		4	18	11	62	4	12
Pool Max Depth (ft)		1.1		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)		22	116	N/A		N/A				8	42	17	53	6	30	8	45	13	51	7	55
Pool Volume (ft^3)																					
Pattern																					
Channel Beltwidth (ft)		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		17	54	N/A		N/A	
Rc:Bankfull Width (ft/ft)	N/A	N/A		N/A		N/A		See Table 10d		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		21	68	N/A		N/A	
Meander Width Ratio		N/A		N/A		N/A				N/A		N/A		N/A		2.2	5.6	N/A		N/A	
Substrate, Bed and Transport Parameters																					
Ri%/Ru%/P%/G%/S%																					
SC%/Sa%/G%/C%/B%/Be%																					
d16/d35/d50/d84/d95/d100	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	
Reach Shear Stress (Competency) lb/ft^2		1.80		N/A		N/A				0.95		---		---		0.31	1.05	0.45		1.32	
Max part size (mm) mobilized at bankfull																					
Stream Power (Capacity) W/m^2										---		---		---		---		---		---	
Additional Reach Parameters																					
Drainage Area (SM)		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		12		4		9		12		4	
Q-NFF regression (2-yr)		---		---		---															
Q-USGS extrapolation (1.2-yr)	N/A	---		---		---		See Table 10d													
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^2)		---		---		---				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
[1]Entrenchment Ratio is the flood prone width divided by the bankfull width
[2]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 5 - 2021

UT3, UT4, and UT5

		Pre-Restoration Condition						Reference Reach Data		Design						As-Built/Baseline					
Parameter	**Gage**	**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**
Dimension and Substrate - Shallow																					
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
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
Bankfull Cross-sectional Area (ft^2)		3.9		7.2		6.7				4.8		9.4		7.5		5.5		11.0	15.2	6.0	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
Entrenchment Ratio[1]		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[2]		5.4		6.2		5.6				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	
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
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	
Pool Spacing (ft)		6	43	12	42	9	54			17	43	28	66	25	64	24	33	24	123	26	65
Pool Volume (ft^3)																					
Pattern																					
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
Substrate, Bed and Transport Parameters																					
Ri%/Ru%/P%/G%/S%	N/A							See Table 10d													
SC%/Sa%/G%/C%/B%/Be%																					
d16/d35/d50/d84/d95/d100		SC/0.1/10.6/22.6/41/64		0.3/0.5/2.8/28.5/40.6/63		0.3/2.8/12.5/29.7/41/90										SC/0.36/1.5/81/111/180		SC/0.16/0.6/100/161/512		SC/SC/0.6/32/143/362	
Reach Shear Stress (Competency) lb/ft^2		0.93		0.55		1.90				0.81		0.61		0.28		0.88		0.30	0.32	0.23	0.30
Max part size (mm) mobilized at bankfull																					
Stream Power (Capacity) W/m^2										---		---		---		---		---		---	
Additional Reach Parameters																					
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	
Watershed Impervious Cover Estimate (%)		1%		0%		1%				1%		0%		1%		1%		0%		1%	
Rosgen Classification		G4		G4		F4				C/E		C/E		C/E		C5		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
Bankfull Discharge (cfs)		14		30		22				14		30		22		14		30		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	
Channel Thalweg Length (ft)		346		1,270		1,012				346		1,355		1,012		346		1,356		1,012	
Sinuosity		1.45		1.20		1.38				1.15		1.22		1.20		1.15		1.22		1.20	
Water Surface Slope (ft/ft^2)		---		---		---				0.011	0.032	0.003	0.012	0.002	0.010	0.024		0.006		0.006	
Bankfull Slope (ft/ft)		---		---		---				0.016	0.032	0.012		0.012		0.022		0.006		0.007	

SC: Silt/Clay <0.062 mm diameter particles
(---): Data was not provided
N/A: Not Applicable

[1]Entrenchment Ratio is the flood prone width divided by the bankfull width

[2]Bank Height Ratio is the bank height divided by the max depth of the bankfull channel

Table 11a. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

	Cross-Section 1, Candy Creek Reach 1 (Riffle)						Cross-Section 2, Candy Creek Reach 1 (Pool)						Cross-Section 3, Candy Creek Reach 1 (Riffle)						Cross-Section 4, Candy Creek Reach 1 (Pool)					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	765.9	765.9	765.8	765.6	766.0		763.4	763.4	763.3	763.3	763.3		763.0	763.0	763.1	763.0	763.3		757.4	757.4	757.4	757.4	757.4	
Low Bank Elevation (ft)	765.9	765.9	765.8	765.6	765.9		763.4	763.4	763.3	763.3	763.3		763.0	763.0	763.1	763.0	763.3		757.4	757.4	757.4	757.4	757.4	
Bankfull Width (ft)	12.8	11.3	11.4	10.3	12.2		18.7	17.0	16.8	16.8	16.6		12.0	10.6	13.0	11.3	8.9		12.5	11.7	11.7	11.8	10.0	
Floodprone Width (ft)	71.0	71.0	54.6	54.5	54.6		---	---	---	---	---		97.0	97.0	95.6	96.2	101.7		---	---	---	---	---	
Bankfull Mean Depth (ft)	0.7	0.7	0.6	0.6	0.6		1.0	0.9	0.9	0.8	0.7		0.5	0.5	0.5	0.5	0.7		1.1	1.1	1.1	1.0	1.2	
Bankfull Max Depth (ft)	1.2	1.2	1.0	0.9	1.1		3.0	3.0	2.7	2.4	2.1		1.0	0.9	1.0	1.0	1.1		2.1	2.0	2.0	2.2	2.2	
Bankfull Cross-sectional Area (ft2)	8.9	8.3	6.9	6.5	7.3		18.4	15.8	14.5	14.2	10.9		5.7	5.1	6.2	5.9	5.8		13.5	12.3	12.3	12.3	11.7	
Bankfull Width/Depth Ratio	18.4	15.4	19.0	16.5	20.4		19.0	18.3	19.4	19.9	25.2		25.3	22.2	27.2	21.6	13.7		11.6	11.1	11.1	11.4	8.5	
Bankfull Entrenchment Ratio[1]	5.5	6.3	4.8	5.3	4.5		---	---	---	---	---		8.1	9.1	7.3	8.5	11.4		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	0.9	0.8	0.9		---	---	---	---	---		1.0	1.0	1.0	1.0	1.0		---	---	---	---	---	
	Cross-Section 5, Candy Creek Reach 1 (Riffle)						**Cross-Section 6, Candy Creek Reach 1 (Pool)**						**Cross-Section 7, Candy Creek Reach 1 (Riffle)**						**Cross-Section 8, Candy Creek Reach 1 (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	757.1	757.1	757.1	757.1	757.2		749.3	749.3	749.2	748.8	749.1		748.9	748.9	748.9	748.7	749.0		747.3	747.3	747.3	747.4	747.3	
Low Bank Elevation (ft)	757.1	757.1	757.1	757.1	757.1		749.3	749.3	749.2	748.8	749.1		748.9	748.9	748.9	748.7	749.0		747.3	747.3	747.3	747.4	747.3	
Bankfull Width (ft)	11.9	12.1	12.1	13.0	11.3		19.9	19.7	20.4	15.9	18.0		16.1	14.8	13.6	11.7	14.0		17.0	15.3	15.2	15.2	15.6	
Floodprone Width (ft)	53.0	53.0	74.8	74.8	74.8		---	---	---	---	---		164.0	164.0	82.7	82.7	82.7		292.0	292.0	63.8	63.8	64.0	
Bankfull Mean Depth (ft)	0.6	0.6	0.6	0.6	0.5		1.8	1.7	1.6	2.3	2.5		0.9	1.0	0.9	1.0	1.0		1.2	1.3	1.3	1.4	1.4	
Bankfull Max Depth (ft)	1.2	1.2	1.3	1.3	1.2		3.3	4.0	3.8	4.6	4.9		1.8	1.8	1.7	1.8	2.1		2.3	2.3	2.2	2.3	2.4	
Bankfull Cross Sectional Area (ft^2)	7.1	7.5	7.1	7.7	5.7		35.5	34.2	31.7	36.5	45.4		13.9	14.3	12.2	12.0	14.4		20.3	20.3	19.8	20.7	21.9	
Bankfull Width/Depth Ratio	19.9	19.5	20.5	21.8	22.2		11.2	11.3	13.1	6.9	7.1		18.6	15.4	15.3	11.3	13.7		14.3	11.5	11.7	11.1	11.1	
Bankfull Entrenchment Ratio[1]	4.4	4.4	6.2	5.8	6.6		---	---	---	---	---		10.2	11.1	6.1	7.1	5.9		17.1	19.1	4.2	4.2	4.1	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	0.9		---	---	---	---	---		1.0	1.0	0.9	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
	Cross-Section 9, Candy Creek Reach 2 (Pool)						**Cross-Section 10, Candy Creek Reach 2 (Riffle)**						**Cross-Section 11, Candy Creek Reach 2 (Riffle)**						**Cross-Section 12, Candy Creek Reach 2 (Pool)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	745.6	745.6	745.5	745.4	745.5		745.0	745.0	744.9	745.1	744.9		741.1	741.1	741.1	741.1	741.0		737.4	737.4	737.3	737.4	737.5	
Low Bank Elevation (ft)	745.6	745.6	745.5	745.4	745.5		745.0	745.0	744.9	745.1	745.1		741.1	741.1	741.1	741.1	741.0		737.4	737.4	737.3	737.4	737.5	
Bankfull Width (ft)	22.0	24.9	21.1	23.1	21.2		16.1	16.0	14.5	15.8	15.2		16.3	16.2	16.5	15.3	15.4		23.6	23.7	25.1	23.2	24.4	
Floodprone Width (ft)	---	---	---	---	---		254.0	254.0	93.6	93.4	93.3		154.0	154.0	82.7	82.8	79.0		---	---	---	---	---	
Bankfull Mean Depth (ft)	1.8	1.7	1.8	1.6	2.0		1.0	1.0	1.0	1.2	1.2		1.2	1.3	1.3	1.3	1.4		1.9	1.7	1.5	1.6	1.7	
Bankfull Max Depth (ft)	3.5	3.9	4.0	3.5	4.2		1.9	2.0	1.9	2.4	1.8		1.9	2.3	2.3	2.2	2.4		3.3	3.5	3.5	3.6	3.8	
Bankfull Cross Sectional Area (ft^2)	40.1	42.1	38.8	36.0	41.8		16.2	16.5	14.7	19.1	18.2		19.8	21.5	21.6	19.6	21.6		44.2	40.9	38.6	36.1	42.1	
Bankfull Width/Depth Ratio	12.0	14.7	11.5	14.9	10.6		16.0	15.5	14.3	13.1	12.6		13.3	12.2	12.7	11.9	11.0		12.6	13.7	16.3	15.0	14.1	
Bankfull Entrenchment Ratio[1]	---	---	---	---	---		15.8	15.9	6.5	5.9	6.2		9.5	9.5	5.0	5.4	5.1		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	---	---	---	---	---		1.0	1.0	0.9	1.1	1.1		1.0	1.0	1.0	1.0	1.1		---	---	---	---	---	

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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

Table 11b. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

	Cross-Section 13, Candy Creek Reach 2 (Riffle)						Cross-Section 14, Candy Creek Reach 2 (Riffle)						Cross-Section 15, Candy Creek Reach 2 (Pool)						Cross-Section 16, Candy Creek Reach 3 (Pool)					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base[4] (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	737.0	737.0	736.8	737.0	737.0		733.1	733.1	733.1	733.1	733.0		733.2	733.2	733.2	733.2	733.1		729.2	729.2	729.4	729.3	729.8	
Low Bank Elevation (ft)	737.0	737.0	736.8	737.0	737.0		733.1	733.1	733.1	733.1	733.0		733.2	733.2	733.2	733.2	733.1		729.2	729.2	729.4	729.3	729.8	
Bankfull Width (ft)	19.5	18.2	17.9	19.1	17.7		16.7	17.3	17.5	17.4	15.7		23.9	21.8	21.6	21.7	19.5		26.2	25.8	27.4	23.1	22.5	
Floodprone Width (ft)	221.0	221.0	95.7	95.8	95.8		164.0	164.0	80.8	86.5	75.0		---	---	---	---	---		---	---	---	---	---	
Bankfull Mean Depth (ft)	1.2	1.3	1.2	1.1	1.3		1.2	1.3	1.2	1.3	1.3		1.9	2.2	1.9	2.2	2.3		1.9	2.1	2.0	2.5	3.1	
Bankfull Max Depth (ft)	2.1	2.0	2.1	2.1	2.2		1.8	2.1	2.0	2.0	1.9		3.9	4.5	4.2	5.6	4.7		3.5	4.2	4.3	3.9	5.0	
Bankfull Cross-sectional Area (ft2)	23.3	24.3	22.3	21.6	22.9		20.8	22.7	21.8	22.0	20.5		46.3	47.8	40.0	48.6	45.4		50.0	54.3	54.1	57.4	68.5	
Bankfull Width/Depth Ratio	16.3	13.7	14.3	16.9	13.7		13.5	13.2	14.0	13.7	12.1		12.3	9.9	11.7	9.7	8.4		13.8	12.3	13.9	9.3	7.4	
Bankfull Entrenchment Ratio[1]	11.3	12.1	5.3	5.0	5.4		9.8	9.5	4.6	5.0	4.8		---	---	---	---	---		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0		---	---	---	---	---		---	---	---	---	---	
	Cross-Section 17, Candy Creek Reach 3 (Riffle)						**Cross-Section 18, Candy Creek Reach 4 (Pool)**						**Cross-Section 19, Candy Creek Reach 4 (Riffle)**						**Cross-Section 20, Candy Creek Reach 4 (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	729.1	729.1	729.2	729.2	729.3		720.6	720.6	720.6	720.1	721.1		720.5	720.5	720.5	720.5	720.9		717.8	717.8	717.7	717.7	717.7	
Low Bank Elevation (ft)	729.1	729.1	729.2	729.2	729.3		720.6	720.6	720.6	720.1	721.1		720.5	720.5	720.5	720.5	720.9		717.8	717.8	717.7	717.7	717.7	
Bankfull Width (ft)	19.2	18.0	20.0	19.7	18.3		26.9	26.3	25.9	22.2	17.5		19.1	19.8	20.4	19.6	16.8		22.4	22.2	22.4	21.9	22.3	
Floodprone Width (ft)	57.0	57.0	53.8	53.7	53.8		---	---	---	---	---		222.0	222.0	85.9	85.9	86.0		158.0	158.0	100.3	100.4	100.4	
Bankfull Mean Depth (ft)	1.5	1.4	1.3	1.5	1.5		2.2	2.1	2.1	1.9	3.1		1.4	1.2	1.4	1.4	1.6		1.4	1.4	1.4	1.4	1.4	
Bankfull Max Depth (ft)	2.3	2.4	2.3	2.4	2.2		4.5	4.8	4.6	4.1	5.2		2.2	2.1	2.3	2.4	2.6		2.1	2.3	2.3	2.3	2.4	
Bankfull Cross-Sectional Area (ft2)	28.2	25.9	26.9	29.2	28.1		58.7	55.5	54.5	42.8	53.6		26.9	23.3	28.0	27.9	27.5		31.0	31.7	30.6	31.7	30.8	
Bankfull Width/Depth Ratio	13.1	12.5	14.9	13.2	12.0		12.3	12.4	12.3	11.5	5.7		13.6	16.8	14.8	13.8	10.3		16.2	15.6	16.5	15.2	16.1	
Bankfull Entrenchment Ratio[1]	3.0	3.2	2.7	2.7	2.9		---	---	---	---	---		11.6	11.2	4.2	4.4	5.1		7.1	7.1	4.5	4.6	4.5	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	1.0		---	---	---	---	---		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
	Cross-Section 21, Candy Creek Reach 4 (Pool)						**Cross-Section 22, Candy Creek Reach 4 (Pool)**						**Cross-Section 23, Candy Creek Reach 4 (Riffle)**						**Cross-Section 24, Candy Creek Reach 4 (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	717.7	717.7	717.9	717.6	717.4		714.0	714.0	713.8	714.0	714.0		713.9	713.9	713.8	713.7	713.9		707.8	707.8	707.8	707.8	707.8	
Low Bank Elevation (ft)	717.7	717.7	717.9	717.6	717.4		714.0	714.0	713.8	714.0	714.0		713.9	713.9	713.8	713.7	713.9		707.8	707.8	707.8	707.8	707.7	
Bankfull Width (ft)	29.3	30.0	32.4	28.7	21.8		23.6	23.8	25.6	28.3	24.0		24.9	22.5	23.9	24.2	26.8		23.2	23.5	23.6	23.6	26.5	
Floodprone Width (ft)	---	---	---	---	---		---	---	---	---	---		180.0	180.0	90.0	90.0	90.1		155.0	155.0	58.7	58.8	59.1	
Bankfull Mean Depth (ft)	2.4	2.5	2.5	2.8	3.7		2.2	2.1	1.9	2.1	2.3		1.5	1.7	1.4	1.4	1.4		1.4	1.4	1.3	1.3	1.1	
Bankfull Max Depth (ft)	4.6	4.6	5.5	6.6	6.5		4.6	4.0	4.3	5.5	5.6		2.9	2.8	2.6	2.5	2.8		2.9	2.5	2.4	2.5	2.7	
Bankfull Cross-Sectional Area (ft2)	70.1	74.0	80.2	79.3	81.0		51.1	50.2	47.7	59.2	54.3		38.1	37.4	34.2	33.9	38.0		31.6	32.4	31.4	29.6	29.9	
Bankfull Width/Depth Ratio	12.2	12.2	13.1	10.4	5.9		10.9	11.3	13.8	13.5	10.7		16.3	13.5	16.6	17.3	18.9		17.1	17.1	17.7	18.8	23.6	
Bankfull Entrenchment Ratio[1]	---	---	---	---	---		---	---	---	---	---		7.2	8.0	3.8	3.7	3.4		6.7	6.6	2.5	2.5	2.2	
Bankfull Bank Height Ratio[2,3]	---	---	---	---	---		---	---	---	---	---		1.0	1.0	0.9	0.9	1.0		1.0	1.0	1.0	1.0	1.0	

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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

[4] Revised MY0 dimensions reported for XS16 in MY1 to correct error

Table 11c. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

	Cross-Section 25, Candy Creek Reach 4 (Riffle)						Cross-Section 26, Candy Creek Reach 4 (Pool)						Cross-Section 27, UT1C (Riffle)						Cross-Section 28, UT1C (Pool)					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	702.6	702.6	702.7	702.6	702.5		702.1	702.1	702.4	702.0	701.8		752.2	752.2	752.3	752.3	752.2		752.1	752.1	752.0	751.9	752.0	
Low Bank Elevation (ft)	702.6	702.6	702.7	702.6	702.6		702.1	702.1	702.4	702.0	701.8		752.2	752.2	752.3	752.3	752.1		752.1	752.1	752.0	751.9	752.0	
Bankfull Width (ft)	21.7	21.6	22.7	23.2	21.6		23.6	24.6	24.5	23.3	23.4		7.8	7.8	10.1	11.4	7.1		6.4	9.1	5.8	6.2	6.2	
Floodprone Width (ft)	132.0	132.0	85.9	85.8	85.5		---	---	---	---	---		28.0	28.0	24.6	24.9	21.1		---	---	---	---	---	
Bankfull Mean Depth (ft)	1.5	1.5	1.5	1.5	1.6		2.2	2.1	2.1	2.2	2.6		0.5	0.5	0.5	0.6	0.5		0.9	0.7	0.9	0.9	0.9	
Bankfull Max Depth (ft)	2.5	2.6	2.5	2.5	2.8		4.1	4.4	4.3	4.9	5.5		0.9	0.8	1.1	1.2	1.0		1.7	1.8	1.8	1.8	1.8	
Bankfull Cross-Sectional Area (ft2)	32.8	32.8	33.5	33.9	35.2		51.3	52.5	52.7	50.5	60.2		4.0	3.7	5.1	6.7	3.2		5.4	6.1	5.5	5.3	5.6	
Bankfull Width/Depth Ratio	14.4	14.3	15.3	15.8	13.3		10.8	11.6	11.4	10.7	9.1		15.0	16.2	19.9	19.4	15.7		7.5	13.5	6.2	7.3	6.8	
Bankfull Entrenchment Ratio[1]	6.1	6.1	3.8	3.7	4.0		---	---	---	---	---		3.6	3.6	2.4	2.2	3.0		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	1.0		---	---	---	---	---		1.0	1.0	1.1	1.3	0.9		---	---	---	---	---	
	Cross-Section 29, UT1D (Riffle)						**Cross-Section 30, UT2 Reach 1 (Riffle)**						**Cross-Section 31, UT2 Reach 1 (Riffle)**						**Cross-Section 32, UT2 Reach 1 (Pool)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	742.7	742.7	742.7	742.6	742.9		771.9	771.9	771.6	771.7	772.0		763.8	763.8	763.6	764.0	764.0		760.4	760.4	760.1	760.2	760.2	
Low Bank Elevation (ft)	742.7	742.7	742.7	742.6	742.8		771.9	771.9	771.6	771.7	771.8		763.8	763.8	763.6	764.0	763.9		760.4	760.4	760.1	760.2	760.2	
Bankfull Width (ft)	7.6	7.1	8.4	7.4	7.7		7.5	7.8	7.5	7.2	8.2		4.8	4.3	3.1	3.8	2.8		10.1	11.3	6.3	6.3	4.6	
Floodprone Width (ft)	15.0	15.0	18.7	17.1	16.8		22.0	22.0	21.9	21.2	21.2		47.0	47.0	42.8	48.1	46.8		---	---	---	---	---	
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.4	0.3		0.9	0.8	0.8	0.8	0.7		0.3	0.2	0.2	0.2	0.4		0.6	0.6	0.9	0.9	1.4	
Bankfull Max Depth (ft)	0.8	0.8	0.9	0.7	0.6		1.5	1.4	1.4	1.4	1.3		0.4	0.3	0.3	0.4	0.5		1.7	1.7	1.8	1.8	2.3	
Bankfull Cross-Sectional Area (ft2)	3.8	3.3	4.0	3.0	2.6		6.8	6.3	6.3	5.5	5.5		1.2	0.8	0.7	0.9	1.0		6.2	7.2	5.7	5.7	6.2	
Bankfull Width/Depth Ratio	15.4	15.3	17.9	18.7	22.6		8.3	9.7	9.0	9.3	12.4		18.5	23.3	13.9	16.5	8.0		16.4	17.7	6.9	6.9	3.4	
Bankfull Entrenchment Ratio[1]	2.0	2.1	2.2	2.3	2.2		2.9	2.8	2.9	3.0	2.6		9.8	11.0	13.6	12.5	16.7		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	0.9	0.8		1.0	1.0	1.0	0.9	0.9		1.0	1.0	0.7	0.9	0.9		---	---	---	---	---	
	Cross-Section 33, UT2 Reach 1 (Riffle)						**Cross-Section 34, UT2 Reach 2 (Pool)**						**Cross-Section 35, UT2 Reach 2 (Riffle)**						**Cross-Section 36, UT2A (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	760.0	760.0	759.8	759.9	759.9		734.8	734.8	734.8	735.0	735.0		734.6	734.6	734.6	734.7	735.3		747.7	747.7	747.7	747.7	748.0	
Low Bank Elevation (ft)	760.0	760.0	759.8	759.9	759.9		734.8	734.8	734.8	735.0	735.0		734.6	734.6	734.6	734.7	735.2		747.7	747.7	747.7	747.7	747.9	
Bankfull Width (ft)	7.8	7.0	6.7	6.6	5.3		10.2	9.6	8.1	9.1	8.7		7.8	7.8	7.0	6.5	7.9		7.0	7.6	7.4	5.9	10.0	
Floodprone Width (ft)	88.0	88.0	79.4	78.1	78.8		---	---	---	---	---		60.0	60.0	24.8	60.0	51.4		31.0	31.0	22.2	40.1	31.7	
Bankfull Mean Depth (ft)	0.5	0.5	0.5	0.5	0.7		0.8	0.5	0.7	0.6	0.3		0.5	0.4	0.4	0.4	0.4		0.6	0.5	0.5	0.5	0.3	
Bankfull Max Depth (ft)	0.8	1.1	1.2	1.2	1.3		1.5	0.8	1.4	1.0	0.6		0.8	0.8	0.7	0.7	0.9		1.0	1.0	1.1	1.2	0.9	
Bankfull Cross-sectional Area (ft2)	3.5	3.2	3.6	3.4	3.5		7.9	4.5	5.8	5.3	2.3		4.1	3.0	3.0	2.8	3.2		4.1	3.7	3.5	3.1	2.8	
Bankfull Width/Depth Ratio	17.2	15.1	12.6	12.8	8.1		13.3	20.2	11.1	15.6	32.8		14.9	20.2	16.4	14.8	19.2		11.9	15.8	15.7	11.2	36.1	
Bankfull Entrenchment Ratio[1]	11.3	12.6	11.8	11.8	14.8		---	---	---	---	---		7.7	7.7	3.6	9.3	6.5		4.4	4.1	3.0	6.8	3.2	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	1.0		---	---	---	---	---		1.0	1.0	0.8	0.8	0.9		1.0	1.0	0.9	0.9	0.9	

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 parameter

Table 11d. Morphology and Hydraulic Summary (Dimensional Parameters - Cross-Section)

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

	Cross-Section 37, UT3 (Riffle)						Cross-Section 38, UT4 (Riffle)						Cross-Section 39, UT4 (Pool)						Cross-Section 40, UT4 (Pool)					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	749.7	749.7	749.6	749.6	749.6		753.6	753.6	753.6	753.5	753.9		753.2	753.2	753.2	753.1	753.4		750.3	750.3	750.3	750.3	750.3	
Low Bank Elevation (ft)	749.7	749.7	749.6	749.6	749.6		753.6	753.6	753.6	753.5	753.7		753.2	753.2	753.2	753.1	753.4		750.3	750.3	750.3	750.3	750.3	
Bankfull Width (ft)	8.8	8.7	9.0	10.4	8.0		15.1	14.7	15.3	15.6	15.4		14.1	15.2	14.2	14.0	13.3		14.5	15.0	16.3	17.0	7.6	
Floodprone Width (ft)	77.0	77.0	67.6	67.3	64.2		98.0	98.0	58.4	58.0	56.2		---	---	---	---	---		---	---	---	---	---	
Bankfull Mean Depth (ft)	0.6	0.6	0.7	0.5	0.7		1.0	1.0	0.9	0.9	0.7		1.3	1.1	1.1	0.9	0.8		1.3	1.1	0.9	0.9	1.6	
Bankfull Max Depth (ft)	1.1	1.1	1.2	1.0	1.1		2.1	2.1	1.9	1.7	1.4		2.3	2.3	2.3	1.8	1.3		2.3	2.3	2.2	2.6	2.3	
Bankfull Cross-Sectional Area (ft2)	5.5	5.3	5.9	5.3	5.5		15.2	14.4	13.3	13.6	11.5		17.8	16.9	15.6	12.5	10.2		18.5	16.3	15.1	15.9	11.8	
Bankfull Width/Depth Ratio	14.0	14.1	13.7	20.3	11.6		15.0	15.0	17.6	17.9	20.7		11.2	13.6	12.9	15.7	17.4		11.4	13.8	17.6	18.2	4.9	
Bankfull Entrenchment Ratio[1]	8.8	8.9	7.5	6.5	8.1		6.5	6.7	3.8	3.7	3.6		---	---	---	---	---		---	---	---	---	---	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	1.0		1.0	1.0	0.9	0.9	0.9		---	---	---	---	---		---	---	---	---	---	
	Cross-Section 41, UT4 (Riffle)						**Cross-Section 42, UT4 (Riffle)**						**Cross-Section 43, UT4 (Pool)**						**Cross-Section 44, UT5 (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	750.2	750.2	750.2	750.2	750.4		748.3	748.3	748.3	748.3	748.5		748.0	748.0	748.0	747.9	748.0		758.4	758.4	758.4	758.6	758.4	
Low Bank Elevation (ft)	750.2	750.2	750.2	750.2	750.3		748.3	748.3	748.3	748.3	748.4		748.0	748.0	748.0	747.9	748.0		758.4	758.4	758.4	758.6	758.5	
Bankfull Width (ft)	11.8	12.3	12.4	12.9	10.3		11.5	12.3	13.0	12.3	12.6		16.9	15.0	17.7	11.3	10.8		9.7	9.6	11.5	9.6	8.5	
Floodprone Width (ft)	172.0	172.0	69.1	69.1	69.1		288.0	288.0	49.9	49.9	49.9		---	---	---	---	---		83.0	83.0	82.3	82.3	82.1	
Bankfull Mean Depth (ft)	0.9	0.9	0.8	0.8	1.0		1.1	1.0	1.0	1.0	1.0		1.2	1.3	1.1	1.4	1.1		0.6	0.6	0.6	0.7	0.8	
Bankfull Max Depth (ft)	1.6	1.6	1.5	1.5	1.5		1.8	1.7	1.8	1.8	1.7		2.9	3.1	3.1	3.0	2.6		0.9	0.9	1.1	1.3	1.2	
Bankfull Cross-Sectional Area (ft2)	11.0	11.1	10.6	10.2	9.9		13.0	12.7	12.4	12.0	12.0		20.2	18.9	18.8	15.9	12.1		6.0	5.6	6.9	6.3	6.4	
Bankfull Width/Depth Ratio	12.7	13.7	14.6	16.1	10.7		10.2	11.9	13.6	12.5	13.2		14.2	12.0	16.7	8.1	9.6		15.5	16.2	19.1	14.5	11.2	
Bankfull Entrenchment Ratio[1]	14.6	13.9	5.6	5.4	6.7		25.0	23.5	3.8	4.1	4.0		---	---	---	---	---		8.6	8.7	7.2	8.6	9.7	
Bankfull Bank Height Ratio[2,3]	1.0	1.0	1.0	1.0	0.9		1.0	1.0	1.0	1.0	1.0		---	---	---	---	---		1.0	1.0	1.1	1.0	1.0	
	Cross-Section 45, UT5 (Pool)						**Cross-Section 46, UT5 (Riffle)**						**Cross-Section 47, UT5 (Pool)**						**Cross-Section 48, UT5 (Riffle)**					
Dimension and Substrate	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**	**Base (10/2016)**	**MY1 (2017)**	**MY2 (2018)**	**MY3 (2019)**	**MY5 (2021)**	**MY7 (2023)**
Bankfull Elevation	758.4	758.4	758.3	758.6	758.5		755.0	755.0	755.0	755.1	752.2		754.8	754.8	754.7	755.0	754.7		753.0	753.0	753.0	753.0	753.3	
Low Bank Elevation (ft)	758.4	758.4	758.3	758.6	758.5		755.0	755.0	755.0	755.1	752.2		754.8	754.8	754.7	755.0	754.7		753.0	753.0	753.0	753.0	753.2	
Bankfull Width (ft)	10.6	10.2	11.0	12.0	10.5		9.9	9.5	10.6	9.3	8.3		13.1	13.0	12.8	14.7	7.6		10.6	10.8	11.6	10.1	13.1	
Floodprone Width (ft)	---	---	---	---	---		84.0	84.0	55.8	56.0	57.8		---	---	---	---	---		229.0	229.0	53.9	53.8	53.9	
Bankfull Mean Depth (ft)	0.9	0.9	0.9	0.7	0.7		0.7	0.7	0.6	0.6	0.8		1.1	1.1	1.0	0.8	1.4		0.8	0.8	0.7	0.8	0.5	
Bankfull Max Depth (ft)	1.9	1.9	1.9	1.7	1.4		1.0	0.9	1.0	1.0	1.5		1.9	2.0	2.0	2.0	2.3		1.3	1.3	1.3	1.3	1.1	
Bankfull Cross-sectional Area (ft2)	9.8	9.5	9.5	8.9	7.7		6.8	6.3	6.4	5.5	6.6		14.7	14.2	13.1	11.8	11.0		8.8	8.4	8.2	7.6	6.6	
Bankfull Width/Depth Ratio	11.4	11.1	12.8	16.2	14.3		14.5	14.4	17.4	15.8	10.5		11.6	11.9	12.4	18.3	5.3		12.8	13.8	16.2	13.5	25.7	
Bankfull Entrenchment Ratio[1]	---	---	---	---	---		8.5	8.8	5.3	6.0	6.9		---	---	---	---	---		21.6	21.2	4.7	5.3	4.1	
Bankfull Bank Height Ratio[2,3]	---	---	---	---	---		1.0	1.0	1.0	0.9	1.0		---	---	---	---	---		1.0	1.0	1.0	1.0	0.9	

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 parameter

Table 12a. Monitoring Data - Stream Reach Data Summary

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	11.9	12.8	10.6	12.1	11.4	13.0	10.3	13.0	8.9	12.2		
Floodprone Width (ft)	53.0	97.0	53.0	97.0	54.6	95.6	54.5	96.2	54.6	101.7		
Bankfull Mean Depth	0.5	0.7	0.5	0.7	0.5	0.6	0.5	0.6	0.5	0.7		
Bankfull Max Depth	1.0	1.2	0.9	1.2	1.0	1.3	0.9	1.3	1.1	1.2		
Bankfull Cross-sectional Area (ft2)	5.7	8.9	5.1	8.3	6.2	7.1	5.9	7.7	5.7	7.3		
Width/Depth Ratio	18.4	25.3	15.4	22.2	19.0	27.2	16.5	21.8	13.7	22.2		
Entrenchment Ratio[1]	4.4	8.1	4.4	9.1	4.8	7.3	5.3	8.5	4.5	11.4		
Bank Height Ratio[2,3]	1.0		1.0		0.9	1.0	0.8	1.0	0.9	1.0		
D50 (mm)[4]	23.6	40.9	37.9	45.0	1.4	33.6	28.5	34.4	37.4	45.7		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	16.1		16.8		13.6		11.7		14.0			
Floodprone Width (ft)	164.0		164.0		82.7		82.7		82.7			
Bankfull Mean Depth	0.9		1.0		0.9		1.0		1.0			
Bankfull Max Depth	1.8		1.8		1.7		1.8		2.1			
Bankfull Cross-Sectional Area (ft2)	13.9		14.3		12.2		12.0		14.4			
Width/Depth Ratio	18.6		15.4		15.3		11.3		13.7			
Entrenchment Ratio[1]	10.2		11.1		6.1		7.1		5.9			
Bank Height Ratio[2,3]	1.0		1.0		0.9		1.0		1.0			
D50 (mm)[4]	46.2		35.9		68.5		49.1		43.3			
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	17.0		15.3		15.2		15.2		15.6			
Floodprone Width (ft)	292.0		292.0		63.8		63.8		64.0			
Bankfull Mean Depth	1.2		1.3		1.3		1.4		1.4			
Bankfull Max Depth	2.3		2.3		2.2		2.3		2.4			
Bankfull Cross-Sectional Area (ft2)	20.3		20.3		19.8		20.7		21.9			
Width/Depth Ratio	14.3		11.5		11.7		11.1		11.1			
Entrenchment Ratio[1]	17.1		19.1		4.2		4.2		4.1			
Bank Height Ratio[2,3]	1.0		1.0		1.0		1.0		1.0			
D50 (mm)[4]	22.6		90		22.6		74.1		48.1			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	16.1	19.5	16.0	18.2	14.5	17.9	15.3	19.1	15.2	17.7		
Floodprone Width (ft)	154.0	254.0	154.0	254.0	82.7	95.7	82.8	95.8	79.0	95.8		
Bankfull Mean Depth	1.0	1.2	1.0	1.3	1.0	1.3	1.1	1.3	1.2	1.4		
Bankfull Max Depth	1.9	2.1	2.0	2.3	1.9	2.3	2.1	2.4	1.8	2.4		
Bankfull Cross-Sectional Area (ft2)	16.2	23.3	16.5	24.3	14.7	22.3	19.1	21.6	18.2	22.9		
Width/Depth Ratio	13.3	16.3	12.2	13.7	12.7	14.3	11.9	16.9	11.0	13.7		
Entrenchment Ratio[1]	9.5	15.8	9.5	15.9	5.0	6.5	5.0	5.9	5.1	6.2		
Bank Height Ratio[2,3]	1.0		1.0		0.9	1.0	1.0	1.1	1.0	1.1		
D50 (mm)[4]	26.9	47.3	16.0	93.6	1.0	14.6	27.4	80.7	37.9	45.0		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	16.7		17.3		17.5		17.4		15.7			
Floodprone Width (ft)	164		164		80.8		87		75			
Bankfull Mean Depth	1.2		1.3		1.2		1.3		1.3			
Bankfull Max Depth	1.8		2.1		2.0		2.0		1.9			
Bankfull Cross-Sectional Area (ft2)	20.8		22.7		21.8		22.0		20.5			
Width/Depth Ratio	13.5		13.2		14.0		13.7		12.1			
Entrenchment Ratio[1]	9.8		9.5		4.6		5.0		4.8			
Bank Height Ratio[2,3]	1.0		1.0		1.0		1.0		1.0			
D50 (mm)[4]	9.4		77.2		11.0		37.6		40.2			
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 docum (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	19.2		18.0		20.0		19.7		18.3			
Floodprone Width (ft)	57		57		53.8		53.7		53.8			
Bankfull Mean Depth	1.5		1.4		1.3		1.5		1.5			
Bankfull Max Depth	2.3		2.4		2.3		2.4		2.2			
Bankfull Cross-Sectional Area (ft2)	28.2		25.9		26.9		29.2		28.1			
Width/Depth Ratio	13.1		12.5		14.9		13.2		12.0			
Entrenchment Ratio[1]	3.0		3.2		2.7		2.7		2.9			
Bank Height Ratio[2,3]	1.0		1.0		1.0		1.0		1.0			
D50 (mm)[4]	87.8		97.2		4.0		65.8		29.1			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 documer (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	19.1	24.9	19.8	22.5	20.4	23.9	19.6	24.2	16.8	26.8		
Floodprone Width (ft)	158.0	222.0	158.0	222.0	85.9	100.3	85.9	100.4	86.0	100.4		
Bankfull Mean Depth	1.4	1.5	1.2	1.7	1.4	1.4	1.4	1.4	1.4	1.6		
Bankfull Max Depth	2.1	2.9	2.1	2.8	2.3	2.6	2.3	2.5	2.4	2.8		
Bankfull Cross-Sectional Area (ft2)	26.9	38.1	23.3	37.4	28.0	34.2	27.9	33.9	27.5	38.0		
Width/Depth Ratio	13.6	16.3	13.5	16.8	14.8	16.6	13.8	17.3	10.3	18.9		
Entrenchment Ratio[1]	7.1	11.6	7.1	11.2	3.8	4.5	3.7	4.6	3.4	5.1		
Bank Height Ratio[2,3]	1.0		1.0		0.9	1.0	0.9	1.0	1.0	1.0		
D50 (mm)[4]	27.6	37.9	17.7	51.8	22.6	51.1	31.4	55.1	16.4	41.6		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 docume (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

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

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	21.7	23.2	21.6	23.5	22.7	23.6	23.2	23.6	21.6	26.5		
Floodprone Width (ft)	132.0	155.0	132.0	155.0	58.7	85.9	58.8	85.8	59.1	85.5		
Bankfull Mean Depth	1.4	1.5	1.4	1.5	1.3	1.5	1.3	1.5	1.1	1.6		
Bankfull Max Depth	2.5	2.9	2.5	2.6	2.4	2.5	2.5	2.5	2.7	2.8		
Bankfull Cross-Sectional Area (ft2)	31.6	32.8	32.4	32.8	31.4	33.5	29.6	33.9	29.9	35.2		
Width/Depth Ratio	14.4	17.1	14.3	17.1	15.3	17.7	15.8	18.8	13.3	23.6		
Entrenchment Ratio[1]	6.1	6.7	6.1	6.6	2.5	3.8	2.5	3.7	2.2	4.0		
Bank Height Ratio[2,3]	1.0		1.0		1.0	1.0	1.0	1.0	1.0	1.0		
D50 (mm)[4]	29.3	39.0	28.5	102.5	1.0	100.4	41.6	60.4	41.0	92.6		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT1C

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	7.8		7.8		10.1		11.4		7.1			
Floodprone Width (ft)	28.0		28.0		24.6		24.9		21.1			
Bankfull Mean Depth	0.5		0.5		0.5		0.6		0.5			
Bankfull Max Depth	0.9		0.8		1.1		1.2		1.0			
Bankfull Cross-Sectional Area (ft2)	4.0		3.7		5.1		6.7		3.2			
Width/Depth Ratio	15.0		16.2		19.9		19.4		15.7			
Entrenchment Ratio[1]	3.6		3.6		2.4		2.2		3.0			
Bank Height Ratio[2,3]	1.0		1.0		1.1		1.3		0.9			
D50 (mm)[4]	54.5		84.6		54.1		39.4		44.2			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT1D

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	7.6		7.1		8.4		7.4		7.7			
Floodprone Width (ft)	15.0		15.0		18.7		17.1		16.8			
Bankfull Mean Depth	0.5		0.5		0.5		0.4		0.3			
Bankfull Max Depth	0.8		0.8		0.9		0.7		0.6			
Bankfull Cross-Sectional Area (ft2)	3.8		3.3		4.0		3.0		2.6			
Width/Depth Ratio	15.4		15.3		17.9		18.7		22.6			
Entrenchment Ratio[1]	2.0		2.1		2.2		2.3		2.2			
Bank Height Ratio[2,3]	1.0		1.0		1.0		0.9		0.8			
D50 (mm)[4]	25.1		33.7		34.8		0.9		0.7			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT2 - Reach 1

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	4.8	7.5	4.3	7.5	3.1	7.5	3.8	7.2	2.8	8.2		
Floodprone Width (ft)	22.0	47.0	22.0	47.0	21.9	79.4	21.2	78.1	21.2	78.8		
Bankfull Mean Depth	0.3	0.9	0.2	0.8	0.2	0.8	0.2	0.8	0.4	0.7		
Bankfull Max Depth	0.4	1.5	0.3	1.4	0.3	1.4	0.4	1.4	0.5	1.3		
Bankfull Cross-Sectional Area (ft2)	1.2	6.8	0.8	6.3	0.7	6.3	0.9	5.5	1.0	5.5		
Width/Depth Ratio	8.3	18.5	9.7	23.3	9.0	13.9	9.3	16.5	8.0	12.4		
Entrenchment Ratio[1]	2.9	9.8	2.8	11.0	2.9	13.6	3.0	12.5	2.6	16.7		
Bank Height Ratio[2,3]	1.0		1.0		0.7	1.0	0.9	1.0	0.9	1.0		
D50 (mm)[4]	34.0	39.0	34.8	40.2	9.9	33.3	25.0	36.7	26.4	52.2		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 12l. Monitoring Data - Stream Reach Data Summary

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021

UT2 - Reach 2

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	7.8		7.8		7.0		6.5		7.9			
Floodprone Width (ft)	60.0		60.0		24.8		60.0		51.4			
Bankfull Mean Depth	0.5		0.4		0.4		0.4		0.4			
Bankfull Max Depth	0.8		0.8		0.7		0.7		0.9			
Bankfull Cross-Sectional Area (ft2)	4.1		3.0		3.0		2.8		3.2			
Width/Depth Ratio	14.9		20.2		16.4		14.8		19.2			
Entrenchment Ratio[1]	7.7		7.7		3.6		9.3		6.5			
Bank Height Ratio[2,3]	1.0		1.0		0.8		0.8		0.9			
D50 (mm)[4]	26.2		66.5		11.0		10.7		2.6			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 pro
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT2A

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	7.0		7.6		7.4		5.9		10.0			
Floodprone Width (ft)	31.0		31.0		22.2		40.1		31.7			
Bankfull Mean Depth	0.6		0.5		0.5		0.5		0.3			
Bankfull Max Depth	1.0		1.0		1.1		1.2		0.9			
Bankfull Cross-Sectional Area (ft2)	4.1		3.7		3.5		3.1		2.8			
Width/Depth Ratio	11.9		15.8		15.7		11.2		36.1			
Entrenchment Ratio[1]	4.4		4.1		3.0		6.8		3.2			
Bank Height Ratio[2,3]	1.0		1.0		0.9		0.9		0.9			
D50 (mm)[4]	18.2		7.5		5.6		9.3		0.5			
Profile												
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^3)												
Pattern												
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											
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT3

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	8.8		8.7		9.0		10.4		8.0			
Floodprone Width (ft)	77.0		77.0		67.6		67.3		64.2			
Bankfull Mean Depth	0.6		0.6		0.7		0.5		0.7			
Bankfull Max Depth	1.1		1.1		1.2		1.0		1.1			
Bankfull Cross-Sectional Area (ft2)	5.5		5.3		5.9		5.3		5.5			
Width/Depth Ratio	14.0		14.1		13.7		20.3		11.6			
Entrenchment Ratio[1]	8.8		8.9		7.5		6.5		8.1			
Bank Height Ratio[2,3]	1.0		1.0		1.0		1.0		1.0			
D50 (mm)[4]	74.4		96		72.7		58.6		85.5			
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT4

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	11.5	15.1	12.3	14.7	12.4	15.3	12.3	15.6	10.3	15.4		
Floodprone Width (ft)	98.0	288.0	98.0	288.0	49.9	69.1	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	0.7	1.0		
Bankfull Max Depth	1.6	2.1	1.6	2.1	1.5	1.9	1.5	1.8	1.4	1.7		
Bankfull Cross-Sectional Area (ft2)	11.0	15.2	11.1	14.4	10.6	13.3	10.2	13.6	9.9	12.0		
Width/Depth Ratio	10.2	15.0	11.9	15.0	13.6	17.6	12.5	17.9	10.7	20.7		
Entrenchment Ratio[1]	6.5	25.0	6.7	23.5	3.8	5.6	3.7	5.4	3.6	6.7		
Bank Height Ratio[2,3]	1.0		1.0		0.9	1.0	0.9	1.0	0.9	1.0		
D50 (mm)[4]	16.0	45.0	22.6	79.4	25.4	64.7	1.9	77.2	1.6	66.0		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

[3] 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 p
(9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

UT5

Parameter	As-Built/Baseline 2016		MY1 2017		MY2 2018		MY3 2019		MY5 2021		MY7 2023	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Dimension and Substrate												
Bankfull Width (ft)	9.7	10.6	9.6	10.8	10.6	11.6	9.3	10.1	8.3	13.1		
Floodprone Width (ft)	83.0	229.0	83.0	229.0	53.9	82.3	53.8	82.3	53.9	82.1		
Bankfull Mean Depth	0.6	0.8	0.6	0.8	0.6	0.7	0.6	0.8	0.5	0.8		
Bankfull Max Depth	0.9	1.3	0.9	1.3	1.0	1.3	1.0	1.3	1.1	1.5		
Bankfull Cross-Sectional Area (ft2)	6.0	8.8	5.6	8.4	6.4	8.2	5.5	7.6	6.4	6.6		
Width/Depth Ratio	12.8	15.5	13.8	16.2	16.2	19.1	13.5	15.8	10.5	25.7		
Entrenchment Ratio[1]	8.6	21.6	8.8	21.2	4.7	7.2	5.3	8.6	4.1	9.7		
Bank Height Ratio[2,3]	1.0		1.0		1.0	1.1	0.9	1.0	0.9	1.0		
D50 (mm)[4]	11.0	46.2	40.6	53.0	18.0	45.0	1.0	47.7	0.7	40.8		
Profile												
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^3)												
Pattern												
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										
Additional Reach Parameters												
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											

(---): Data was not provided

[1] 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.

