Big Cedar Creek Stream Restoration Final Mitigation Plan and As-built Baseline Report Stanly County, North Carolina

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1.0 EXECUTIVE SUMMARY

The Big Cedar Stream Restoration Site (Site) was restored by Michael Baker Engineering, Inc. (Baker) through a full delivery contract with the North Carolina Ecosystem Enhancement Program (NCEEP). A length of 11,103 linear feet (LF) of perennial and intermittent channel along Big Cedar Creek (BCC) and six unnamed tributaries (UT1, UT2, UT3, UT1A, UT1B, and UT1C) were fully restored through a combination of Priority 1 and 2 restoration approaches, in addition to 1,171 LF of enhancement along Big Cedar Creek, and UT1, and 539 LF of preservation along Big Cedar Creek and the northern most unnamed tributary (UT2). There were four main goals associated with this restoration project: to create geomorphically stable conditions, to improve and restore hydrologic connections between the streams and their floodplains, to improve the water quality in the Big Cedar Creek and Rocky River watersheds, and to improve aquatic and terrestrial habitat along the project corridor.

The Site has a history of general agricultural usage including cattle, cotton and corn production. Prior to restoration, the streams on the Site were channelized and riparian vegetation on the majority of the site was absent. The riparian vegetation that was present on much of the site consisted of successional and invasive species such as Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*).

In order to accomplish the established goals at the Site, Baker proposed restoration of the existing incised, eroding and channelized streams by creating stable channels with access to a floodplain. In-stream structures and riffle pool sequences were proposed to provide varied aquatic habitat and to diversify the bedform. Ephemeral pools in the floodplain were proposed to provide additional habitat for amphibians. Native herbaceous and woody riparian vegetation were proposed to enhance terrestrial habitat and to shade the stream and decrease water temperatures. Fences were proposed for livestock exclusion in order to protect the channel stability and the health of the riparian vegetation. Through these activities, water quality benefits would be seen in the form of storm water filtration and nutrient uptake of the riparian vegetation, and decreased sediment loading from the channel banks.

This report documents the completion of the restoration construction and presents as-built monitoring data for the five-year monitoring period. Table 1 summarizes site conditions before and after restoration as well as the conditions predicted in the previously approved site restoration plan.

2.0 PROJECT GOALS, BACKGROUND, & ATTRIBUTES

2.1 Project Location and Description

The Big Cedar Creek Stream Restoration Site ("Site") is located in Stanly County, NC (Figure 1, Appendix A) approximately ten miles south of the City of Albemarle. The Site is part of the Yadkin River Basin within NCDWQ sub-basin 03-07-14 and USGS hydrologic unit 03040105060080.

The Site is part of the Piedmont physiographic province. Medina and others describe the Piedmont as, "... consist(ing) of generally rolling, well-rounded hills and ridges with a few hundred feet of elevation difference between the hills and valleys" (Medina, 2004). The local geology is typical of the Carolina Slate Belt lithotectonic province of central North Carolina, and is comprised of Proterozoic and Cambrian age siltstone, mudstone, and mafic hypabyssal intrusive rocks according to the 1 degree by 2 degree geologic map of the Charlotte Quadrangle prepared by the USGS (Goldsmith et al., 1988). Soil types at the site were researched using Natural Resources Conservation Service (NRCS) soil survey data for Stanly County, along with on-site evaluations. The predominant soil series within the floodplain area of the site is mapped as Oakboro silt loam series, a hydric soil.

The Big Cedar Creek restoration project area drains predominately forested and agricultural lands, as well as a portion of the residential and commercial district of the town of Norwood. The Winston-Salem Southbound Railroad line parallels Big Cedar to the east, then turns to cross Big Cedar and UT1 upstream of their confluence.

To visit the Site, take Highway 52 for approximately ten miles south, turn right onto Mount Zion Church Road (1.25 miles south of the Town of Norwood). Follow Mount Zion Church Road for approximately 0.5 mile west to the intersection of Mount Zion Road and Big Cedar Creek. UT1, UT2, and the upstream reaches of Big Cedar Creek can be accessed from the farm road on the north side of Mount Zion Church Road, approximately 0.25 miles east of the intersection of the railroad and Mount Zion Church road. Reach 5 and 6 of Big Cedar Creek can be accessed from a farm field approximately 0.1 mile west of the intersection of the railroad and Mount Zion Church road.