[2] Prior to MY2, bankfull dimensions were calculated using a fixed bankfull elevation

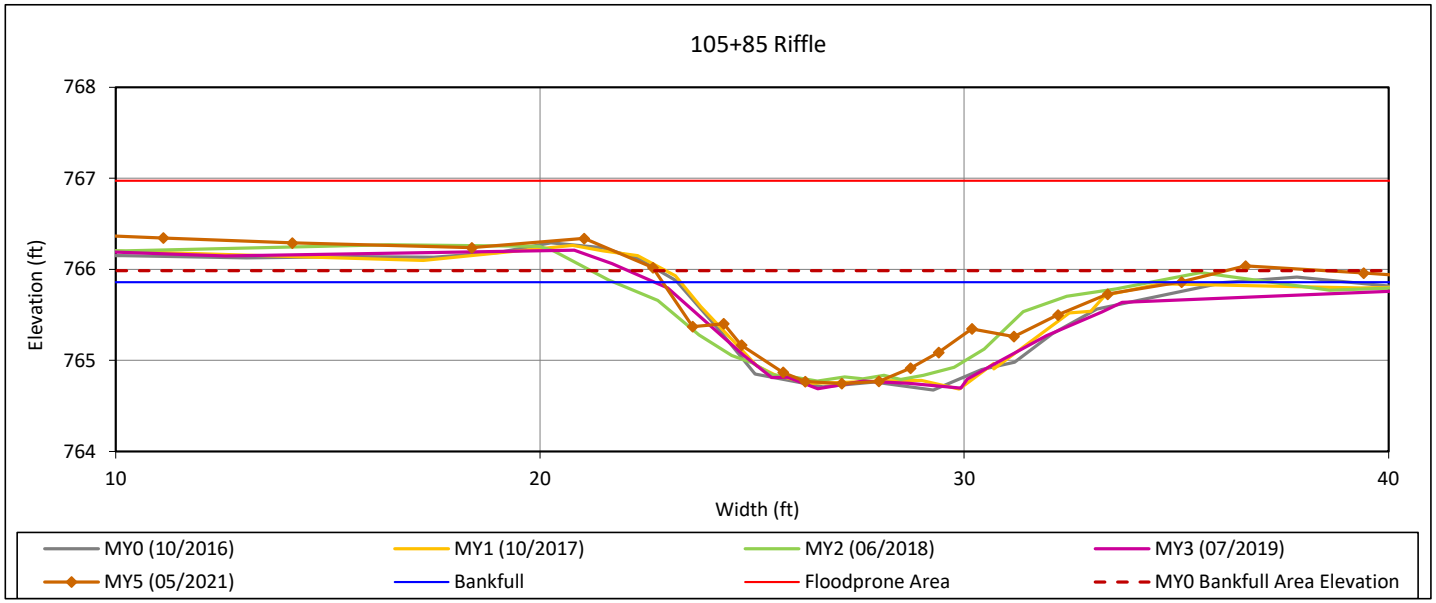
[3] MY2-MY7 Bank Height Ratio was calculated based on the As-built (MY0) cross-sectional area as described in the Standard Measurement of the BHR Monitoring Parameter document (9/2018). The remainder of the cross-section dimension parameters were calculated based on the current year's low bank height

[4] 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 5 - 2021

Cross-Section 1 - Candy Creek Reach 1



Bankfull Dimensions	
7.3	x-section area (ft.sq.)
12.2	width (ft)
0.6	mean depth (ft)
1.1	max depth (ft)
12.6	wetted perimeter (ft)
0.6	hydraulic radius (ft)
20.4	width-depth ratio
54.6	W flood prone area (ft)
4.5	entrenchment ratio
0.9	low bank height ratio

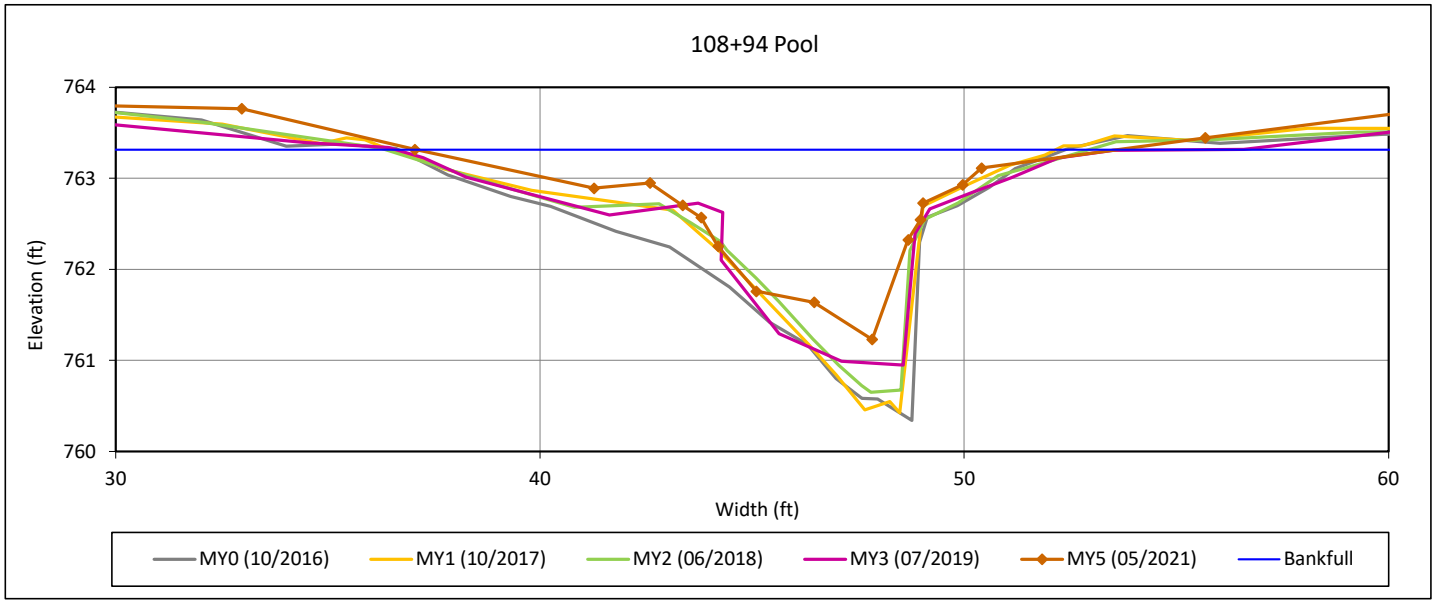
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 2 - Candy Creek Reach 1



Bankfull Dimensions	
10.9	x-section area (ft.sq.)
16.6	width (ft)
0.7	mean depth (ft)
2.1	max depth (ft)
17.8	wetted perimeter (ft)
0.6	hydraulic radius (ft)
25.2	width-depth ratio

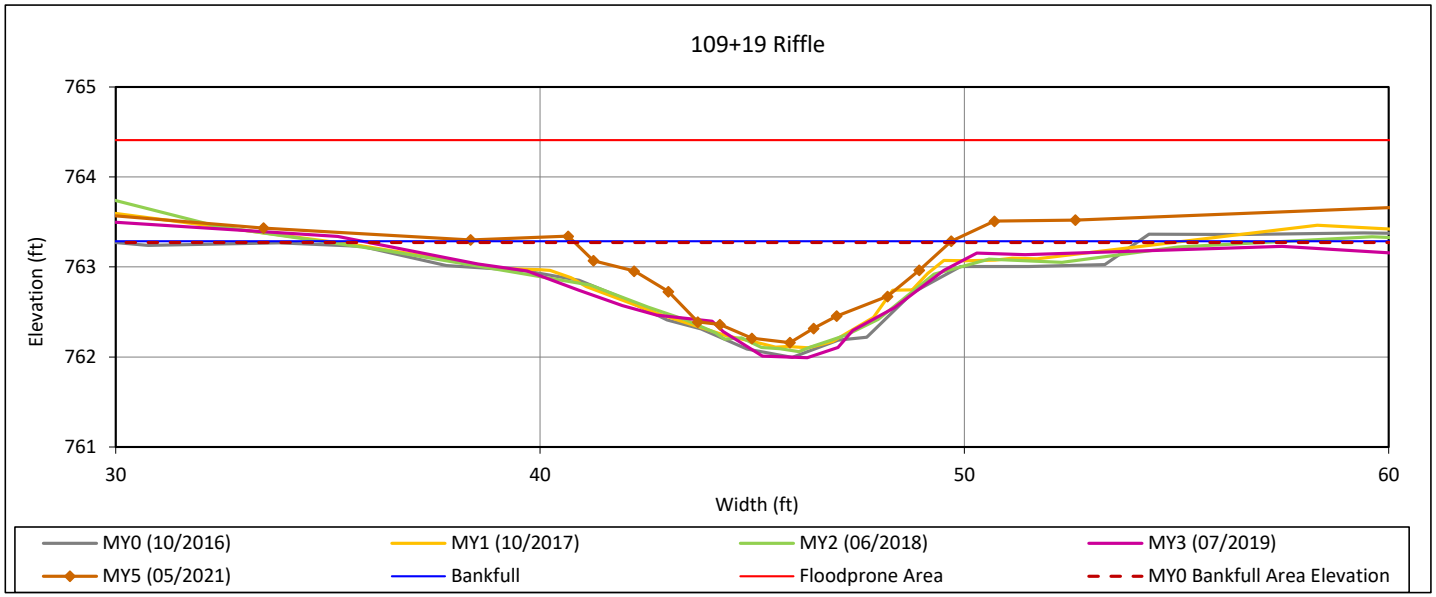
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 3 - Candy Creek Reach 1



Bankfull Dimensions	
5.8	x-section area (ft.sq.)
8.9	width (ft)
0.7	mean depth (ft)
1.1	max depth (ft)
9.3	wetted perimeter (ft)
0.6	hydraulic radius (ft)
13.7	width-depth ratio
101.7	W flood prone area (ft)
11.4	entrenchment ratio
1.0	low bank height ratio

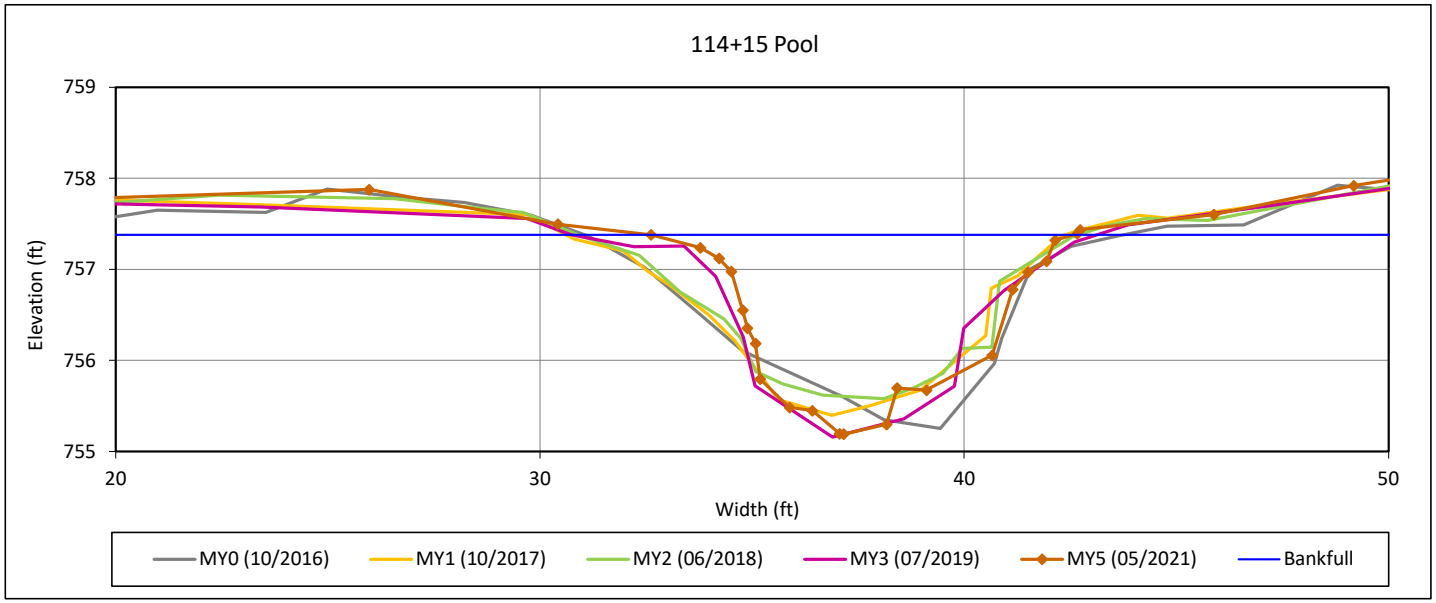
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross Section 4 - Candy Creek Reach 1



Bankfull Dimensions	
11.7	x-section area (ft.sq.)
10.0	width (ft)
1.2	mean depth (ft)
2.2	max depth (ft)
11.7	wetted perimeter (ft)
1.0	hydraulic radius (ft)
8.5	width-depth ratio

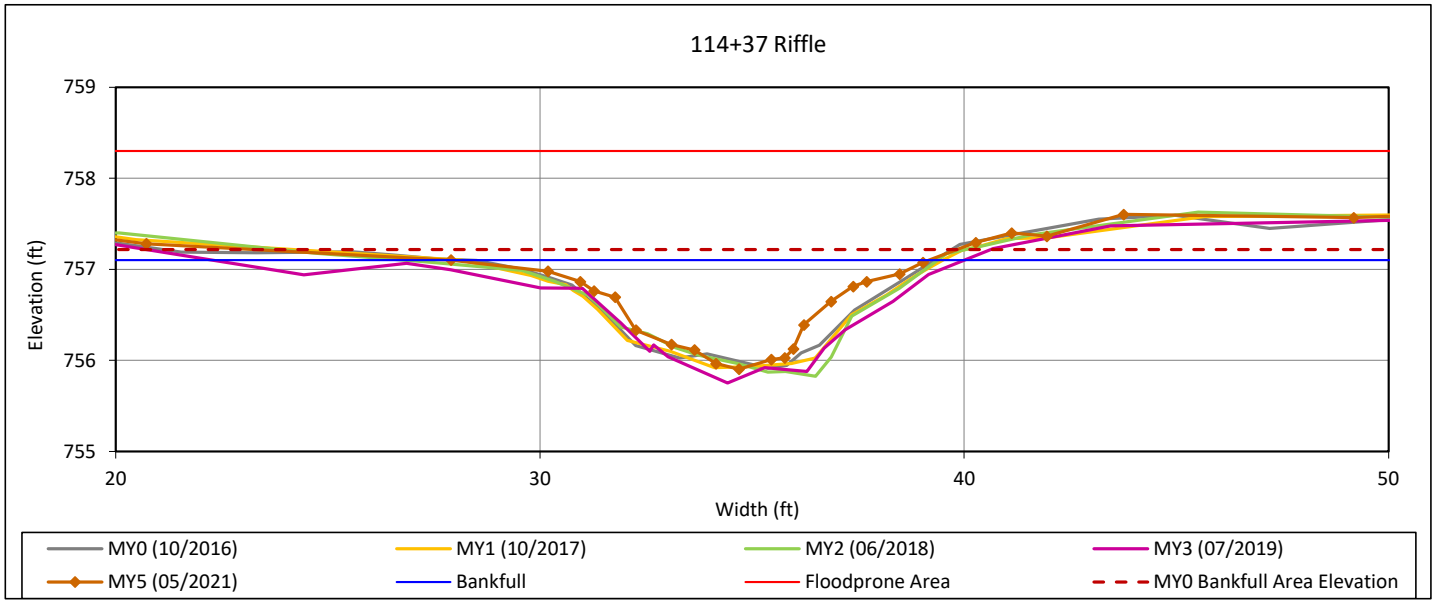
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 5 - Candy Creek Reach 1



Bankfull Dimensions	
5.7	x-section area (ft.sq.)
11.3	width (ft)
0.5	mean depth (ft)
1.2	max depth (ft)
11.7	wetted perimeter (ft)
0.5	hydraulic radius (ft)
22.2	width-depth ratio
74.8	W flood prone area (ft)
6.6	entrenchment ratio
0.9	low bank height ratio

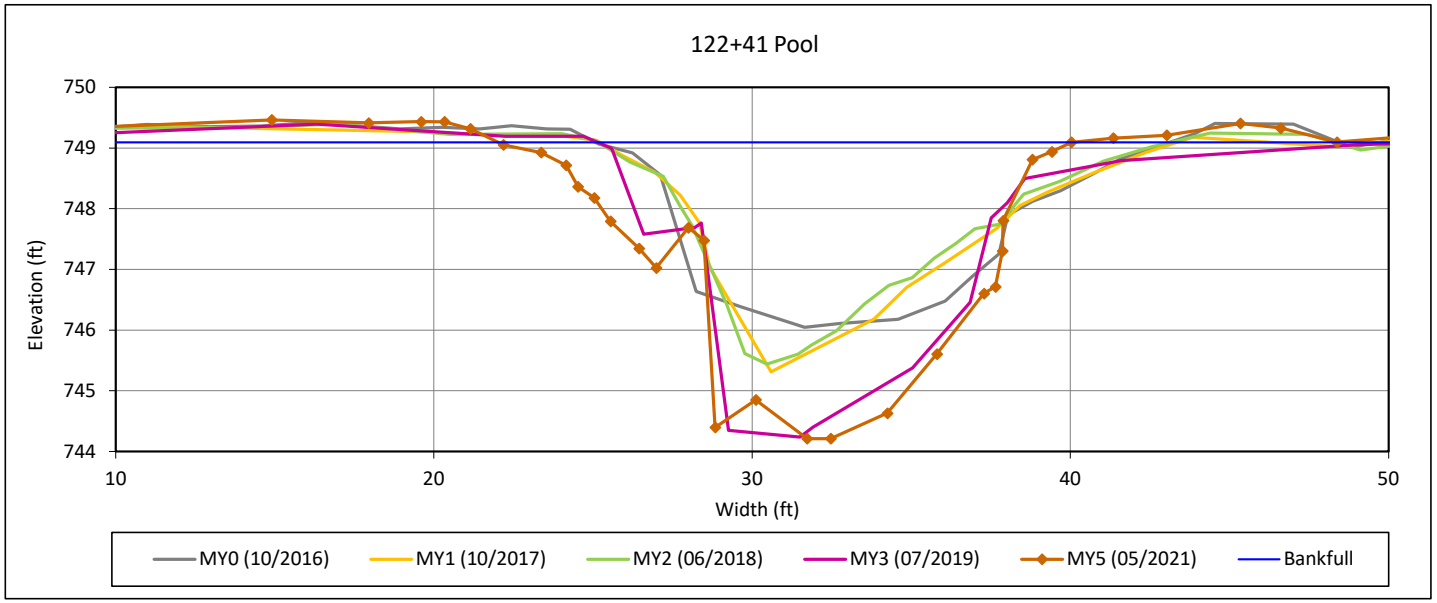
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 6 - Candy Creek Reach 1



Bankfull Dimensions	
45.4	x-section area (ft.sq.)
18.0	width (ft)
2.5	mean depth (ft)
4.9	max depth (ft)
23.8	wetted perimeter (ft)
1.9	hydraulic radius (ft)
7.1	width-depth ratio

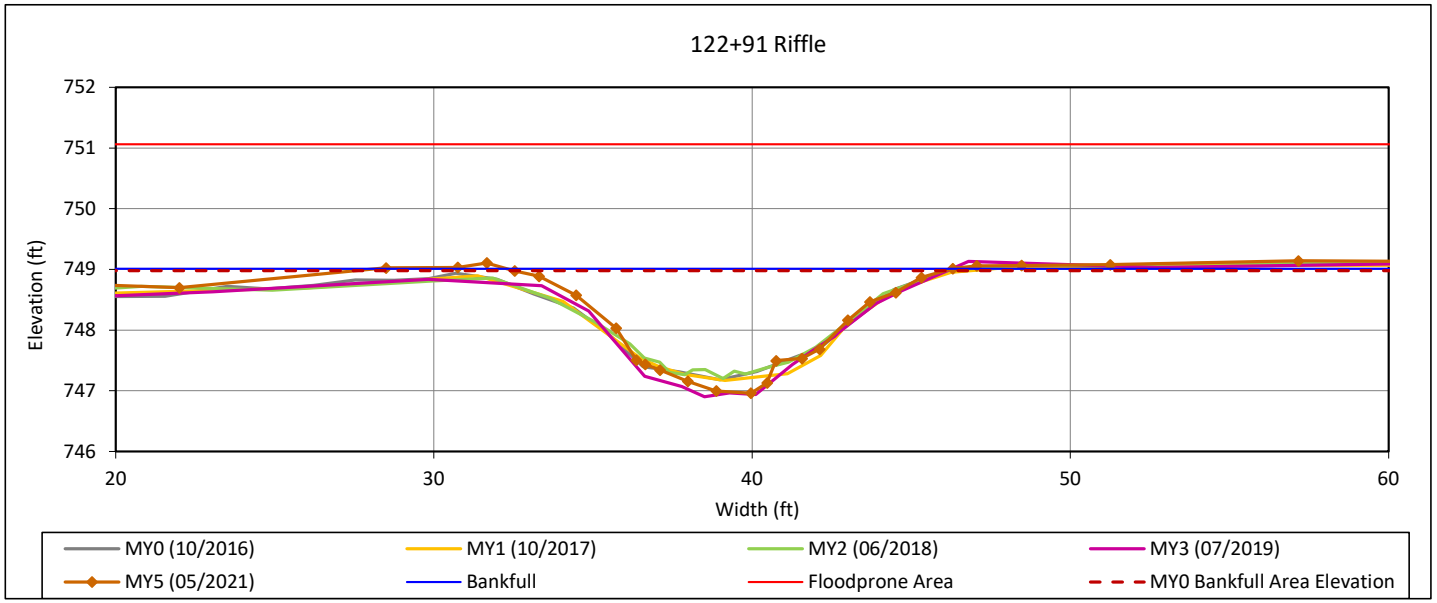
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 7 - Candy Creek Reach 1



Bankfull Dimensions	
14.4	x-section area (ft.sq.)
14.0	width (ft)
1.0	mean depth (ft)
2.1	max depth (ft)
14.9	wetted perimeter (ft)
1.0	hydraulic radius (ft)
13.7	width-depth ratio
82.7	W flood prone area (ft)
5.9	entrenchment ratio
1.0	low bank height ratio

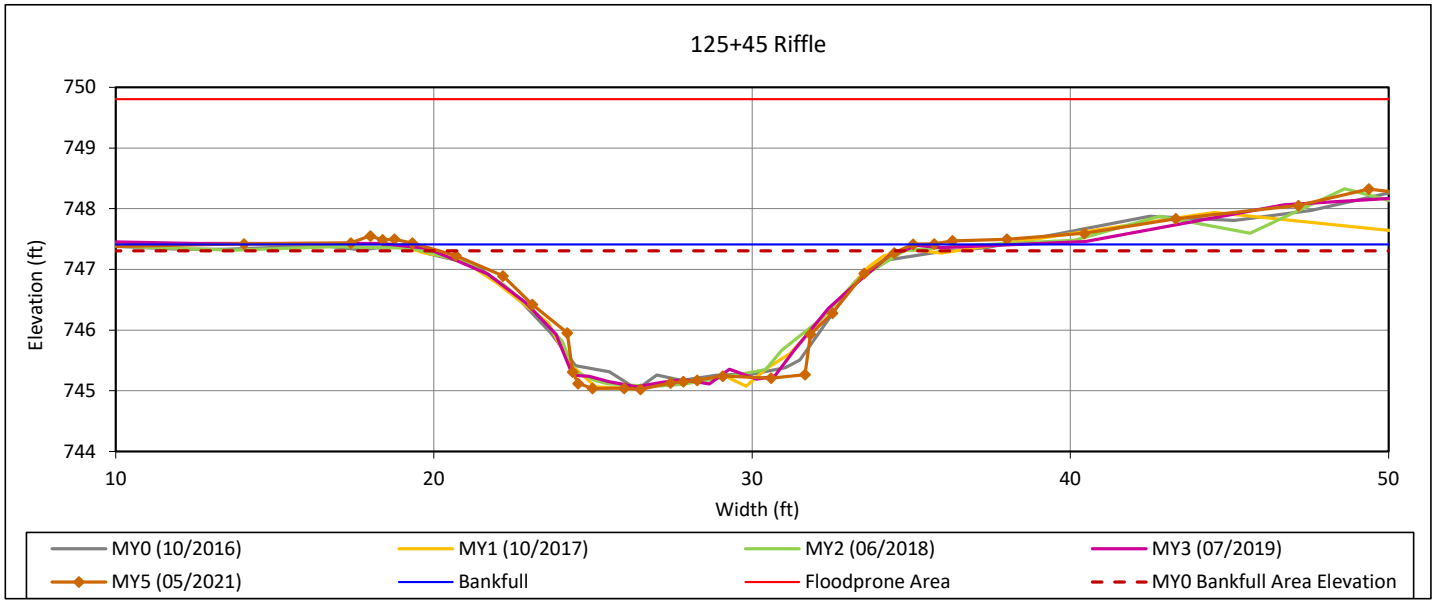
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 8 - Candy Creek Reach 1



Bankfull Dimensions	
21.9	x-section area (ft.sq.)
15.6	width (ft)
1.4	mean depth (ft)
2.4	max depth (ft)
17.3	wetted perimeter (ft)
1.3	hydraulic radius (ft)
11.1	width-depth ratio
64.0	W flood prone area (ft)
4.1	entrenchment ratio
1.0	low bank height ratio

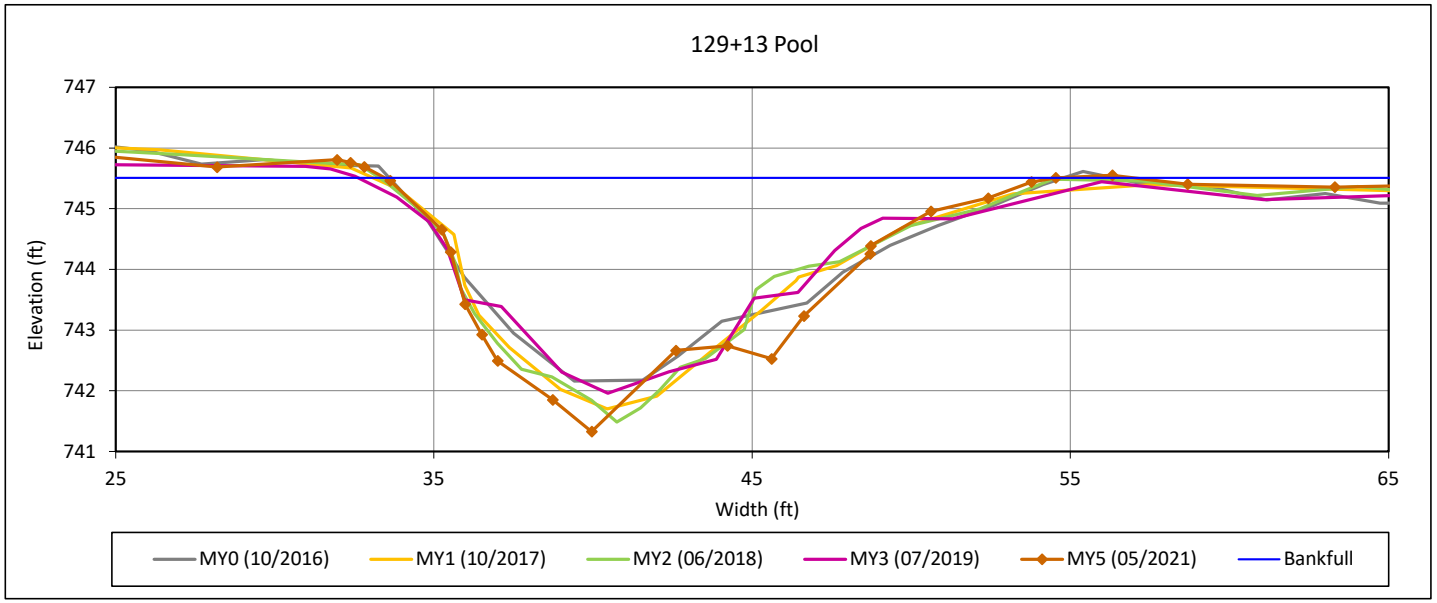
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 9 - Candy Creek Reach 2



Bankfull Dimensions	
41.8	x-section area (ft.sq.)
21.1	width (ft)
2.0	mean depth (ft)
4.2	max depth (ft)
23.6	wetted perimeter (ft)
1.8	hydraulic radius (ft)
10.6	width-depth ratio

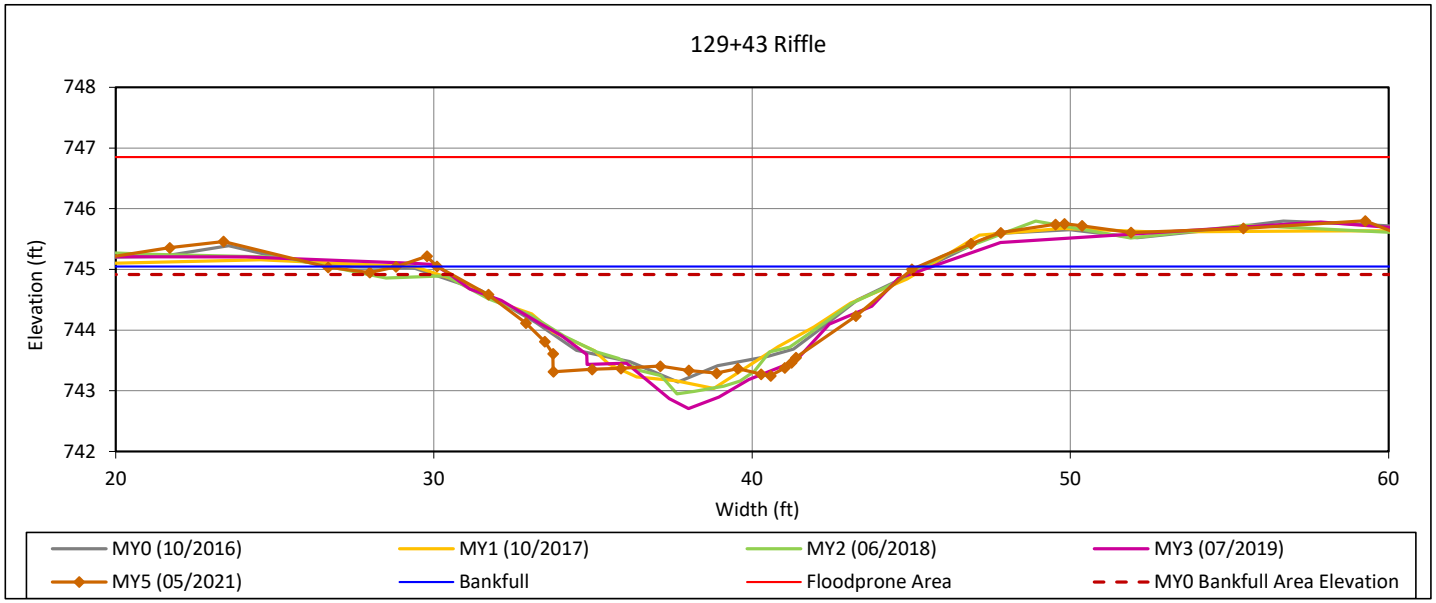
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 10 - Candy Creek Reach 2



Bankfull Dimensions	
18.2	x-section area (ft.sq.)
15.2	width (ft)
1.2	mean depth (ft)
1.8	max depth (ft)
16.1	wetted perimeter (ft)
1.1	hydraulic radius (ft)
12.6	width-depth ratio
93.3	W flood prone area (ft)
6.2	entrenchment ratio
1.1	low bank height ratio

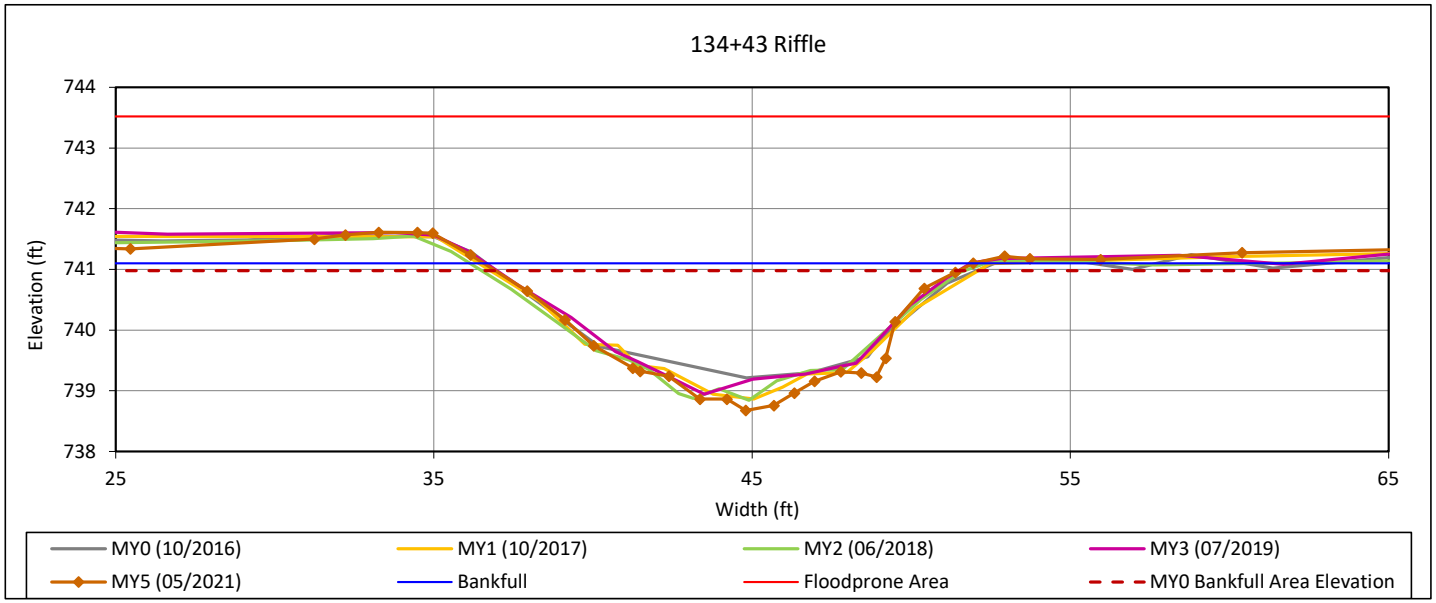
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 11 - Candy Creek Reach 2



Bankfull Dimensions	
21.6	x-section area (ft.sq.)
15.4	width (ft)
1.4	mean depth (ft)
2.4	max depth (ft)
16.6	wetted perimeter (ft)
1.3	hydraulic radius (ft)
11.0	width-depth ratio
79.0	W flood prone area (ft)
5.1	entrenchment ratio
1.1	low bank height ratio

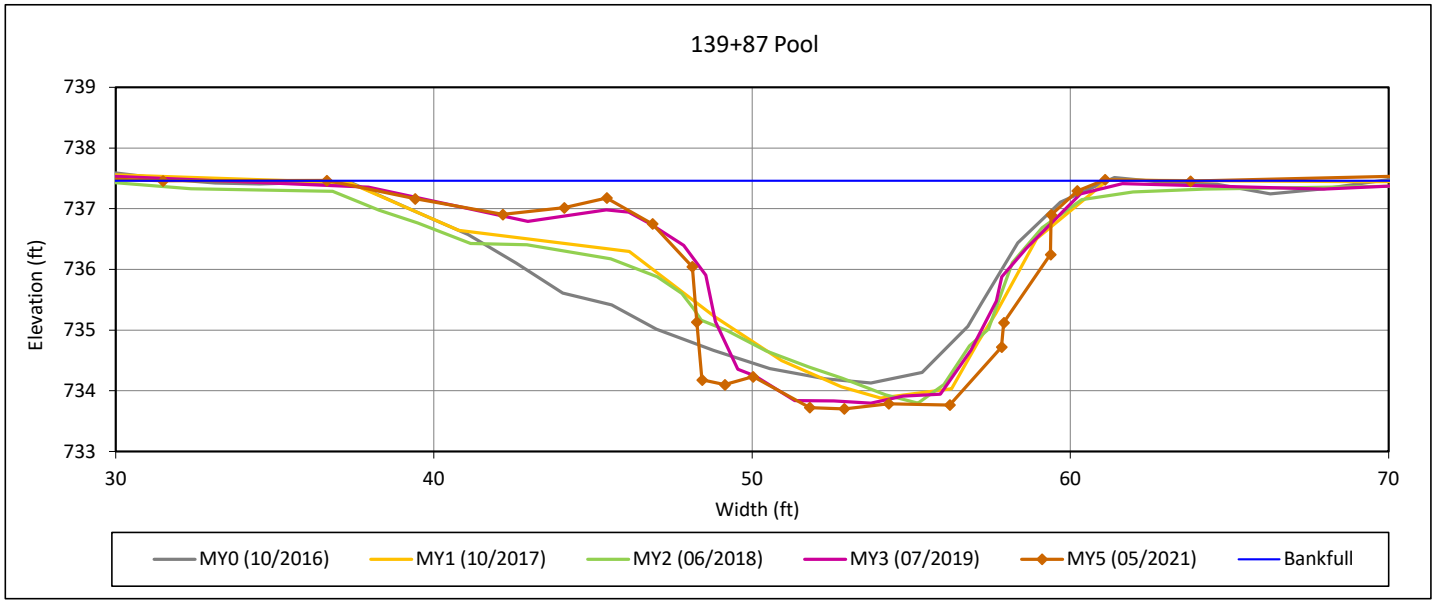
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 12 - Candy Creek Reach 2



Bankfull Dimensions	
42.1	x-section area (ft.sq.)
24.4	width (ft)
1.7	mean depth (ft)
3.8	max depth (ft)
28.1	wetted perimeter (ft)
1.5	hydraulic radius (ft)
14.1	width-depth ratio

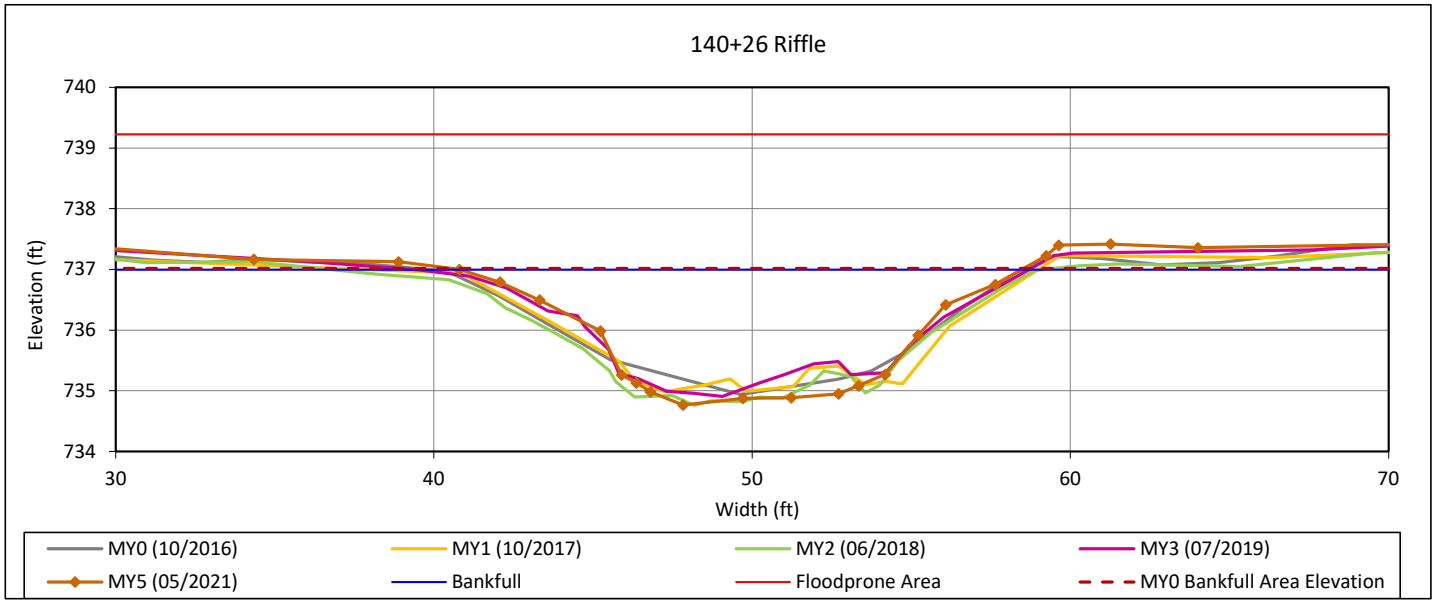
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 13 - Candy Creek Reach 2



Bankfull Dimensions	
22.9	x-section area (ft.sq.)
17.7	width (ft)
1.3	mean depth (ft)
2.2	max depth (ft)
18.6	wetted perimeter (ft)
1.2	hydraulic radius (ft)
13.7	width-depth ratio
95.8	W flood prone area (ft)
5.4	entrenchment ratio
1.0	low bank height ratio

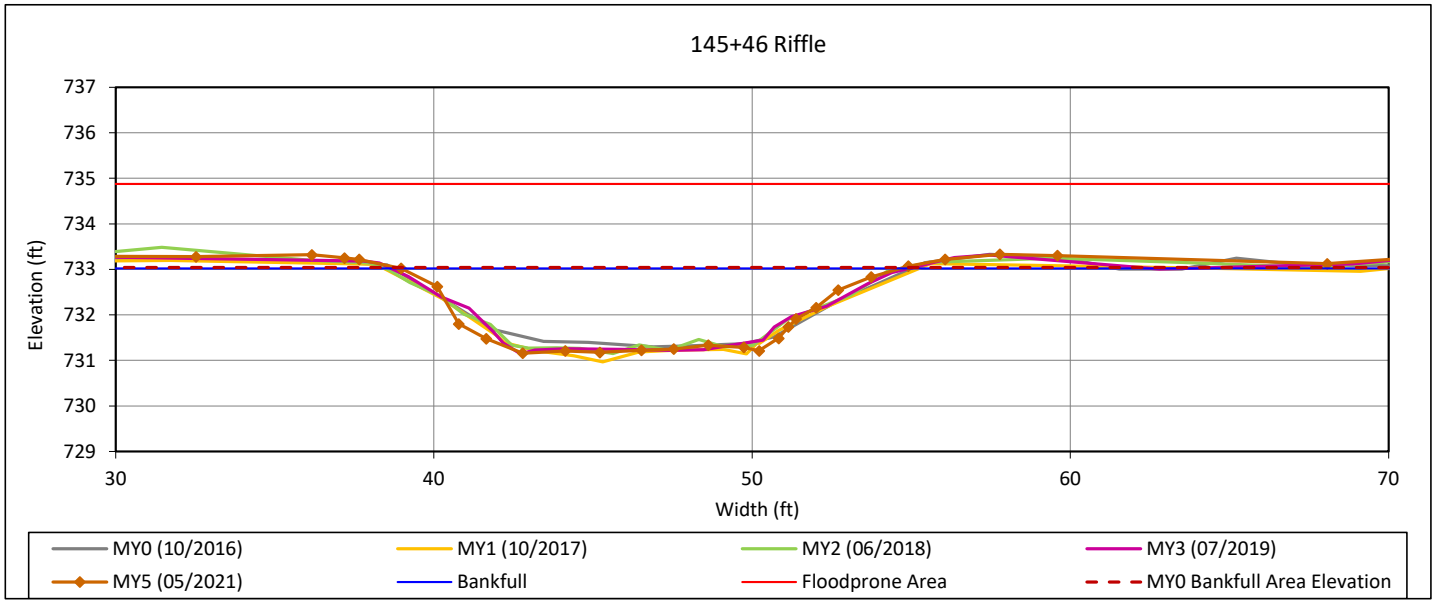
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 14 - Candy Creek Reach 2



Bankfull Dimensions	
20.5	x-section area (ft.sq.)
15.7	width (ft)
1.3	mean depth (ft)
1.9	max depth (ft)
16.7	wetted perimeter (ft)
1.2	hydraulic radius (ft)
12.1	width-depth ratio
75.0	W flood prone area (ft)
4.8	entrenchment ratio
1.0	low bank height ratio

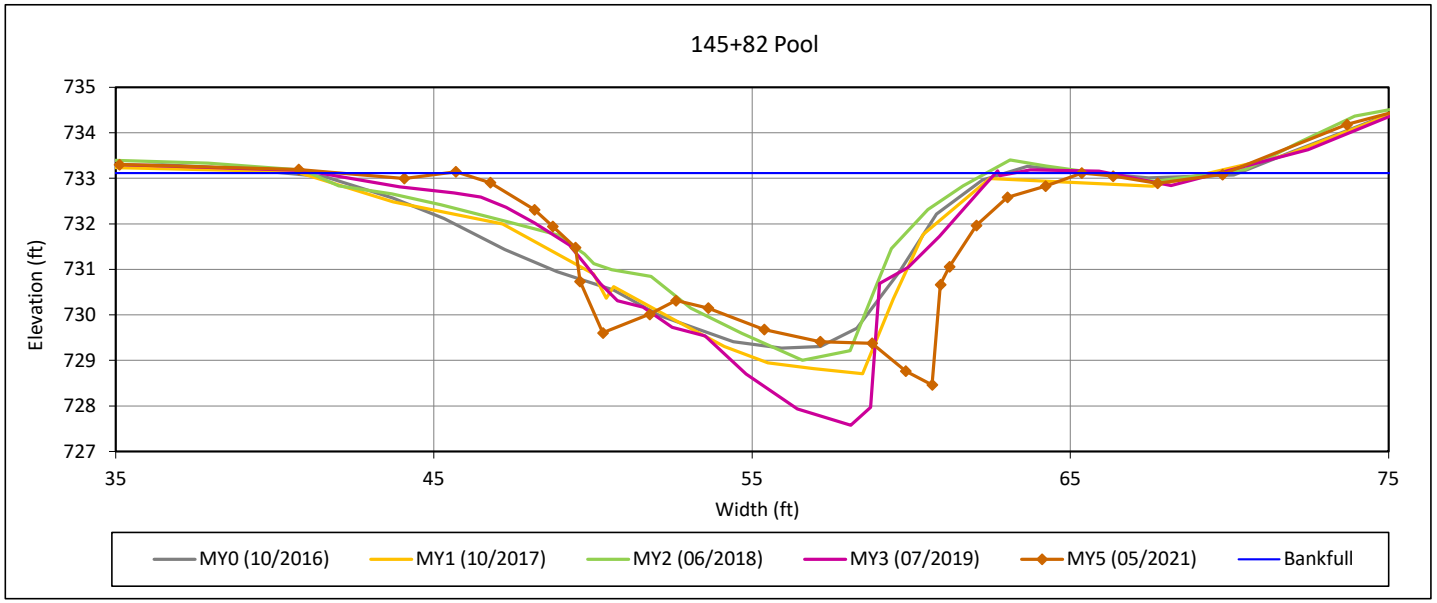
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 15 - Candy Creek Reach 2



Bankfull Dimensions	
45.4	x-section area (ft.sq.)
19.5	width (ft)
2.3	mean depth (ft)
4.7	max depth (ft)
24.4	wetted perimeter (ft)
1.9	hydraulic radius (ft)
8.4	width-depth ratio

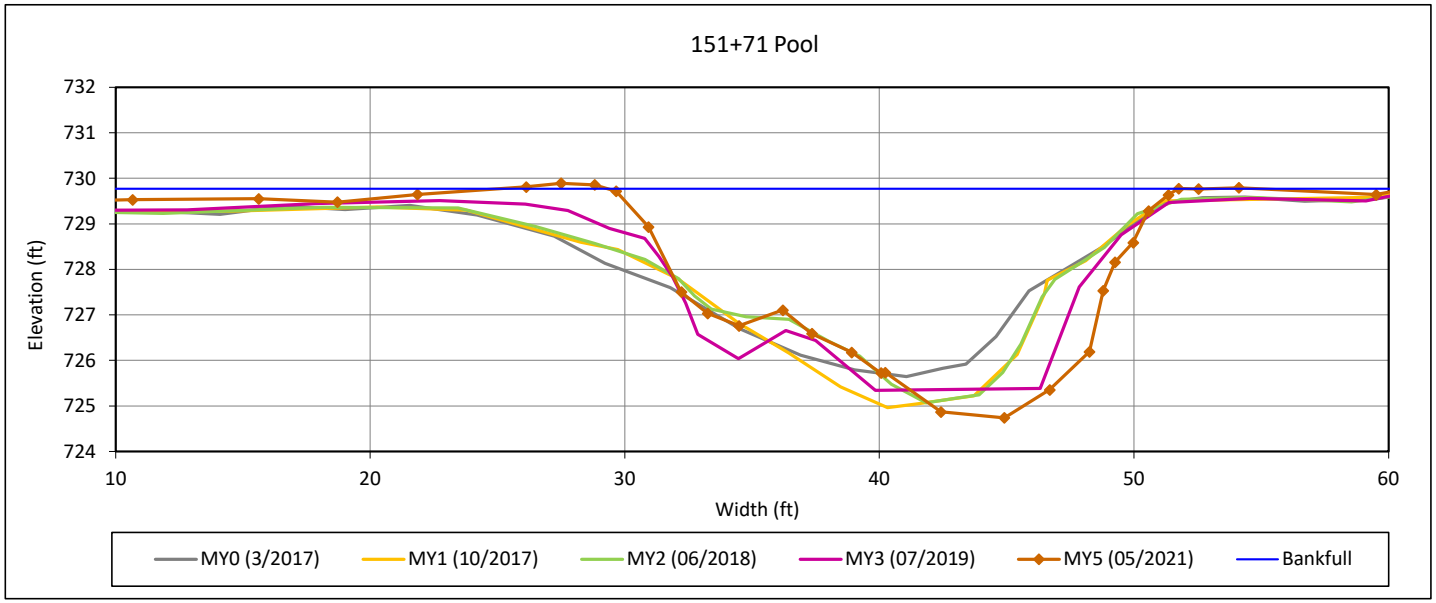
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 16 - Candy Creek Reach 3



Bankfull Dimensions	
68.5	x-section area (ft.sq.)
22.5	width (ft)
3.1	mean depth (ft)
5.0	max depth (ft)
26.0	wetted perimeter (ft)
2.6	hydraulic radius (ft)
7.4	width-depth ratio

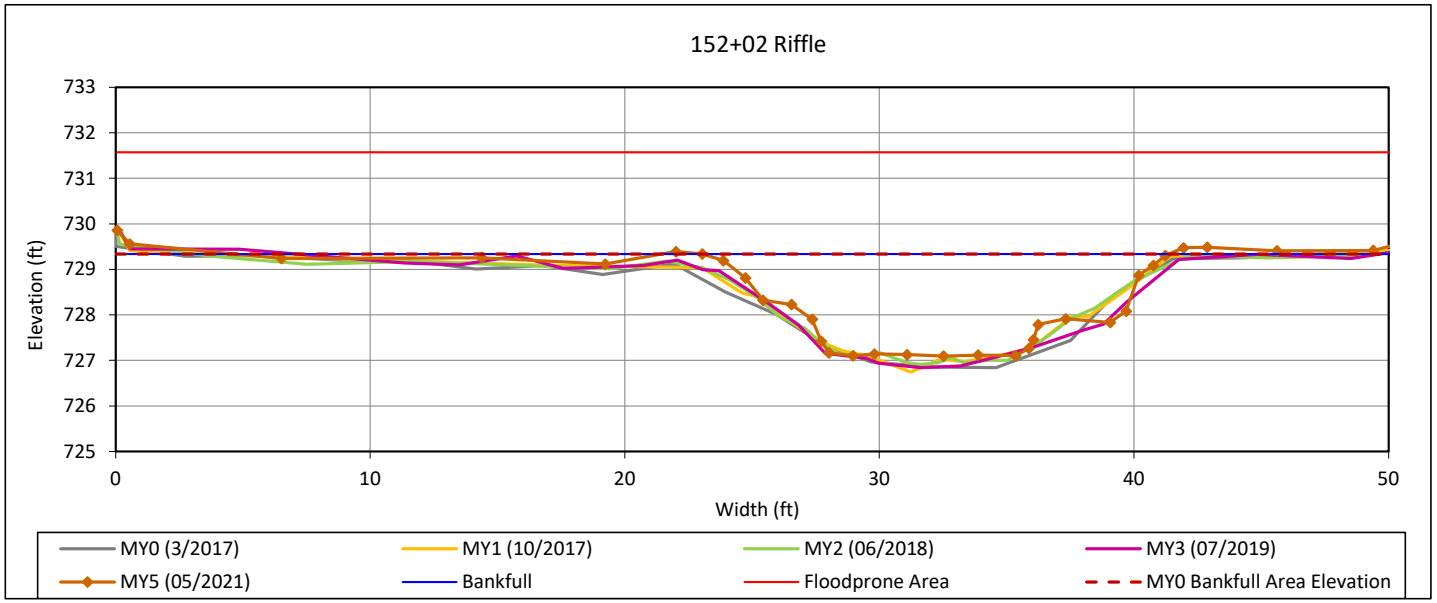
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 17 - Candy Creek Reach 3



Bankfull Dimensions	
28.1	x-section area (ft.sq.)
18.3	width (ft)
1.5	mean depth (ft)
2.2	max depth (ft)
19.9	wetted perimeter (ft)
1.4	hydraulic radius (ft)
12.0	width-depth ratio
53.8	W flood prone area (ft)
2.9	entrenchment ratio
1.0	low bank height ratio

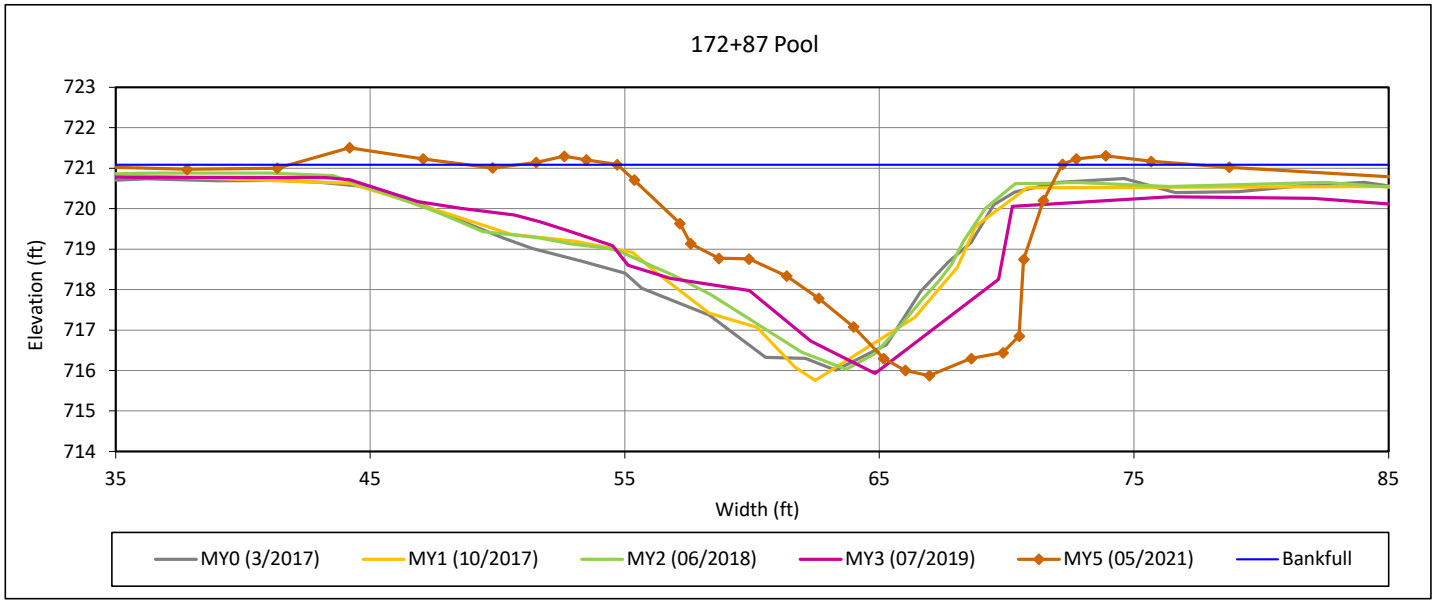
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 18 - Candy Creek Reach 4



Bankfull Dimensions	
53.6	x-section area (ft.sq.)
17.5	width (ft)
3.1	mean depth (ft)
5.2	max depth (ft)
22.0	wetted perimeter (ft)
2.4	hydraulic radius (ft)
5.7	width-depth ratio

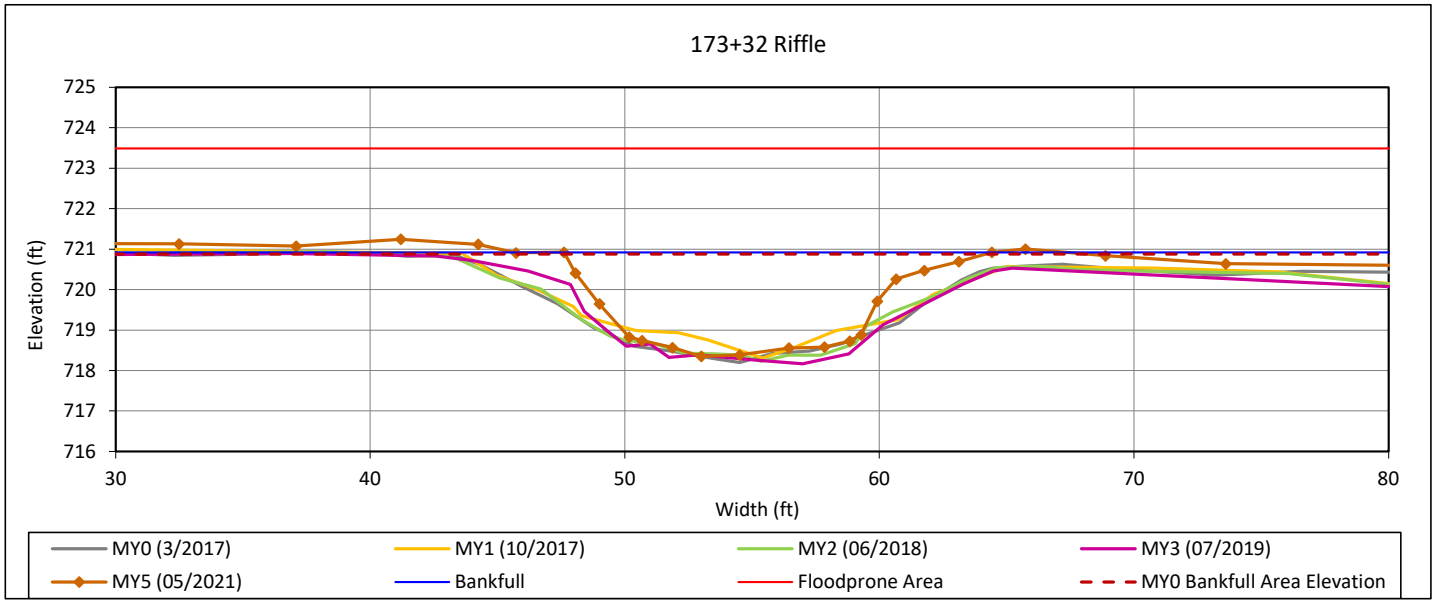
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 19 - Candy Creek Reach 4



Bankfull Dimensions	
27.5	x-section area (ft.sq.)
16.8	width (ft)
1.6	mean depth (ft)
2.6	max depth (ft)
18.3	wetted perimeter (ft)
1.5	hydraulic radius (ft)
10.3	width-depth ratio
86.0	W flood prone area (ft)
5.1	entrenchment ratio
1.0	low bank height ratio

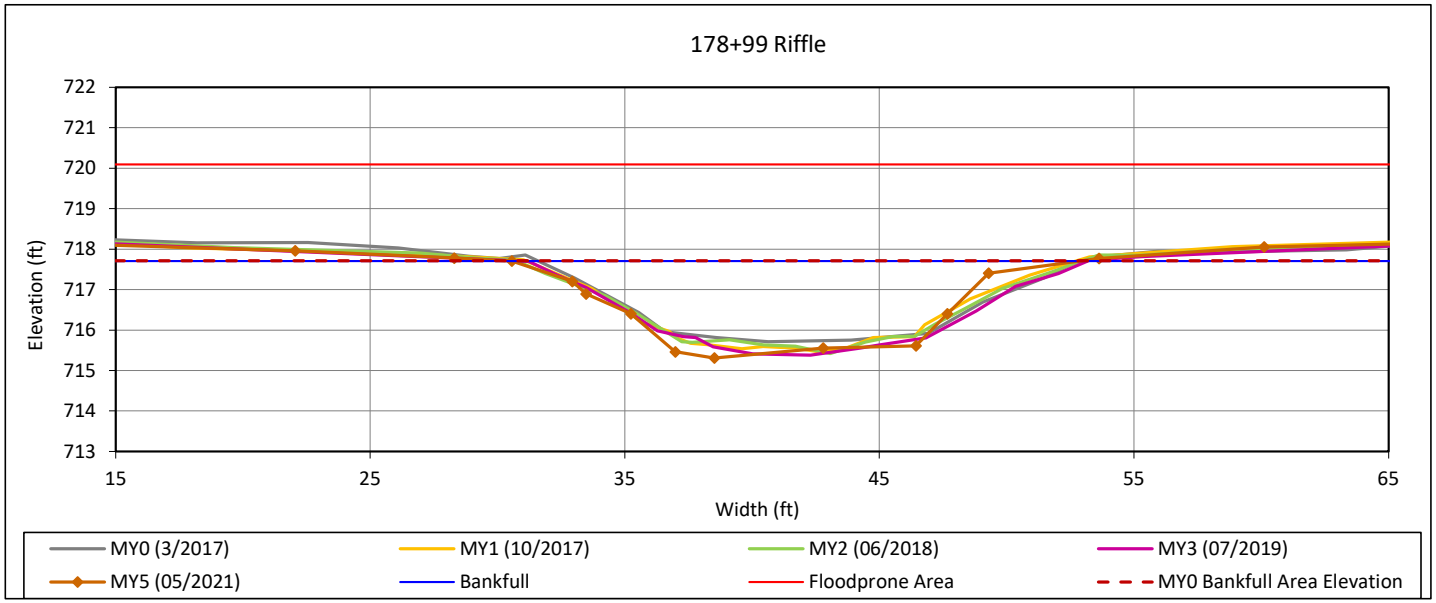
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 20 - Candy Creek Reach 4



Bankfull Dimensions	
30.8	x-section area (ft.sq.)
22.3	width (ft)
1.4	mean depth (ft)
2.4	max depth (ft)
23.3	wetted perimeter (ft)
1.3	hydraulic radius (ft)
16.1	width-depth ratio
100.4	W flood prone area (ft)
4.5	entrenchment ratio
1.0	low bank height ratio

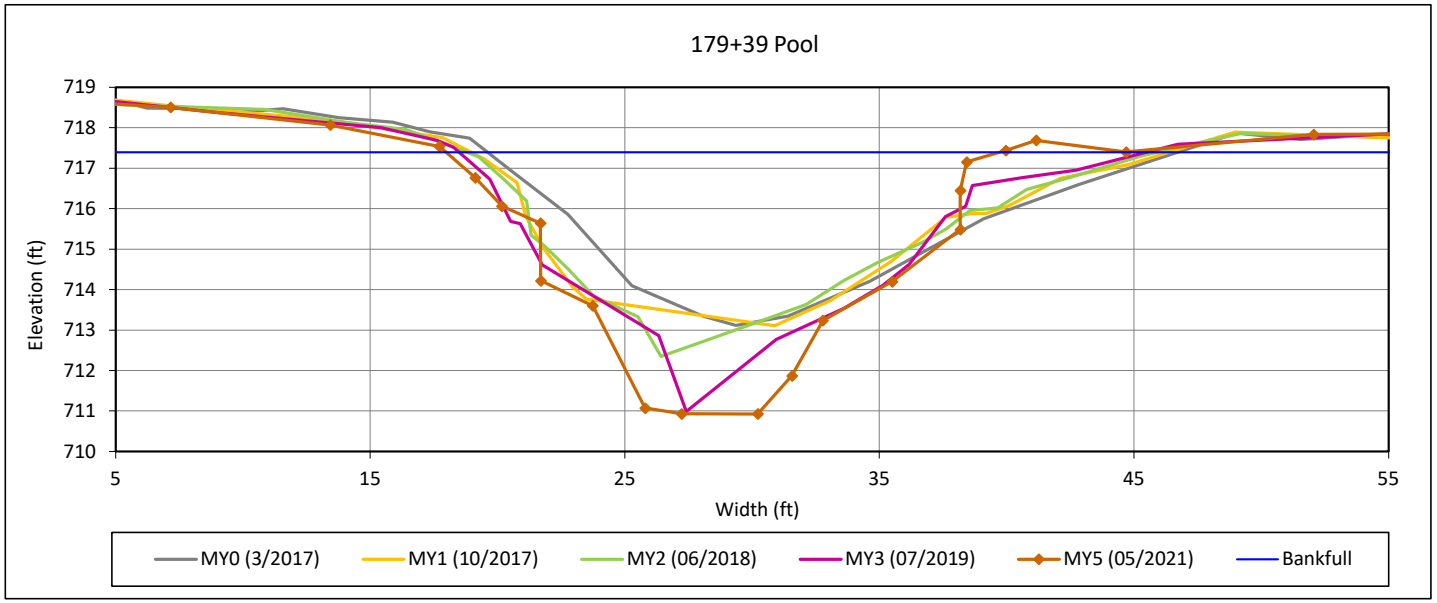
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 21 - Candy Creek Reach 4



Bankfull Dimensions	
81.0	x-section area (ft.sq.)
21.8	width (ft)
3.7	mean depth (ft)
6.5	max depth (ft)
27.8	wetted perimeter (ft)
2.9	hydraulic radius (ft)
5.9	width-depth ratio

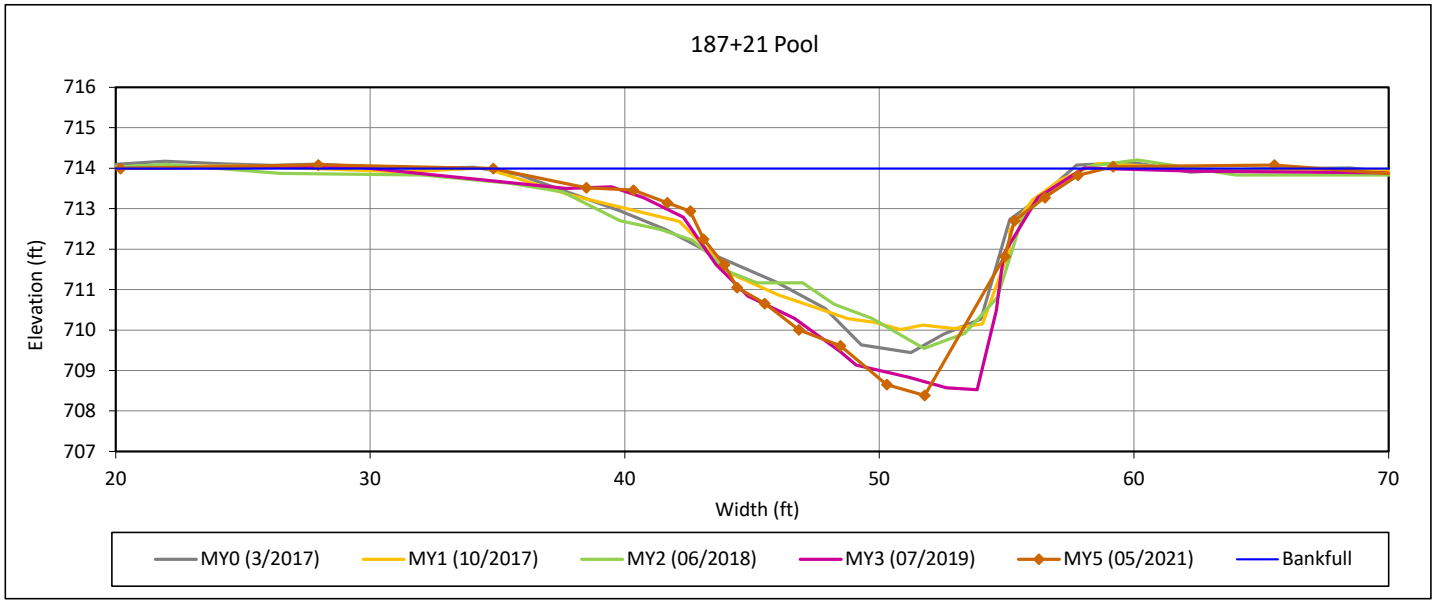
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 22 - Candy Creek Reach 4



Bankfull Dimensions	
54.3	x-section area (ft.sq.)
24.0	width (ft)
2.3	mean depth (ft)
5.6	max depth (ft)
27.8	wetted perimeter (ft)
1.9	hydraulic radius (ft)
10.7	width-depth ratio

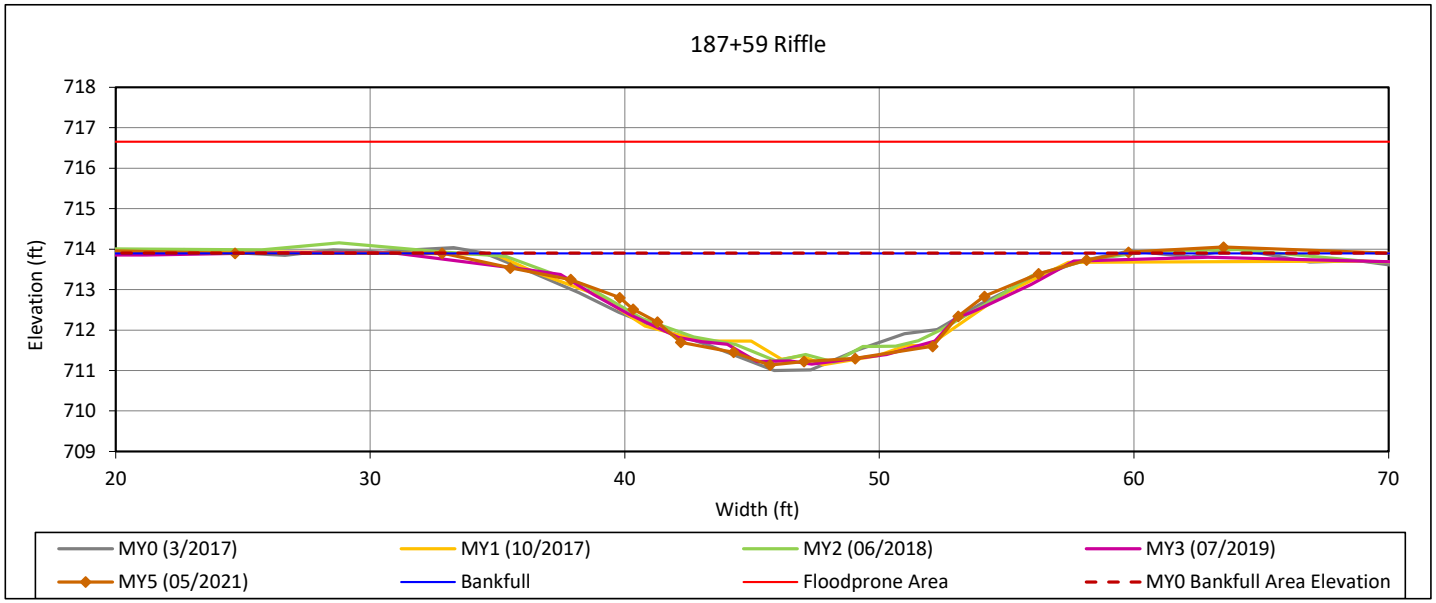
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 23 - Candy Creek Reach 4



Bankfull Dimensions	
38.0	x-section area (ft.sq.)
26.8	width (ft)
1.4	mean depth (ft)
2.8	max depth (ft)
27.6	wetted perimeter (ft)
1.4	hydraulic radius (ft)
18.9	width-depth ratio
90.1	W flood prone area (ft)
3.4	entrenchment ratio
1.0	low bank height ratio

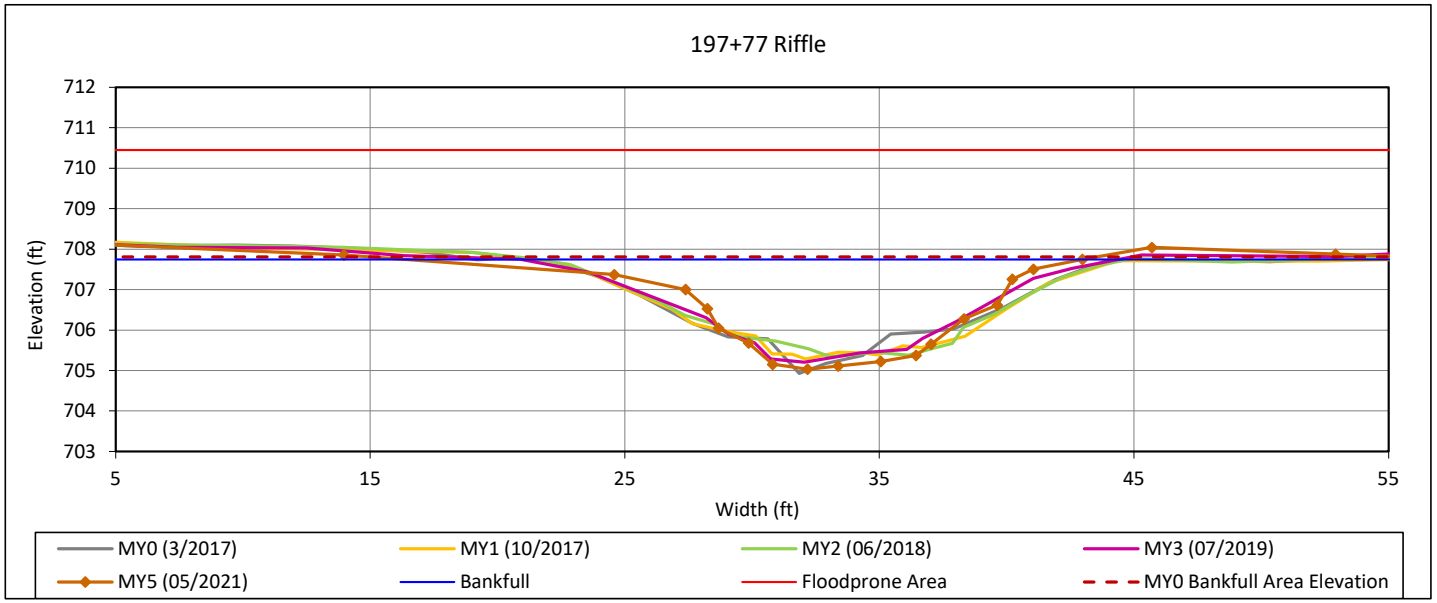
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 24 - Candy Creek Reach 4



Bankfull Dimensions	
29.9	x-section area (ft.sq.)
26.5	width (ft)
1.1	mean depth (ft)
2.7	max depth (ft)
27.7	wetted perimeter (ft)
1.1	hydraulic radius (ft)
23.6	width-depth ratio
59.1	W flood prone area (ft)
2.2	entrenchment ratio
1.0	low bank height ratio

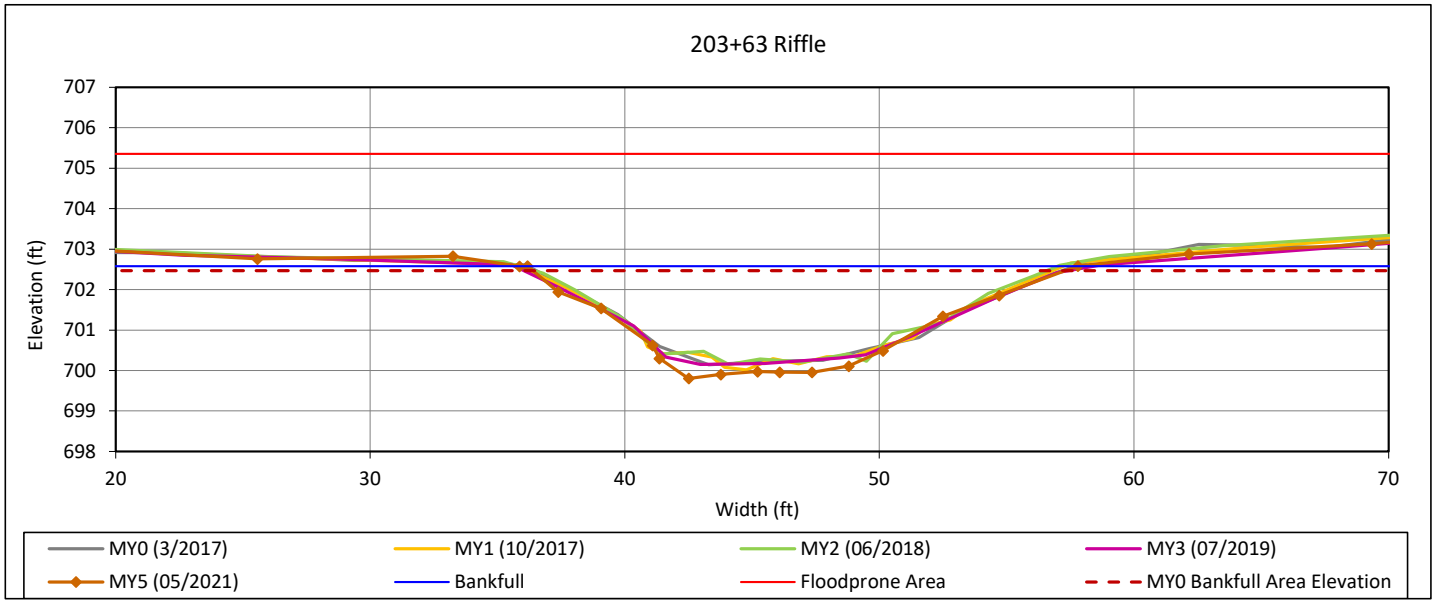
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 25 - Candy Creek Reach 4



Bankfull Dimensions	
35.2	x-section area (ft.sq.)
21.6	width (ft)
1.6	mean depth (ft)
2.8	max depth (ft)
22.6	wetted perimeter (ft)
1.6	hydraulic radius (ft)
13.3	width-depth ratio
85.5	W flood prone area (ft)
4.0	entrenchment ratio
1.0	low bank height ratio

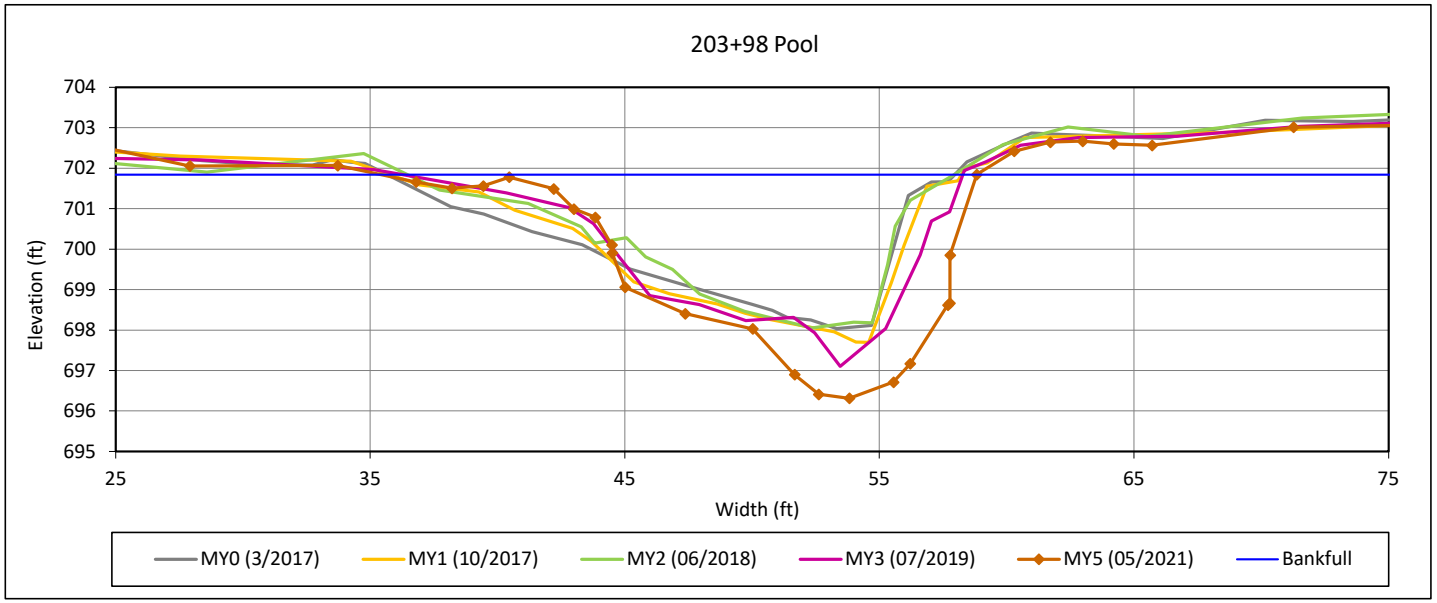
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 26 - Candy Creek Reach 4



Bankfull Dimensions	
60.2	x-section area (ft.sq.)
23.4	width (ft)
2.6	mean depth (ft)
5.5	max depth (ft)
28.4	wetted perimeter (ft)
2.1	hydraulic radius (ft)
9.1	width-depth ratio

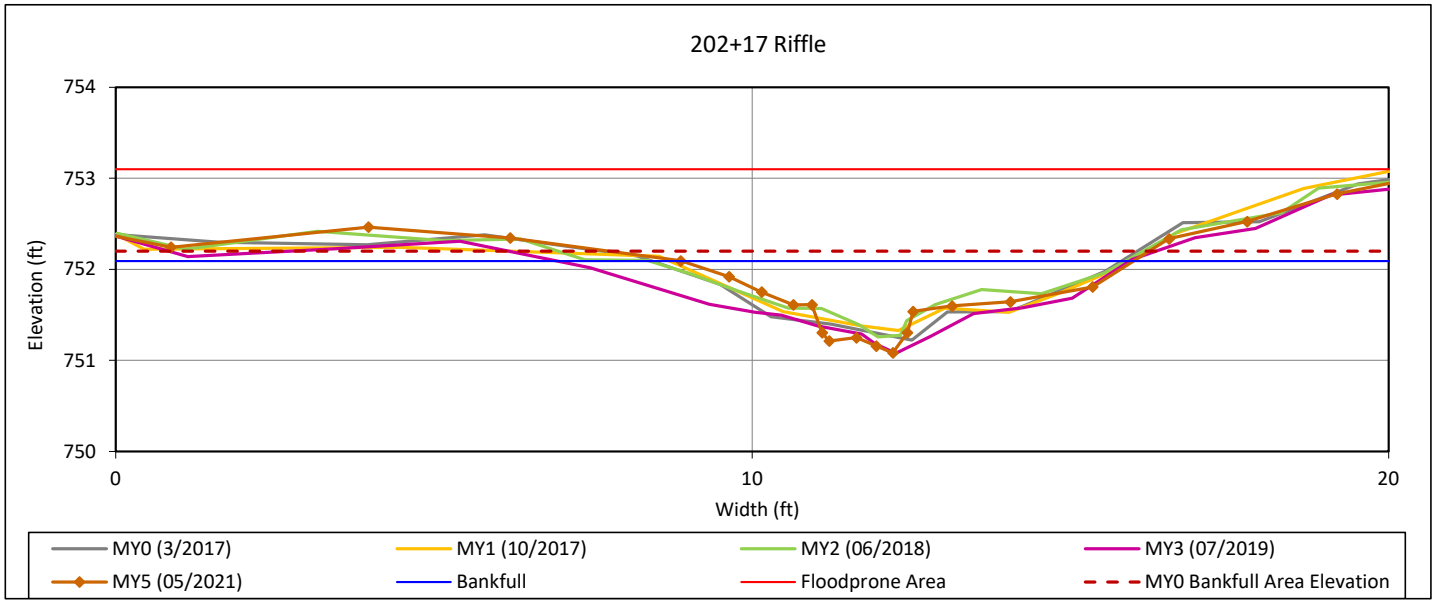
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 27 - UT1C



Bankfull Dimensions	
3.2	x-section area (ft.sq.)
7.1	width (ft)
0.5	mean depth (ft)
1.0	max depth (ft)
7.8	wetted perimeter (ft)
0.4	hydraulic radius (ft)
15.7	width-depth ratio
21.1	W flood prone area (ft)
3.0	entrenchment ratio
0.9	low bank height ratio

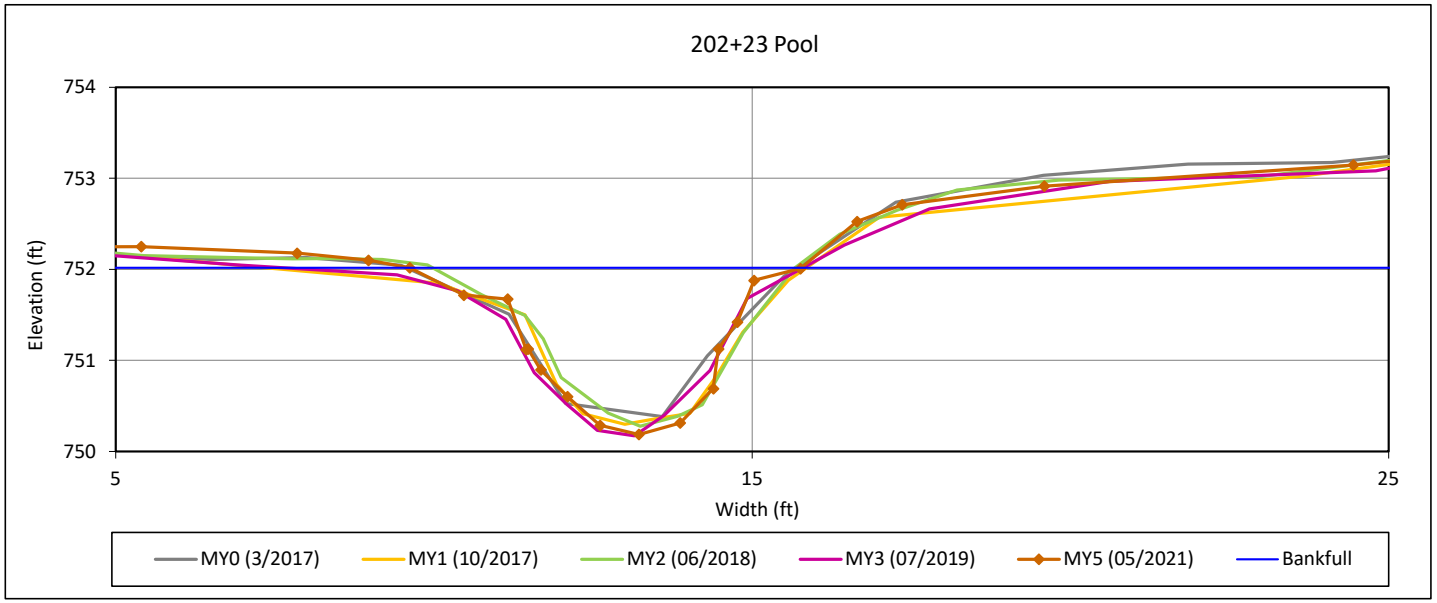
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 28 - UT1C



Bankfull Dimensions	
5.6	x-section area (ft.sq.)
6.2	width (ft)
0.9	mean depth (ft)
1.8	max depth (ft)
7.7	wetted perimeter (ft)
0.7	hydraulic radius (ft)
6.8	width-depth ratio

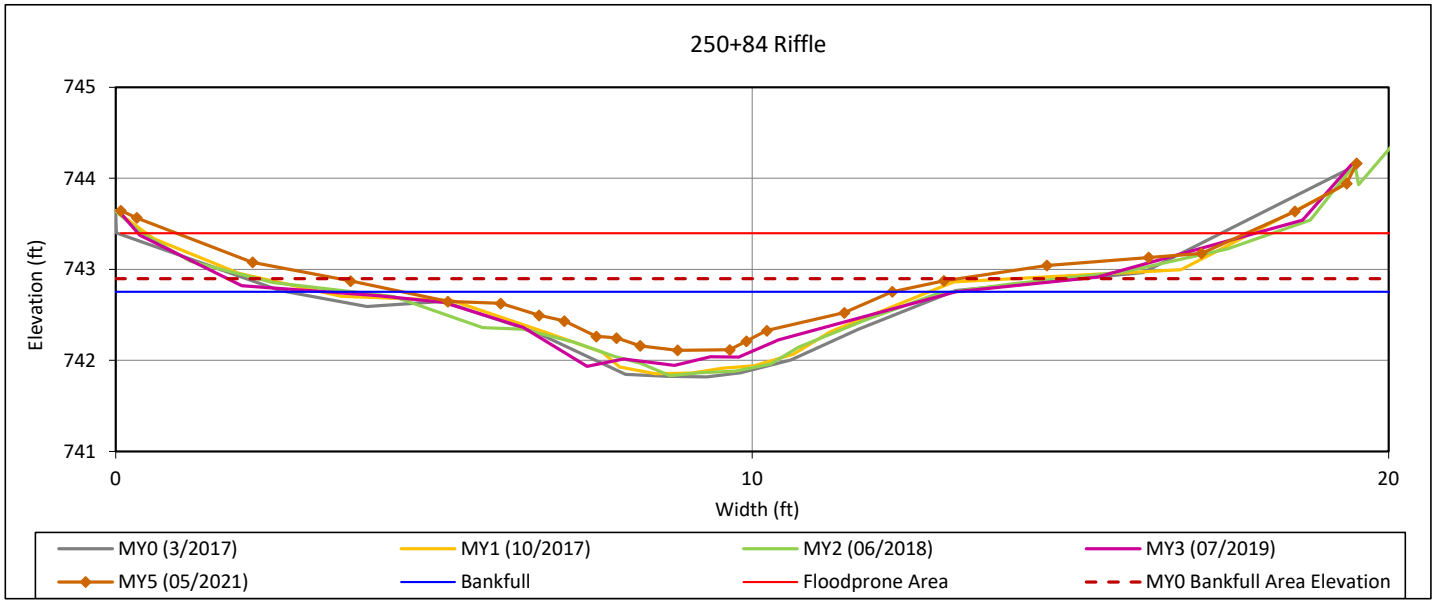
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 29 - UT1D



Bankfull Dimensions	
2.6	x-section area (ft.sq.)
7.7	width (ft)
0.3	mean depth (ft)
0.6	max depth (ft)
7.9	wetted perimeter (ft)
0.3	hydraulic radius (ft)
22.6	width-depth ratio
16.8	W flood prone area (ft)
2.2	entrenchment ratio
0.8	low bank height ratio

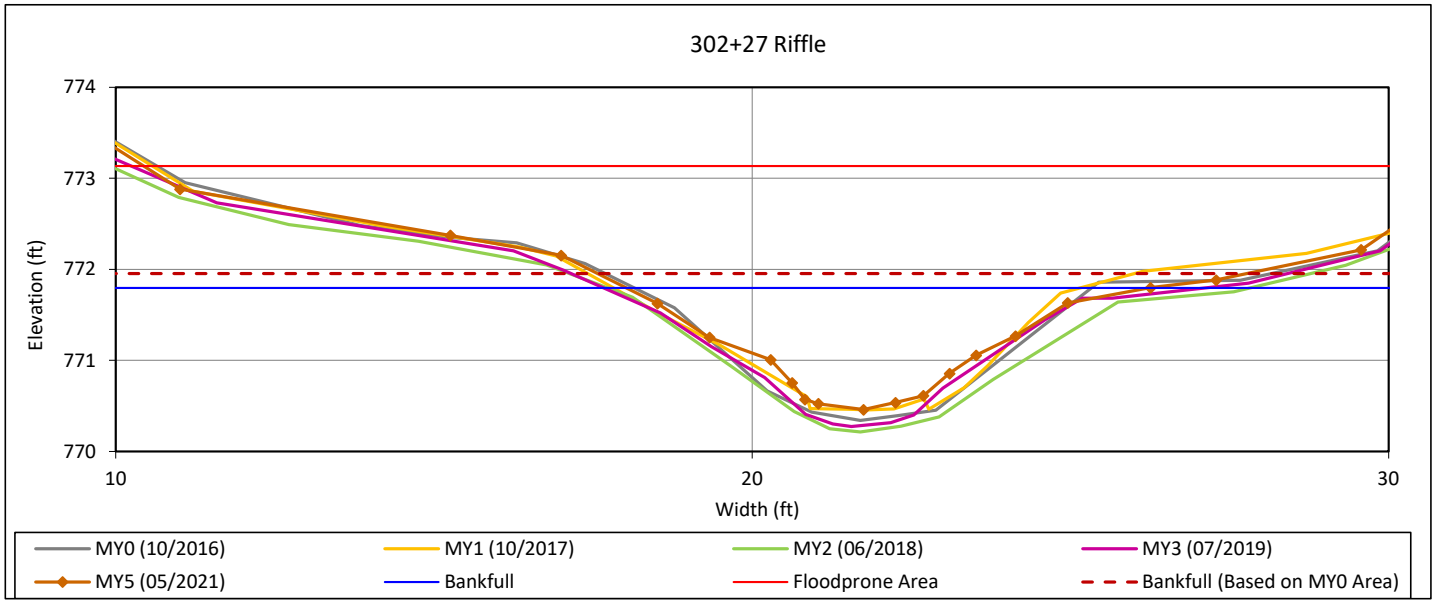
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 30 - UT2 Reach 1



Bankfull Dimensions	
5.5	x-section area (ft.sq.)
8.2	width (ft)
0.7	mean depth (ft)
1.3	max depth (ft)
8.8	wetted perimeter (ft)
0.6	hydraulic radius (ft)
12.4	width-depth ratio
21.1	W flood prone area (ft)
2.6	entrenchment ratio
0.9	low bank height ratio

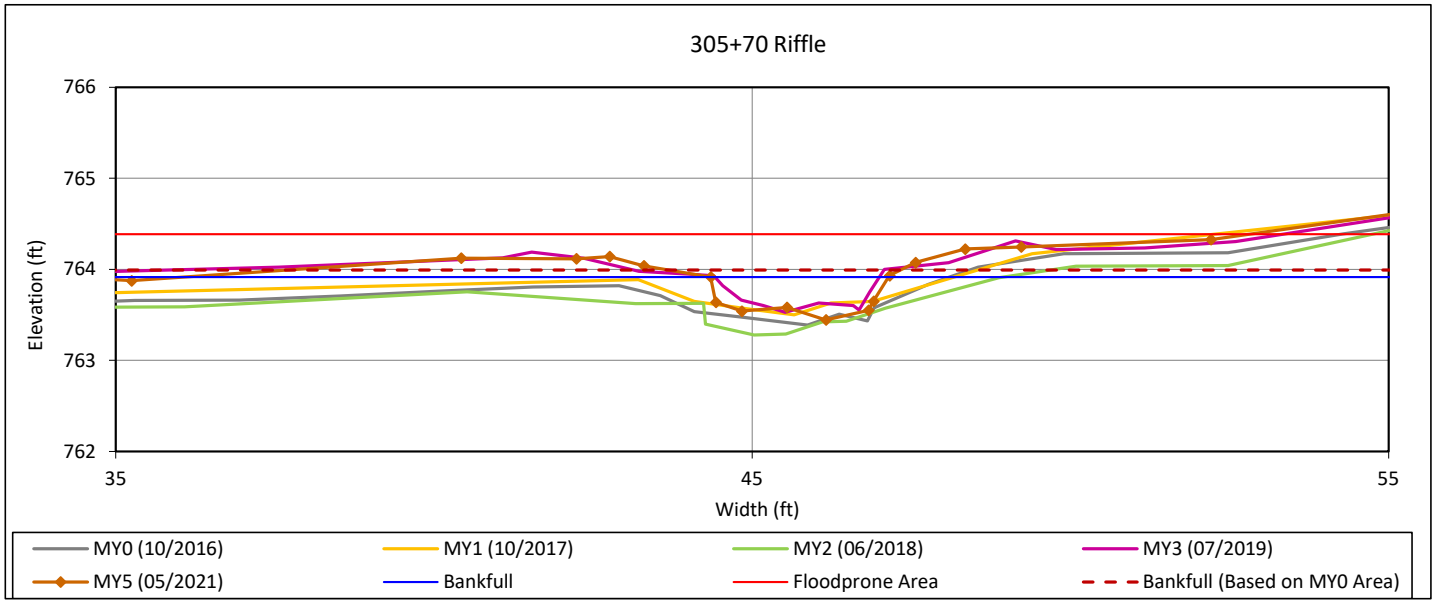
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 31 - UT2 Reach 1



Bankfull Dimensions	
1.0	x-section area (ft.sq.)
2.8	width (ft)
0.4	mean depth (ft)
0.5	max depth (ft)
3.2	wetted perimeter (ft)
0.3	hydraulic radius (ft)
8.0	width-depth ratio
46.8	W flood prone area (ft)
16.7	entrenchment ratio
0.9	low bank height ratio

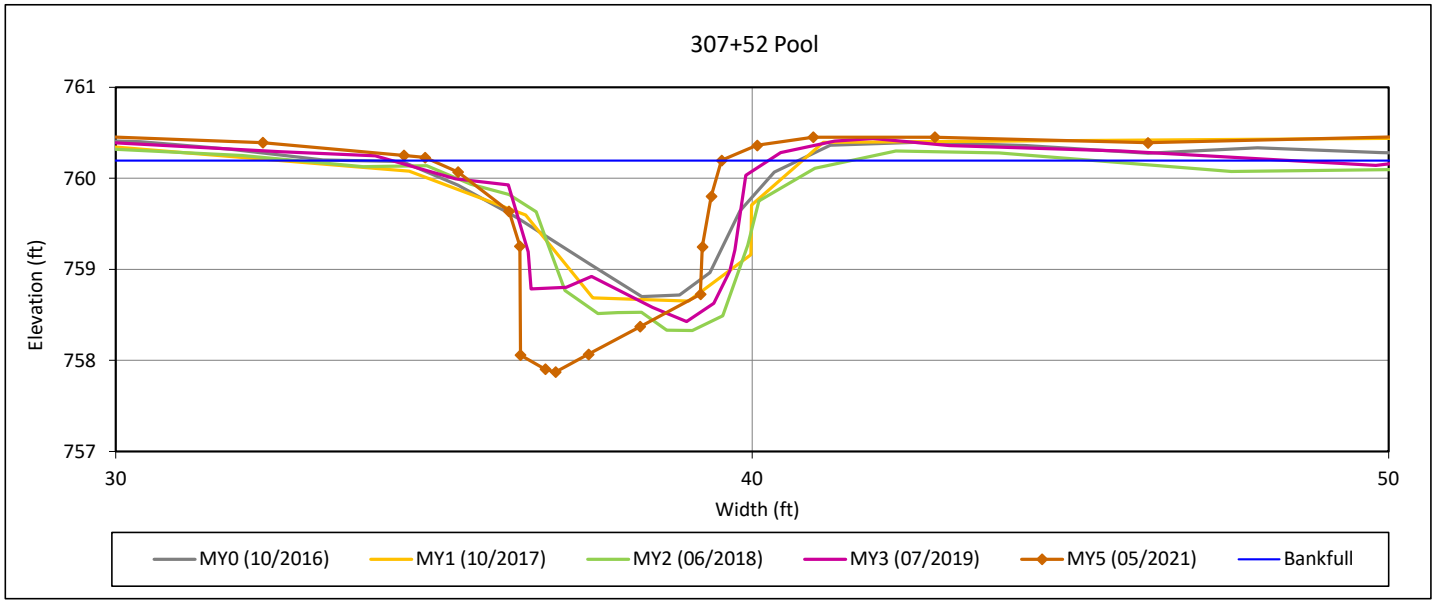
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 32 - UT2 Reach 1



Bankfull Dimensions	
6.2	x-section area (ft.sq.)
4.6	width (ft)
1.4	mean depth (ft)
2.3	max depth (ft)
7.5	wetted perimeter (ft)
0.8	hydraulic radius (ft)
3.4	width-depth ratio

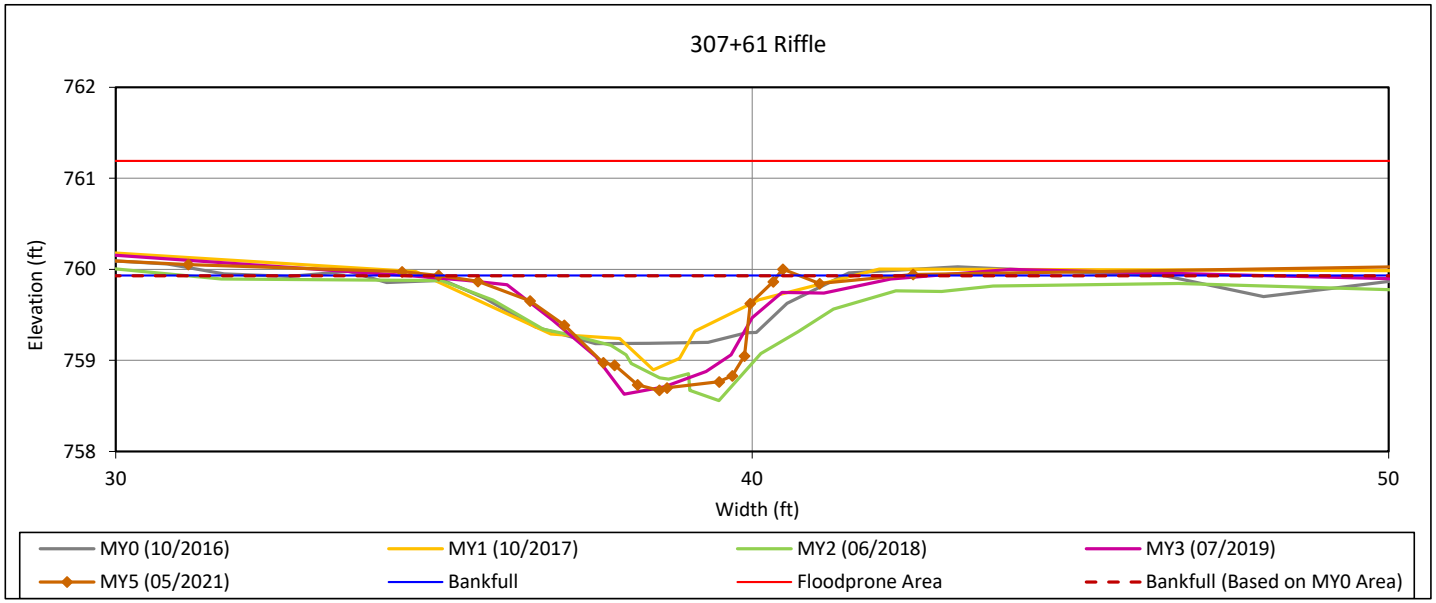
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 33 - UT2 Reach 1



Bankfull Dimensions	
3.5	x-section area (ft.sq.)
5.3	width (ft)
0.7	mean depth (ft)
1.3	max depth (ft)
6.3	wetted perimeter (ft)
0.6	hydraulic radius (ft)
8.1	width-depth ratio
78.8	W flood prone area (ft)
14.8	entrenchment ratio
1.0	low bank height ratio

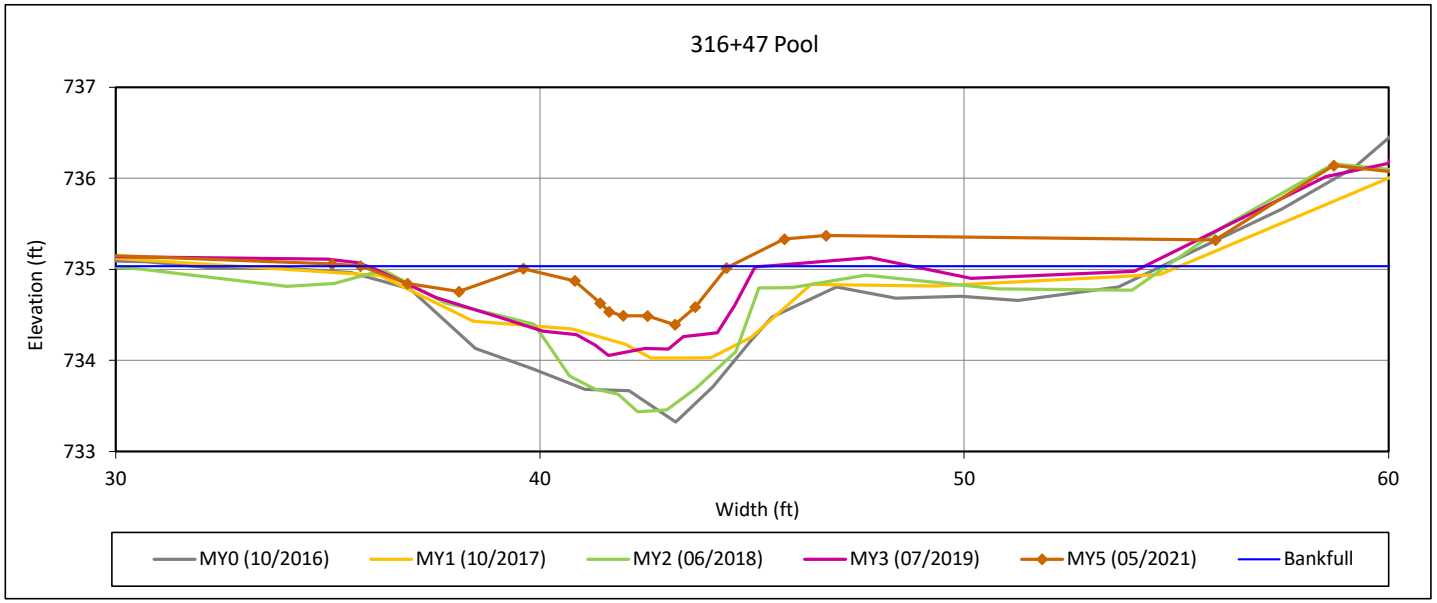
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 34 - UT2 Reach 2



Bankfull Dimensions	
2.3	x-section area (ft.sq.)
8.7	width (ft)
0.3	mean depth (ft)
0.6	max depth (ft)
9.0	wetted perimeter (ft)
0.3	hydraulic radius (ft)
32.8	width-depth ratio

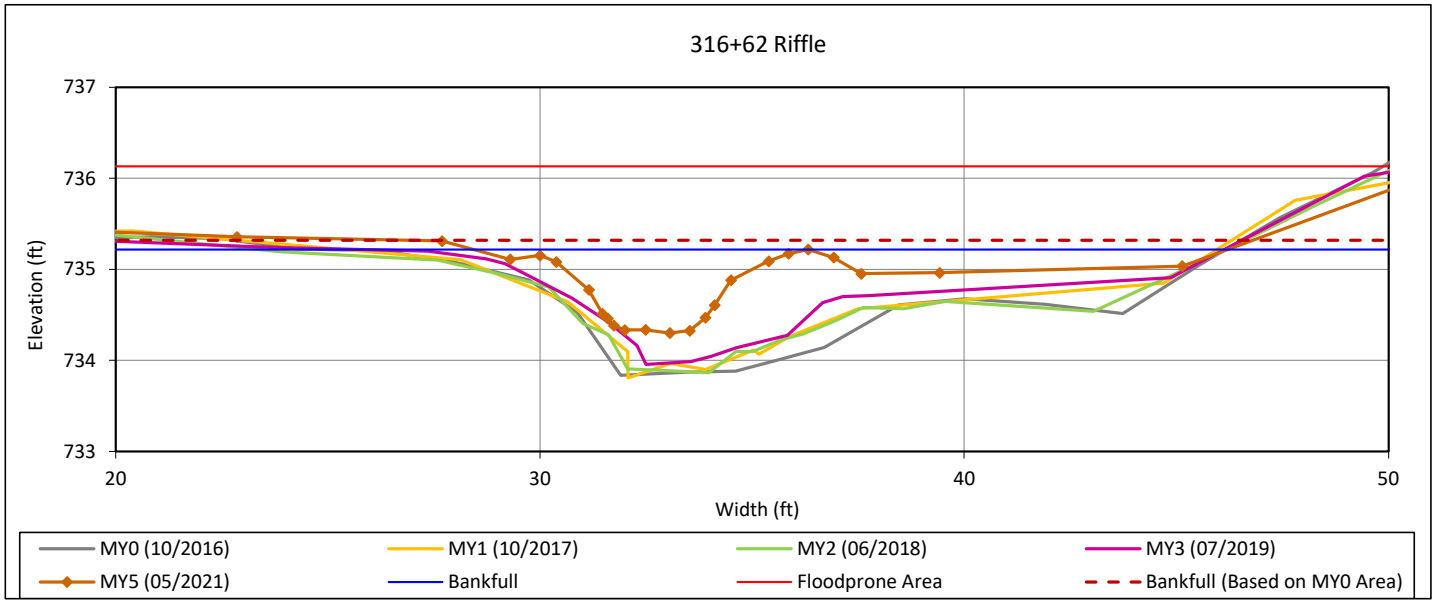
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 35 - UT2 Reach 2