2.2 Restoration Summary

2.2.1 Mitigation Goals and Objectives

The specific goals for the Big Cedar Creek Site Restoration Project were as follows:

- Create geomorphically stable conditions on the Big Cedar Creek project site.
- Improve and restore hydrologic connections between the streams and their floodplains.
- Improve the water quality in the Big Cedar Creek and Rocky River watersheds.
- Improve aquatic and terrestrial habitat along the project corridor.

The primary objective of the Big Cedar Restoration project was to accelerate the channel evolutionary processes by constructing channels with geomorphically stable cross sections, increased sinuosity, and access to the floodplain at bankfull stage. Flood attenuation, increased groundwater infiltration, and alleviation of bank stress resulted from providing floodplain access. Water quality improvements were made through fencing cattle out of the restored reaches and by reducing bank erosion throughout the project site. Aquatic habitat was improved by providing geomorphically stable habitat features and through placement of in-stream habitat structures. Invasive vegetative species removal efforts and reforestation of the riparian buffer with native species complemented the restoration of Big Cedar Creek, UT1, UT2, UT3, UT1A, UT1B, and UT1C. Existing native trees were preserved onsite wherever feasible. The vegetative efforts will benefit both aquatic and terrestrial habitat as the site matures.

2.2.2 Projection Description and Restoration Approach

The project involved the restoration, enhancement, and preservation of Big Cedar Creek and six unnamed tributaries to Big Cedar Creek. A total of 11,103 linear feet (LF) of stream channel along Big Cedar Creek and six unnamed tributaries (UT1, UT2, UT3, UT1A, UT1B, and UT1C) were restored. Additionally 1,171 LF of Enhancement II along Big Cedar Creek and UT1 and 539 LF of preservation along Big Cedar Creek and UT2 based on the post-construction as-built survey. The area has a history of general agricultural usage including cattle, cotton and corn production. The streams on the project site were channelized and riparian vegetation on the majority of the site had been removed. The riparian vegetation that was present on much of the site consists of successional and invasive species such as Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*). As a result of channelization, many of the project reaches were incised and lacked bankfull floodplain access.

For analysis and design purposes, Big Cedar Creek, UT1, and UT2 were divided into 11 reaches (Asbuilt Plan Sheets, Appendix D). Big Cedar Creek flows from north to south entering the site at the northern property line. The reaches on Big Cedar Creek were numbered sequentially from north to south. Big Cedar Creek Reach 1 starts at the northern property line and ends at the confluence with UT2. Big Cedar Creek Reaches 2 through 4 are located between this confluence and the Winston-Salem Southbound Railroad line crossing. Big Cedar Creek Reach 5 begins below the railroad crossing and continues to just upstream of Big Cedar's confluence with UT1. Reach 6 begins where Reach 5 ends and continues to the culvert at Mount Zion Church Road. UT1 Reach 1 flows from west to east entering the site at the western most property line. The reaches on UT1 (1 through 4) were numbered sequentially from west to east. UT1 ends at its confluence with Big Cedar Creek. UT2 flows northwest to southeast entering the site along the northern property line. UT2 ends at its confluence with Big Cedar Creek.

A holistic restoration approach was based on the condition of the overall site and each reach's potential for restoration as determined during the site assessment. Design criteria for the proposed stream concept were selected based on the range of the reference data and the desired performance of the proposed channel. The developed design criteria were then compared to past projects built with similar conditions. Ultimately, these sites provide the best pattern and dimension ratios because they reflect site conditions after construction. While most reference reaches are in mature forests, restoration sites are in floodplains with little or no mature woody vegetation. This lack of mature woody vegetation severely alters floodplain processes and stream bank conditions. If past ratios did not provide adequate stability or bedform diversity, they were not used. Conversely, if past project ratios created stable channels with optimal bedform diversity, they were incorporated into the design.

Following the initial application of design criteria, detailed refinements were made to accommodate the existing valley morphology and to promote natural channel adjustment following construction.