Bankfull Dimensions	
3.2	x-section area (ft.sq.)
7.9	width (ft)
0.4	mean depth (ft)
0.9	max depth (ft)
8.3	wetted perimeter (ft)
0.4	hydraulic radius (ft)
19.2	width-depth ratio
51.4	W flood prone area (ft)
6.5	entrenchment ratio
0.9	low bank height ratio

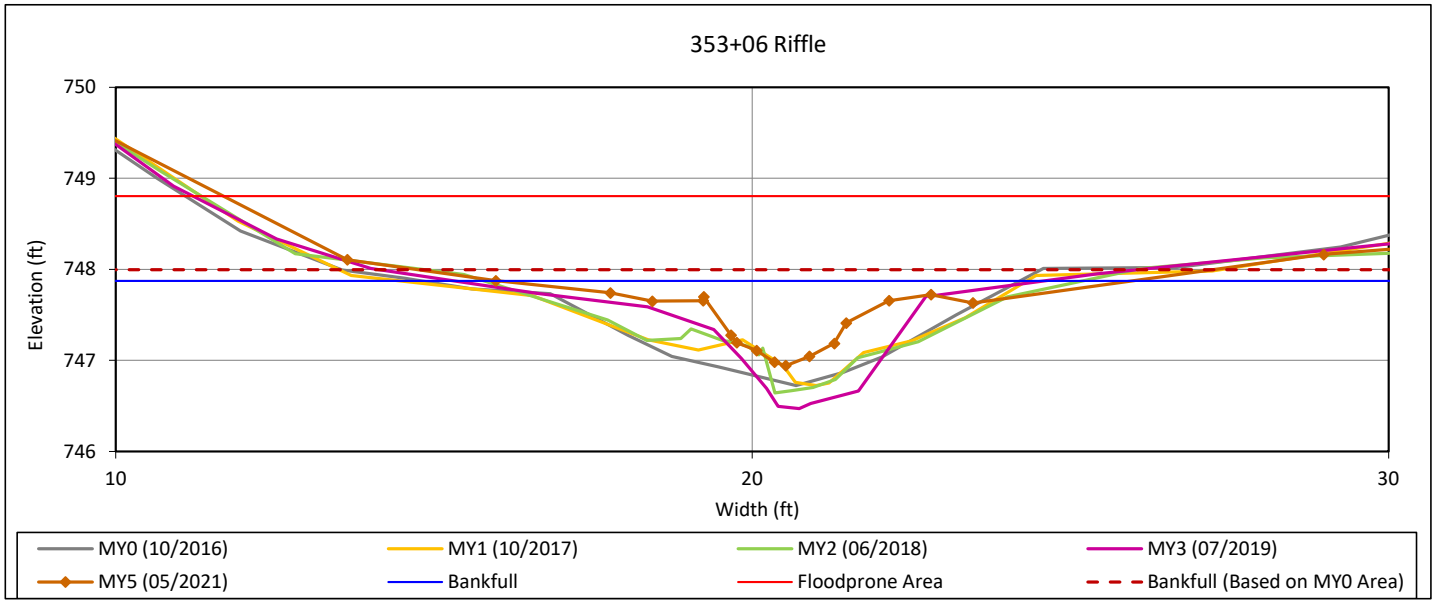
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 36 - UT2A



Bankfull Dimensions	
2.8	x-section area (ft.sq.)
10.0	width (ft)
0.3	mean depth (ft)
0.9	max depth (ft)
10.5	wetted perimeter (ft)
0.3	hydraulic radius (ft)
36.1	width-depth ratio
31.7	W flood prone area (ft)
3.2	entrenchment ratio
0.9	low bank height ratio

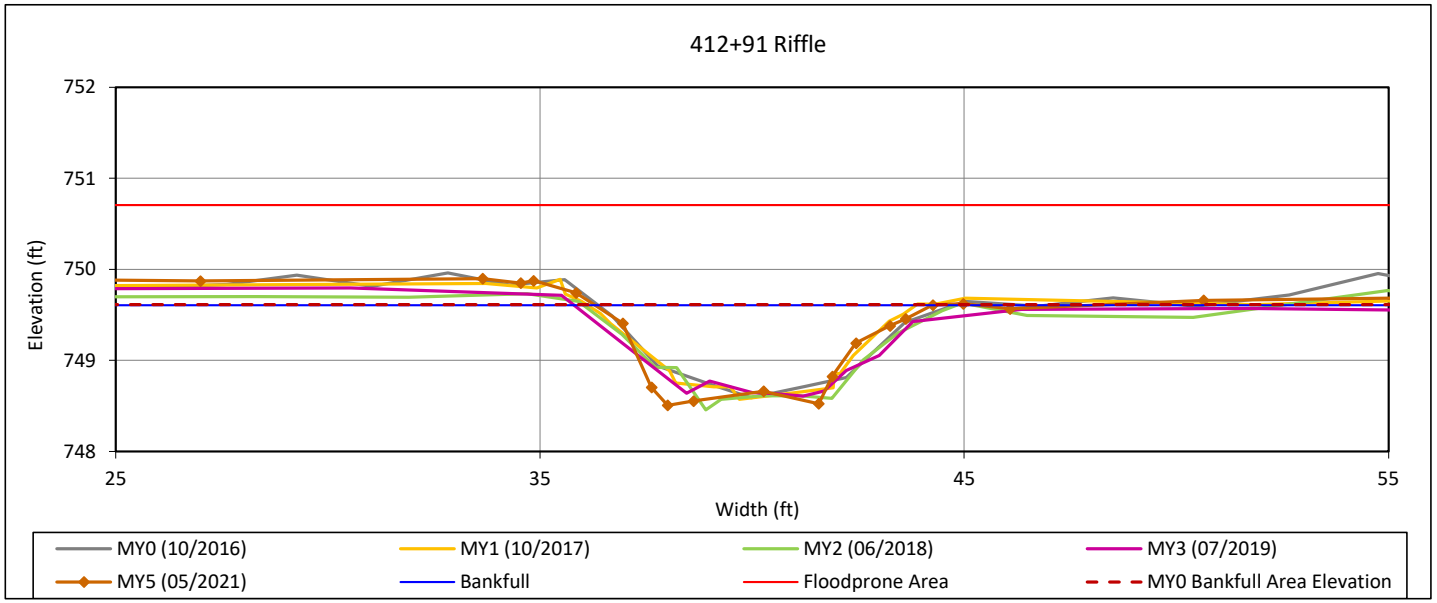
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 37 - UT3



Bankfull Dimensions	
5.5	x-section area (ft.sq.)
8.0	width (ft)
0.7	mean depth (ft)
1.1	max depth (ft)
8.6	wetted perimeter (ft)
0.6	hydraulic radius (ft)
11.6	width-depth ratio
64.2	W flood prone area (ft)
8.1	entrenchment ratio
1.0	low bank height ratio

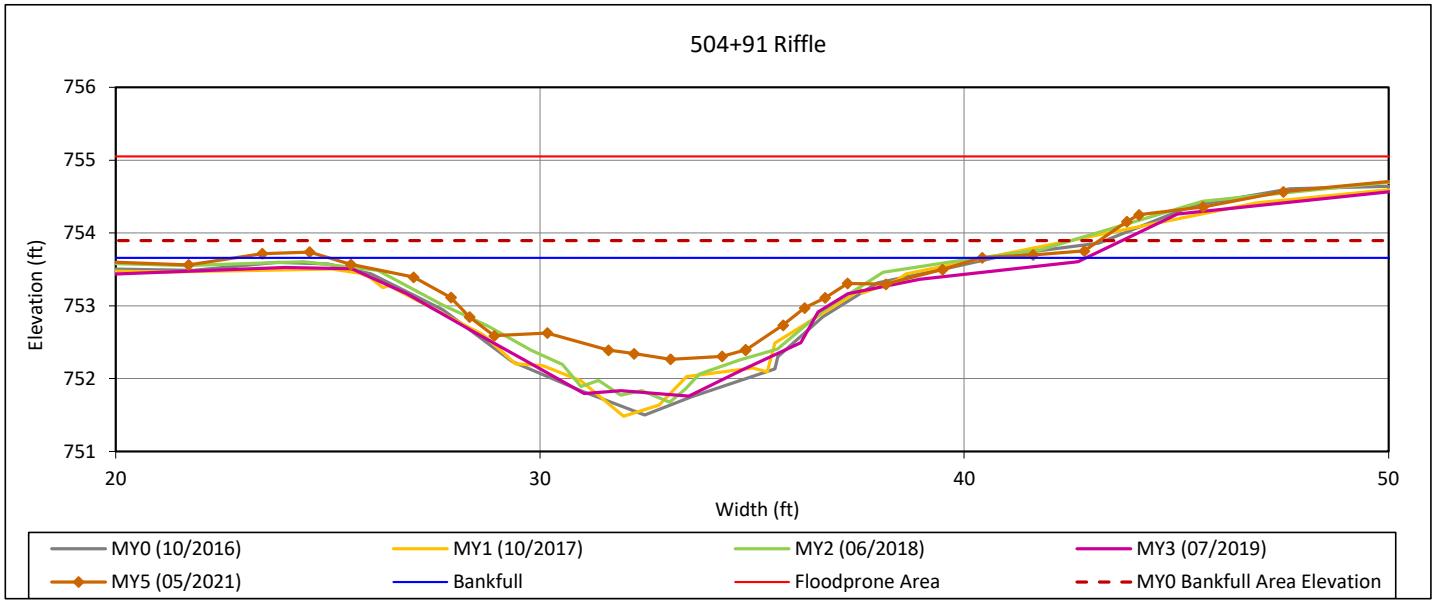
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 38 - UT4



Bankfull Dimensions	
11.5	x-section area (ft.sq.)
15.4	width (ft)
0.7	mean depth (ft)
1.4	max depth (ft)
15.8	wetted perimeter (ft)
0.7	hydraulic radius (ft)
20.7	width-depth ratio
56.2	W flood prone area (ft)
3.6	entrenchment ratio
0.9	low bank height ratio

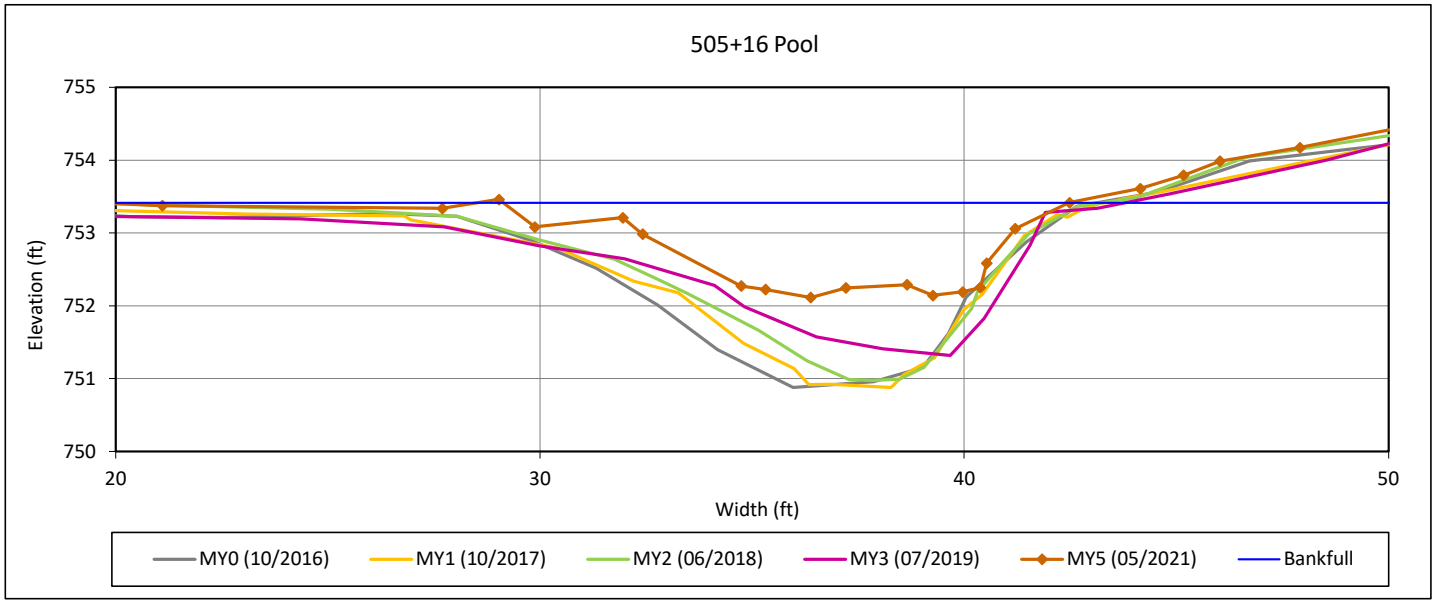
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 39 - UT4



Bankfull Dimensions	
10.2	x-section area (ft.sq.)
13.3	width (ft)
0.8	mean depth (ft)
1.3	max depth (ft)
14.0	wetted perimeter (ft)
0.7	hydraulic radius (ft)
17.4	width-depth ratio

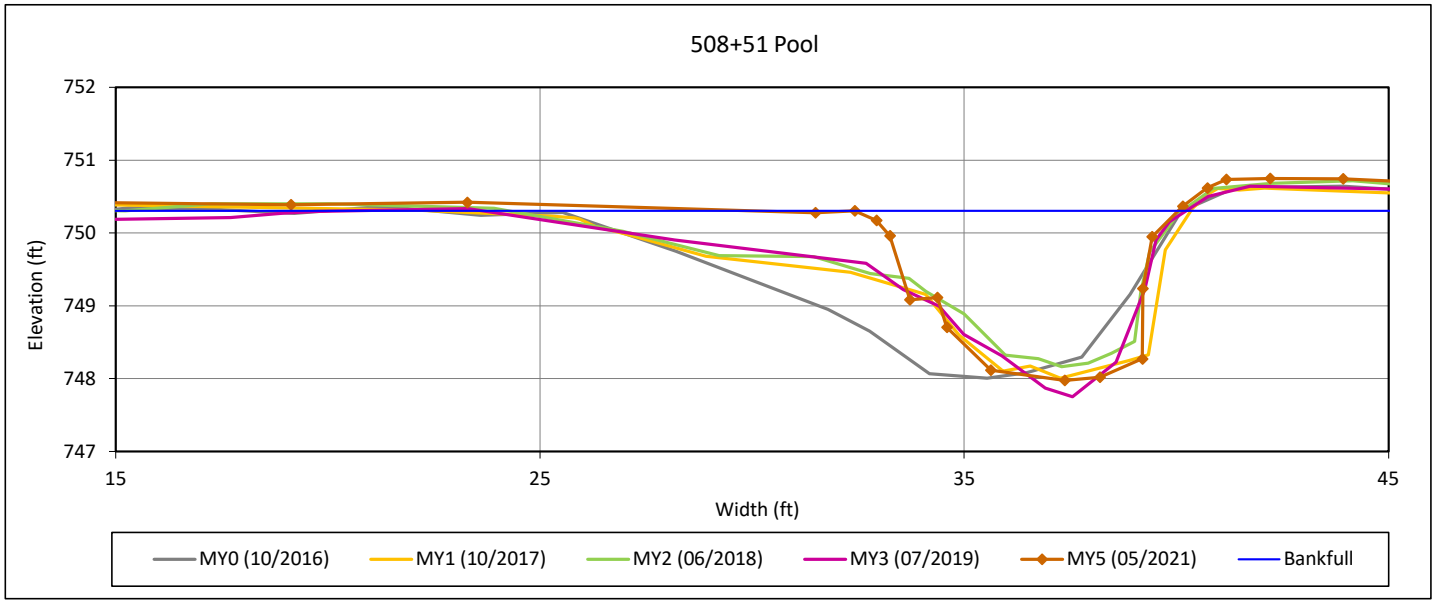
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 40 - UT4



Bankfull Dimensions	
11.8	x-section area (ft.sq.)
7.6	width (ft)
1.6	mean depth (ft)
2.3	max depth (ft)
10.2	wetted perimeter (ft)
1.2	hydraulic radius (ft)
4.9	width-depth ratio

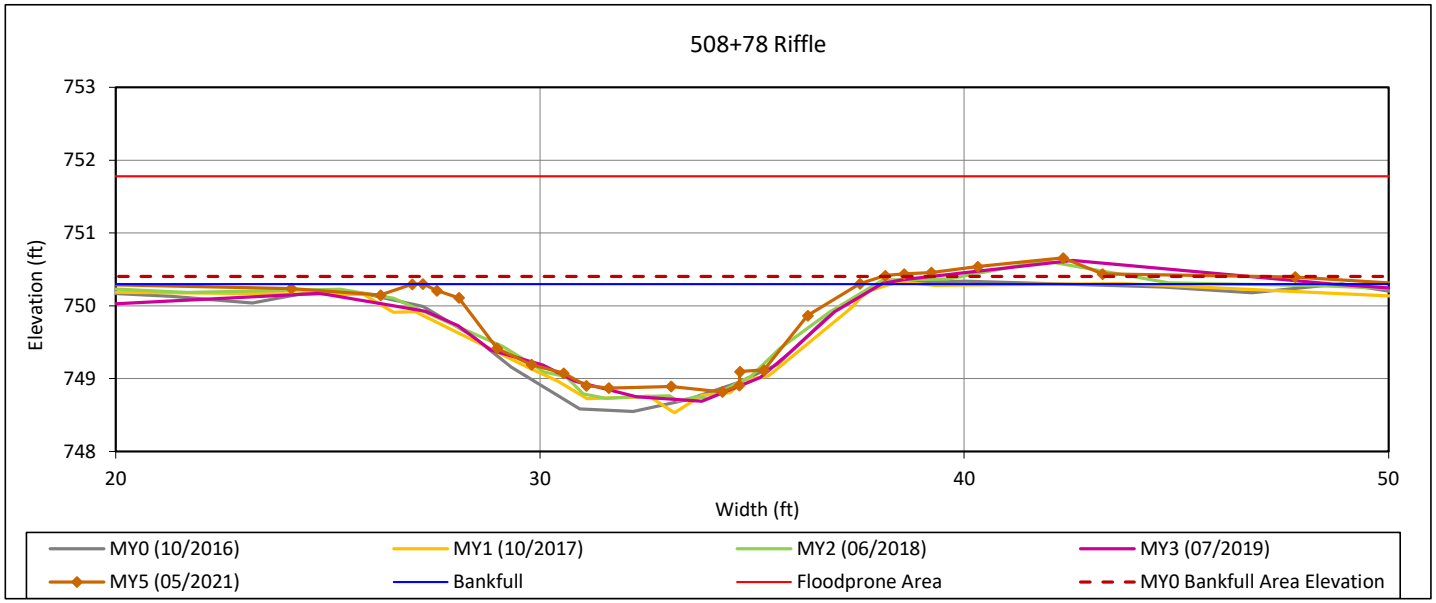
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 41 - UT4



Bankfull Dimensions	
9.9	x-section area (ft.sq.)
10.3	width (ft)
1.0	mean depth (ft)
1.5	max depth (ft)
11.1	wetted perimeter (ft)
0.9	hydraulic radius (ft)
10.7	width-depth ratio
69.1	W flood prone area (ft)
6.7	entrenchment ratio
0.9	low bank height ratio

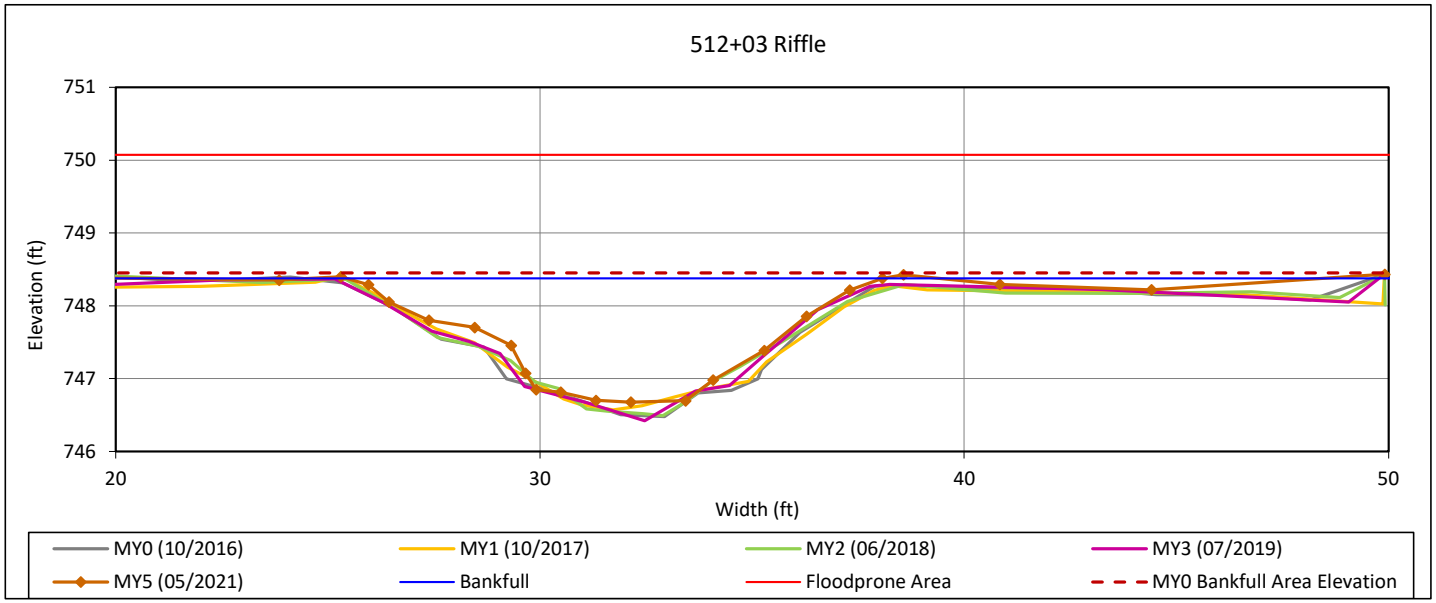
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 42 - UT4



Bankfull Dimensions	
12.0	x-section area (ft.sq.)
12.6	width (ft)
1.0	mean depth (ft)
1.7	max depth (ft)
13.3	wetted perimeter (ft)
0.9	hydraulic radius (ft)
13.2	width-depth ratio
49.9	W flood prone area (ft)
4.0	entrenchment ratio
1.0	low bank height ratio

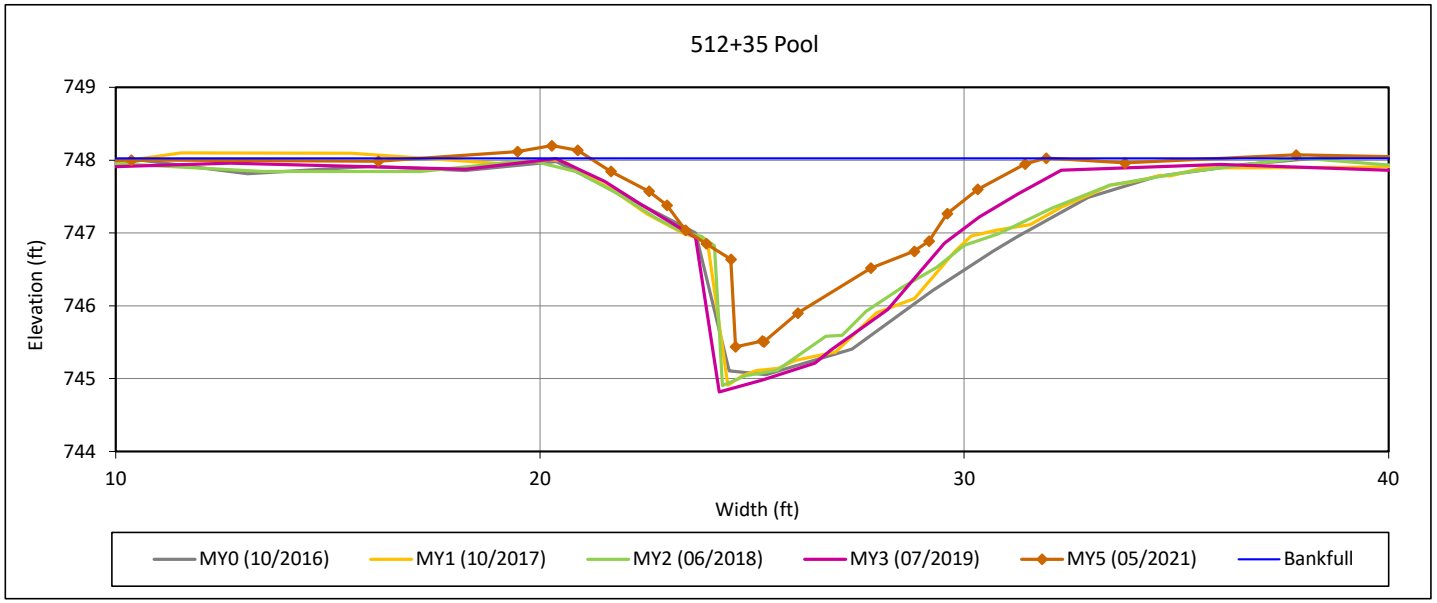
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 43 - UT4



Bankfull Dimensions	
12.1	x-section area (ft.sq.)
10.8	width (ft)
1.1	mean depth (ft)
2.6	max depth (ft)
12.7	wetted perimeter (ft)
1.0	hydraulic radius (ft)
9.6	width-depth ratio

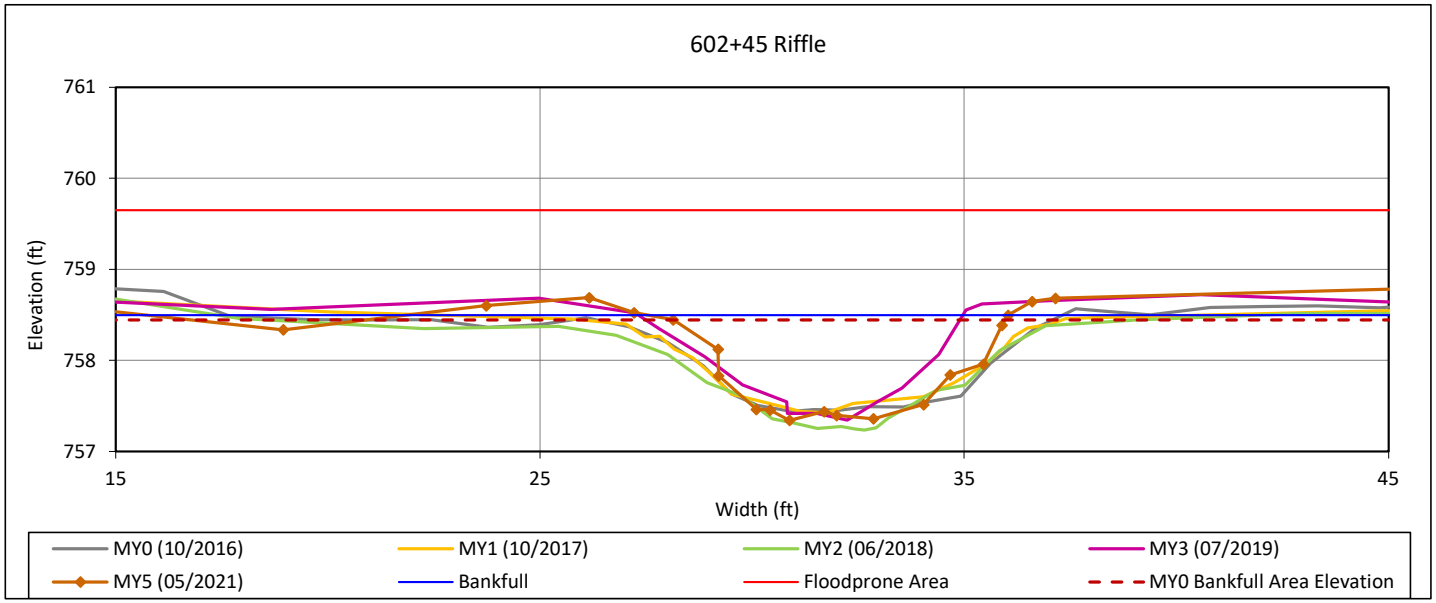
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 44 - UT5



Bankfull Dimensions	
6.4	x-section area (ft.sq.)
8.5	width (ft)
0.8	mean depth (ft)
1.2	max depth (ft)
9.2	wetted perimeter (ft)
0.7	hydraulic radius (ft)
11.2	width-depth ratio
82.1	W flood prone area (ft)
9.7	entrenchment ratio
1.0	low bank height ratio

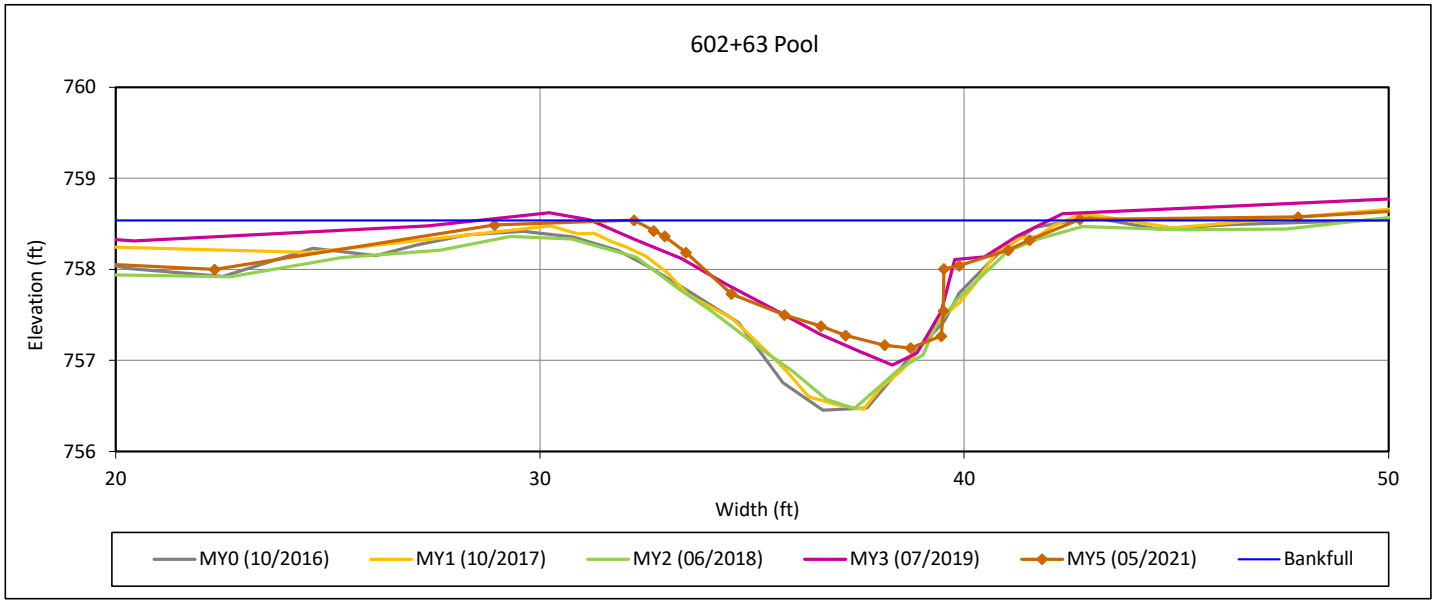
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 45 - UT5



Bankfull Dimensions	
7.7	x-section area (ft.sq.)
10.5	width (ft)
0.7	mean depth (ft)
1.4	max depth (ft)
11.4	wetted perimeter (ft)
0.7	hydraulic radius (ft)
14.3	width-depth ratio

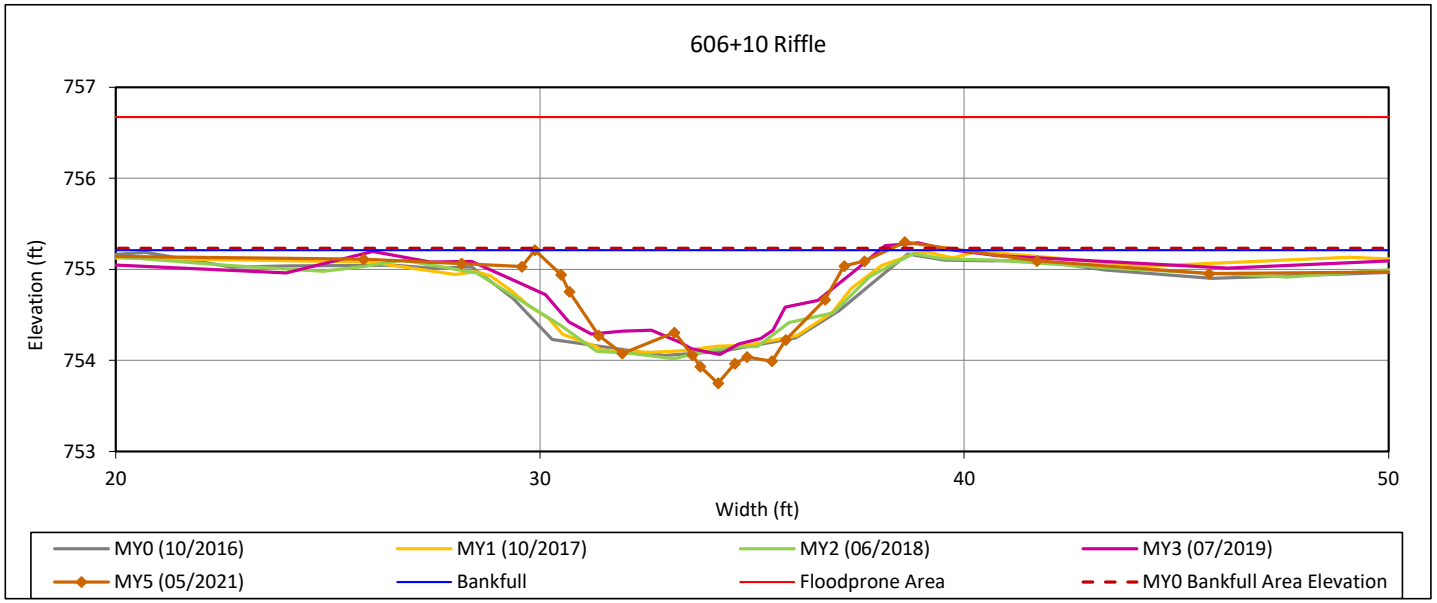
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 46 - UT5



Bankfull Dimensions	
6.6	x-section area (ft.sq.)
8.3	width (ft)
0.8	mean depth (ft)
1.5	max depth (ft)
9.2	wetted perimeter (ft)
0.7	hydraulic radius (ft)
10.5	width-depth ratio
57.8	W flood prone area (ft)
6.9	entrenchment ratio
1.0	low bank height ratio

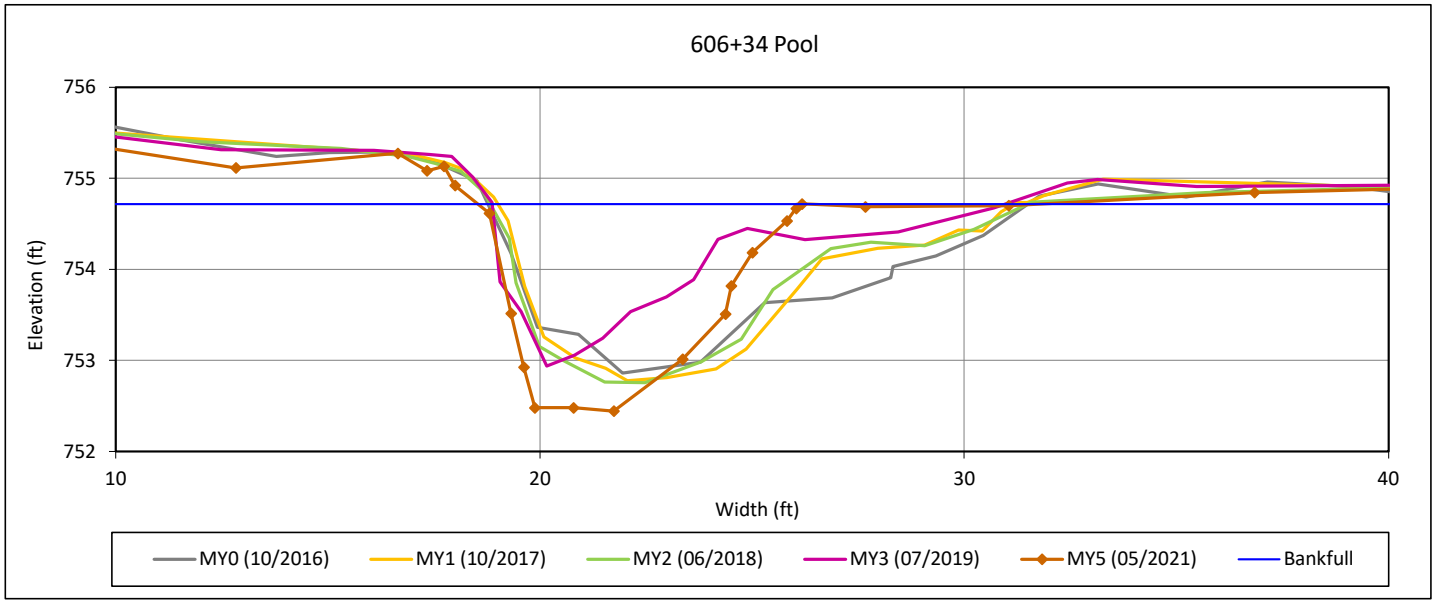
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 47 - UT5



Bankfull Dimensions	
11.0	x-section area (ft.sq.)
7.6	width (ft)
1.4	mean depth (ft)
2.3	max depth (ft)
9.6	wetted perimeter (ft)
1.1	hydraulic radius (ft)
5.3	width-depth ratio

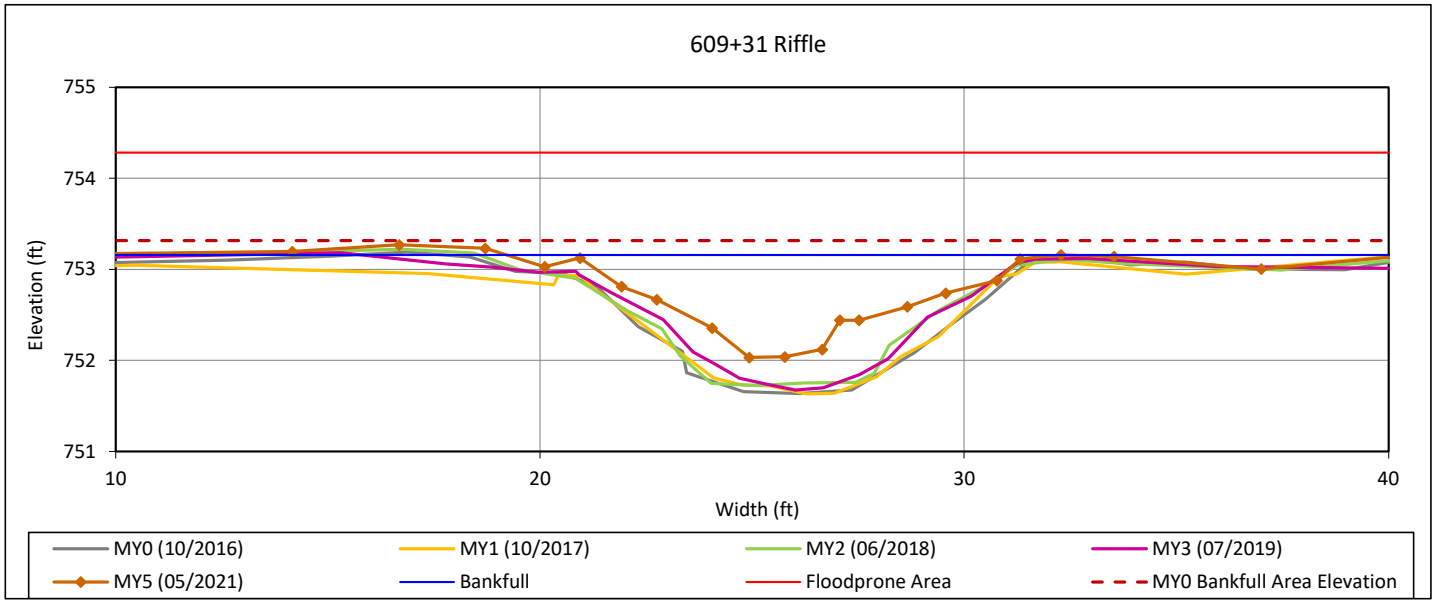
Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

Cross-Section Plots

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Cross-Section 48 - UT5



Bankfull Dimensions	
6.6	x-section area (ft.sq.)
13.1	width (ft)
0.5	mean depth (ft)
1.1	max depth (ft)
13.4	wetted perimeter (ft)
0.5	hydraulic radius (ft)
25.7	width-depth ratio
53.9	W flood prone area (ft)
4.1	entrenchment ratio
0.9	low bank height ratio

Survey Date: 05/2021
Field Crew: Wildlands Engineering

View Downstream

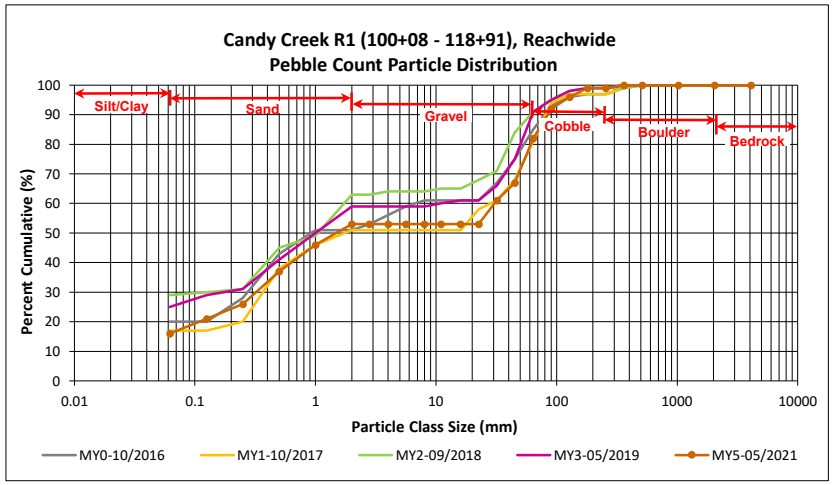
Reachwide and Cross-Section Pebble Count Plots

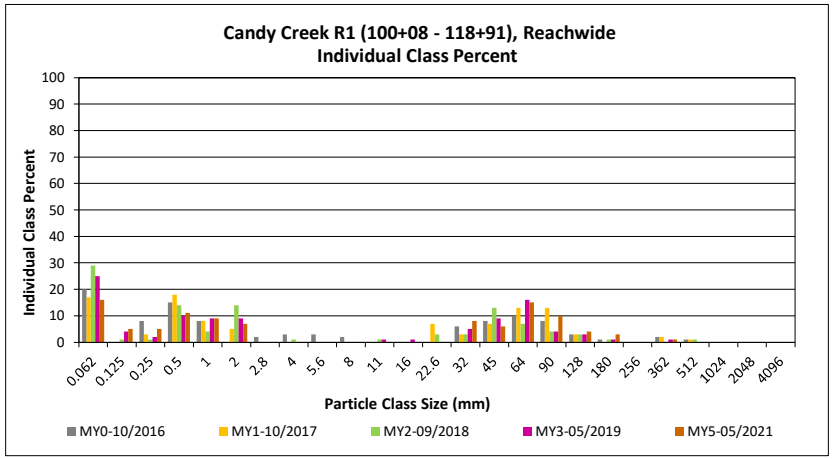
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	22	25	25	25
SAND	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
GRAVEL	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
COBBLE	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
BOULDER	Small	256	362		1	1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.3
D_{50} =	1.0
D_{84} =	54.9
D_{95} =	90.0
D_{100} =	362.0





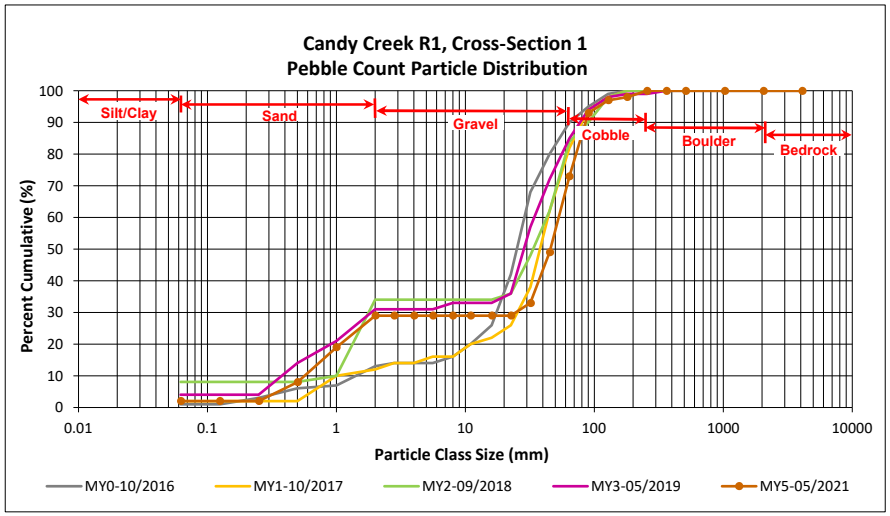
Reachwide and Cross-Section Pebble Count Plots

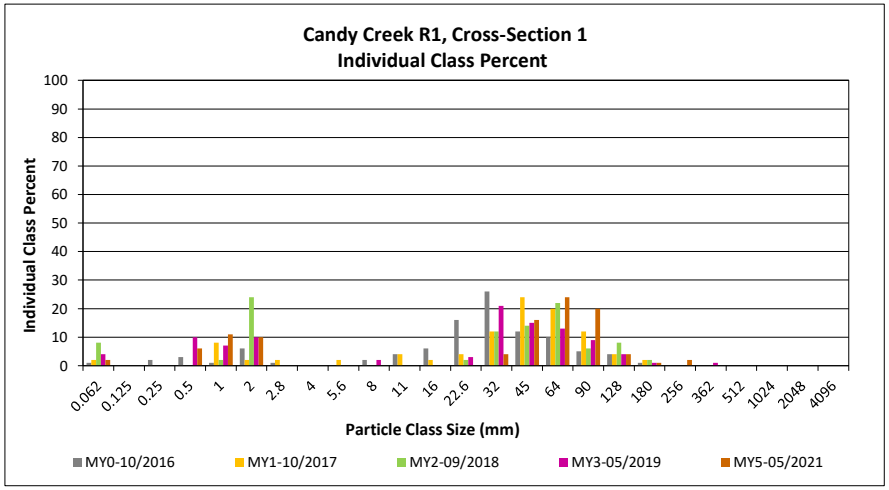
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R1, Cross-Section 1

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125			2
	Fine	0.125	0.250			2
	Medium	0.25	0.50	6	6	8
	Coarse	0.5	1.0	11	11	19
	Very Coarse	1.0	2.0	10	10	29
GRAVEL	Very Fine	2.0	2.8			29
	Very Fine	2.8	4.0			29
	Fine	4.0	5.6			29
	Fine	5.6	8.0			29
	Medium	8.0	11.0			29
	Medium	11.0	16.0			29
	Coarse	16.0	22.6			29
	Coarse	22.6	32	4	4	33
	Very Coarse	32	45	16	16	49
	Very Coarse	45	64	24	24	73
COBBLE	Small	64	90	20	20	93
	Small	90	128	4	4	97
	Large	128	180	1	1	98
	Large	180	256	2	2	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 1	
Channel materials (mm)	
D_{16} =	0.8
D_{35} =	33.4
D_{50} =	45.7
D_{84} =	77.2
D_{95} =	107.3
D_{100} =	256.0





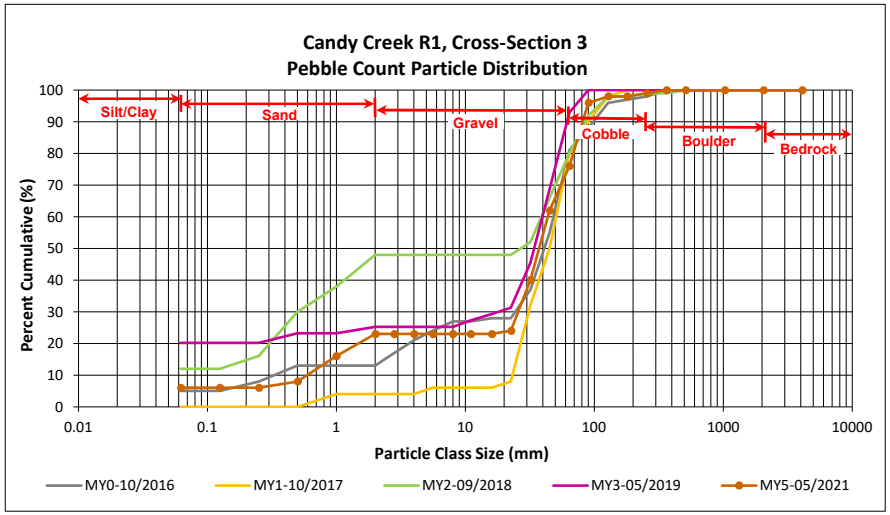
Reachwide and Cross-Section Pebble Count Plots

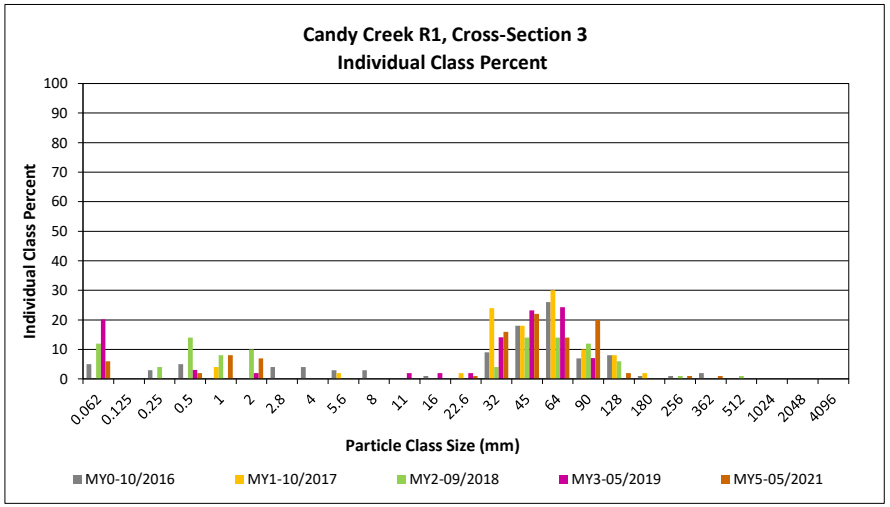
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R1, Cross-Section 3

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	6	6	6
SAND	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	8	16
	Very Coarse	1.0	2.0	7	7	23
GRAVEL	Very Fine	2.0	2.8			23
	Very Fine	2.8	4.0			23
	Fine	4.0	5.6			23
	Fine	5.6	8.0			23
	Medium	8.0	11.0			23
	Medium	11.0	16.0			23
	Coarse	16.0	22.6	1	1	24
	Coarse	22.6	32	16	16	40
	Very Coarse	32	45	22	22	62
	Very Coarse	45	64	14	14	76
COBBLE	Small	64	90	20	20	96
	Small	90	128	2	2	98
	Large	128	180			98
	Large	180	256	1	1	99
BOULDER	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 3	
Channel materials (mm)	
D_{16} =	1.00
D_{35} =	28.7
D_{50} =	37.4
D_{84} =	73.4
D_{95} =	88.5
D_{100} =	362.0





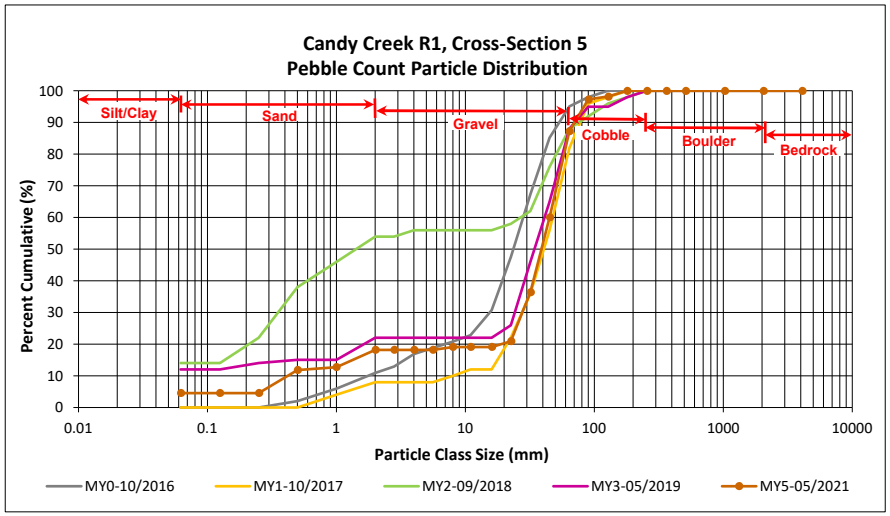
Reachwide and Cross-Section Pebble Count Plots

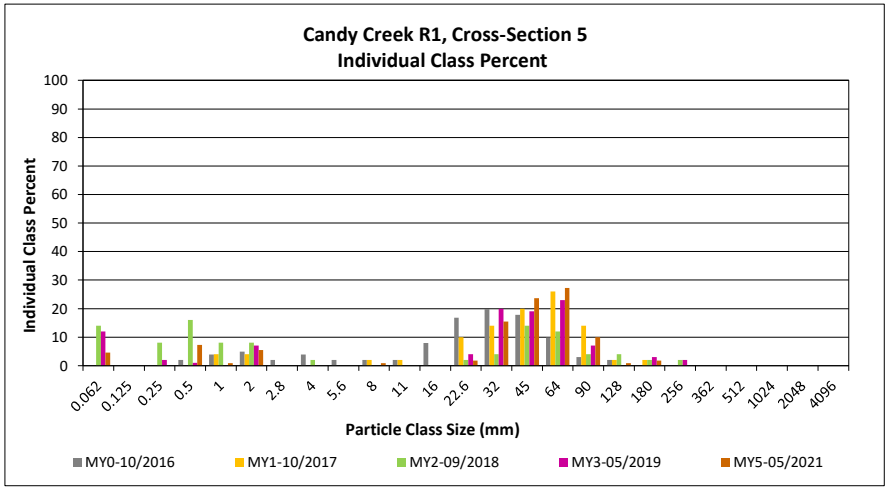
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R1, Cross-Section 5

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	5	5	5
SAND	Very fine	0.062	0.125			5
	Fine	0.125	0.250			5
	Medium	0.25	0.50	8	7	12
	Coarse	0.5	1.0	1	1	13
	Very Coarse	1.0	2.0	6	5	18
GRAVEL	Very Fine	2.0	2.8			18
	Very Fine	2.8	4.0			18
	Fine	4.0	5.6			18
	Fine	5.6	8.0	1	1	19
	Medium	8.0	11.0			19
	Medium	11.0	16.0			19
	Coarse	16.0	22.6	2	2	21
	Coarse	22.6	32	17	15	36
	Very Coarse	32	45	26	24	60
	Very Coarse	45	64	30	27	87
COBBLE	Small	64	90	11	10	97
	Small	90	128	1	1	98
	Large	128	180	2	2	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**110**	**100**	**100**

Cross-Section 5	
Channel materials (mm)	
D_{16} =	1.5
D_{35} =	31.0
D_{50} =	39.0
D_{84} =	61.4
D_{95} =	83.3
D_{100} =	180.0





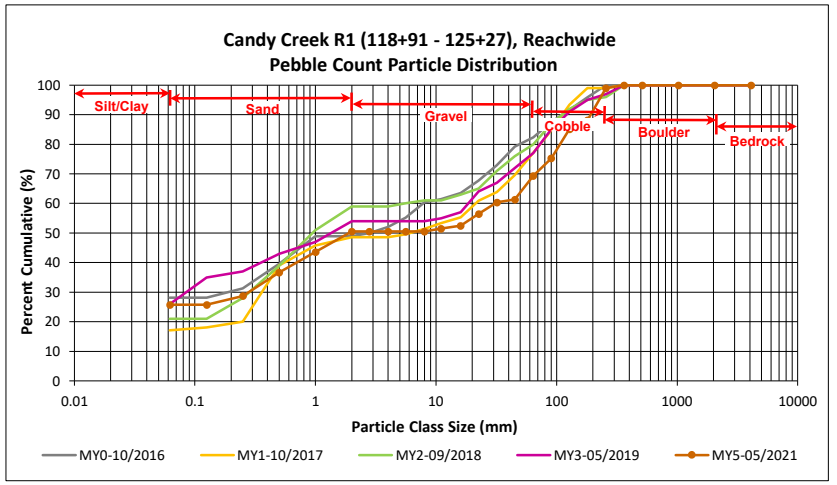
Reachwide and Cross-Section Pebble Count Plots

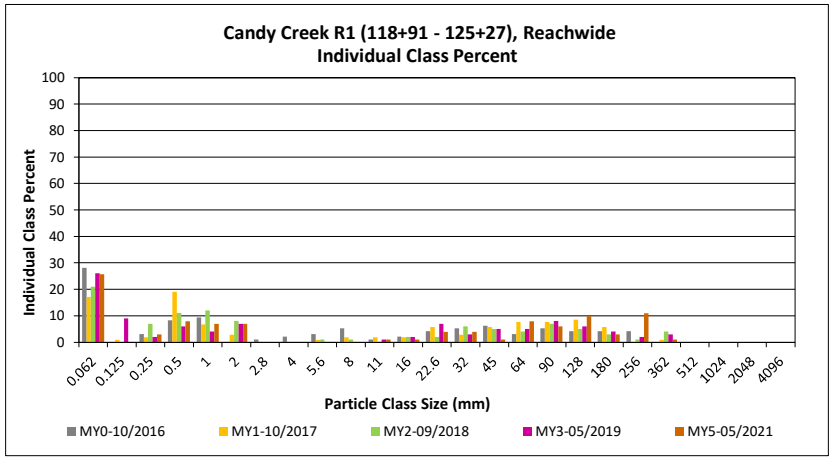
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		26	26	26	26
SAND	Very fine	0.062	0.125					26
	Fine	0.125	0.250		3	3	3	29
	Medium	0.25	0.50	1	7	8	8	37
	Coarse	0.5	1.0	1	6	7	7	44
	Very Coarse	1.0	2.0	3	4	7	7	50
GRAVEL	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	1		1	1	52
	Coarse	16.0	22.6	1	3	4	4	56
	Coarse	22.6	32	4		4	4	60
	Very Coarse	32	45	1		1	1	61
	Very Coarse	45	64	7	1	8	8	69
COBBLE	Small	64	90	6		6	6	75
	Small	90	128	10		10	10	85
	Large	128	180	3		3	3	88
	Large	180	256	11		11	11	99
BOULDER	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**51**	**50**	**101**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.4
D_{50} =	1.9
D_{84} =	122.9
D_{95} =	224.9
D_{100} =	362.0





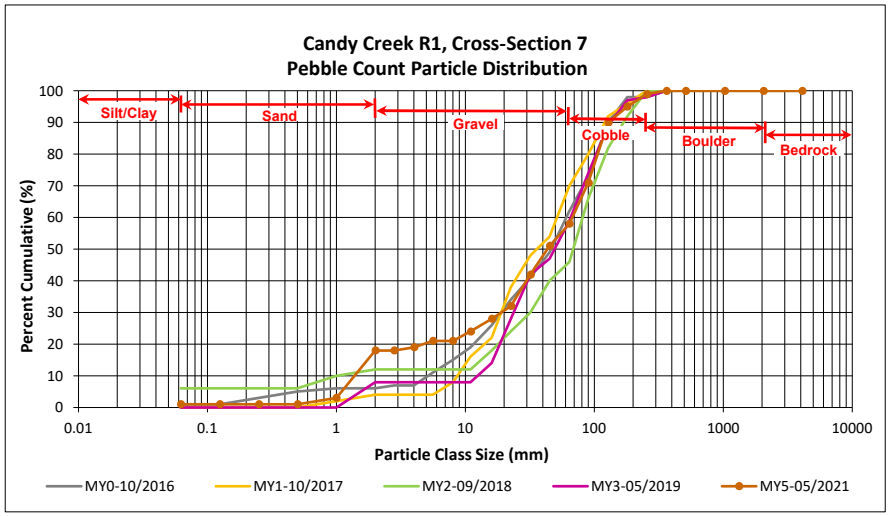
Reachwide and Cross-Section Pebble Count Plots

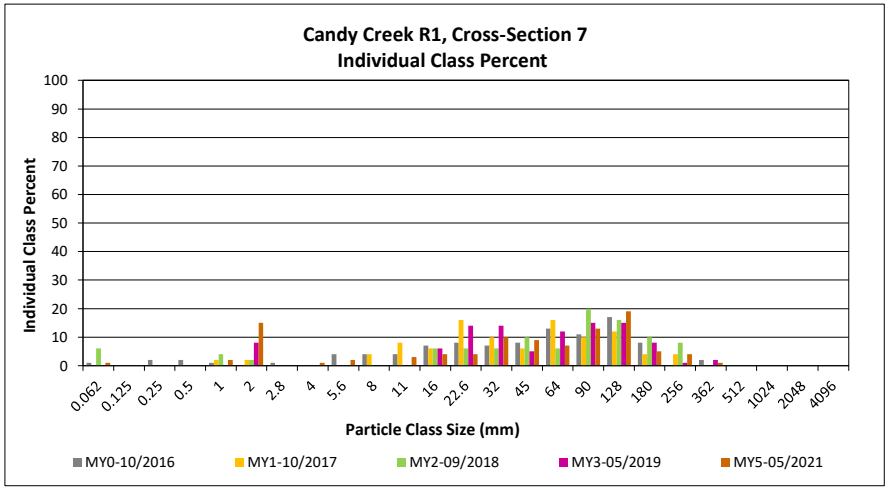
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R1, Cross-Section 7

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	1	1
SAND	Very fine	0.062	0.125			1
	Fine	0.125	0.250			1
	Medium	0.25	0.50			1
	Coarse	0.5	1.0	2	2	3
	Very Coarse	1.0	2.0	15	15	18
GRAVEL	Very Fine	2.0	2.8			18
	Very Fine	2.8	4.0	1	1	19
	Fine	4.0	5.6	2	2	21
	Fine	5.6	8.0			21
	Medium	8.0	11.0	3	3	24
	Medium	11.0	16.0	4	4	28
	Coarse	16.0	22.6	4	4	32
	Coarse	22.6	32	10	10	42
	Very Coarse	32	45	9	9	51
	Very Coarse	45	64	7	7	58
COBBLE	Small	64	90	13	13	71
	Small	90	128	19	19	90
	Large	128	180	5	5	95
	Large	180	256	4	4	99
BOULDER	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 7	
Channel materials (mm)	
D_{16} =	1.8
D_{35} =	25.1
D_{50} =	43.3
D_{84} =	114.5
D_{95} =	180.0
D_{100} =	362.0





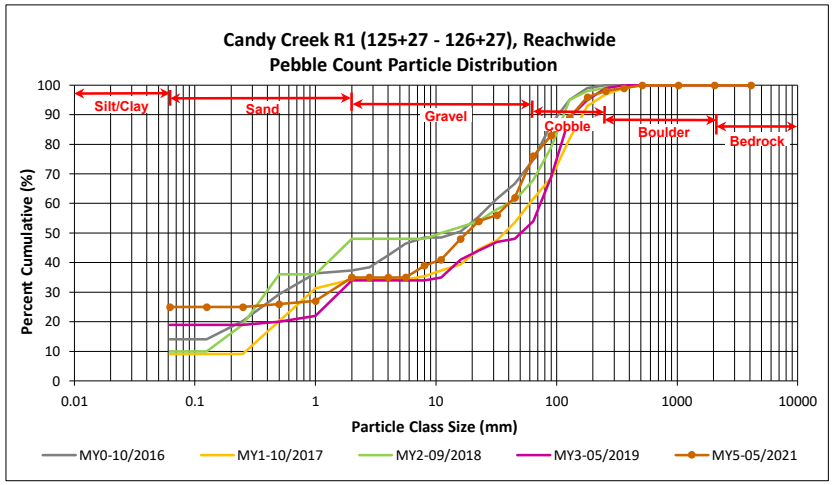
Reachwide and Cross-Section Pebble Count Plots

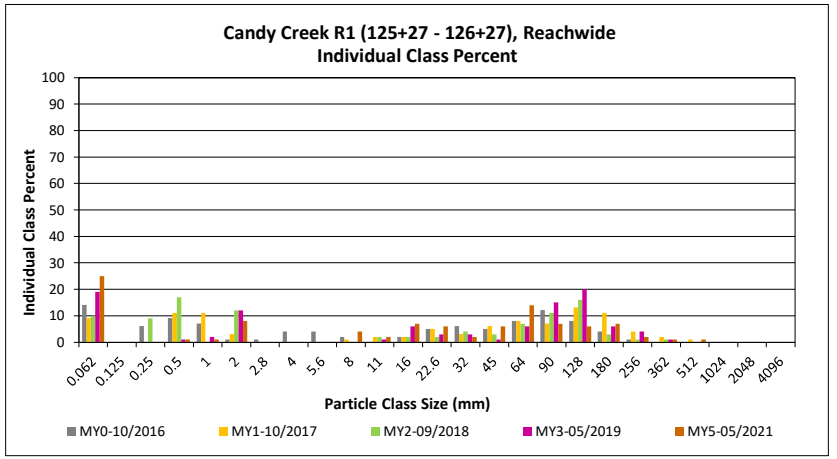
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	16	19	19	19
SAND	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
GRAVEL	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
COBBLE	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
BOULDER	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**65**	**35**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	11.0
D_{50} =	50.6
D_{84} =	117.2
D_{95} =	180.0
D_{100} =	362.0





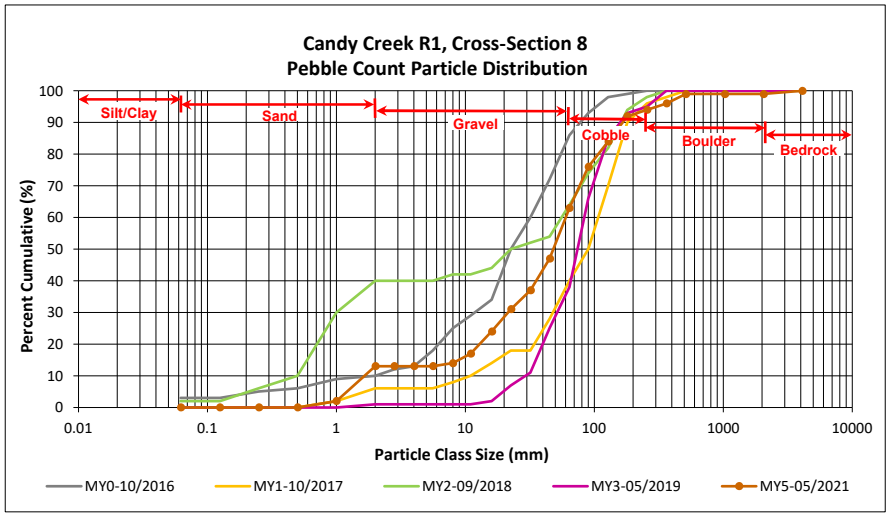
Reachwide and Cross-Section Pebble Count Plots

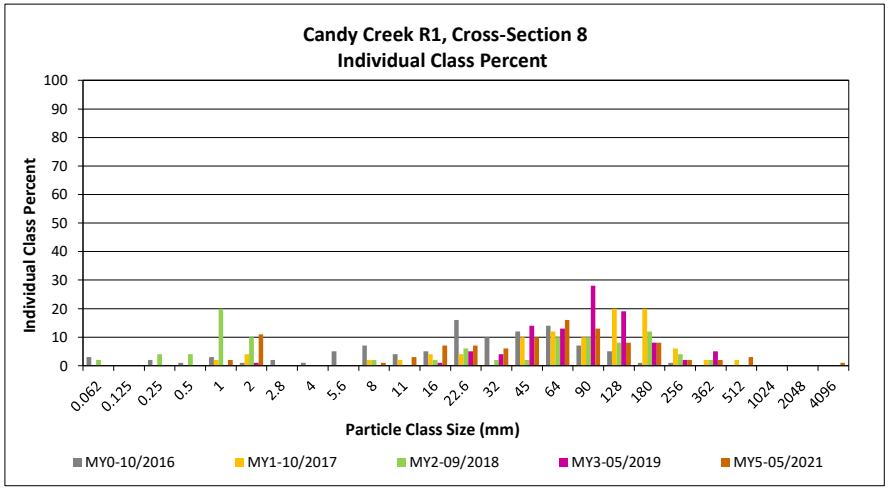
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R1, Cross-Section 8

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	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
GRAVEL	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
COBBLE	Small	64	90	28	28	66
	Small	90	128	19	19	85
	Large	128	180	8	8	93
	Large	180	256	2	2	95
BOULDER	Small	256	362	5	5	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 8	
Channel materials (mm)	
D_{16} =	36.1
D_{35} =	59.0
D_{50} =	74.1
D_{84} =	125.6
D_{95} =	256.0
D_{100} =	362.0





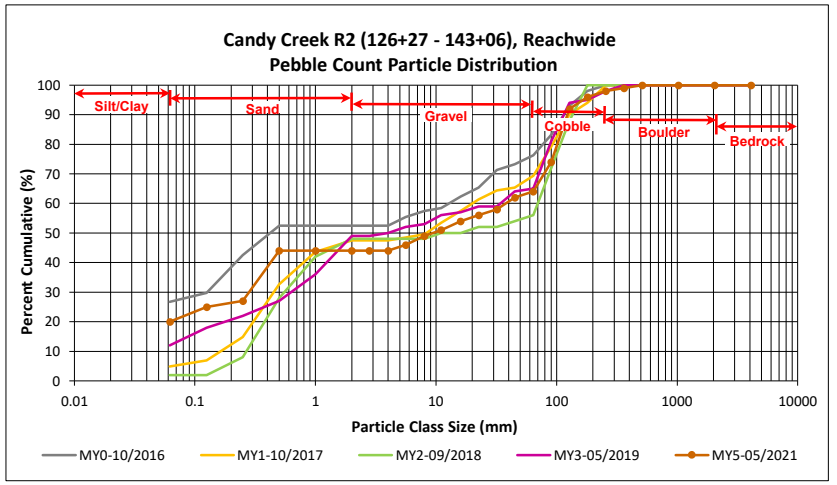
Reachwide and Cross-Section Pebble Count Plots

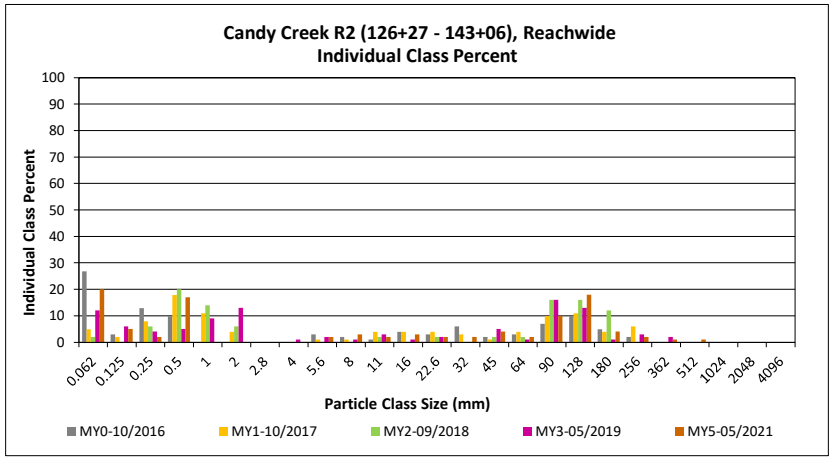
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	19	20	20	20
SAND	Very fine	0.062	0.125		5	5	5	25
	Fine	0.125	0.250		2	2	2	27
	Medium	0.25	0.50	1	16	17	17	44
	Coarse	0.5	1.0					44
	Very Coarse	1.0	2.0					44
GRAVEL	Very Fine	2.0	2.8					44
	Very Fine	2.8	4.0					44
	Fine	4.0	5.6	1	1	2	2	46
	Fine	5.6	8.0	2	1	3	3	49
	Medium	8.0	11.0		2	2	2	51
	Medium	11.0	16.0	2	1	3	3	54
	Coarse	16.0	22.6		2	2	2	56
	Coarse	22.6	32	2		2	2	58
	Very Coarse	32	45	4		4	4	62
	Very Coarse	45	64	2		2	2	64
COBBLE	Small	64	90	9	1	10	10	74
	Small	90	128	18		18	18	92
	Large	128	180	4		4	4	96
	Large	180	256	2		2	2	98
BOULDER	Small	256	362	1		1	1	99
	Small	362	512	1		1	1	100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.3
D_{50} =	9.4
D_{84} =	109.5
D_{95} =	165.3
D_{100} =	512.0





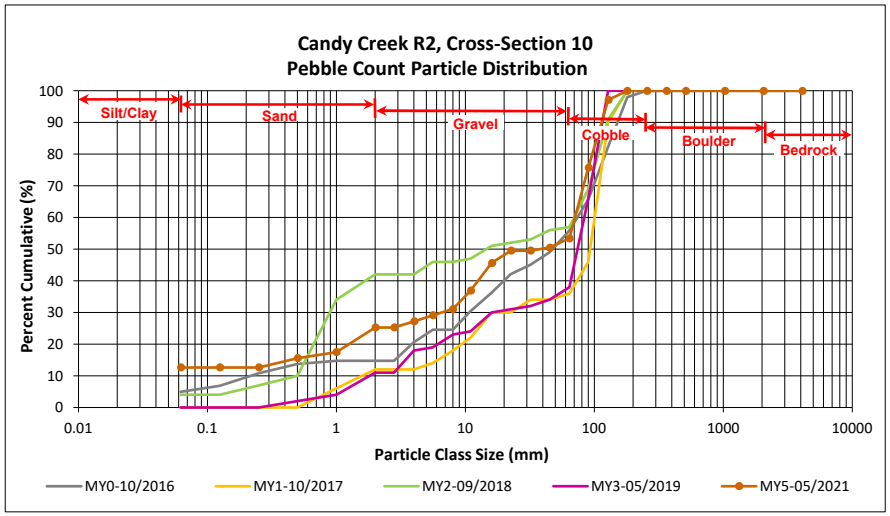
Reachwide and Cross-Section Pebble Count Plots

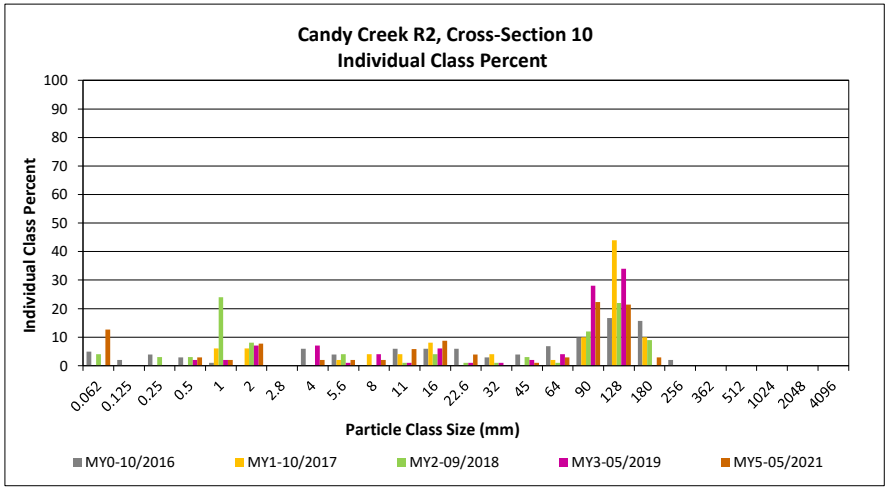
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R2, Cross-Section 10

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	13	13	13
SAND	Very fine	0.062	0.125			13
	Fine	0.125	0.250			13
	Medium	0.25	0.50	3	3	16
	Coarse	0.5	1.0	2	2	17
	Very Coarse	1.0	2.0	8	8	25
GRAVEL	Very Fine	2.0	2.8			25
	Very Fine	2.8	4.0	2	2	27
	Fine	4.0	5.6	2	2	29
	Fine	5.6	8.0	2	2	31
	Medium	8.0	11.0	6	6	37
	Medium	11.0	16.0	9	9	46
	Coarse	16.0	22.6	4	4	50
	Coarse	22.6	32			50
	Very Coarse	32	45	1	1	50
	Very Coarse	45	64	3	3	53
COBBLE	Small	64	90	23	22	76
	Small	90	128	22	21	97
	Large	128	180	3	3	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**103**	**100**	**100**

Cross-Section 10	
Channel materials (mm)	
D_{16} =	0.6
D_{35} =	9.9
D_{50} =	37.9
D_{84} =	103.2
D_{95} =	123.7
D_{100} =	180.0





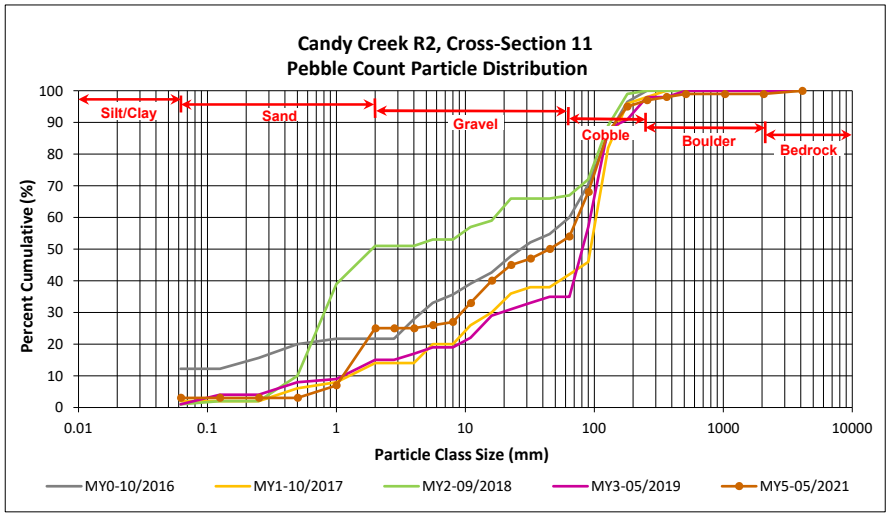
Reachwide and Cross-Section Pebble Count Plots

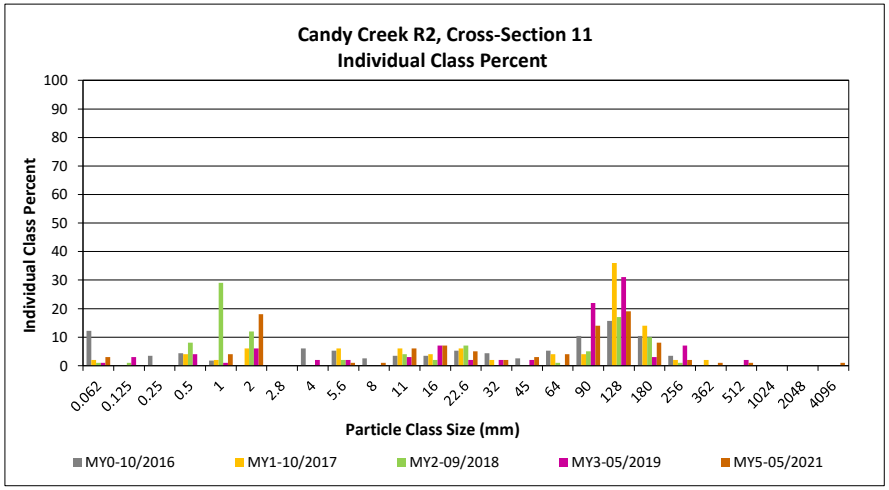
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R2, Cross-Section 11

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	3	3
SAND	Very fine	0.062	0.125			3
	Fine	0.125	0.250			3
	Medium	0.25	0.50			3
	Coarse	0.5	1.0	4	4	7
	Very Coarse	1.0	2.0	18	18	25
GRAVEL	Very Fine	2.0	2.8			25
	Very Fine	2.8	4.0			25
	Fine	4.0	5.6	1	1	26
	Fine	5.6	8.0	1	1	27
	Medium	8.0	11.0	6	6	33
	Medium	11.0	16.0	7	7	40
	Coarse	16.0	22.6	5	5	45
	Coarse	22.6	32	2	2	47
	Very Coarse	32	45	3	3	50
	Very Coarse	45	64	4	4	54
COBBLE	Small	64	90	14	14	68
	Small	90	128	19	19	87
	Large	128	180	8	8	95
	Large	180	256	2	2	97
BOULDER	Small	256	362	1	1	98
	Small	362	512	1	1	99
	Medium	512	1024			99
	Large/Very Large	1024	2048			99
BEDROCK	Bedrock	2048	>2048	1	1	100
			Total	**100**	**100**	**100**

Cross-Section 11	
Channel materials (mm)	
D_{16} =	1.4
D_{35} =	12.2
D_{50} =	45.0
D_{84} =	121.1
D_{95} =	180.0
D_{100} =	>2048





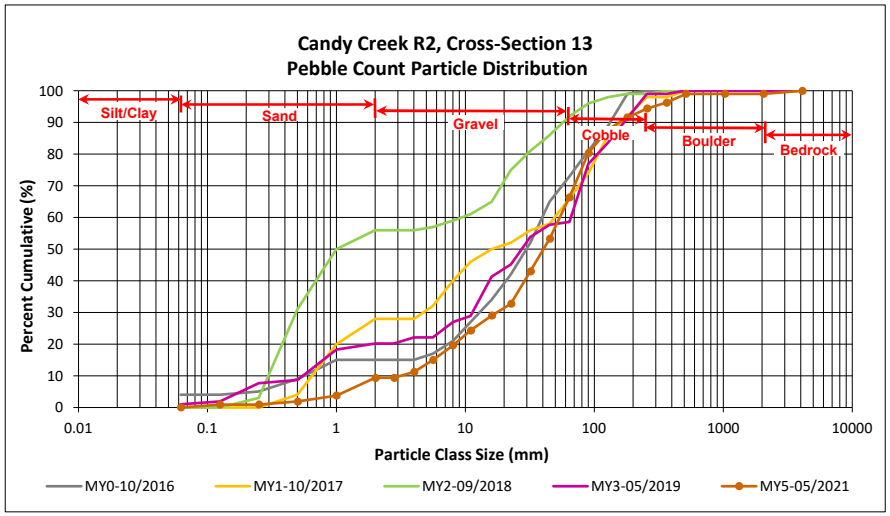
Reachwide and Cross-Section Pebble Count Plots

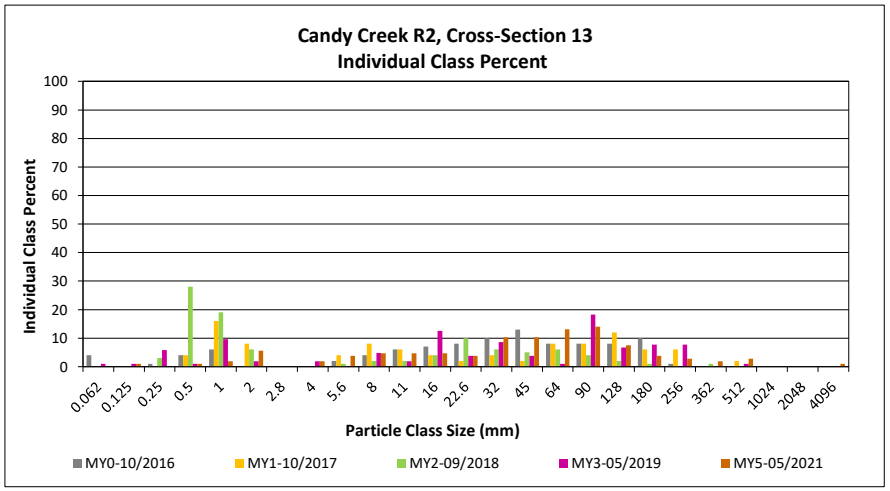
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R2, Cross-Section 13

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125	1	1	1
	Fine	0.125	0.250			1
	Medium	0.25	0.50	1	1	2
	Coarse	0.5	1.0	2	2	4
	Very Coarse	1.0	2.0	6	6	9
GRAVEL	Very Fine	2.0	2.8			9
	Very Fine	2.8	4.0	2	2	11
	Fine	4.0	5.6	4	4	15
	Fine	5.6	8.0	5	5	20
	Medium	8.0	11.0	5	5	24
	Medium	11.0	16.0	5	5	29
	Coarse	16.0	22.6	4	4	33
	Coarse	22.6	32	11	10	43
	Very Coarse	32	45	11	10	53
	Very Coarse	45	64	14	13	66
COBBLE	Small	64	90	15	14	80
	Small	90	128	8	7	88
	Large	128	180	4	4	92
	Large	180	256	3	3	94
BOULDER	Small	256	362	2	2	96
	Small	362	512	3	3	99
	Medium	512	1024			99
	Large/Very Large	1024	2048			99
BEDROCK	Bedrock	2048	>2048	1	1	100
			Total	**107**	**100**	**100**

Cross-Section 13	
Channel materials (mm)	
D_{16} =	6.1
D_{35} =	24.4
D_{50} =	40.4
D_{84} =	106.8
D_{95} =	286.5
D_{100} =	>2048





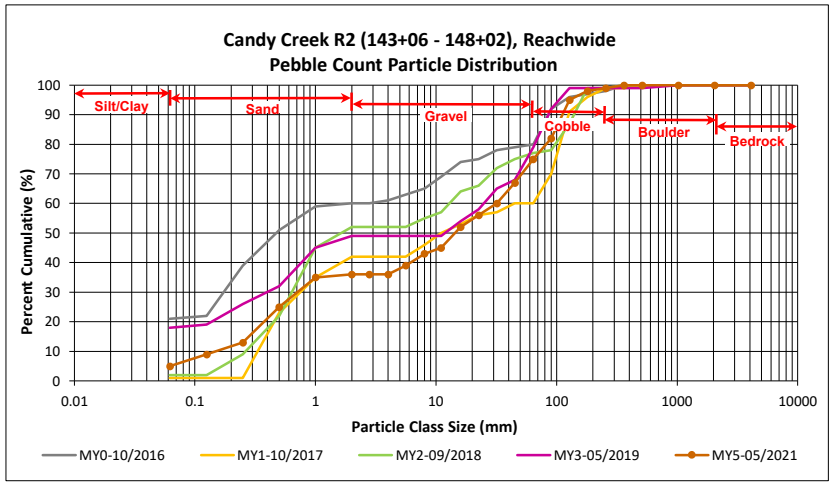
Reachwide and Cross-Section Pebble Count Plots

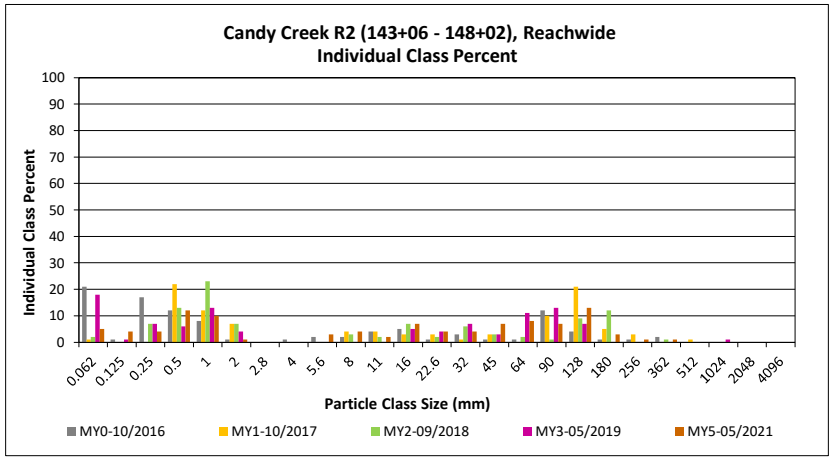
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		5	5	5	5
SAND	Very fine	0.062	0.125		4	4	4	9
	Fine	0.125	0.250		4	4	4	13
	Medium	0.25	0.50		12	12	12	25
	Coarse	0.5	1.0	2	8	10	10	35
	Very Coarse	1.0	2.0		1	1	1	36
GRAVEL	Very Fine	2.0	2.8					36
	Very Fine	2.8	4.0					36
	Fine	4.0	5.6		3	3	3	39
	Fine	5.6	8.0	3	1	4	4	43
	Medium	8.0	11.0		2	2	2	45
	Medium	11.0	16.0	3	4	7	7	52
	Coarse	16.0	22.6	2	2	4	4	56
	Coarse	22.6	32	3	1	4	4	60
	Very Coarse	32	45	6	1	7	7	67
	Very Coarse	45	64	8		8	8	75
COBBLE	Small	64	90	6	1	7	7	82
	Small	90	128	12	1	13	13	95
	Large	128	180	3		3	3	98
	Large	180	256	1		1	1	99
BOULDER	Small	256	362	1		1	1	100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.30
D_{35} =	1.0
D_{50} =	14.4
D_{84} =	95.0
D_{95} =	128.0
D_{100} =	362.0





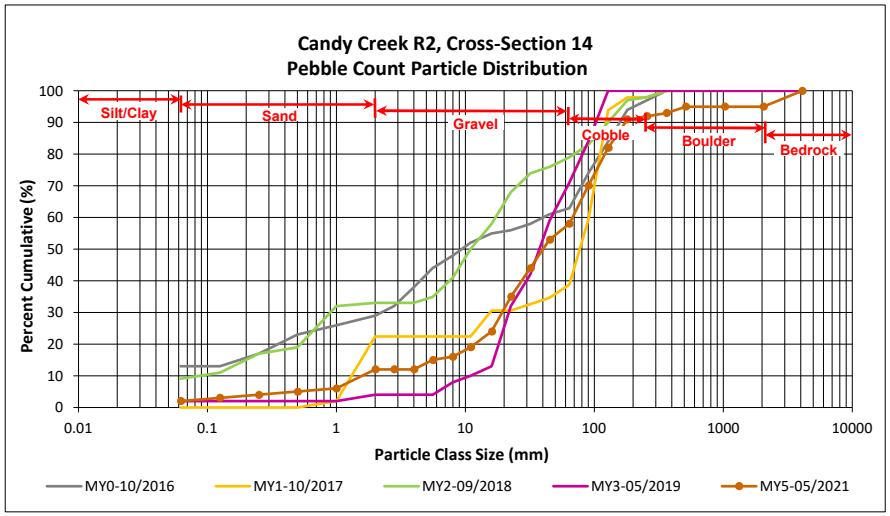
Reachwide and Cross-Section Pebble Count Plots

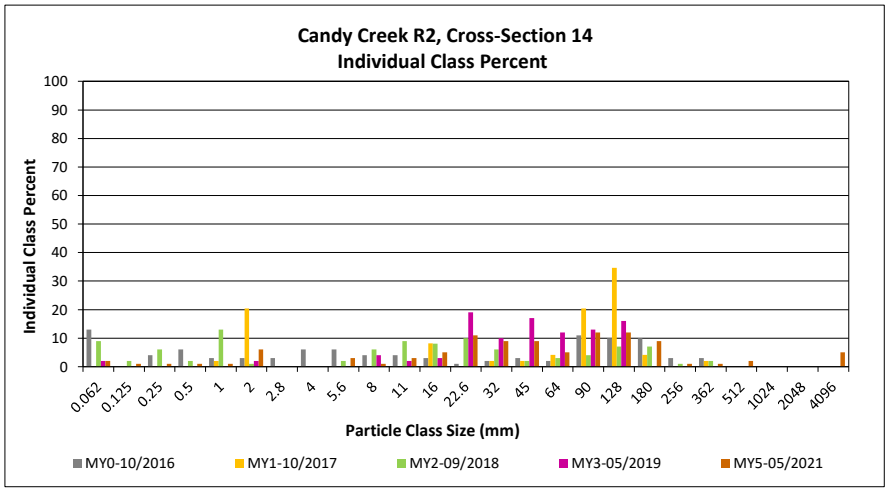
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R2, Cross-Section 14

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125	1	1	3
	Fine	0.125	0.250	1	1	4
	Medium	0.25	0.50	1	1	5
	Coarse	0.5	1.0	1	1	6
	Very Coarse	1.0	2.0	6	6	12
GRAVEL	Very Fine	2.0	2.8			12
	Very Fine	2.8	4.0			12
	Fine	4.0	5.6	3	3	15
	Fine	5.6	8.0	1	1	16
	Medium	8.0	11.0	3	3	19
	Medium	11.0	16.0	5	5	24
	Coarse	16.0	22.6	11	11	35
	Coarse	22.6	32	9	9	44
	Very Coarse	32	45	9	9	53
	Very Coarse	45	64	5	5	58
COBBLE	Small	64	90	12	12	70
	Small	90	128	12	12	82
	Large	128	180	9	9	91
	Large	180	256	1	1	92
BOULDER	Small	256	362	1	1	93
	Small	362	512	2	2	95
	Medium	512	1024			95
	Large/Very Large	1024	2048			95
BEDROCK	Bedrock	2048	>2048	5	5	100
			Total	**100**	**100**	**100**

Cross-Section 14	
Channel materials (mm)	
D_{16} =	8.0
D_{35} =	22.6
D_{50} =	40.2
D_{84} =	138.1
D_{95} =	512.0
D_{100} =	>2048





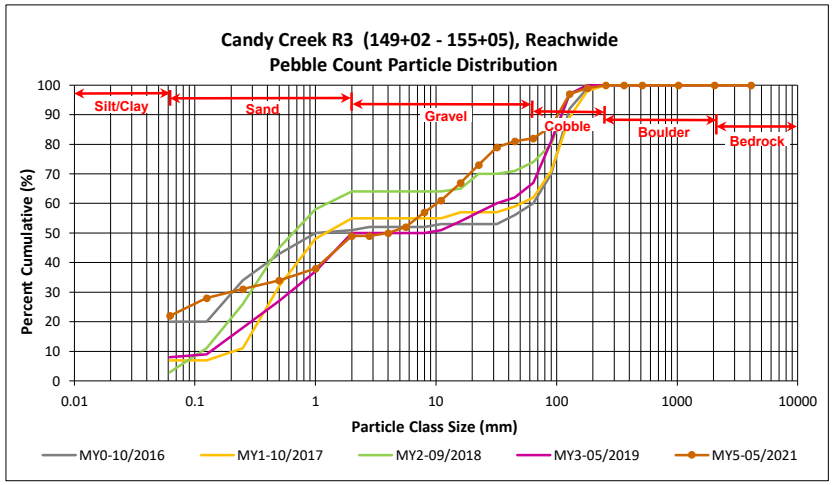
Reachwide and Cross-Section Pebble Count Plots

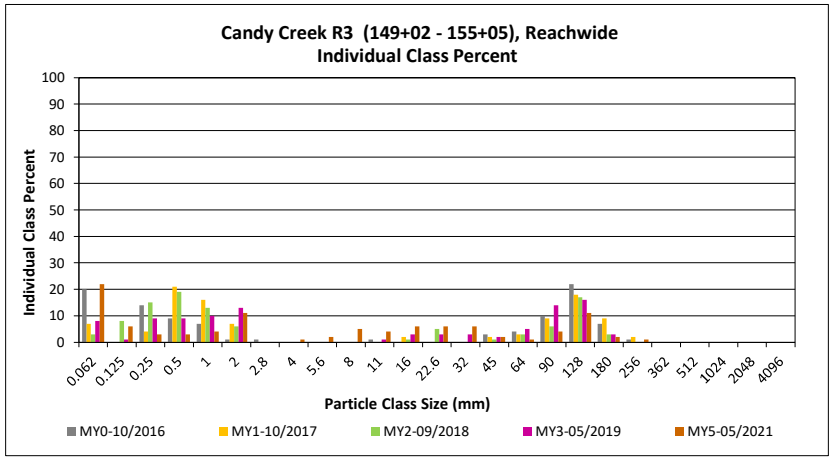
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		22	22	22	22
SAND	Very fine	0.062	0.125	1	5	6	6	28
	Fine	0.125	0.250		3	3	3	31
	Medium	0.25	0.50	1	2	3	3	34
	Coarse	0.5	1.0		4	4	4	38
	Very Coarse	1.0	2.0	5	6	11	11	49
GRAVEL	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	4	5	5	57
	Medium	8.0	11.0	2	2	4	4	61
	Medium	11.0	16.0	6		6	6	67
	Coarse	16.0	22.6	6		6	6	73
	Coarse	22.6	32	6		6	6	79
	Very Coarse	32	45	2		2	2	81
	Very Coarse	45	64	1		1	1	82
COBBLE	Small	64	90	4		4	4	86
	Small	90	128	11		11	11	97
	Large	128	180	2		2	2	99
	Large	180	256	1		1	1	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.6
D_{50} =	4.0
D_{84} =	75.9
D_{95} =	120.1
D_{100} =	256.0





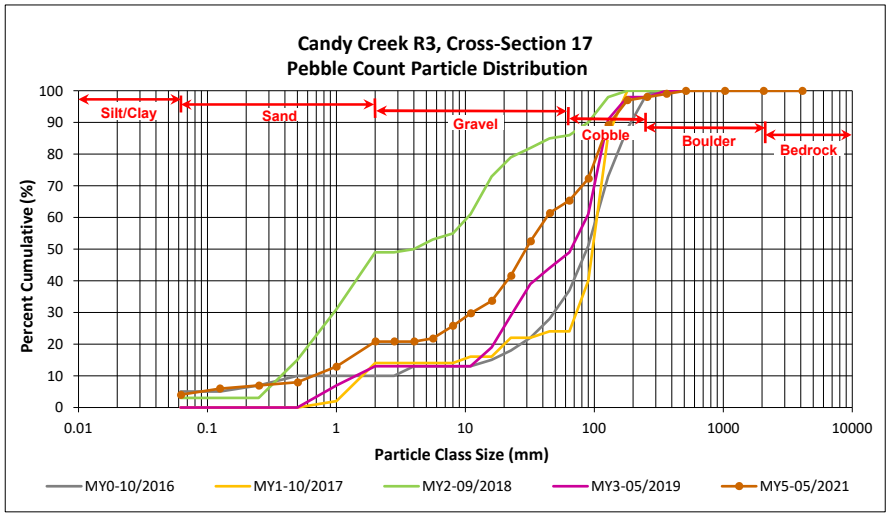
Reachwide and Cross-Section Pebble Count Plots

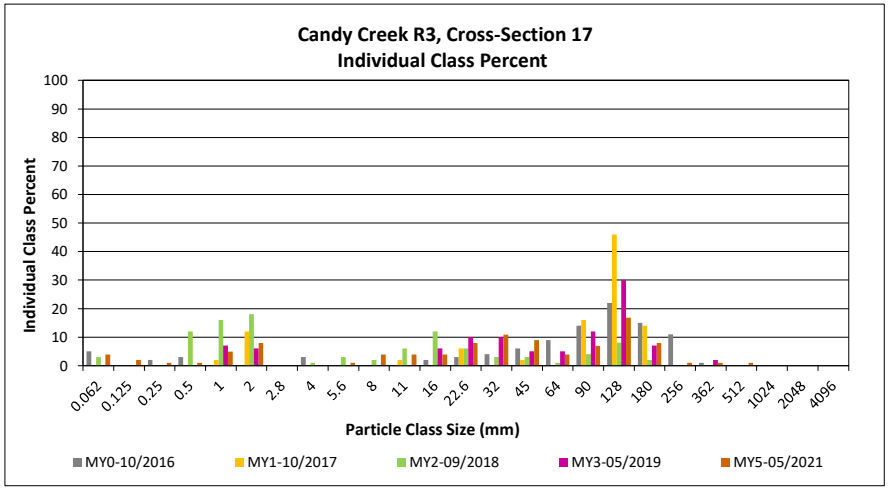
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R3, Cross-Section 17

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	4	4	4
SAND	Very fine	0.062	0.125	2	2	6
	Fine	0.125	0.250	1	1	7
	Medium	0.25	0.50	1	1	8
	Coarse	0.5	1.0	5	5	13
	Very Coarse	1.0	2.0	8	8	21
GRAVEL	Very Fine	2.0	2.8			21
	Very Fine	2.8	4.0			21
	Fine	4.0	5.6	1	1	22
	Fine	5.6	8.0	4	4	26
	Medium	8.0	11.0	4	4	30
	Medium	11.0	16.0	4	4	34
	Coarse	16.0	22.6	8	8	42
	Coarse	22.6	32	11	11	52
	Very Coarse	32	45	9	9	61
	Very Coarse	45	64	4	4	65
COBBLE	Small	64	90	7	7	72
	Small	90	128	17	17	89
	Large	128	180	8	8	97
	Large	180	256	1	1	98
BOULDER	Small	256	362	1	1	99
	Small	362	512	1	1	100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**101**	**100**	**100**

Cross-Section 17	
Channel materials (mm)	
D_{16} =	1.3
D_{35} =	17.0
D_{50} =	29.6
D_{84} =	115.0
D_{95} =	164.9
D_{100} =	512.0





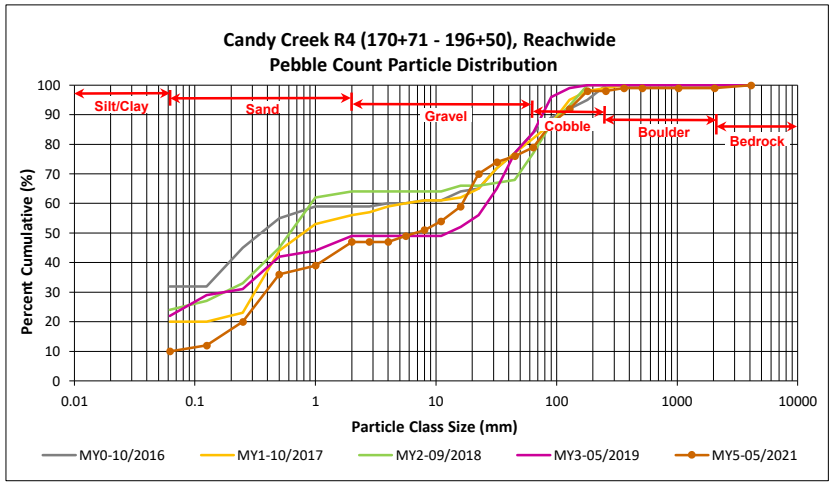
Reachwide and Cross-Section Pebble Count Plots

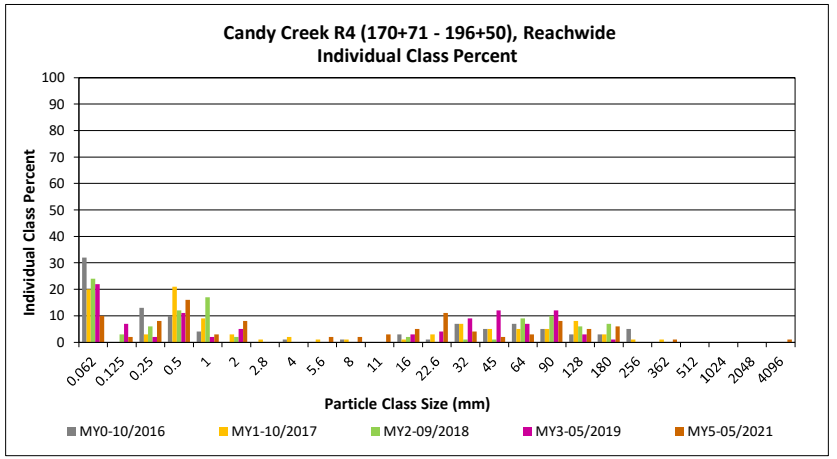
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		10	10	10	10
SAND	Very fine	0.062	0.125	2		2	2	12
	Fine	0.125	0.250	1	7	8	8	20
	Medium	0.25	0.50	1	15	16	16	36
	Coarse	0.5	1.0	1	2	3	3	39
	Very Coarse	1.0	2.0	4	4	8	8	47
GRAVEL	Very Fine	2.0	2.8					47
	Very Fine	2.8	4.0					47
	Fine	4.0	5.6	1	1	2	2	49
	Fine	5.6	8.0	1	1	2	2	51
	Medium	8.0	11.0	2	1	3	3	54
	Medium	11.0	16.0	3	2	5	5	59
	Coarse	16.0	22.6	8	3	11	11	70
	Coarse	22.6	32	3	1	4	4	74
	Very Coarse	32	45	2		2	2	76
	Very Coarse	45	64	2	1	3	3	79
COBBLE	Small	64	90	7	1	8	8	87
	Small	90	128	5		5	5	92
	Large	128	180	5	1	6	6	98
	Large	180	256					98
BOULDER	Small	256	362	1		1	1	99
	Small	362	512					99
	Medium	512	1024					99
	Large/Very Large	1024	2048					99
BEDROCK	Bedrock	2048	>2048	1		1	1	100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.18
D_{35} =	0.5
D_{50} =	6.7
D_{84} =	79.2
D_{95} =	151.8
D_{100} =	>2048





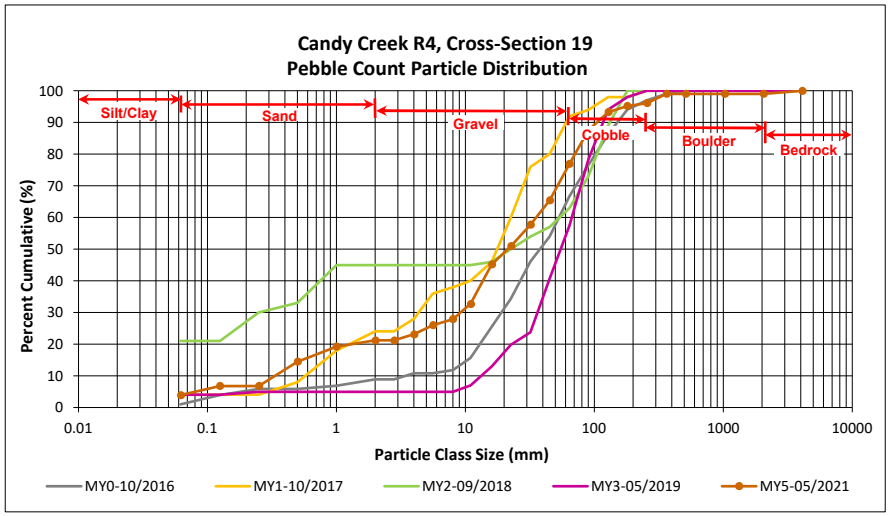
Reachwide and Cross-Section Pebble Count Plots

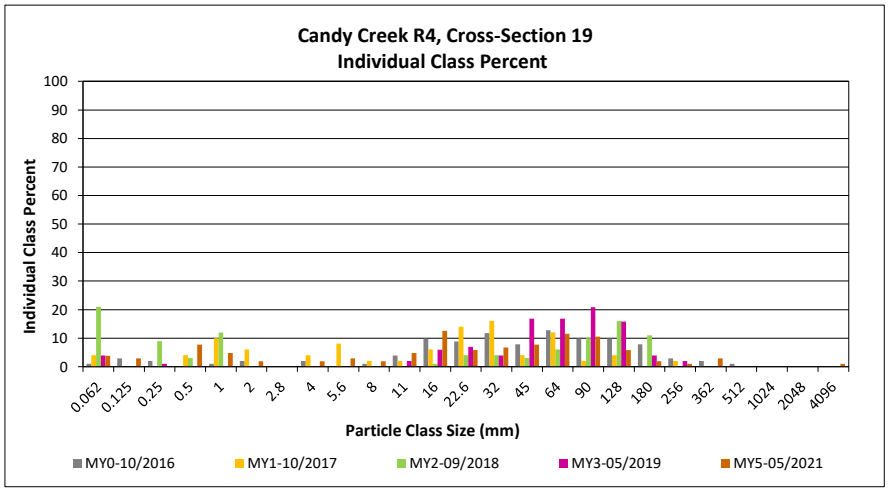
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R4, Cross-Section 19

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	4	4	4
SAND	Very fine	0.062	0.125	3	3	7
	Fine	0.125	0.250			7
	Medium	0.25	0.50	8	8	14
	Coarse	0.5	1.0	5	5	19
	Very Coarse	1.0	2.0	2	2	21
GRAVEL	Very Fine	2.0	2.8			21
	Very Fine	2.8	4.0	2	2	23
	Fine	4.0	5.6	3	3	26
	Fine	5.6	8.0	2	2	28
	Medium	8.0	11.0	5	5	33
	Medium	11.0	16.0	13	13	45
	Coarse	16.0	22.6	6	6	51
	Coarse	22.6	32	7	7	58
	Very Coarse	32	45	8	8	65
	Very Coarse	45	64	12	12	77
COBBLE	Small	64	90	11	11	88
	Small	90	128	6	6	93
	Large	128	180	2	2	95
	Large	180	256	1	1	96
BOULDER	Small	256	362	3	3	99
	Small	362	512			99
	Medium	512	1024			99
	Large/Very Large	1024	2048			99
BEDROCK	Bedrock	2048	>2048	1	1	100
			Total	**104**	**100**	**100**

Cross-Section 19	
Channel materials (mm)	
D_{16} =	0.6
D_{35} =	11.8
D_{50} =	21.3
D_{84} =	80.4
D_{95} =	174.0
D_{100} =	>2048





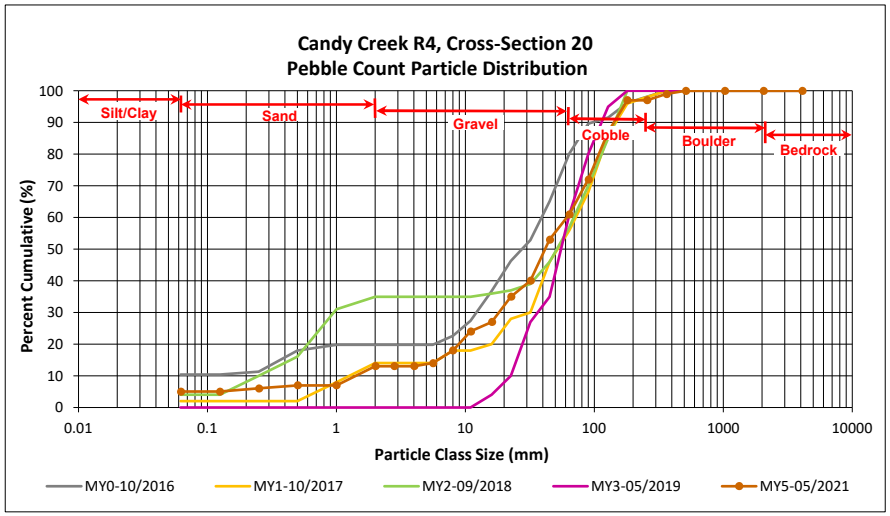
Reachwide and Cross-Section Pebble Count Plots

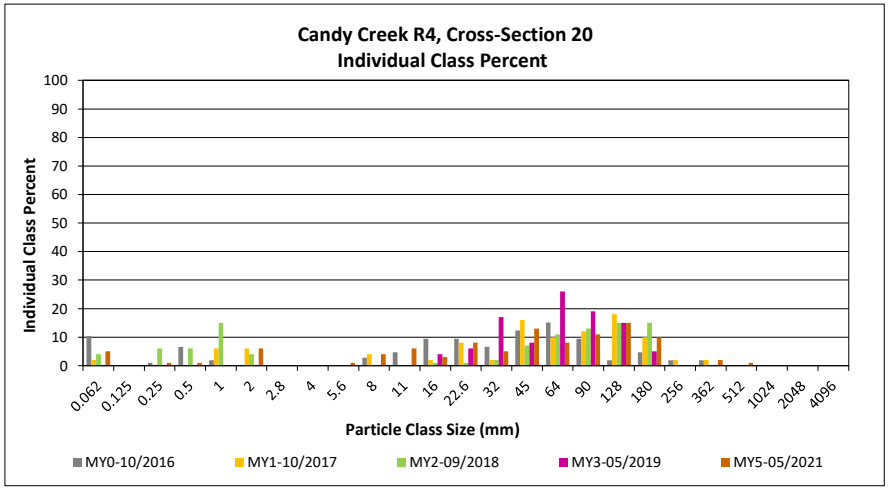
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R4, Cross-Section 20

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	5	5	5
SAND	Very fine	0.062	0.125			5
	Fine	0.125	0.250	1	1	6
	Medium	0.25	0.50	1	1	7
	Coarse	0.5	1.0			7
	Very Coarse	1.0	2.0	6	6	13
GRAVEL	Very Fine	2.0	2.8			13
	Very Fine	2.8	4.0			13
	Fine	4.0	5.6	1	1	14
	Fine	5.6	8.0	4	4	18
	Medium	8.0	11.0	6	6	24
	Medium	11.0	16.0	3	3	27
	Coarse	16.0	22.6	8	8	35
	Coarse	22.6	32	5	5	40
	Very Coarse	32	45	13	13	53
	Very Coarse	45	64	8	8	61
COBBLE	Small	64	90	11	11	72
	Small	90	128	15	15	87
	Large	128	180	10	10	97
	Large	180	256			97
BOULDER	Small	256	362	2	2	99
	Small	362	512	1	1	100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 20	
Channel materials (mm)	
D_{16} =	6.7
D_{35} =	22.6
D_{50} =	41.6
D_{84} =	119.3
D_{95} =	168.1
D_{100} =	512.0





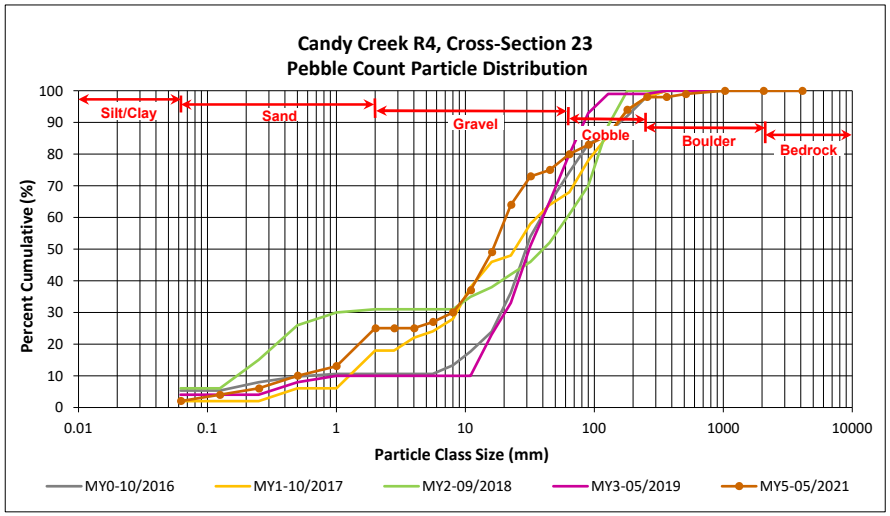
Reachwide and Cross-Section Pebble Count Plots

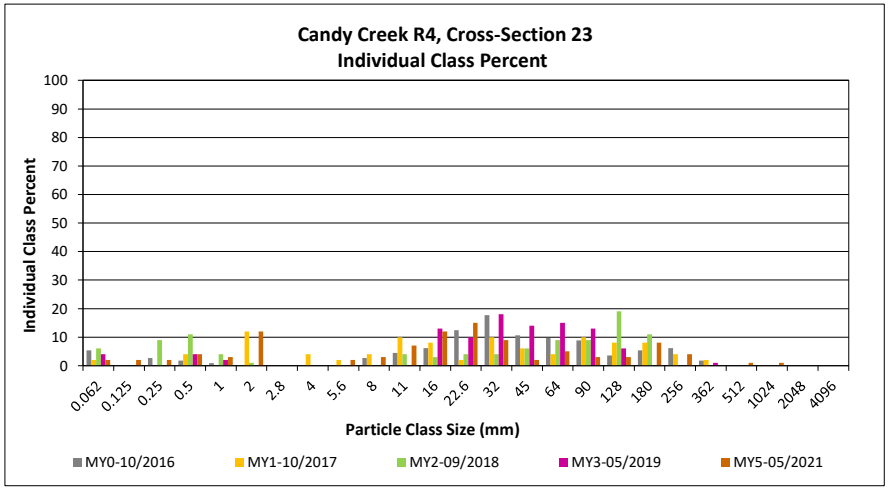
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R4, Cross-Section 23

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125	2	2	4
	Fine	0.125	0.250	2	2	6
	Medium	0.25	0.50	4	4	10
	Coarse	0.5	1.0	3	3	13
	Very Coarse	1.0	2.0	12	12	25
GRAVEL	Very Fine	2.0	2.8			25
	Very Fine	2.8	4.0			25
	Fine	4.0	5.6	2	2	27
	Fine	5.6	8.0	3	3	30
	Medium	8.0	11.0	7	7	37
	Medium	11.0	16.0	12	12	49
	Coarse	16.0	22.6	15	15	64
	Coarse	22.6	32	9	9	73
	Very Coarse	32	45	2	2	75
	Very Coarse	45	64	5	5	80
COBBLE	Small	64	90	3	3	83
	Small	90	128	3	3	86
	Large	128	180	8	8	94
	Large	180	256	4	4	98
BOULDER	Small	256	362			98
	Small	362	512	1	1	99
	Medium	512	1024	1	1	100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 23	
Channel materials (mm)	
D_{16} =	1.2
D_{35} =	10.0
D_{50} =	16.4
D_{84} =	101.2
D_{95} =	196.6
D_{100} =	1024.0





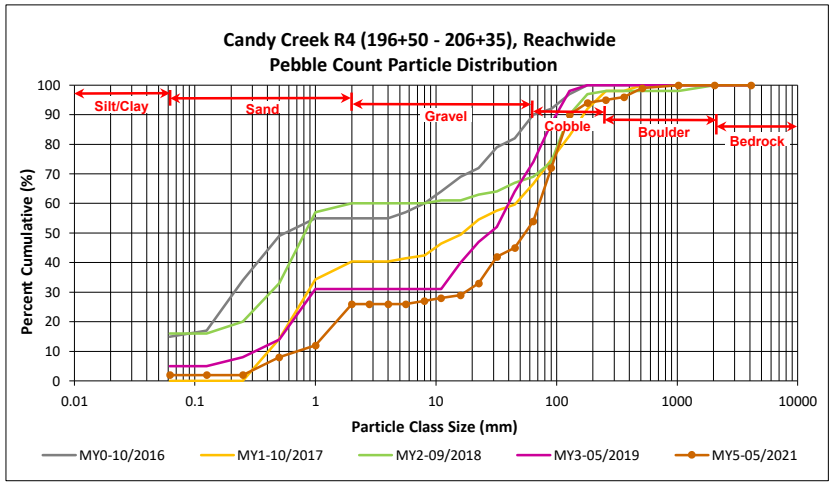
Reachwide and Cross-Section Pebble Count Plots

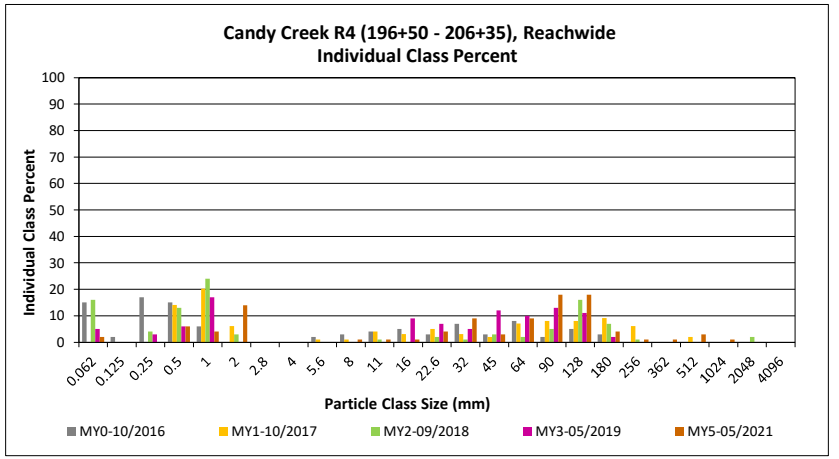
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

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

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		2	2	2	2
SAND	Very fine	0.062	0.125					2
	Fine	0.125	0.250					2
	Medium	0.25	0.50		6	6	6	8
	Coarse	0.5	1.0	1	3	4	4	12
	Very Coarse	1.0	2.0	3	11	14	14	26
GRAVEL	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		1	1	1	27
	Medium	8.0	11.0		1	1	1	28
	Medium	11.0	16.0		1	1	1	29
	Coarse	16.0	22.6	1	3	4	4	33
	Coarse	22.6	32	2	7	9	9	42
	Very Coarse	32	45	1	2	3	3	45
	Very Coarse	45	64	3	6	9	9	54
COBBLE	Small	64	90	12	6	18	18	72
	Small	90	128	17	1	18	18	90
	Large	128	180	4		4	4	94
	Large	180	256	1		1	1	95
BOULDER	Small	256	362	1		1	1	96
	Small	362	512	3		3	3	99
	Medium	512	1024	1		1	1	100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	1.2
D_{35} =	24.4
D_{50} =	54.7
D_{84} =	113.8
D_{95} =	256.0
D_{100} =	1024.0





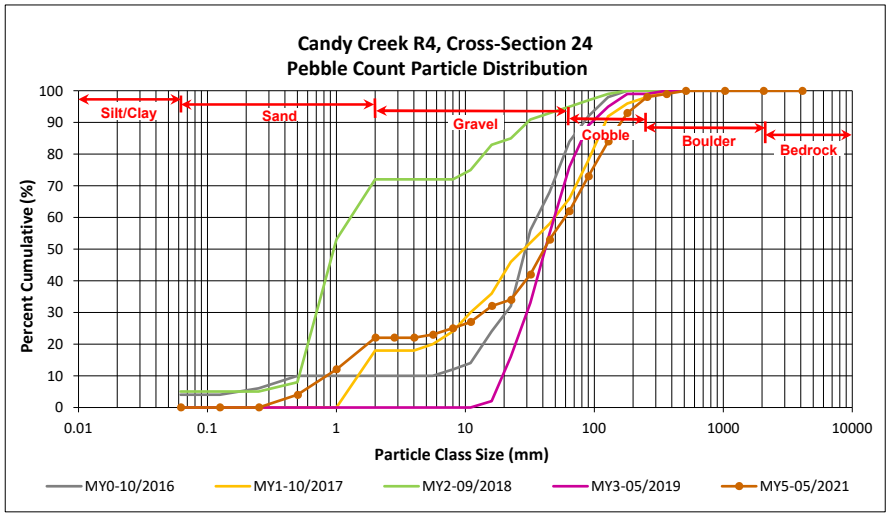
Reachwide and Cross-Section Pebble Count Plots

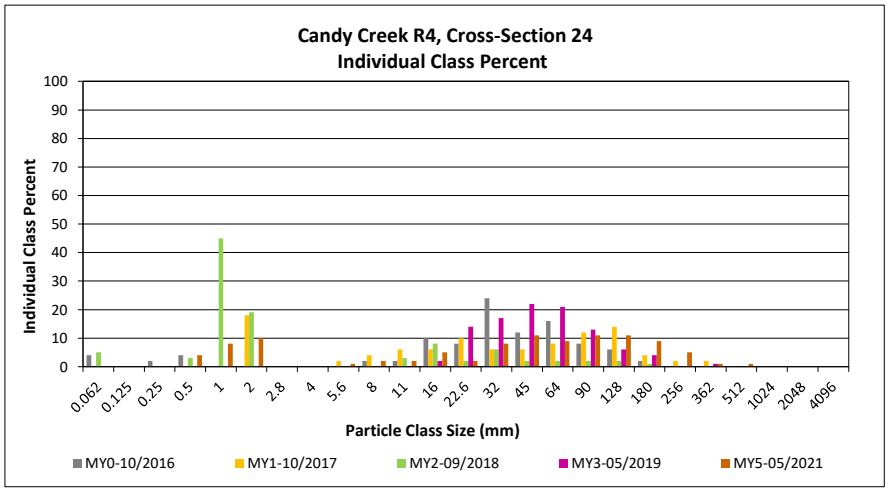
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R4, Cross-Section 24

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50	4	4	4
	Coarse	0.5	1.0	8	8	12
	Very Coarse	1.0	2.0	10	10	22
GRAVEL	Very Fine	2.0	2.8			22
	Very Fine	2.8	4.0			22
	Fine	4.0	5.6	1	1	23
	Fine	5.6	8.0	2	2	25
	Medium	8.0	11.0	2	2	27
	Medium	11.0	16.0	5	5	32
	Coarse	16.0	22.6	2	2	34
	Coarse	22.6	32	8	8	42
	Very Coarse	32	45	11	11	53
	Very Coarse	45	64	9	9	62
COBBLE	Small	64	90	11	11	73
	Small	90	128	11	11	84
	Large	128	180	9	9	93
	Large	180	256	5	5	98
BOULDER	Small	256	362	1	1	99
	Small	362	512	1	1	100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 24	
Channel materials (mm)	
D_{16} =	1.3
D_{35} =	23.6
D_{50} =	41.0
D_{84} =	128.0
D_{95} =	207.2
D_{100} =	512.0





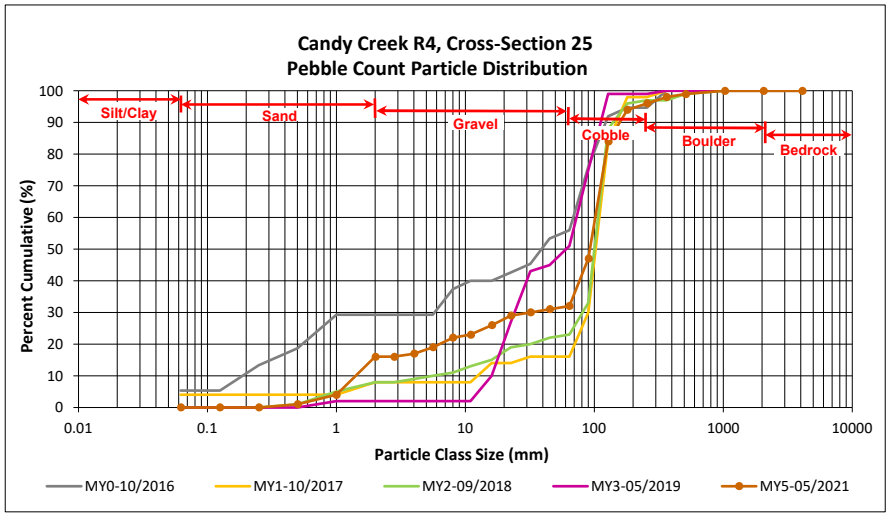
Reachwide and Cross-Section Pebble Count Plots

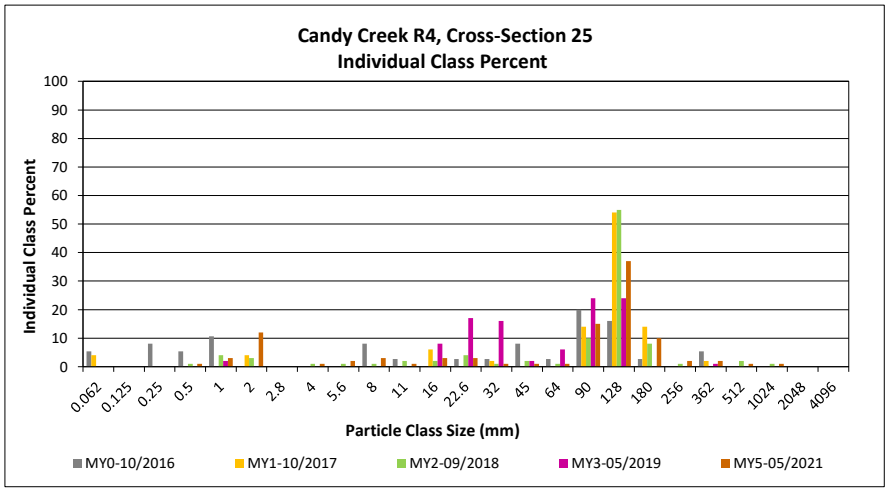
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Candy Creek R4, Cross-Section 25

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250			0
	Medium	0.25	0.50	1	1	1
	Coarse	0.5	1.0	3	3	4
	Very Coarse	1.0	2.0	12	12	16
GRAVEL	Very Fine	2.0	2.8			16
	Very Fine	2.8	4.0	1	1	17
	Fine	4.0	5.6	2	2	19
	Fine	5.6	8.0	3	3	22
	Medium	8.0	11.0	1	1	23
	Medium	11.0	16.0	3	3	26
	Coarse	16.0	22.6	3	3	29
	Coarse	22.6	32	1	1	30
	Very Coarse	32	45	1	1	31
	Very Coarse	45	64	1	1	32
COBBLE	Small	64	90	15	15	47
	Small	90	128	37	37	84
	Large	128	180	10	10	94
	Large	180	256	2	2	96
BOULDER	Small	256	362	2	2	98
	Small	362	512	1	1	99
	Medium	512	1024	1	1	100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 25	
Channel materials (mm)	
D_{16} =	2.0
D_{35} =	68.5
D_{50} =	92.6
D_{84} =	128.0
D_{95} =	214.7
D_{100} =	1024.0





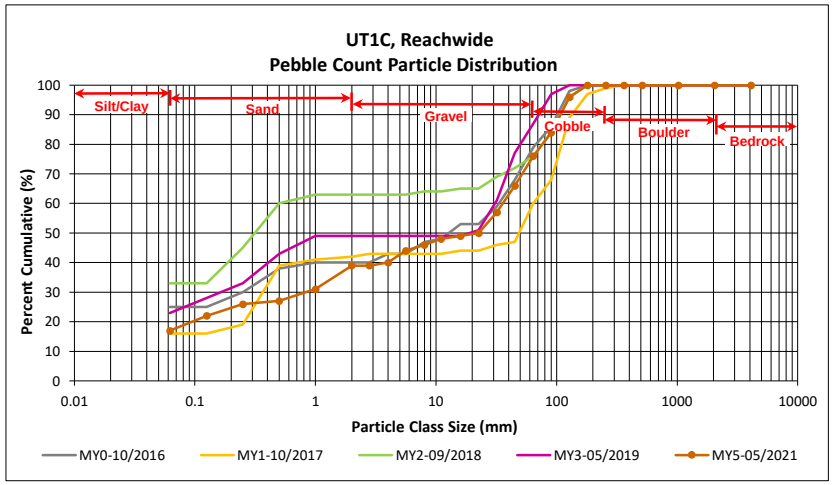
Reachwide and Cross-Section Pebble Count Plots

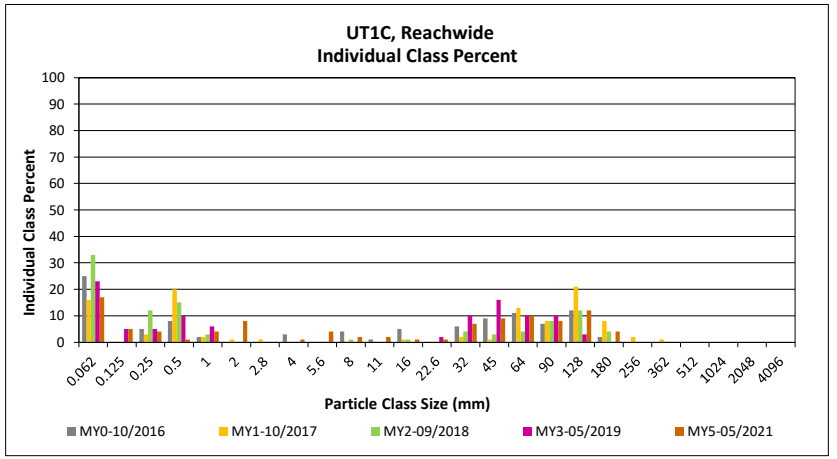
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT1C, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		17	17	17	17
SAND	Very fine	0.062	0.125	1	4	5	5	22
	Fine	0.125	0.250		4	4	4	26
	Medium	0.25	0.50		1	1	1	27
	Coarse	0.5	1.0		4	4	4	31
	Very Coarse	1.0	2.0	3	5	8	8	39
GRAVEL	Very Fine	2.0	2.8					39
	Very Fine	2.8	4.0		1	1	1	40
	Fine	4.0	5.6		4	4	4	44
	Fine	5.6	8.0	2		2	2	46
	Medium	8.0	11.0	2		2	2	48
	Medium	11.0	16.0	1		1	1	49
	Coarse	16.0	22.6	1		1	1	50
	Coarse	22.6	32	5	2	7	7	57
	Very Coarse	32	45	8	1	9	9	66
	Very Coarse	45	64	9	1	10	10	76
COBBLE	Small	64	90	6	2	8	8	84
	Small	90	128	9	3	12	12	96
	Large	128	180	3	1	4	4	100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	1.4
D_{50} =	22.6
D_{84} =	90.0
D_{95} =	124.3
D_{100} =	180.0





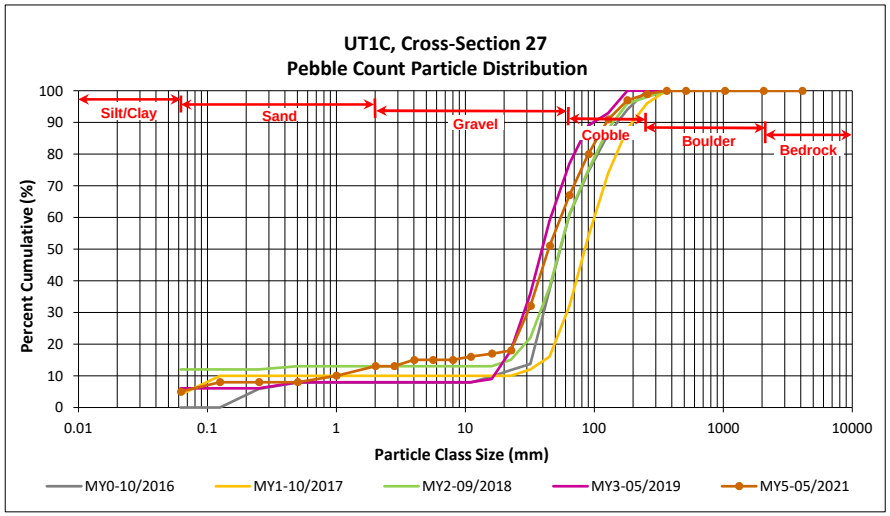
Reachwide and Cross-Section Pebble Count Plots

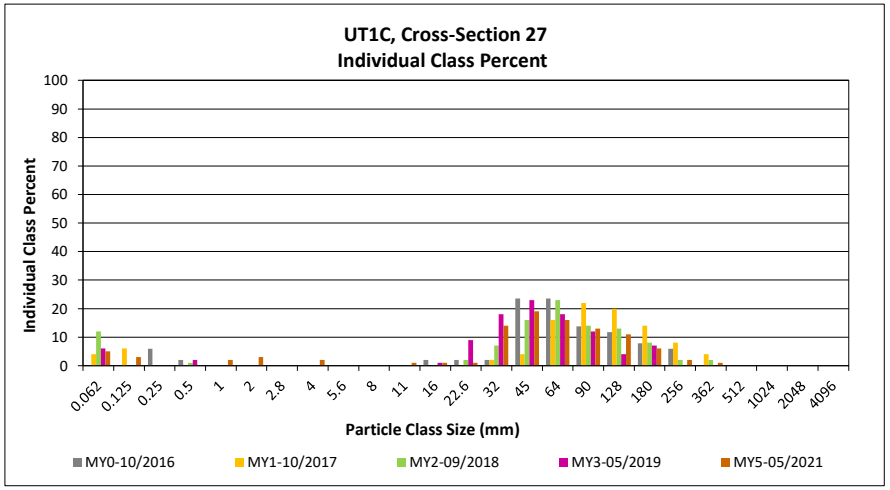
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT1C, Cross-Section 27

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	5	5	5
SAND	Very fine	0.062	0.125	3	3	8
	Fine	0.125	0.250			8
	Medium	0.25	0.50			8
	Coarse	0.5	1.0	2	2	10
	Very Coarse	1.0	2.0	3	3	13
GRAVEL	Very Fine	2.0	2.8			13
	Very Fine	2.8	4.0	2	2	15
	Fine	4.0	5.6			15
	Fine	5.6	8.0			15
	Medium	8.0	11.0	1	1	16
	Medium	11.0	16.0	1	1	17
	Coarse	16.0	22.6	1	1	18
	Coarse	22.6	32	14	14	32
	Very Coarse	32	45	19	19	51
	Very Coarse	45	64	16	16	67
COBBLE	Small	64	90	13	13	80
	Small	90	128	11	11	91
	Large	128	180	6	6	97
	Large	180	256	2	2	99
BOULDER	Small	256	362	1	1	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 27	
Channel materials (mm)	
D_{16} =	11.0
D_{35} =	33.8
D_{50} =	44.2
D_{84} =	102.3
D_{95} =	160.7
D_{100} =	362.0





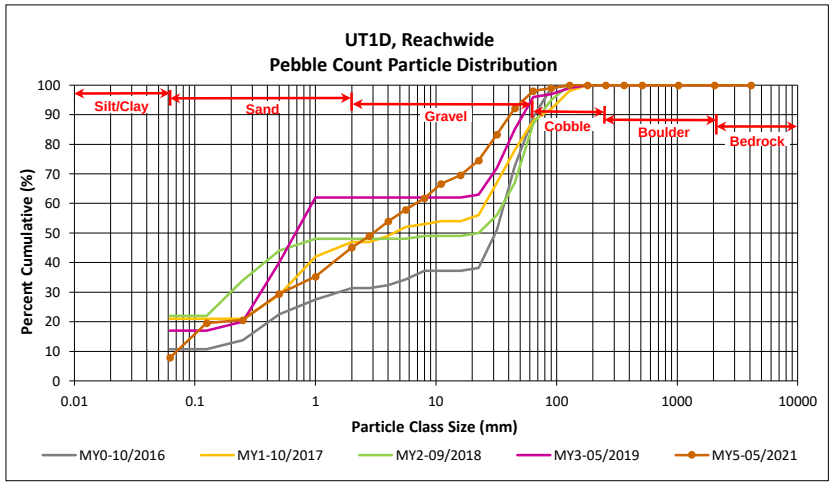
Reachwide and Cross-Section Pebble Count Plots

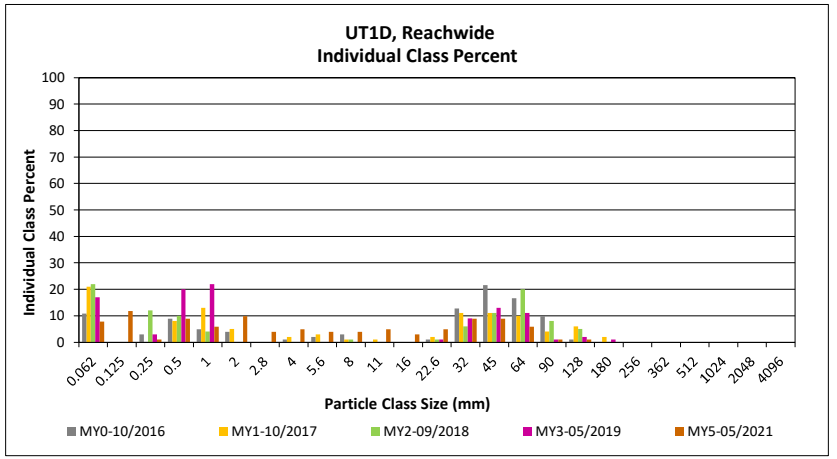
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT1D, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	7	8	8	8
SAND	Very fine	0.062	0.125	3	9	12	12	20
	Fine	0.125	0.250		1	1	1	21
	Medium	0.25	0.50	4	5	9	9	29
	Coarse	0.5	1.0	1	5	6	6	35
	Very Coarse	1.0	2.0	1	9	10	10	45
GRAVEL	Very Fine	2.0	2.8	1	3	4	4	49
	Very Fine	2.8	4.0	2	3	5	5	54
	Fine	4.0	5.6	1	3	4	4	58
	Fine	5.6	8.0	2	2	4	4	62
	Medium	8.0	11.0	4	1	5	5	67
	Medium	11.0	16.0	2	1	3	3	70
	Coarse	16.0	22.6	5		5	5	75
	Coarse	22.6	32	7	2	9	9	83
	Very Coarse	32	45	8	1	9	9	92
	Very Coarse	45	64	6		6	6	98
COBBLE	Small	64	90	1		1	1	99
	Small	90	128	1		1	1	100
	Large	128	180					100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**52**	**102**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.10
D_{35} =	1.0
D_{50} =	3.0
D_{84} =	32.8
D_{95} =	53.4
D_{100} =	128.0





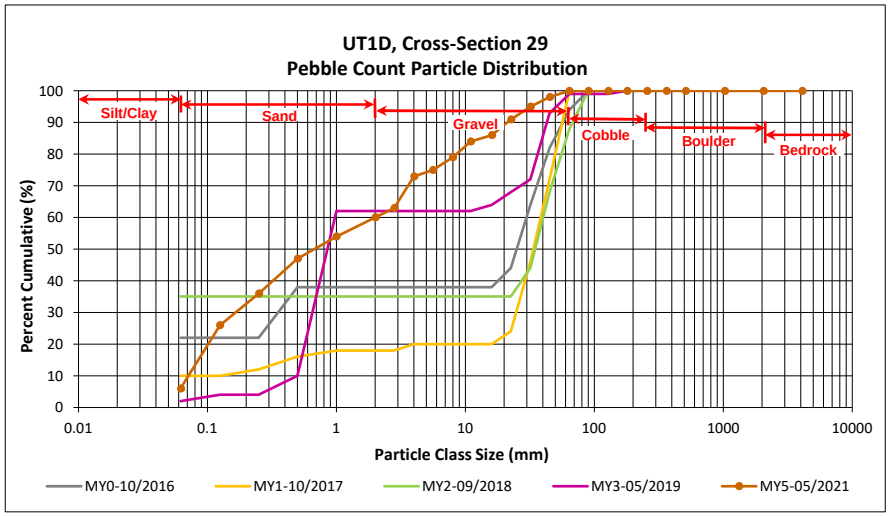
Reachwide and Cross-Section Pebble Count Plots

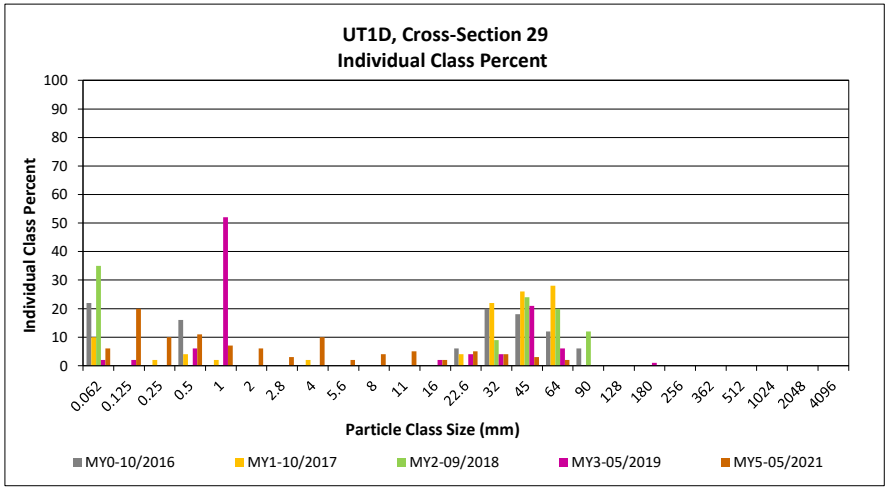
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT1D, Cross-Section 29

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	6	6	6
SAND	Very fine	0.062	0.125	20	20	26
	Fine	0.125	0.250	10	10	36
	Medium	0.25	0.50	11	11	47
	Coarse	0.5	1.0	7	7	54
	Very Coarse	1.0	2.0	6	6	60
GRAVEL	Very Fine	2.0	2.8	3	3	63
	Very Fine	2.8	4.0	10	10	73
	Fine	4.0	5.6	2	2	75
	Fine	5.6	8.0	4	4	79
	Medium	8.0	11.0	5	5	84
	Medium	11.0	16.0	2	2	86
	Coarse	16.0	22.6	5	5	91
	Coarse	22.6	32	4	4	95
	Very Coarse	32	45	3	3	98
	Very Coarse	45	64	2	2	100
COBBLE	Small	64	90			100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 29	
Channel materials (mm)	
D_{16} =	0.1
D_{35} =	0.2
D_{50} =	0.7
D_{84} =	11.0
D_{95} =	32.0
D_{100} =	64.0





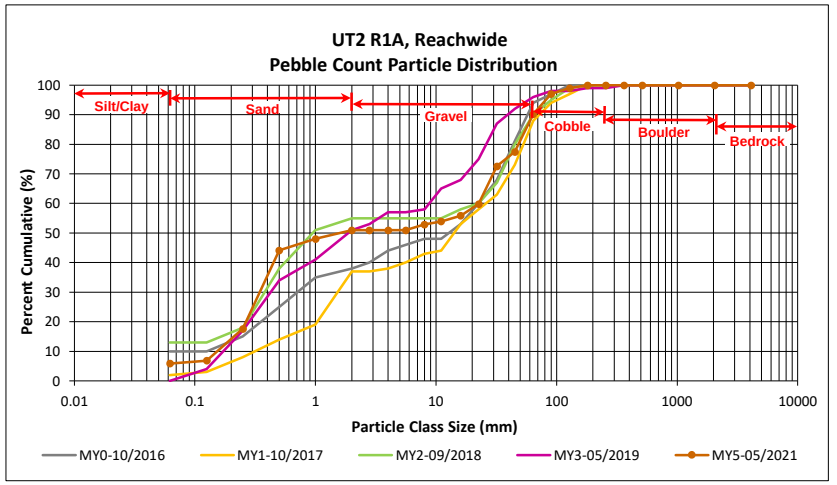
Reachwide and Cross-Section Pebble Count Plots

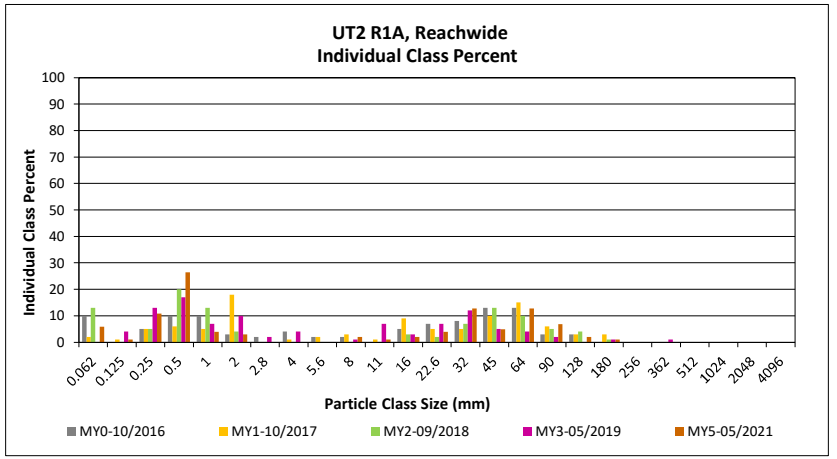
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R1A, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	5	6	6	6
SAND	Very fine	0.062	0.125		1	1	1	7
	Fine	0.125	0.250		11	11	11	18
	Medium	0.25	0.50	2	25	27	26	44
	Coarse	0.5	1.0	2	2	4	4	48
	Very Coarse	1.0	2.0	2	1	3	3	51
GRAVEL	Very Fine	2.0	2.8					51
	Very Fine	2.8	4.0					51
	Fine	4.0	5.6					51
	Fine	5.6	8.0	1	1	2	2	53
	Medium	8.0	11.0	1		1	1	54
	Medium	11.0	16.0	1	1	2	2	56
	Coarse	16.0	22.6	3	1	4	4	60
	Coarse	22.6	32	11	2	13	13	73
	Very Coarse	32	45	3	2	5	5	77
	Very Coarse	45	64	13		13	13	90
COBBLE	Small	64	90	7		7	7	97
	Small	90	128	2		2	2	99
	Large	128	180	1		1	1	100
	Large	180	256					100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**52**	**102**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.2
D_{35} =	0.4
D_{50} =	1.6
D_{84} =	53.9
D_{95} =	81.3
D_{100} =	180.0





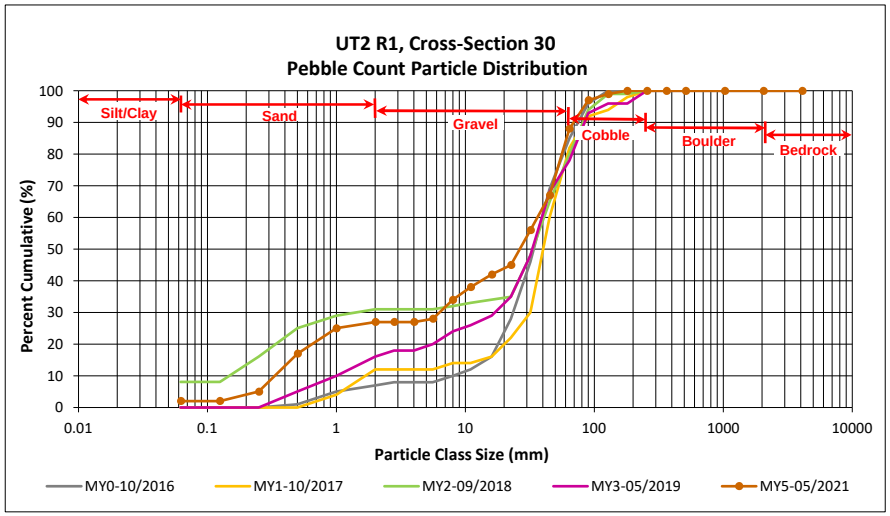
Reachwide and Cross-Section Pebble Count Plots

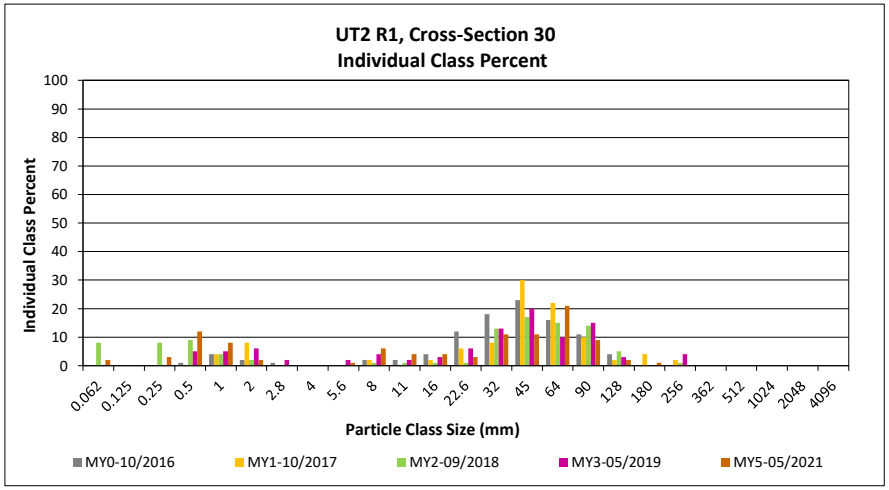
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R1, Cross-Section 30

Particle Class		Diameter (mm)		Riffle 100-Count	Summary	
		min	max		Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125			2
	Fine	0.125	0.250	3	3	5
	Medium	0.25	0.50	12	12	17
	Coarse	0.5	1.0	8	8	25
	Very Coarse	1.0	2.0	2	2	27
GRAVEL	Very Fine	2.0	2.8			27
	Very Fine	2.8	4.0			27
	Fine	4.0	5.6	1	1	28
	Fine	5.6	8.0	6	6	34
	Medium	8.0	11.0	4	4	38
	Medium	11.0	16.0	4	4	42
	Coarse	16.0	22.6	3	3	45
	Coarse	22.6	32	11	11	56
	Very Coarse	32	45	11	11	67
	Very Coarse	45	64	21	21	88
COBBLE	Small	64	90	9	9	97
	Small	90	128	2	2	99
	Large	128	180	1	1	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 30	
Channel materials (mm)	
D_{16} =	0.5
D_{35} =	8.7
D_{50} =	26.5
D_{84} =	59.8
D_{95} =	83.4
D_{100} =	180.0





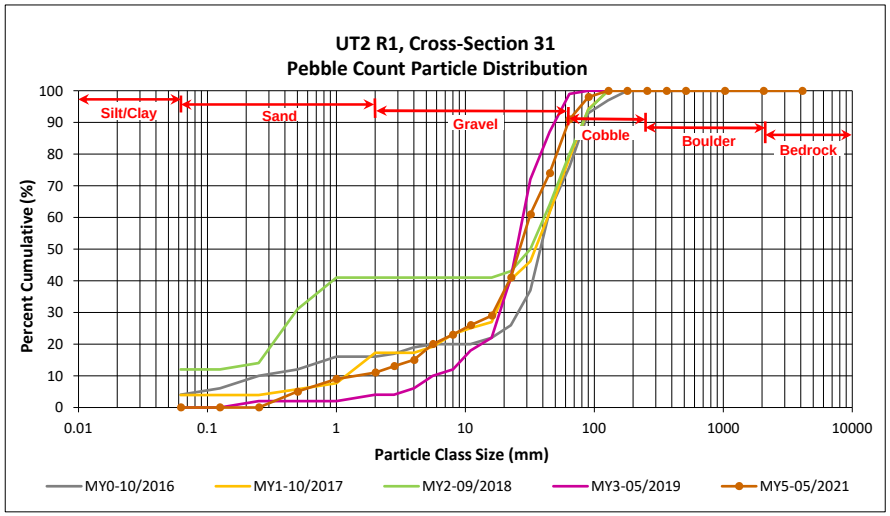
Reachwide and Cross-Section Pebble Count Plots

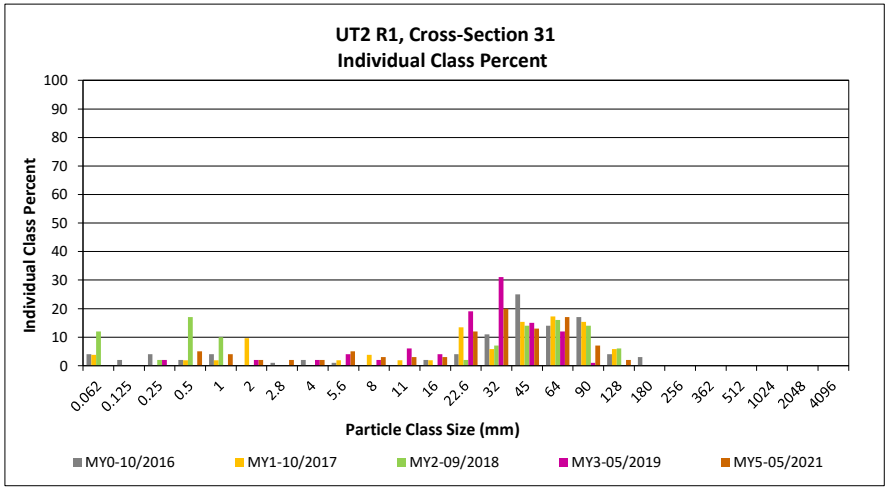
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R1, Cross-Section 31

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	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	4	4	9
	Very Coarse	1.0	2.0	2	2	11
GRAVEL	Very Fine	2.0	2.8	2	2	13
	Very Fine	2.8	4.0	2	2	15
	Fine	4.0	5.6	5	5	20
	Fine	5.6	8.0	3	3	23
	Medium	8.0	11.0	3	3	26
	Medium	11.0	16.0	3	3	29
	Coarse	16.0	22.6	12	12	41
	Coarse	22.6	32	20	20	61
	Very Coarse	32	45	13	13	74
	Very Coarse	45	64	17	17	91
COBBLE	Small	64	90	7	7	98
	Small	90	128	2	2	100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 31	
Channel materials (mm)	
D_{16} =	4.3
D_{35} =	19.0
D_{50} =	26.4
D_{84} =	55.4
D_{95} =	77.8
D_{100} =	128.0





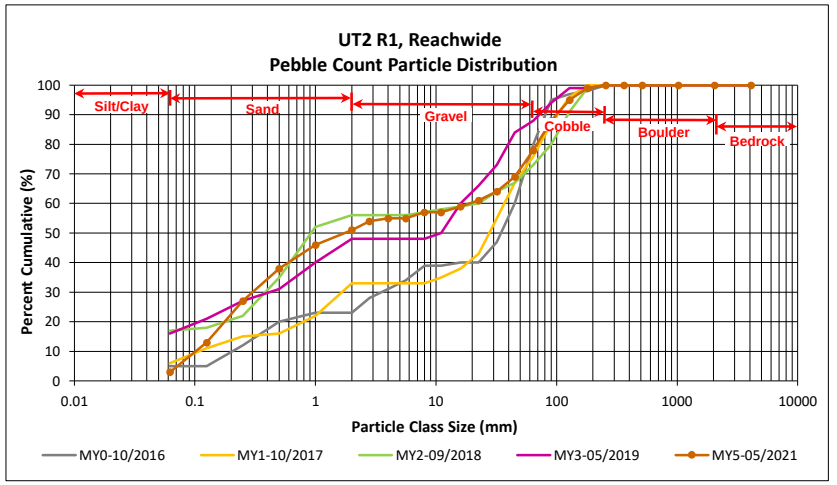
Reachwide and Cross-Section Pebble Count Plots

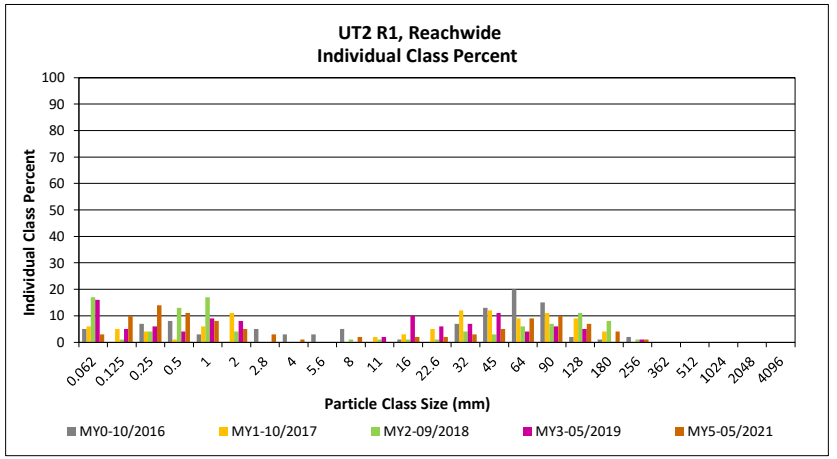
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R1, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		3	3	3	3
SAND	Very fine	0.062	0.125		10	10	10	13
	Fine	0.125	0.250		14	14	14	27
	Medium	0.25	0.50	1	10	11	11	38
	Coarse	0.5	1.0	3	5	8	8	46
	Very Coarse	1.0	2.0	2	3	5	5	51
GRAVEL	Very Fine	2.0	2.8		3	3	3	54
	Very Fine	2.8	4.0	1		1	1	55
	Fine	4.0	5.6					55
	Fine	5.6	8.0	2		2	2	57
	Medium	8.0	11.0					57
	Medium	11.0	16.0	2		2	2	59
	Coarse	16.0	22.6	2		2	2	61
	Coarse	22.6	32	3		3	3	64
	Very Coarse	32	45	5		5	5	69
	Very Coarse	45	64	8	1	9	9	78
COBBLE	Small	64	90	9	1	10	10	88
	Small	90	128	7		7	7	95
	Large	128	180	4		4	4	99
	Large	180	256	1		1	1	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.15
D_{35} =	0.4
D_{50} =	1.7
D_{84} =	78.5
D_{95} =	128.0
D_{100} =	256.0





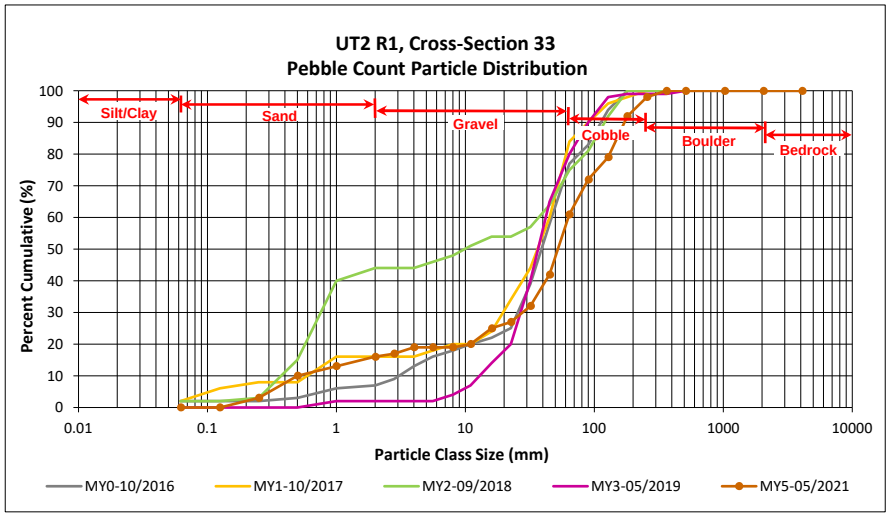
Reachwide and Cross-Section Pebble Count Plots

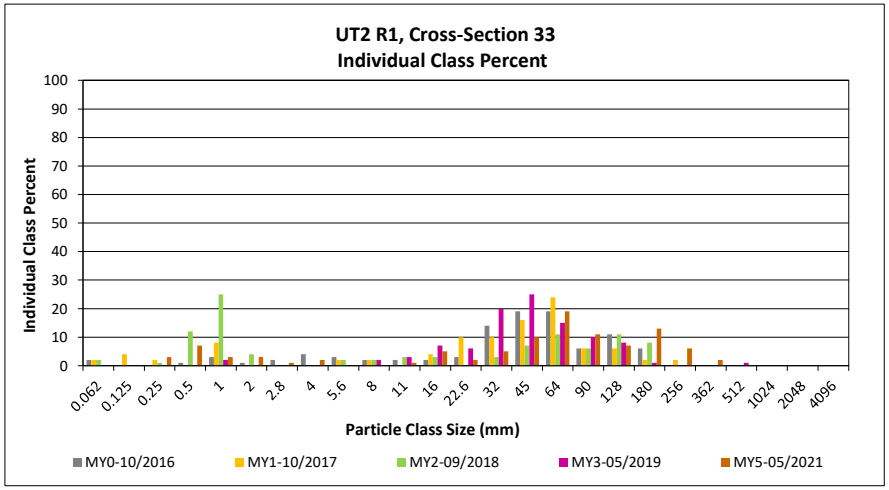
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R1, Cross-Section 33

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250	3	3	3
	Medium	0.25	0.50	7	7	10
	Coarse	0.5	1.0	3	3	13
	Very Coarse	1.0	2.0	3	3	16
GRAVEL	Very Fine	2.0	2.8	1	1	17
	Very Fine	2.8	4.0	2	2	19
	Fine	4.0	5.6			19
	Fine	5.6	8.0			19
	Medium	8.0	11.0	1	1	20
	Medium	11.0	16.0	5	5	25
	Coarse	16.0	22.6	2	2	27
	Coarse	22.6	32	5	5	32
	Very Coarse	32	45	10	10	42
	Very Coarse	45	64	19	19	61
COBBLE	Small	64	90	11	11	72
	Small	90	128	7	7	79
	Large	128	180	13	13	92
	Large	180	256	6	6	98
BOULDER	Small	256	362	2	2	100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 33	
Channel materials (mm)	
D_{16} =	2.0
D_{35} =	35.4
D_{50} =	52.2
D_{84} =	145.9
D_{95} =	214.7
D_{100} =	362.0





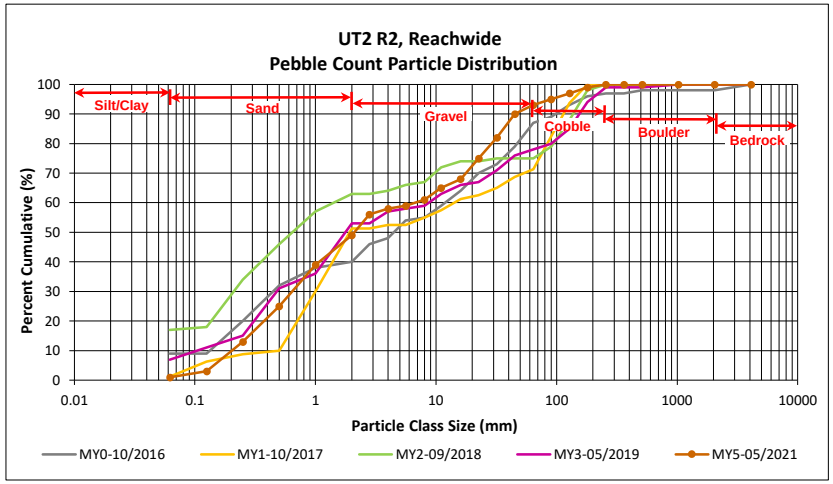
Reachwide and Cross-Section Pebble Count Plots

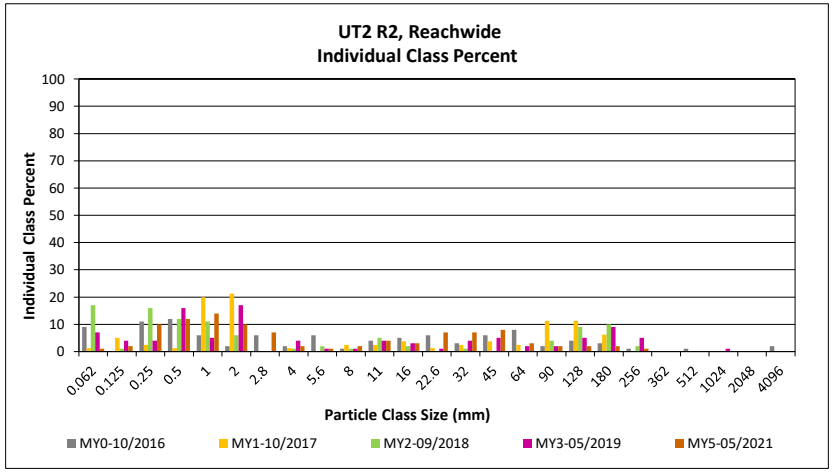
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R2, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		1	1	1	1
SAND	Very fine	0.062	0.125	1	1	2	2	3
	Fine	0.125	0.250		10	10	10	13
	Medium	0.25	0.50	2	10	12	12	25
	Coarse	0.5	1.0	3	11	14	14	39
	Very Coarse	1.0	2.0	3	7	10	10	49
GRAVEL	Very Fine	2.0	2.8	2	5	7	7	56
	Very Fine	2.8	4.0	2		2	2	58
	Fine	4.0	5.6		1	1	1	59
	Fine	5.6	8.0	1	1	2	2	61
	Medium	8.0	11.0	3	1	4	4	65
	Medium	11.0	16.0	3		3	3	68
	Coarse	16.0	22.6	6	1	7	7	75
	Coarse	22.6	32	7		7	7	82
	Very Coarse	32	45	7	1	8	8	90
	Very Coarse	45	64	3		3	3	93
COBBLE	Small	64	90	2		2	2	95
	Small	90	128	2		2	2	97
	Large	128	180	2		2	2	99
	Large	180	256	1		1	1	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.3
D_{35} =	0.8
D_{50} =	2.1
D_{84} =	34.8
D_{95} =	90.0
D_{100} =	256.0





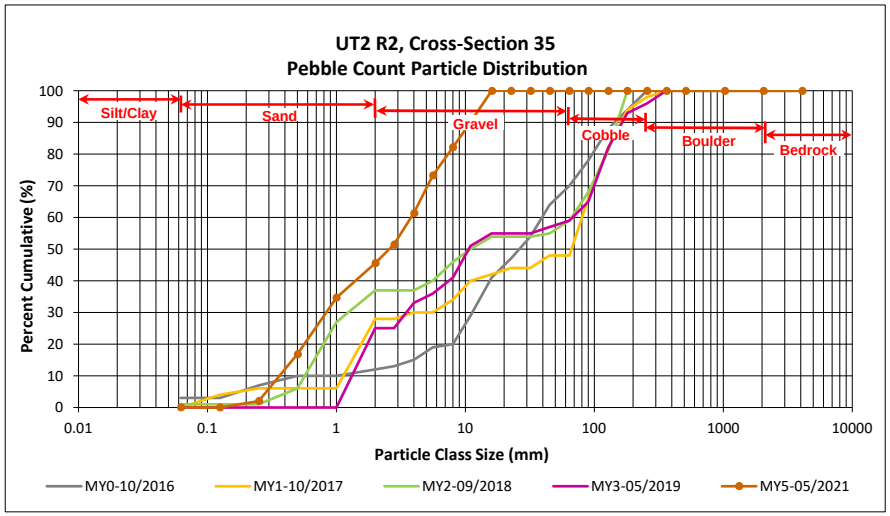
Reachwide and Cross-Section Pebble Count Plots

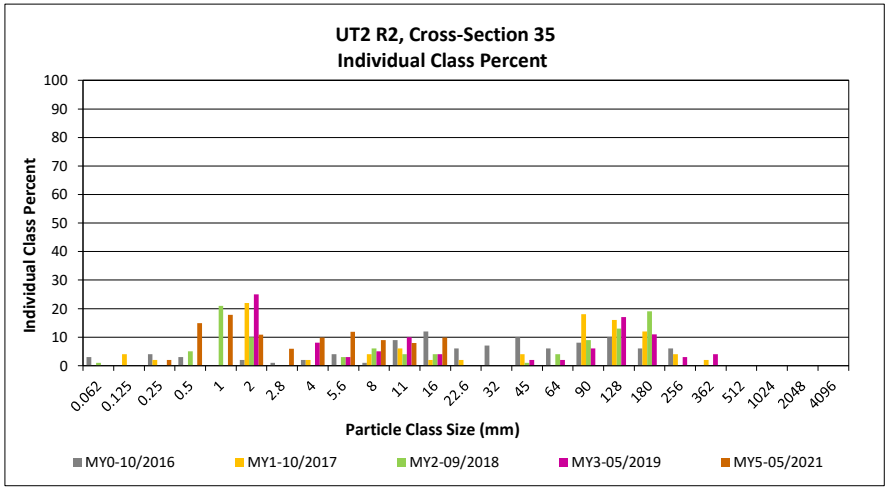
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2 R2, Cross-Section 35

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250	2	2	2
	Medium	0.25	0.50	15	15	17
	Coarse	0.5	1.0	18	18	35
	Very Coarse	1.0	2.0	11	11	46
GRAVEL	Very Fine	2.0	2.8	6	6	51
	Very Fine	2.8	4.0	10	10	61
	Fine	4.0	5.6	12	12	73
	Fine	5.6	8.0	9	9	82
	Medium	8.0	11.0	8	8	90
	Medium	11.0	16.0	10	10	100
	Coarse	16.0	22.6			100
	Coarse	22.6	32			100
	Very Coarse	32	45			100
	Very Coarse	45	64			100
COBBLE	Small	64	90			100
	Small	90	128			100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**101**	**100**	**100**

Cross-Section 35	
Channel materials (mm)	
D_{16} =	0.5
D_{35} =	1.0
D_{50} =	2.6
D_{84} =	8.6
D_{95} =	13.2
D_{100} =	16.0





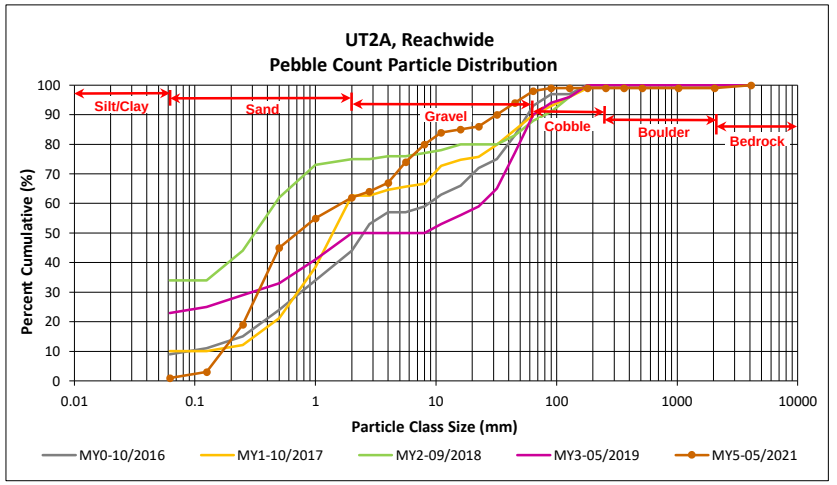
Reachwide and Cross-Section Pebble Count Plots

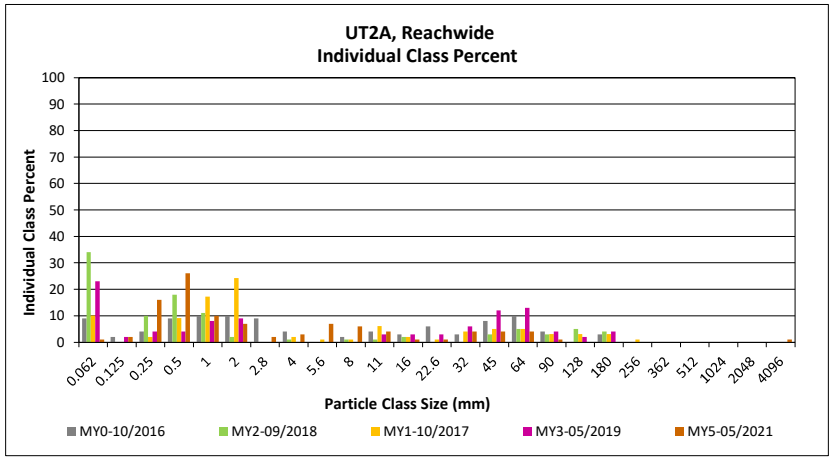
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2A, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		1	1	1	1
SAND	Very fine	0.062	0.125	2		2	2	3
	Fine	0.125	0.250	1	15	16	16	19
	Medium	0.25	0.50	8	18	26	26	45
	Coarse	0.5	1.0	4	6	10	10	55
	Very Coarse	1.0	2.0	4	3	7	7	62
GRAVEL	Very Fine	2.0	2.8	1	1	2	2	64
	Very Fine	2.8	4.0	3		3	3	67
	Fine	4.0	5.6	5	2	7	7	74
	Fine	5.6	8.0	6		6	6	80
	Medium	8.0	11.0	3	1	4	4	84
	Medium	11.0	16.0	1		1	1	85
	Coarse	16.0	22.6	1		1	1	86
	Coarse	22.6	32	2	2	4	4	90
	Very Coarse	32	45	4		4	4	94
	Very Coarse	45	64	4		4	4	98
COBBLE	Small	64	90	1		1	1	99
	Small	90	128					99
	Large	128	180					99
	Large	180	256					99
BOULDER	Small	256	362					99
	Small	362	512					99
	Medium	512	1024					99
	Large/Very Large	1024	2048					99
BEDROCK	Bedrock	2048	>2048		1	1	1	100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.22
D_{35} =	0.4
D_{50} =	0.7
D_{84} =	11.0
D_{95} =	49.1
D_{100} =	>2048





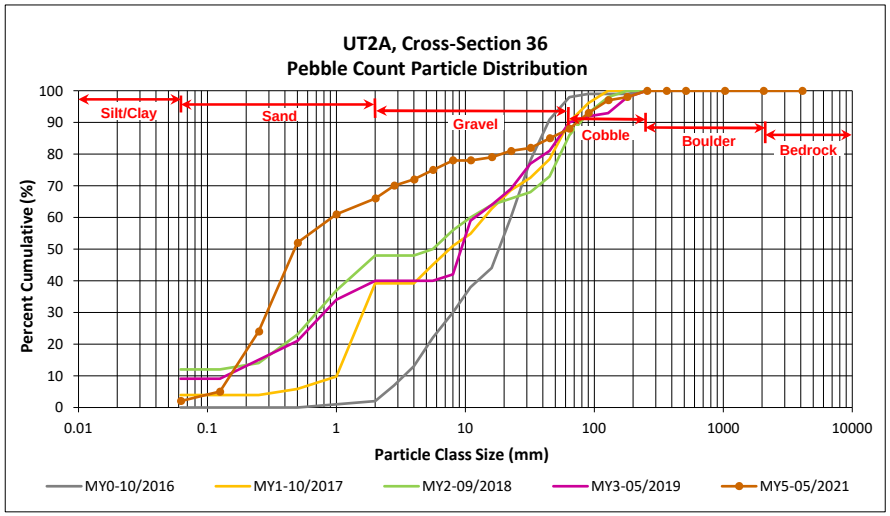
Reachwide and Cross-Section Pebble Count Plots

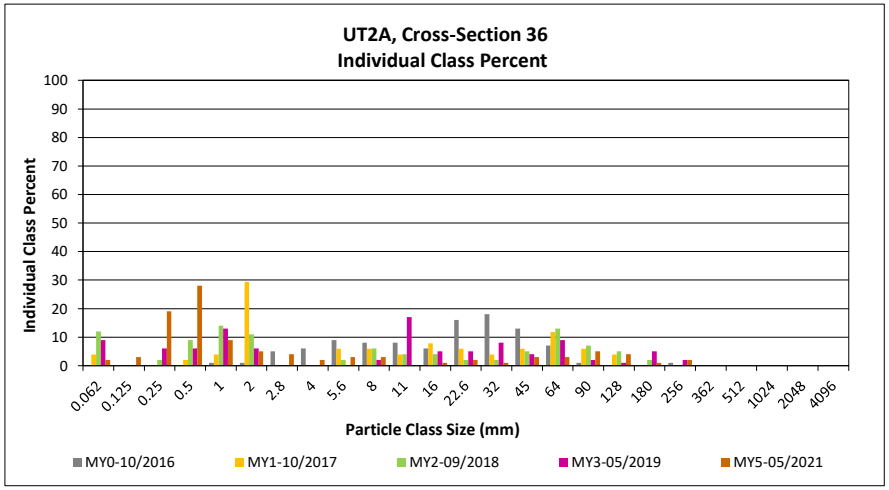
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT2A, Cross-Section 36

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125	3	3	5
	Fine	0.125	0.250	19	19	24
	Medium	0.25	0.50	28	28	52
	Coarse	0.5	1.0	9	9	61
	Very Coarse	1.0	2.0	5	5	66
GRAVEL	Very Fine	2.0	2.8	4	4	70
	Very Fine	2.8	4.0	2	2	72
	Fine	4.0	5.6	3	3	75
	Fine	5.6	8.0	3	3	78
	Medium	8.0	11.0			78
	Medium	11.0	16.0	1	1	79
	Coarse	16.0	22.6	2	2	81
	Coarse	22.6	32	1	1	82
	Very Coarse	32	45	3	3	85
	Very Coarse	45	64	3	3	88
COBBLE	Small	64	90	5	5	93
	Small	90	128	4	4	97
	Large	128	180	1	1	98
	Large	180	256	2	2	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 36	
Channel materials (mm)	
D_{16} =	0.2
D_{35} =	0.3
D_{50} =	0.5
D_{84} =	40.2
D_{95} =	107.3
D_{100} =	256.0





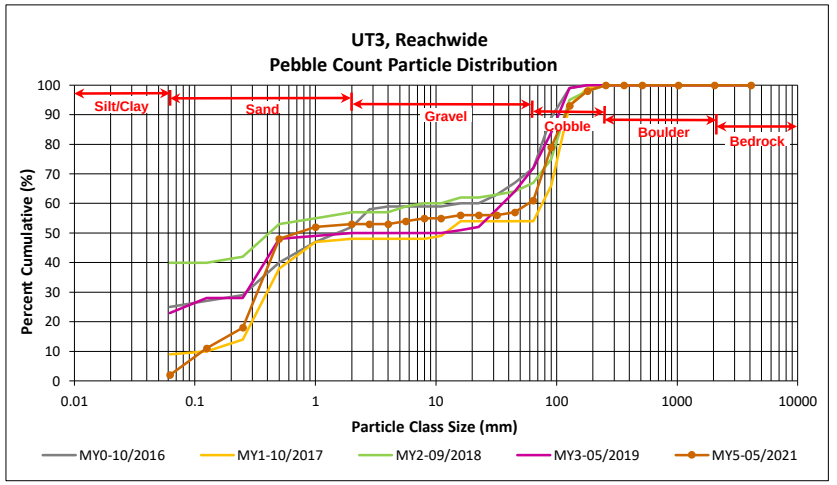
Reachwide and Cross-Section Pebble Count Plots

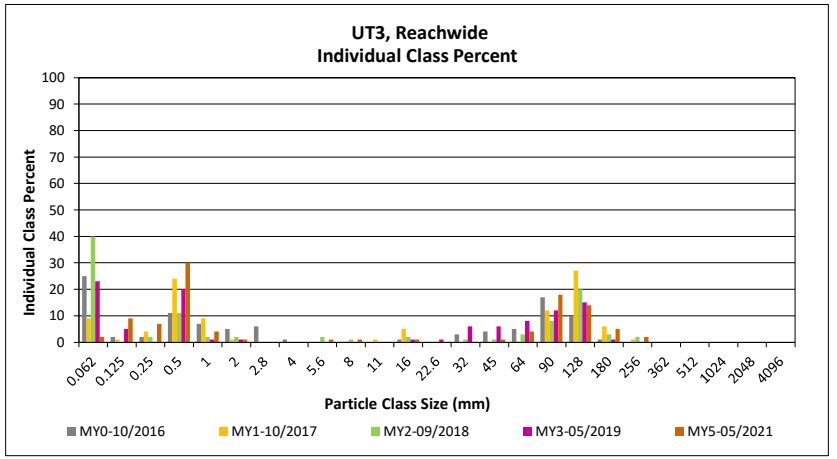
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT3, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062		2	2	2	2
SAND	Very fine	0.062	0.125		9	9	9	11
	Fine	0.125	0.250		7	7	7	18
	Medium	0.25	0.50	2	28	30	30	48
	Coarse	0.5	1.0		4	4	4	52
	Very Coarse	1.0	2.0	1		1	1	53
GRAVEL	Very Fine	2.0	2.8					53
	Very Fine	2.8	4.0					53
	Fine	4.0	5.6	1		1	1	54
	Fine	5.6	8.0	1		1	1	55
	Medium	8.0	11.0					55
	Medium	11.0	16.0	1		1	1	56
	Coarse	16.0	22.6					56
	Coarse	22.6	32					56
	Very Coarse	32	45	1		1	1	57
	Very Coarse	45	64	4		4	4	61
COBBLE	Small	64	90	18		18	18	79
	Small	90	128	14		14	14	93
	Large	128	180	5		5	5	98
	Large	180	256	2		2	2	100
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.21
D_{35} =	0.4
D_{50} =	0.7
D_{84} =	102.1
D_{95} =	146.7
D_{100} =	256.0





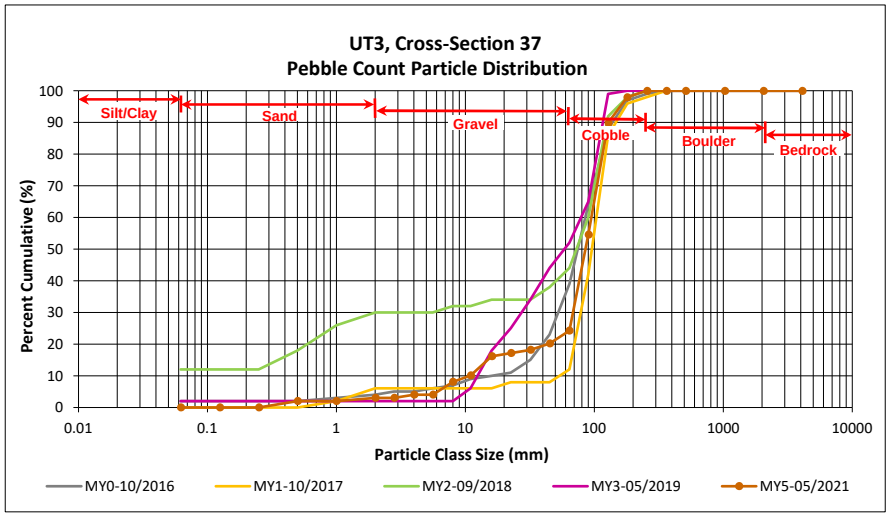
Reachwide and Cross-Section Pebble Count Plots

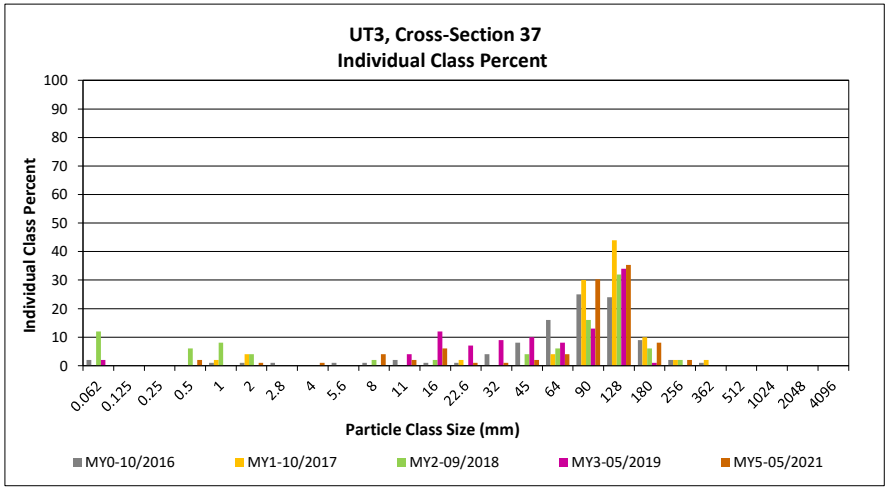
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT3, Cross-Section 37

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	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
	Very Coarse	1.0	2.0	1	1	3
GRAVEL	Very Fine	2.0	2.8			3
	Very Fine	2.8	4.0	1	1	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	6	6	16
	Coarse	16.0	22.6	1	1	17
	Coarse	22.6	32	1	1	18
	Very Coarse	32	45	2	2	20
	Very Coarse	45	64	4	4	24
COBBLE	Small	64	90	30	30	55
	Small	90	128	35	35	90
	Large	128	180	8	8	98
	Large	180	256	2	2	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**99**	**100**	**100**

Cross-Section 37	
Channel materials (mm)	
D_{16} =	15.8
D_{35} =	72.2
D_{50} =	85.5
D_{84} =	120.7
D_{95} =	158.7
D_{100} =	256.0





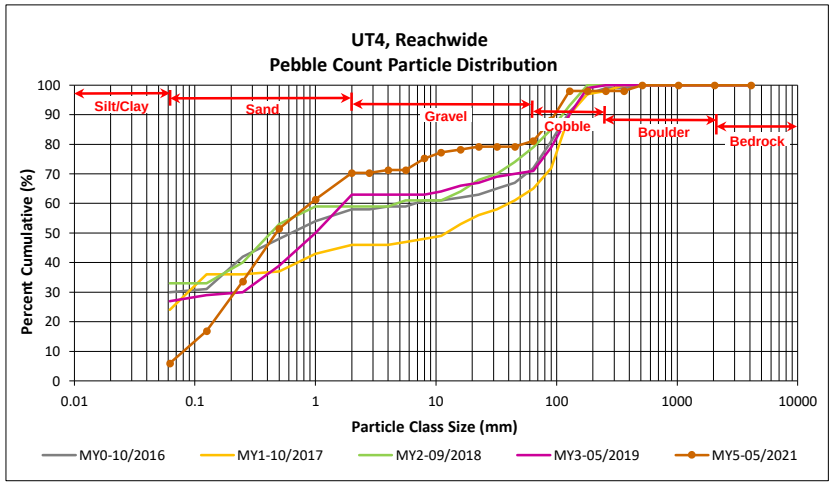
Reachwide and Cross-Section Pebble Count Plots

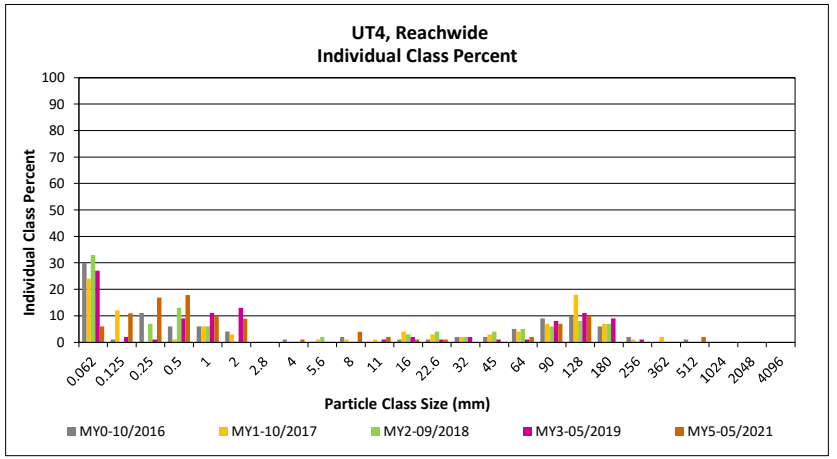
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT4, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	1	5	6	6	6
SAND	Very fine	0.062	0.125	2	9	11	11	17
	Fine	0.125	0.250	1	16	17	17	34
	Medium	0.25	0.50	7	11	18	18	51
	Coarse	0.5	1.0	5	5	10	10	61
	Very Coarse	1.0	2.0	7	2	9	9	70
GRAVEL	Very Fine	2.0	2.8					70
	Very Fine	2.8	4.0		1	1	1	71
	Fine	4.0	5.6					71
	Fine	5.6	8.0	3	1	4	4	75
	Medium	8.0	11.0	1	1	2	2	77
	Medium	11.0	16.0	1		1	1	78
	Coarse	16.0	22.6	1		1	1	79
	Coarse	22.6	32					79
	Very Coarse	32	45					79
	Very Coarse	45	64	2		2	2	81
COBBLE	Small	64	90	7		7	7	88
	Small	90	128	10		10	10	98
	Large	128	180					98
	Large	180	256					98
BOULDER	Small	256	362					98
	Small	362	512	2		2	2	100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**51**	**101**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	0.12
D_{35} =	0.3
D_{50} =	0.5
D_{84} =	73.5
D_{95} =	115.0
D_{100} =	512.0





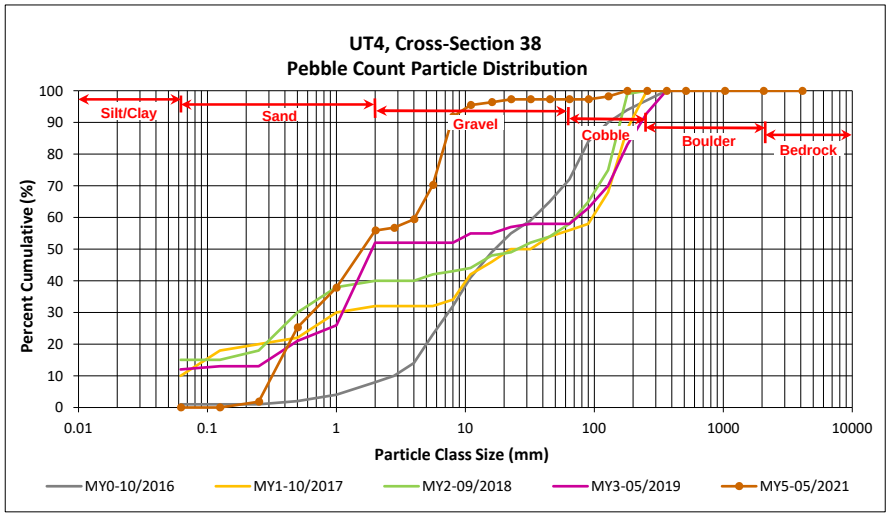
Reachwide and Cross-Section Pebble Count Plots

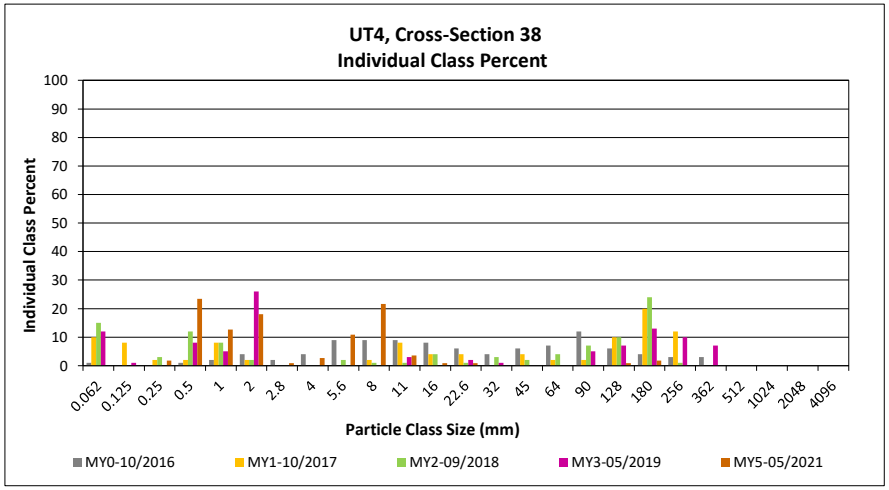
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT4, Cross-Section 38

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250	2	2	2
	Medium	0.25	0.50	26	23	25
	Coarse	0.5	1.0	14	13	38
	Very Coarse	1.0	2.0	20	18	56
GRAVEL	Very Fine	2.0	2.8	1	1	57
	Very Fine	2.8	4.0	3	3	59
	Fine	4.0	5.6	12	11	70
	Fine	5.6	8.0	24	22	92
	Medium	8.0	11.0	4	4	95
	Medium	11.0	16.0	1	1	96
	Coarse	16.0	22.6	1	1	97
	Coarse	22.6	32			97
	Very Coarse	32	45			97
	Very Coarse	45	64			97
COBBLE	Small	64	90			97
	Small	90	128	1	1	98
	Large	128	180	2	2	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**111**	**100**	**100**

Cross-Section 38	
Channel materials (mm)	
D_{16} =	0.4
D_{35} =	0.9
D_{50} =	1.6
D_{84} =	7.0
D_{95} =	10.5
D_{100} =	180.0





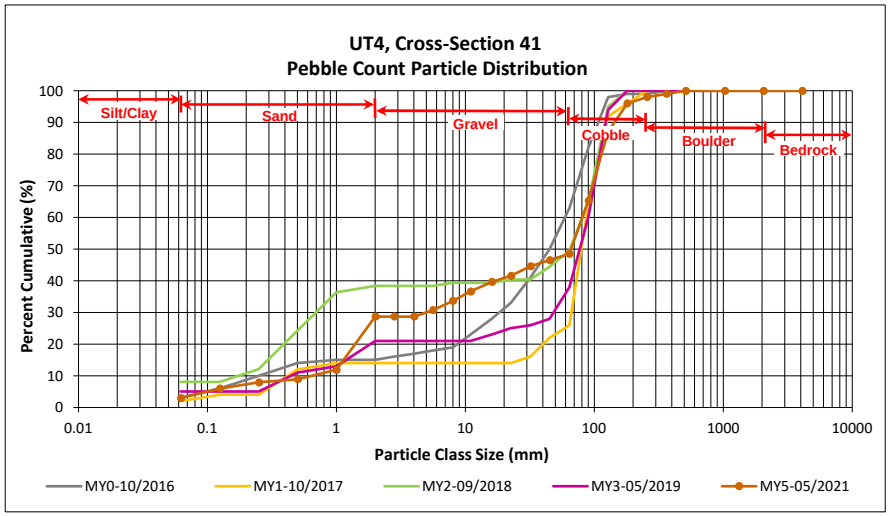
Reachwide and Cross-Section Pebble Count Plots

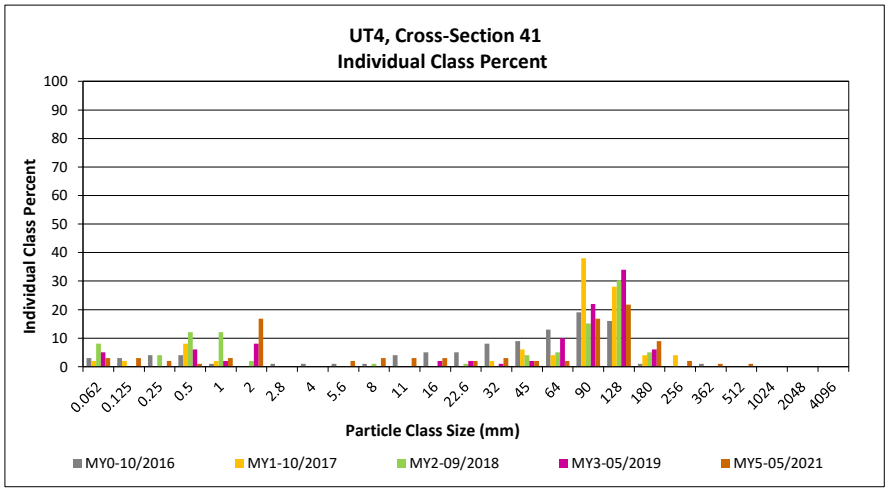
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT4, Cross-Section 41

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	3	3	3
SAND	Very fine	0.062	0.125	3	3	6
	Fine	0.125	0.250	2	2	8
	Medium	0.25	0.50	1	1	9
	Coarse	0.5	1.0	3	3	12
	Very Coarse	1.0	2.0	17	17	29
GRAVEL	Very Fine	2.0	2.8			29
	Very Fine	2.8	4.0			29
	Fine	4.0	5.6	2	2	31
	Fine	5.6	8.0	3	3	34
	Medium	8.0	11.0	3	3	37
	Medium	11.0	16.0	3	3	40
	Coarse	16.0	22.6	2	2	42
	Coarse	22.6	32	3	3	45
	Very Coarse	32	45	2	2	47
	Very Coarse	45	64	2	2	49
COBBLE	Small	64	90	17	17	65
	Small	90	128	22	22	87
	Large	128	180	9	9	96
	Large	180	256	2	2	98
BOULDER	Small	256	362	1	1	99
	Small	362	512	1	1	100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**101**	**100**	**100**

Cross-Section 41	
Channel materials (mm)	
D_{16} =	1.2
D_{35} =	9.2
D_{50} =	66.0
D_{84} =	121.7
D_{95} =	173.0
D_{100} =	512.0





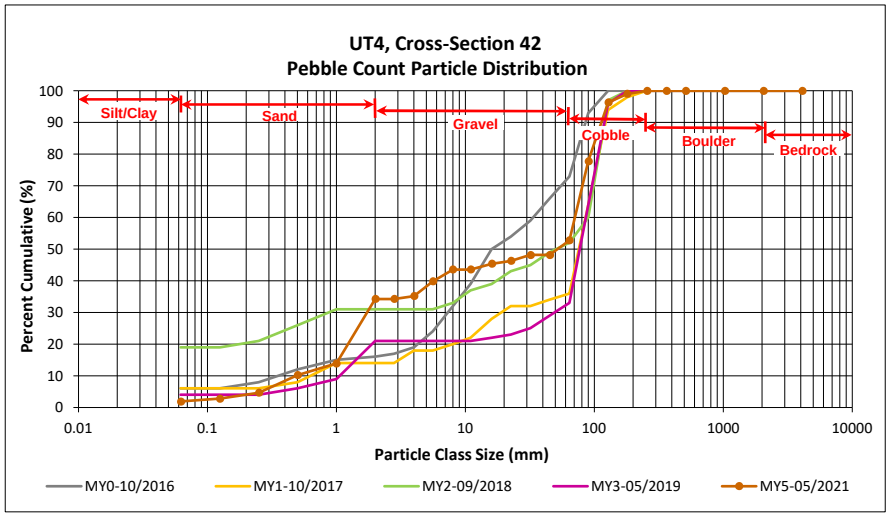
Reachwide and Cross-Section Pebble Count Plots

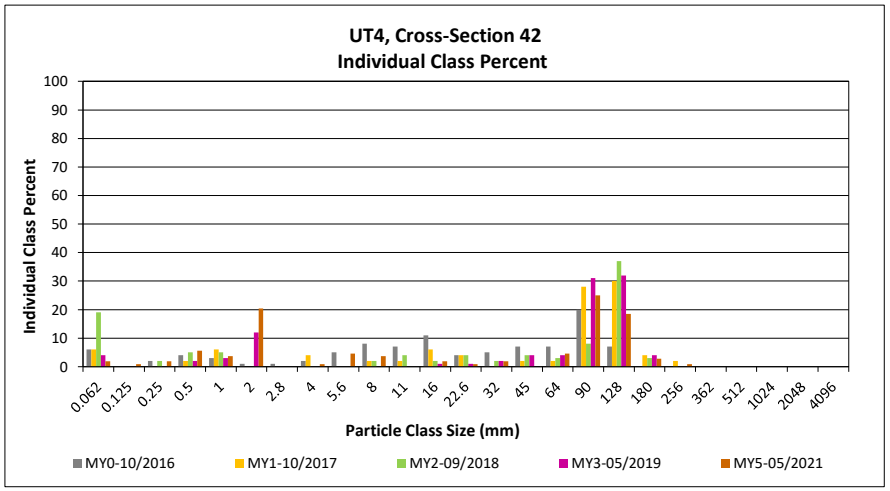
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT4, Cross-Section 42

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	Very fine	0.062	0.125	1	1	3
	Fine	0.125	0.250	2	2	5
	Medium	0.25	0.50	6	6	10
	Coarse	0.5	1.0	4	4	14
	Very Coarse	1.0	2.0	22	20	34
GRAVEL	Very Fine	2.0	2.8			34
	Very Fine	2.8	4.0	1	1	35
	Fine	4.0	5.6	5	5	40
	Fine	5.6	8.0	4	4	44
	Medium	8.0	11.0			44
	Medium	11.0	16.0	2	2	45
	Coarse	16.0	22.6	1	1	46
	Coarse	22.6	32	2	2	48
	Very Coarse	32	45			48
	Very Coarse	45	64	5	5	53
COBBLE	Small	64	90	27	25	78
	Small	90	128	20	19	96
	Large	128	180	3	3	99
	Large	180	256	1	1	100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**108**	**100**	**100**

Cross-Section 43	
Channel materials (mm)	
D_{16} =	1.1
D_{35} =	3.7
D_{50} =	51.8
D_{84} =	101.3
D_{95} =	124.9
D_{100} =	256.0





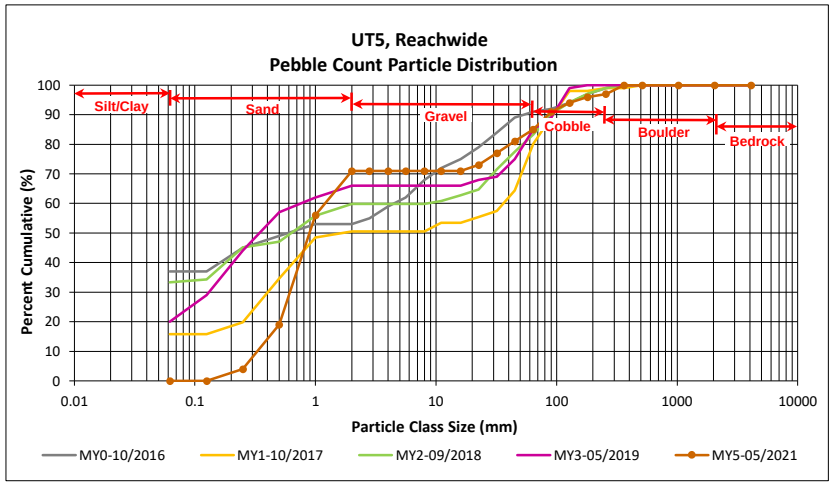
Reachwide and Cross-Section Pebble Count Plots

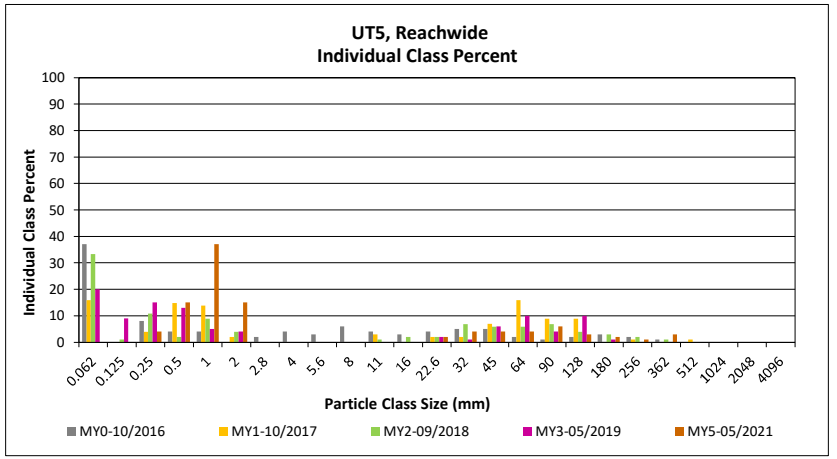
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT5, Reachwide

Particle Class		Diameter (mm)		Particle Count			Reach Summary	
		min	max	Riffle	Pool	Total	Class Percentage	Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	18	20	20	20
SAND	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
GRAVEL	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
COBBLE	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
BOULDER	Small	256	362					100
	Small	362	512					100
	Medium	512	1024					100
	Large/Very Large	1024	2048					100
BEDROCK	Bedrock	2048	>2048					100
			Total	**50**	**50**	**100**	**100**	**100**

Reachwide	
Channel materials (mm)	
D_{16} =	Silt/Clay
D_{35} =	0.2
D_{50} =	0.3
D_{84} =	61.8
D_{95} =	111.2
D_{100} =	180.0





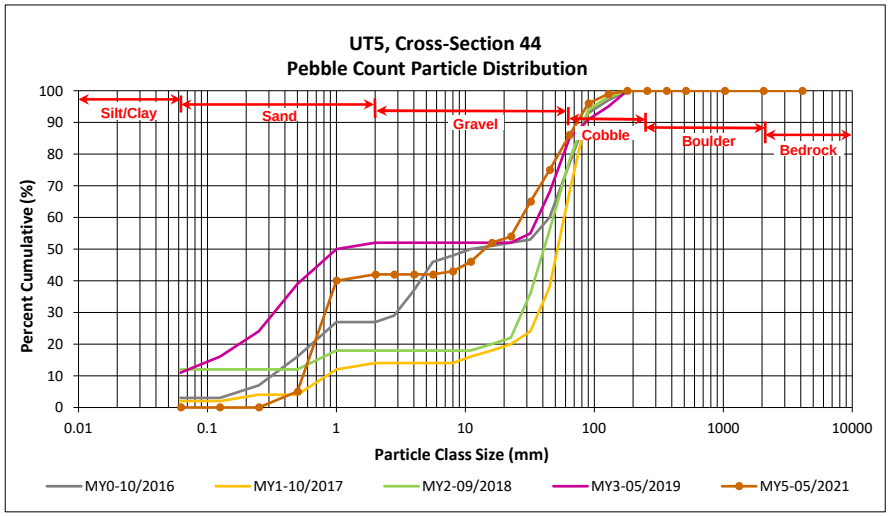
Reachwide and Cross-Section Pebble Count Plots

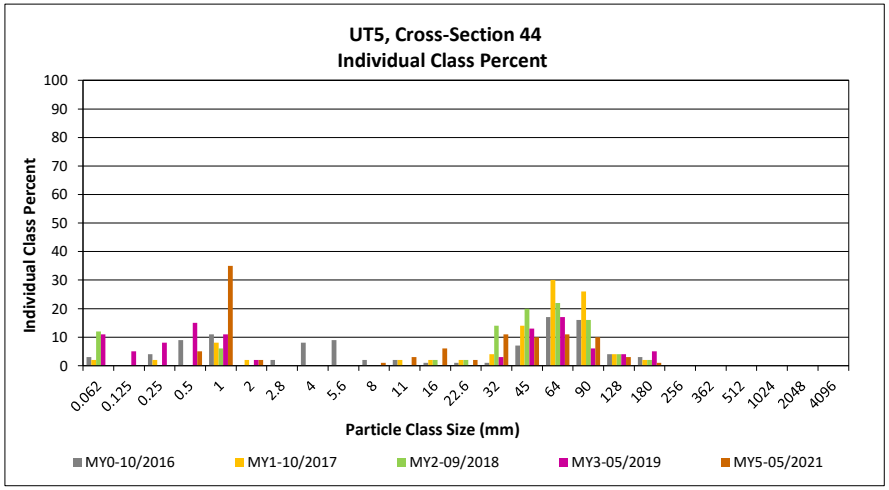
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT5, Cross-Section 44

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	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	35	35	40
	Very Coarse	1.0	2.0	2	2	42
GRAVEL	Very Fine	2.0	2.8			42
	Very Fine	2.8	4.0			42
	Fine	4.0	5.6			42
	Fine	5.6	8.0	1	1	43
	Medium	8.0	11.0	3	3	46
	Medium	11.0	16.0	6	6	52
	Coarse	16.0	22.6	2	2	54
	Coarse	22.6	32	11	11	65
	Very Coarse	32	45	10	10	75
	Very Coarse	45	64	11	11	86
COBBLE	Small	64	90	10	10	96
	Small	90	128	3	3	99
	Large	128	180	1	1	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 44	
Channel materials (mm)	
D_{16} =	0.6
D_{35} =	0.9
D_{50} =	14.1
D_{84} =	60.0
D_{95} =	87.0
D_{100} =	180.0





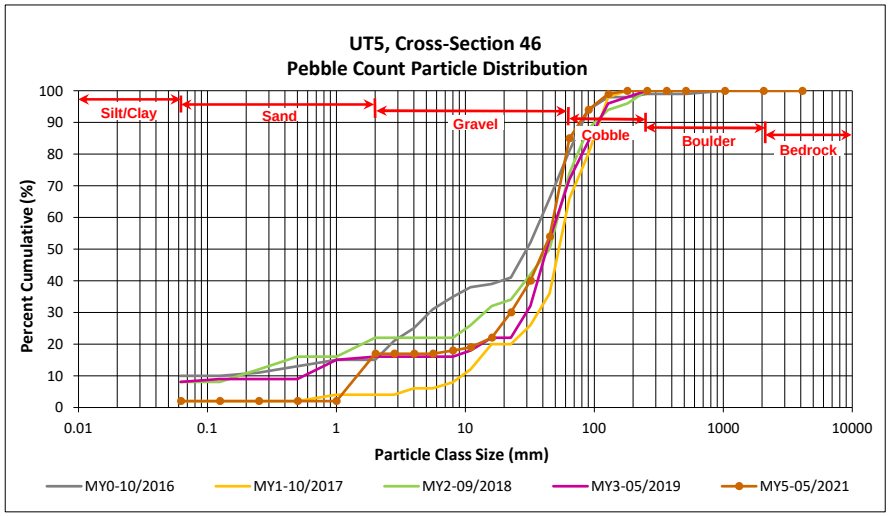
Reachwide and Cross-Section Pebble Count Plots

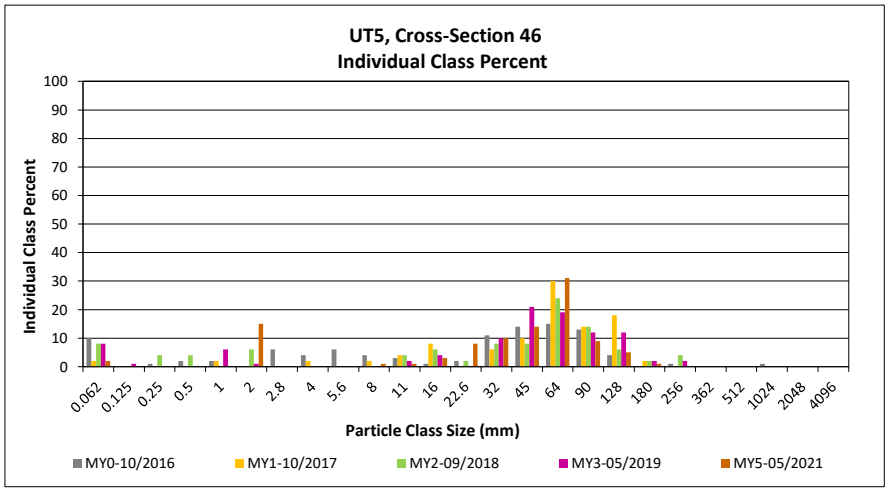
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT5, Cross-Section 46

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062	2	2	2
SAND	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	15	15	17
GRAVEL	Very Fine	2.0	2.8			17
	Very Fine	2.8	4.0			17
	Fine	4.0	5.6			17
	Fine	5.6	8.0	1	1	18
	Medium	8.0	11.0	1	1	19
	Medium	11.0	16.0	3	3	22
	Coarse	16.0	22.6	8	8	30
	Coarse	22.6	32	10	10	40
	Very Coarse	32	45	14	14	54
	Very Coarse	45	64	31	31	85
COBBLE	Small	64	90	9	9	94
	Small	90	128	5	5	99
	Large	128	180	1	1	100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**100**	**100**	**100**

Cross-Section 46	
Channel materials (mm)	
D_{16} =	1.9
D_{35} =	26.9
D_{50} =	40.8
D_{84} =	63.3
D_{95} =	96.6
D_{100} =	180.0





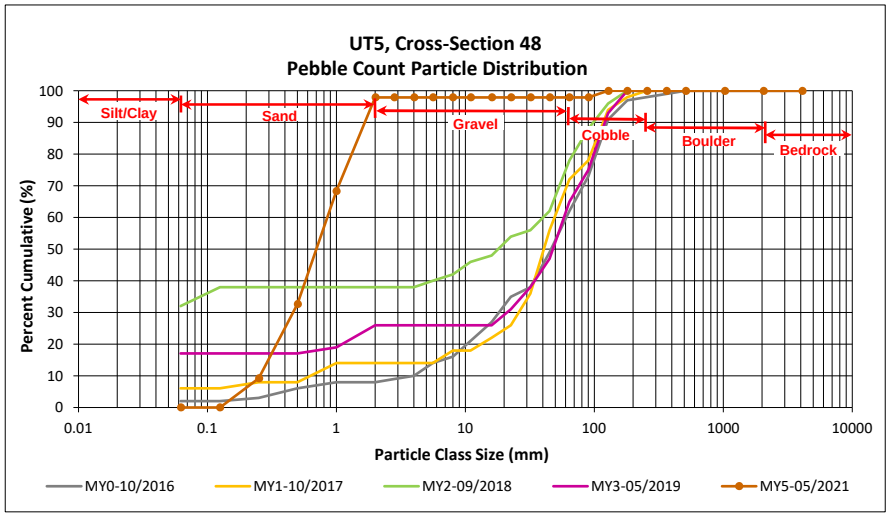
Reachwide and Cross-Section Pebble Count Plots

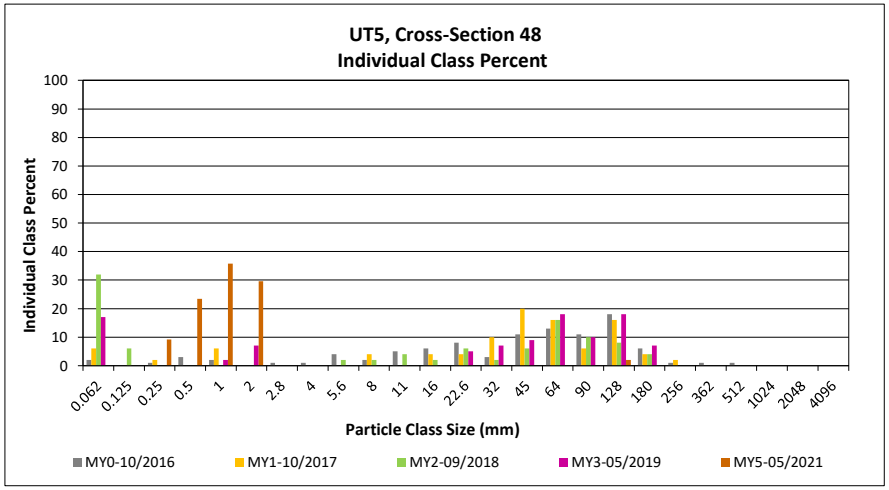
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

UT5, Cross-Section 48

Particle Class		Diameter (mm) min	Diameter (mm) max	Riffle 100-Count	Summary: Class Percentage	Summary: Percent Cumulative
SILT/CLAY	Silt/Clay	0.000	0.062			0
SAND	Very fine	0.062	0.125			0
	Fine	0.125	0.250	9	9	9
	Medium	0.25	0.50	23	23	33
	Coarse	0.5	1.0	35	36	68
	Very Coarse	1.0	2.0	29	30	98
GRAVEL	Very Fine	2.0	2.8			98
	Very Fine	2.8	4.0			98
	Fine	4.0	5.6			98
	Fine	5.6	8.0			98
	Medium	8.0	11.0			98
	Medium	11.0	16.0			98
	Coarse	16.0	22.6			98
	Coarse	22.6	32			98
	Very Coarse	32	45			98
	Very Coarse	45	64			98
COBBLE	Small	64	90			98
	Small	90	128	2	2	100
	Large	128	180			100
	Large	180	256			100
BOULDER	Small	256	362			100
	Small	362	512			100
	Medium	512	1024			100
	Large/Very Large	1024	2048			100
BEDROCK	Bedrock	2048	>2048			100
			Total	**98**	**100**	**100**

Cross-Section 48	
Channel materials (mm)	
D_{16} =	0.31
D_{35} =	0.5
D_{50} =	0.7
D_{84} =	1.4
D_{95} =	1.9
D_{100} =	128.0





APPENDIX 5. Hydrology Summary Data and Plot

Table 13a. Verification of Bankfull Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Reach	Monitoring Year	Date of Occurrence	Method
Candy Creek Reach 2 (XS14)	MY1	None	Automated Crest Gage
	MY2	10/11/2018	
	MY3	1/21/2019	
		1/30/2019	
		2/23/2019	
		3/7/2019	
	MY4	2/6/2020	
		5/21/2020	
	MY5	None	
Candy Creek Reach 4 (XS23)	MY1	6/19/2017	
	MY2	7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	2/23/2019	
	MY4	2/6/2020	
		5/21/2020	
	MY5	7/24/2021	
		8/14/2021	
UT1C (XS27)	MY1	None	
	MY2	2/9/2018	
		3/9/2018	
		10/22/2018	
	MY3	1/10/2019	
		1/16/2019	
		1/21/2019	
		1/31/2019	
	MY4	1/22/2020	
	MY5	7/24/2021	
		8/14/2021	
UT2 (XS33)	MY1	None	
	MY2	1/27/2018	
		7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	1/11/2019	
		1/21/2019	
		1/26/2019	
		1/30/2019	
	MY4	2/6/2020	
		5/21/2020	
	MY5	7/24/2021	
		8/14/2021	

Table 13b. Verification of Bankfull Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

Reach	Monitoring Year	Date of Occurrence	Method
UT2A (XS36)	MY1	None	Automated Crest Gage
	MY2	2/9/2018	
	MY3	1/21/2019	
		1/27/2019	
		1/30/2019	
	MY4	5/21/2020	
	MY5	7/24-28/2021	
UT3 (XS37)	MY1	None	
	MY2	10/11/2018	
	MY3	1/21/2019	
	MY4	None	
	MY5	10/19/2021	Manual Crest Gage & Visual Documentation
UT4 (XS42)	MY1	None	Automated Crest Gage
	MY2	1/31/2018	
		7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	1/21/2019	
		2/23/2019	
		6/8/2019	
	MY4	2/6/2020	
		2/22/2020	
		5/21/2020	
	MY5	7/24-25/2021	
		8/14/2021	
		9/22/2021	

Table 13c. Verification of Bankfull Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

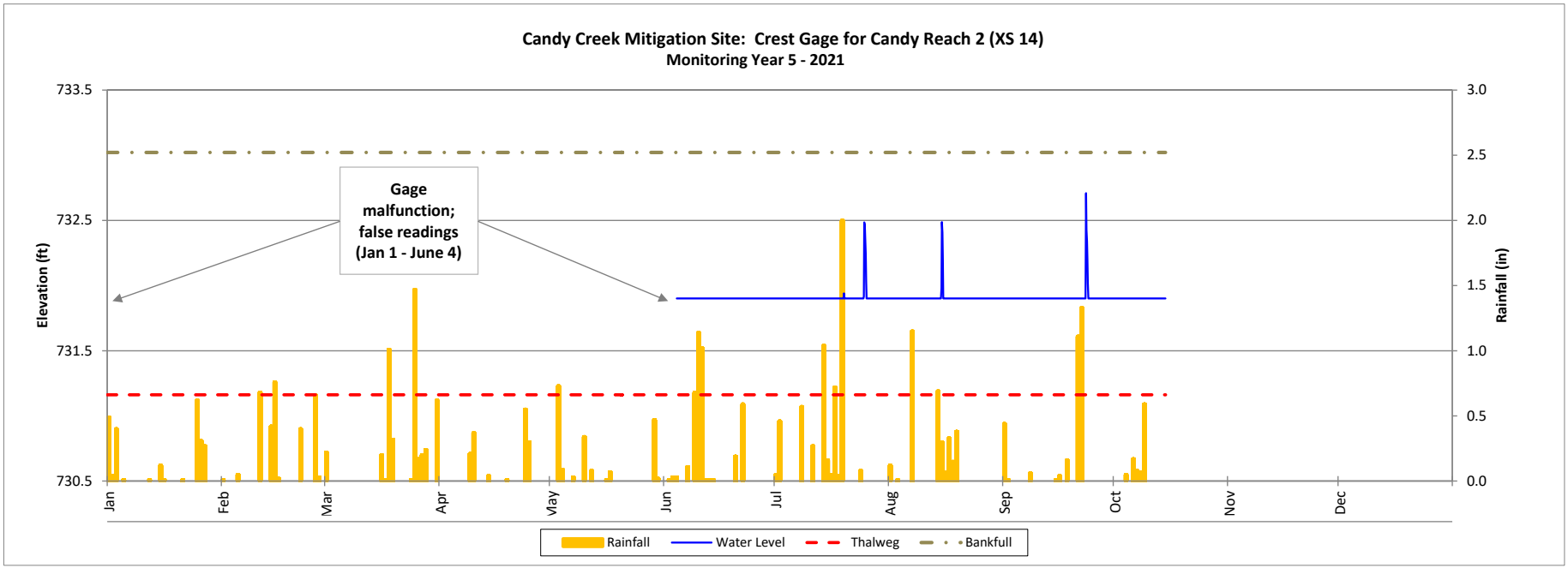
Reach	Monitoring Year	Date of Occurrence	Method
UT5 (XS48)	MY1	4/24/2017	Automated Crest Gage
		6/19/2017	
	MY2	1/31/2018	
		2/6/2018	
		3/9/2018	
		7/30/2018	
		9/17/2018	
		10/11/2018	
	MY3	1/21/2019	
		1/26/2019	
		1/30/2019	
		2/23/2019	
		8/8/2019	
	MY4	10/31/2019	
		2/6/2020	
		5/20/2020	
		6/5/2020	
		6/8/2020	
		6/11/2020	
	MY5	7/19/2021	
		7/24/2021	
		8/14/2021	
		9/22/2021	

HYDROLOGY PHOTOGRAPHS

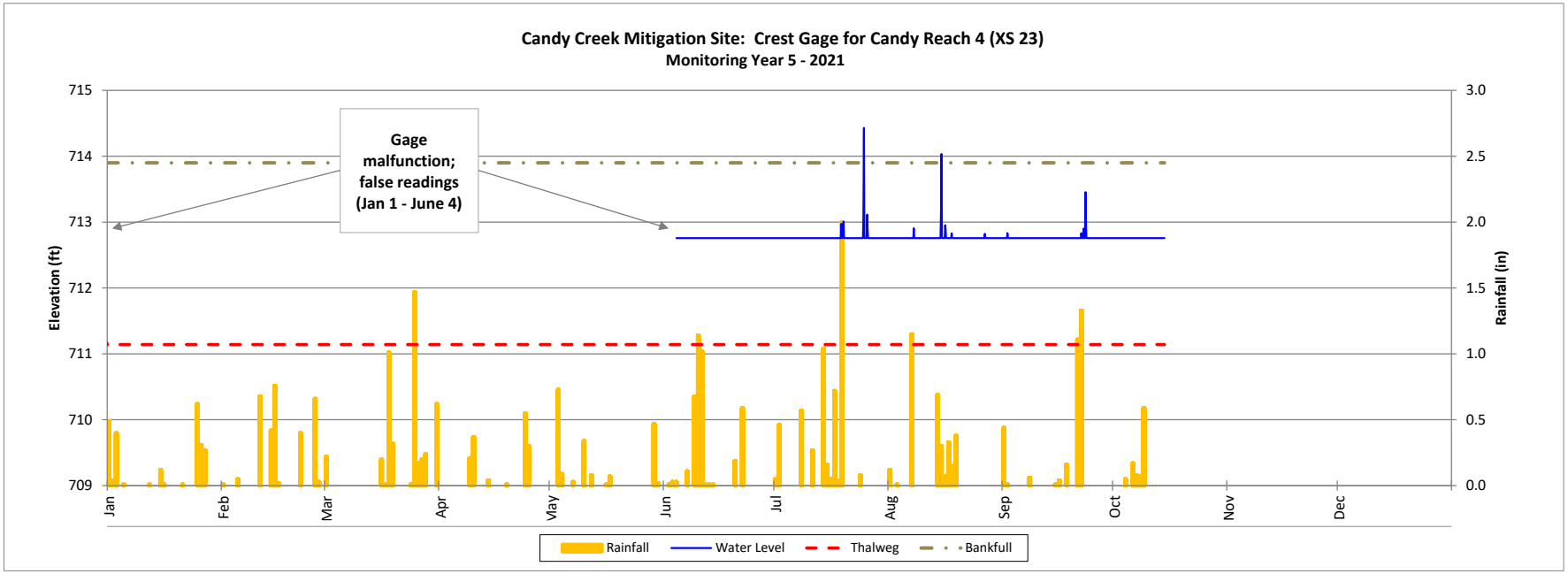
Monitoring Year 5

	
UT3 - Bankfull event recorded with Manual Crest Gage (Sta. 413+00) (10/19/2021)	UT3 - Bankfull event recorded from recent sand deposition on floodplain (Sta. 413+00) (10/19/2021)

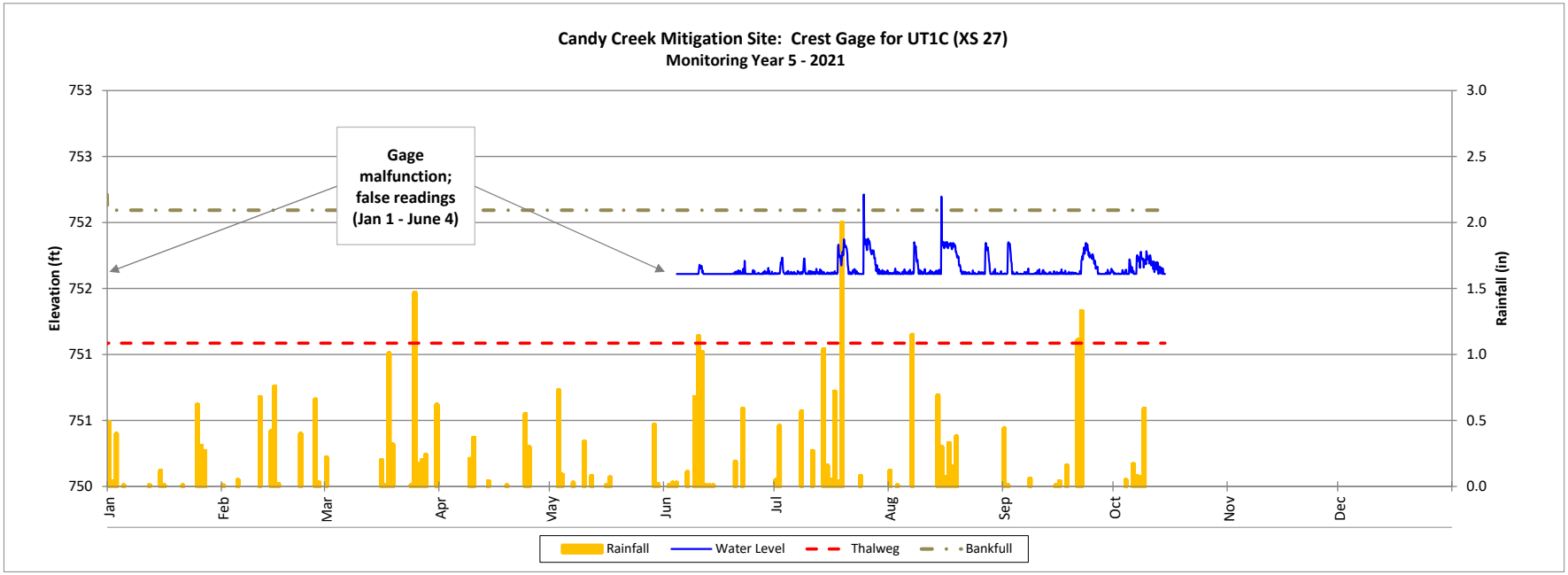
Recorded In-Stream Flow Events
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021



Recorded In-Stream Flow Events
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

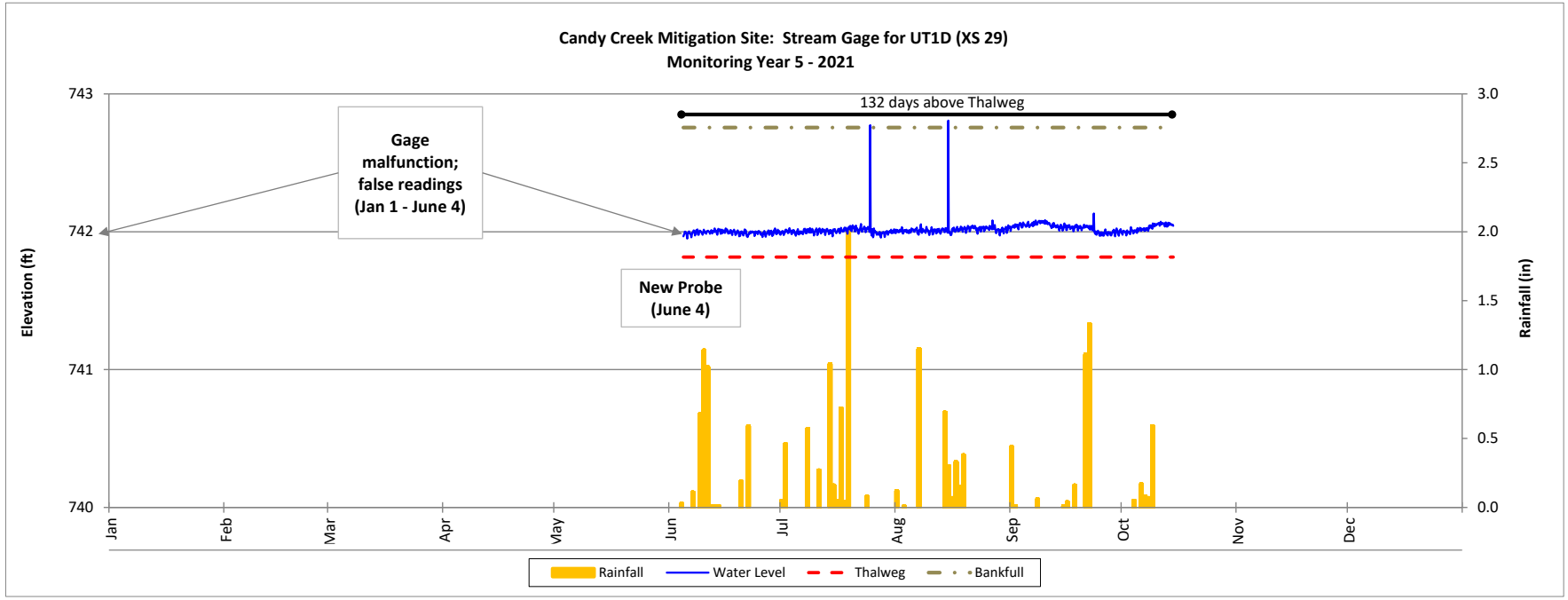


Recorded In-Stream Flow Events
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

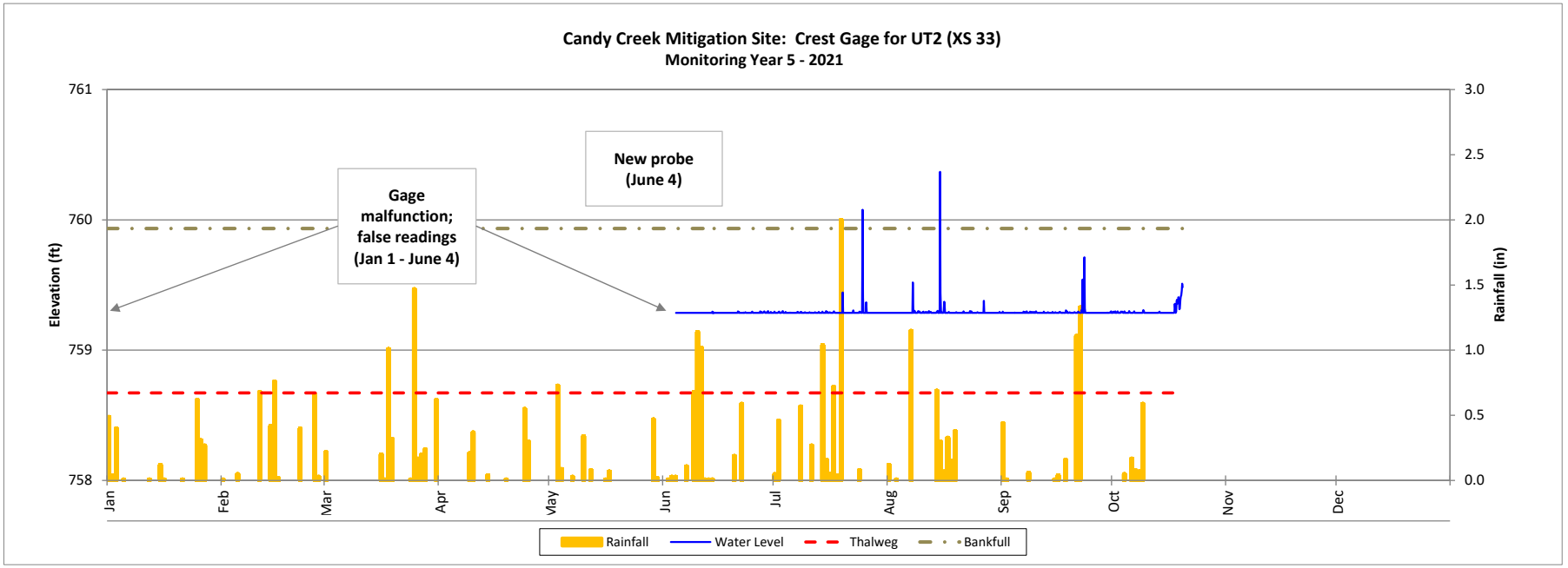


Recorded In-Stream Flow Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

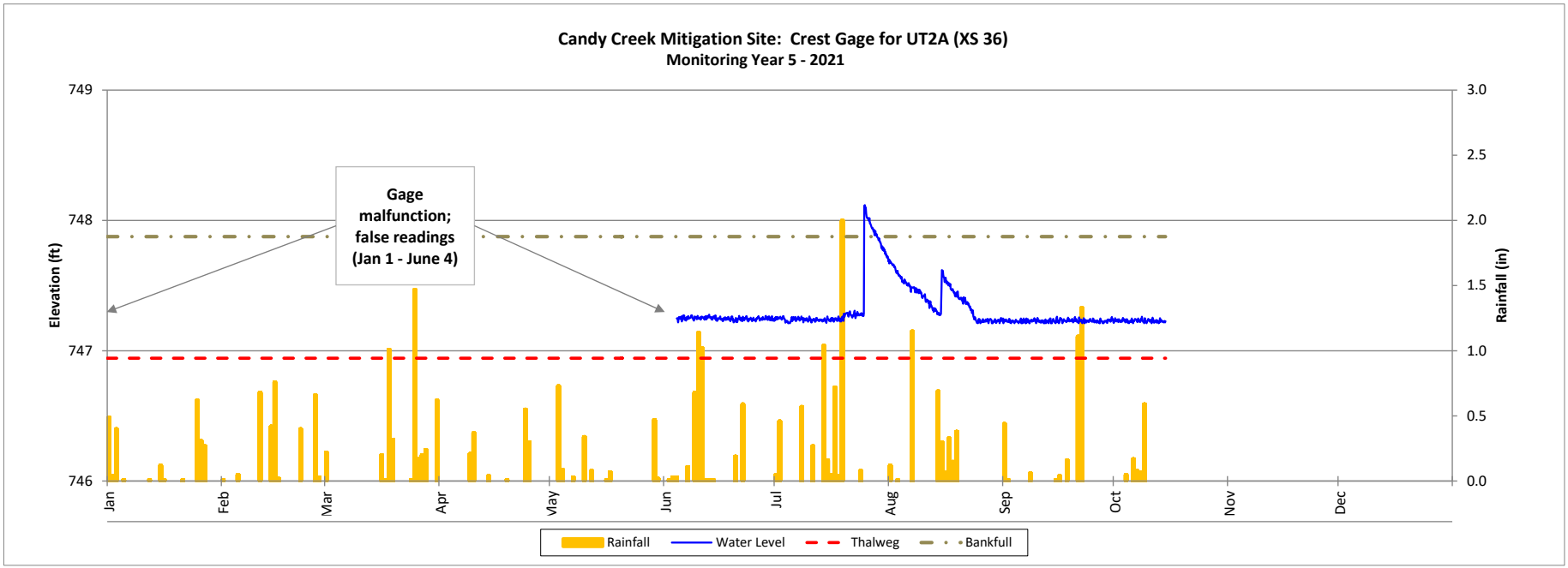


Recorded In-Stream Flow Events
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021



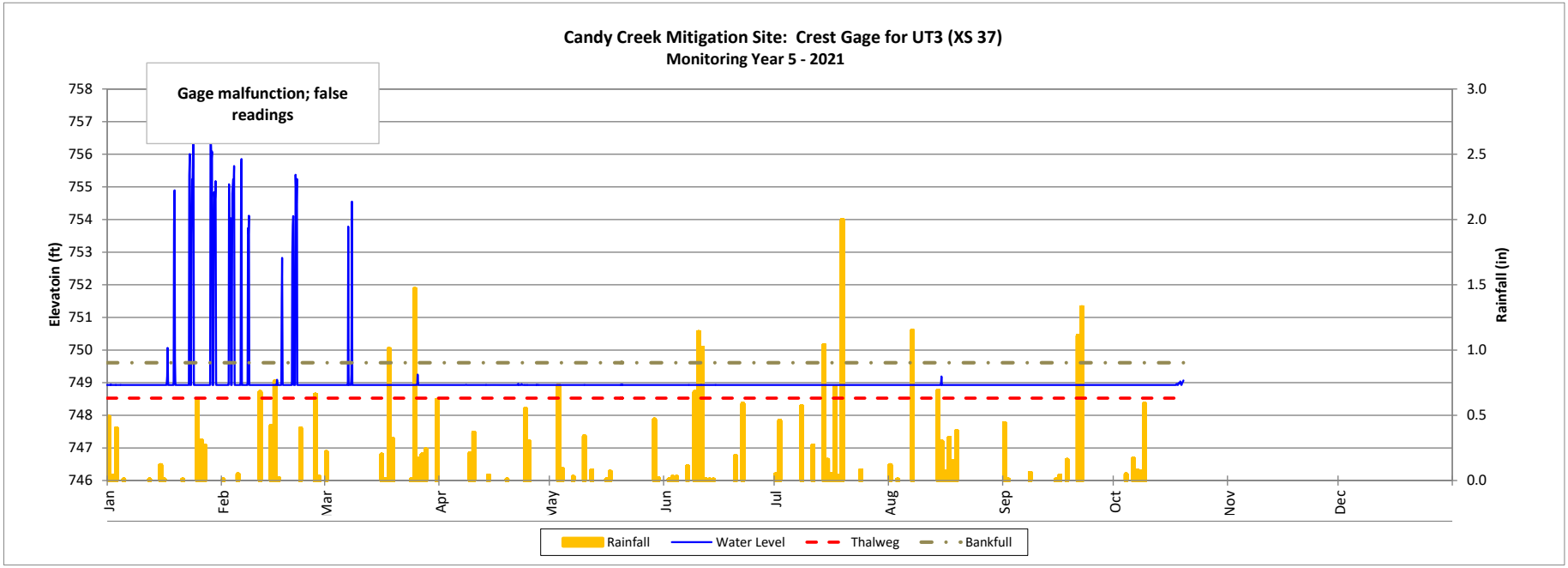
Recorded In-Stream Flow Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021



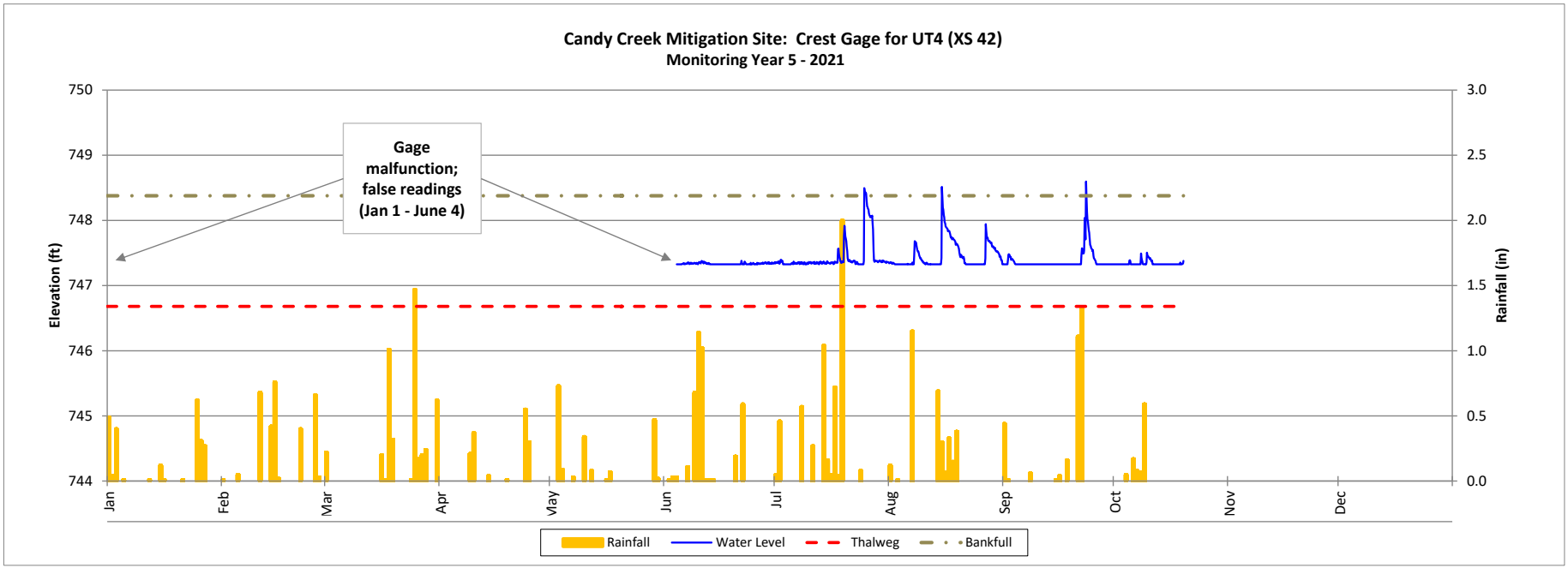
Recorded In-Stream Flow Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021



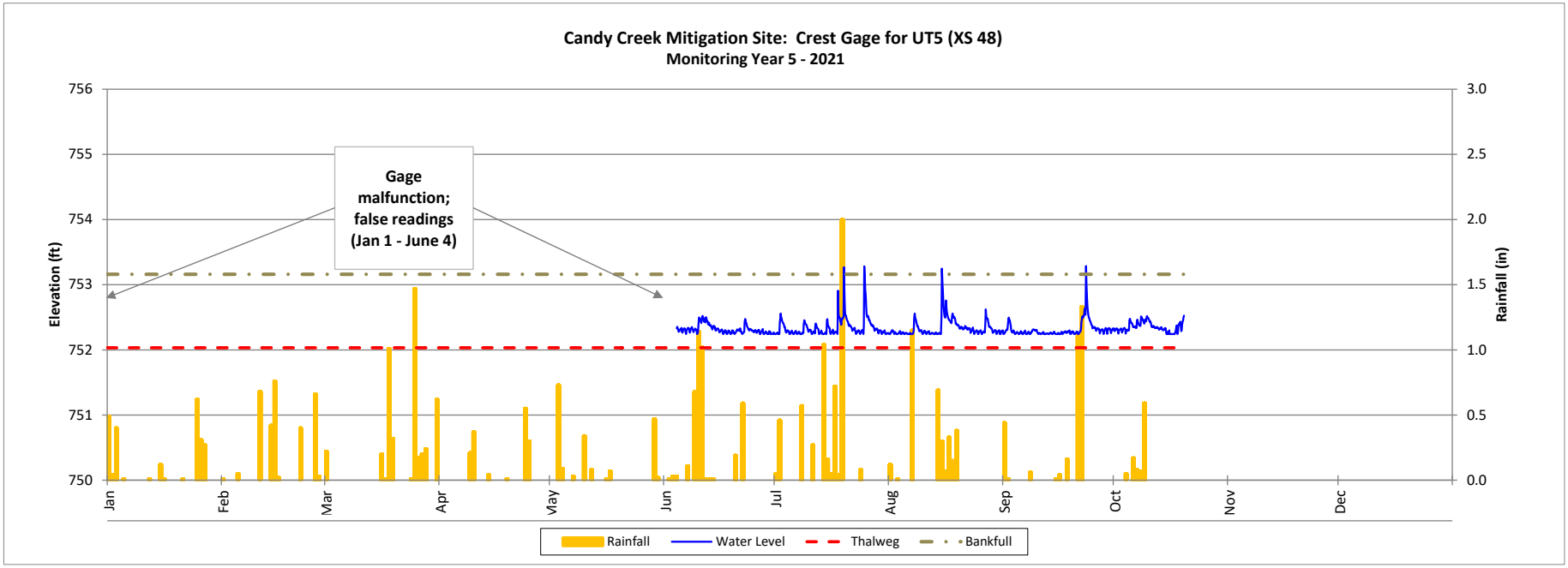
*Due to the large spikes that do not seem to correlate with rainfall amounts, but occurred only during the winter months, Wildlands pulled air temperature data for the surrounding area and noticed a correlation between the spikes and when the air temperatures dropped below freezing. Therefore, Wildlands contacted In-situ on 11.18.21 to gain some technical insight on these findings. A Technical Support Specialist, Kaylie Haynes, at In-situ confirmed that these spikes are likely false readings due to freezing water around the pressure diaphram in the gage. She referred us to specification sheet for the pressure transducers, Rugged TROLL(R) 100 Data Loggers, that Wildlands commonly uses in the field (2021). Therefore, Wildlands ignored the bankfull event spikes recorded from 01.01.21 - 04.01.21, when air temperature is more likely to fall below freezing, and only included bankfull events recorded between 04.01.21 - 10.31.21 when air temperature is more likely to remain above freezing and that positively correlated with rainfall amounts from the nearest rainfall gage. Moving forward, Wildlands will check the calibration on the gages using a known depths of water. If the gage is recording correctly, it will be reinstalled for use in 2022. If the gage is not recording correctly, Wildlands will refrain from using the gage unless it can be refurbished by In-situ, upon which Wildlands will check the calibration before reinstalling it for use during 2022.

Recorded In-Stream Flow Events
Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021



Recorded In-Stream Flow Events

Candy Creek Mitigation Site
DMS Project No. 96315
Monitoring Year 5 - 2021

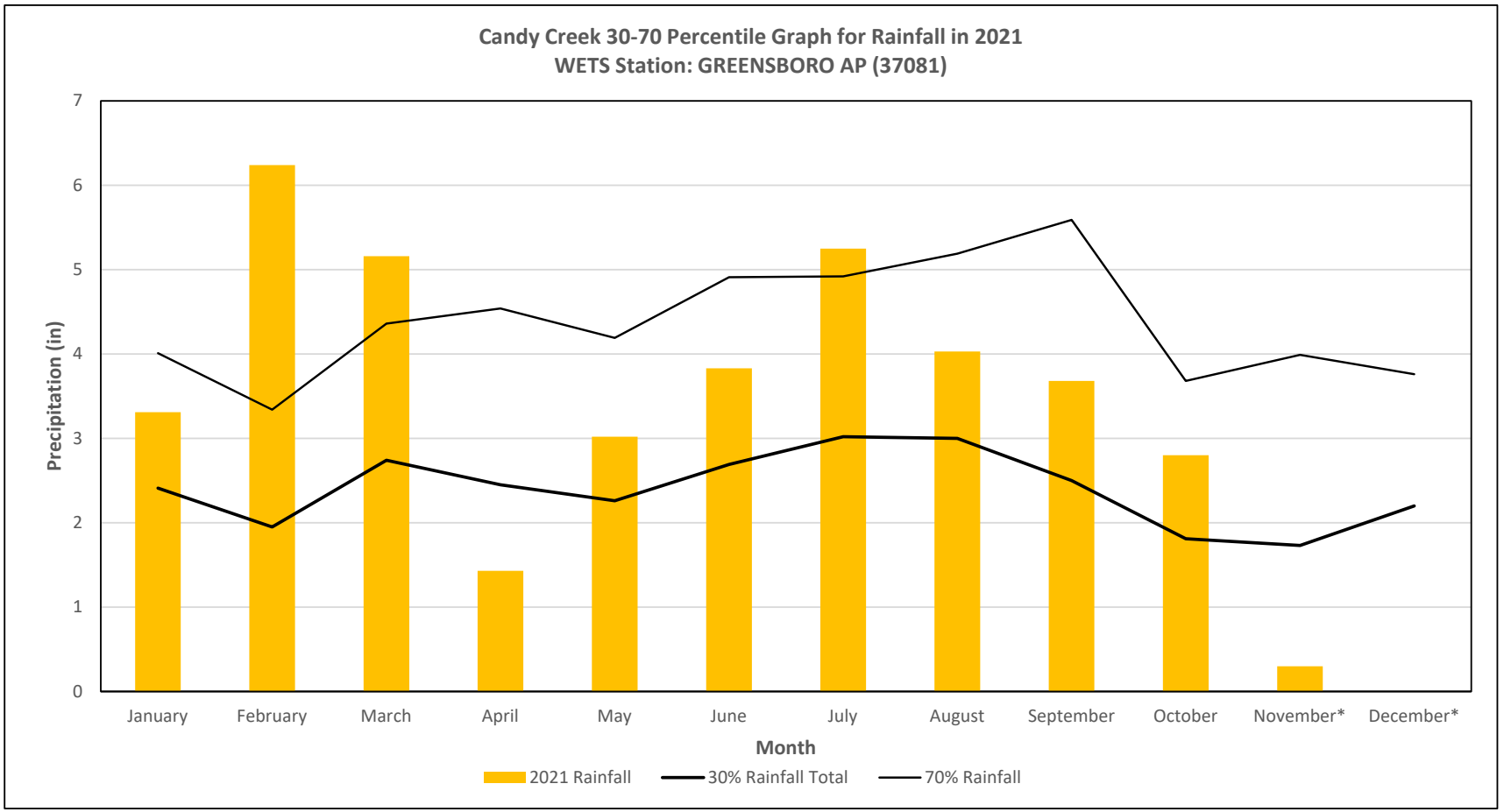


Monthly Rainfall Data

Candy Creek Mitigation Site

DMS Project No. 96315

Monitoring Year 5 - 2021



*2021 rainfall totals as of 11/29/2021

Data collected from WETS Station: GREENSBORO AP (37081); percentiles based on 30-yr climate normal (1991-2020)

APPENDIX 6. Correspondence

WILDLANDS ENGINEERING

MEETING MINUTES

MEETING: IRT Credit Release Site Walk (MY4)
Candy Creek Mitigation Site

MEETING DATE: July 7, 2021

LOCATION: Browns Summit, NC

Participants:

- Aaron Earley, Wildlands Project Manager
- Andrew Radecki, Wildlands Stewardship Lead
- Erin Davis, NC IRT for DWR
- Jeff Turner, Wildlands Monitoring Lead
- John Hutton, Wildlands Principal
- Kelly Phillips, NC DMS Project Manager
- Kristi Suggs, Wildlands Monitoring Supervisor
- Lindsay Crocker, NC DMS Eastern Regional Supervisor
- Melonie Allen, NC DMS Closeout & Credit Release Coordinator
- Olivia Munzer, NC IRT for WRC Western Piedmont Habitat Conservation Coordinator

1. Met at the Hopkins Road crossing between Candy R2 and R3.
2. Introductions
3. Walked to the encroachment area of Candy R3 (~STA149+50)
    a. The area was evidently not being mowed as the grass was tall.
    b. Tree and/or shrub plantings should be scheduled for this winter.
4. Walked downstream along Candy R3
    a. Erosion along the inside bend of a pool (~STA150+00)
        i. Well vegetated and naturally stabilized. It is developing into more of a point bar. IRT agreed that this area was no longer of concern.
    b. Erosion along outer bend of a pool (~STA151+50) where stream repair work is planned for the fall/winter of 2021.
        i. Discussed installing a brush toe and perhaps some live stakes. It was thought that this might also help allow for a better bar development on the inside bend.
5. Walked to UT1D where there are a series of failed structures that are piping underneath
    a. Piping structures (~STA~253+00); repair work is also planned for the same period of the fall/winter of 2021.

   i. Suspected cause is the increased elevation change where the flatter headwaters ties into the lower elevation of the main channel. The steeper grade likely undercut the structures.
   ii. No main concerns were raised.

6. For #4b and #5a, IRT was concerned about access to conduct the repairs so that vegetation damage would be minimized during the repairs.
   a. WEI noted that the site would be accessed by the internal crossing located just downstream of UT1D.
   b. It was also discussed at the end of the meeting that if the repair work is completed after the current monitoring year (MY5) report has been submitted then the repair items should be highlighted in a photolog and sent to DMS for inclusion into the monitoring report prior to the credit release meeting as there will likely be a discussion about it. The work is planned for the fall/winter so would most likely occur during MY6 and be submitted with the MY6 report.
7. There is a dead snag along Candy R3 that needs to be monitored. It is somewhat near a neighbor's structure for which it could possibly damage if it were to fall.
8. Walked upstream to Candy R2.
   a. Looked at manual repair area from 2019/2020. Herbaceous vegetation was well established and was obscuring any substantial view of the bank. No concerns were raised.
9. Walked to UT2.
   a. Looked at the bare area along UT2 R2 (~STA315+00); discussed giving one more attempted treatment to improve the bare area and keeping the lespedeza at bay but it is a minimal problem given the total area of the project and because there are still trees both along the fence line and the stream in that area.
   b. Looked at the area where the dam was removed (~STA310+00-311+00)
      i. No concerns were raised. The process of removing the dam constructing the channel in the pond muck was discussed. It is still maintaining a single-thread channel.
10. Drove upstream to Candy R1 and UT5.
11. Walked part of UT5 (~STA604+00-608+00).
   a. The aggradation on this channel and how to report it was discussed in detail. The main take away is that the aggradation and sedimentation in the channel that was observed was not negatively impacting the overall structure or function of the stream.
   b. The sedimentation was mostly within the banks, but some was also on the floodplain. Its structure was coarse sand. The source is suspected to have come from off-site as no erosive areas have been observed within the easement. There are several farm ponds upstream of the project (above UT5-preservation) that drain a large agricultural tract and could have provided the sediment load, as could have an overflowing or breached pond dam (although no direct source has been confirmed).
   c. For the effects on the stream, it was noted that while the pools are filling with some sand, the stream is functioning more like a sand-bed stream. The pools are present but shallow, and the sediment is not collecting or burying the riffles as noted by the macroinvertebrates present today on the riffle substrate.
   d. It was discussed how this stream is geographically positioned in a transitional area of the piedmont and the slate belt and that some watersheds have soils with a greater

sand load. The sand load in the watershed was not expected during the Mitigation Plan stage but isn't unexpected given the geographic location.

e. How to report the aggradation changes was discussed. The official DMS guidance should be followed; however, the following ideas were mentioned and could be considered if given approval:
    i. Getting photographs early in the year (prior to leaf-out) would be beneficial.
    ii. Survey is still desired later in the year to capture changes that occurred during the monitoring year, but it was noted that even if the survey occurs early, the profile will still capture 12 months of change from the last survey period.
    iii. Using a 360-camera is an idea to show the streams, although the vegetation would be a problem. Using a story map and drones are also ideas, but the latter are better for early projects, or showing vegetation change from year to year. This idea may not be an option for this project, especially within the next few years.

12. The general idea was that the aggradation should continue to be shown and reported, and it should be discussed in the narrative of the text. (It was noted that any area of concern should be discussed in the narrative.) However, the discussion can cover how the aggradation (or any issue) is being reported but is not a substantial cause for concern because of X, Y, or Z.
13. Walked to Candy R1
    a. Encroachment area (~STA101+00)
        i. The area is being encroached upon by an adjacent landowner who is not part of the project. He has been contacted and asked to stop mowing the area.
        ii. Horse tape is being used as are additional easement markers.
        iii. Trees and/or shrubs should also be planted in this area.
14. Action items:
    a. Use the narrative portion of the report to discuss areas of concern; use the text to convey the level of concern about it and if any action is needed. For example using UT5, continue to report its presence but provide information about whether the aggradation is/is not getting worse and if any action is/is not needed.
    b. Continue to report the current aggradation on UT5 but currently it is not a substantial concern making sure to discuss its current state and to refer to the discussion we had on-site. Include the meeting notes in the monitoring report appendix.
    c. Look into giving one more attempted treatment to improve the bare area along UT2 R2 and keep the lespedeza at bay. However, don't go overboard with trying to establish vegetation because it is a minimal problem given the total area of the project and there are still trees both along the fence line and the stream in that area.
    d. Repairs planned for items #4 and #5. In the MY5 report, discuss the areas of concern in the narrative, provide photos if available, and discuss the repair plan documenting if it has been completed or when it is to be completed. If the work is done prior to the submittal of the MY5 report to DMS, include photos of the repair area. If it is done after the submittal to DMS, send a photolog of the repairs to DMS for inclusion in the report prior to the credit release meeting.
    e. Encroachment areas should include supplemental plantings of trees/shrubs.
    f. The next IRT walk is not expected until the final close-out. At that point, any continuing/new encroachment areas could be an issue in getting the final credit release.

Jeff Turner

From: Kristi Suggs
Sent: Tuesday, November 23, 2021 1:08 PM
To: Jeff Turner
Subject: FW: [External] FW: Pebble Count Data Requirements

Please see below.

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

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

From: Phillips, Kelly D <Kelly.Phillips@ncdenr.gov>
Sent: Thursday, November 18, 2021 3:56 PM
To: Kristi Suggs <ksuggs@wildlandseng.com>
Cc: Mimi Caddell <mcaddell@wildlandseng.com>
Subject: RE: [External] FW: Pebble Count Data Requirements

Kristi,

You may implement the new pebble count policy on any of the projects that I manage in accordance with the policy and your own professional judgement. Please feel free to utilize pebble count data for any site that you determine would benefit from the analysis. Some sites may have specific performance criteria or other factors where pebble counts could be required.

Let me know if you have any questions,

Kelly Phillips
Project Manager
NCDEQ Division of Mitigation Services

919-723-7565
kelly.phillips@ncdenr.gov

610 East Center Avenue
Suite 301
Mooresville, NC 28115

From: Kristi Suggs <ksuggs@wildlandseng.com>
Sent: Wednesday, October 27, 2021 1:26 PM
To: Phillips, Kelly D <Kelly.Phillips@ncdenr.gov>

Cc: Mimi Caddell <mcaddell@wildlandseng.com>
Subject: [External] FW: Pebble Count Data Requirements

Kelly,

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

Kristi

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

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

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

FYI!

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

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

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

<Kirsten.Ullman@NCDENR.gov>; Ackerman, Anjie <anjie.ackerman@ncdenr.gov>; Blackwell, Jamie D <james.blackwell@ncdenr.gov>; Xu, Lin <lin.xu@ncdenr.gov>; Mir, Danielle <Danielle.Mir@ncdenr.gov>; Corson, Kristie <kristie.corson@ncdenr.gov>; Russell, Periann <periann.russell@ncdenr.gov>; Sparks, Kimberly L <Kim.sparks@ncdenr.gov>
Subject: Pebble Count Data Requirements

Please review the attached memo documenting the agreed upon policy for pebble count data requirements.
Please reply (me only) to this email if accept that this memo represents (or misrepresents) our discussion on Sept 29.
Thank you.

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

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

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