For example, old meander scars in the Big Cedar Creek floodplain were incorporated for a more historical replication of channel alignment. The design philosophy employed at the Big Cedar Creek site was to use conservative design parameter values based on reference reach data and lessons learned from past projects. This allows the project to evolve in a positive direction as the permanent vegetation becomes established.

The overall restoration approach for the Site allows stream flows larger than bankfull flows to spread onto the floodplain, dissipating flow energies and reducing stress on streambanks. In-stream structures were used throughout all reaches to control streambed grade, reduce streambank stress, and promote bedform sequences and habitat diversity. The in-stream structures consist of root wads, log vanes, log weirs, cross vanes, j-hooks, and constructed riffles, which promote a diversity of habitat features in the restored channel. Where grade control was a consideration, constructed riffles and grade control j-hooks were installed to provide long-term stability. Streambanks were stabilized using a combination of erosion control matting, temporary and permanent seeding, bare-root planting, and brush mattresses. The Site was planted with native vegetation as shown in Table 8 (Appendix C) and is protected through a permanent conservation easement. Table 2 (Appendix A) provides a summary of the project components.

2.2.3 Project History, Contacts, and Attribute Data

Big Cedar Creek was restored by Baker through a full delivery contract with NCEEP. The chronology of the Big Cedar Creek Restoration Project is presented in Table 3. The contact information for all designers, contractors, and relevant suppliers is presented in Table 4. Relevant project background information is presented in Table 5. Tables 3, 4, and 5 are located in Appendix A of this report.

2.2.3.1 Construction Summary

Construction activities, in accordance with the approved restoration plan and permits for the middle of the project (UT1 mainstem), began with site preparation, harvesting of root wads, and establishment of the staging areas, haul roads, and stockpile areas. Materials were stockpiled as needed for the initial stages of construction.

Stream construction began with the installation of temporary rock dams at station 25+80 and 35+00 of UT1 reach 2. After existing trees were harvested for root wads, log vanes, and cover logs, grade stakes were installed along the thalweg and bench limits to direct the grading activities. The contractor constructed the channel and excavated floodplain areas to design grades starting at UT1 reach 1 station 10+00 and worked downstream. Excavated material was stockpiled in specified areas near field ditches and existing channels that were to be filled. Where necessary, silt fencing was installed between stockpiles and the active ditches to prevent erosion of sediment into the channel.

The offline sections of the channel were the first stream segments to be constructed. Pumparound operations were used where necessary for tying in newly constructed offline stream segments. Construction continued in a downstream direction for the entire length of UT1 mainstem channel. All disturbed areas were covered with temporary and permanent seed and straw before mobilizing to the next project area.

As construction continued downstream along UT1, reach 1 (station 10+46-22+94), reach 2 (station 22+94-33+63), and reach 3 (station 33+63-53+03) were built in succession per the approved design plans. In-stream structures varied slightly from the design plans along all of UT1 due to the lack of available onsite material (for rootwads) or in areas where bedrock was encountered. Brush mattresses were substituted for rootwads in areas where rootwads were not available. Seeding, mulching, and coir matting where used in areas where bedrock was

encountered and structures could not be installed. Constructed riffles on reaches 1 and 2 were built out of a well graded mix of on-site alluvium and quarried Class 1, 2, and A stone. Riffles were constructed entirely with on-site alluvium on reaches 3 and 4. Three ephemeral pools where constructed along reach 1 to generate extra material necessary to backfill the existing channel and grade the floodplain. All disturbed areas were covered with temporary and permanent seed and straw before mobilizing to the next project area.

Construction activities were halted on reach 3 at station 40+00 in early May 2008 due to review of a Conditional Letter of Map Revision (CLOMR) by the Federal Emergency Management Agency (FEMA). The contractor subsequently demobilized from the site. No construction occurred between early May 2008 and late August 2008.

On August 24, 2008 Reiser and River Works, Inc. mobilized construction equipment on UT1 and Big Cedar Creek respectively. Reiser resumed work on UT1 reach 3 starting at station 40+00 and continued constructing the channel downstream. Construction of UT1 reach 4 (station 53+03 - 63+52) followed the completion of UT1 reach 3. Reiser finalized construction on UT1 in September 2008. In-stream structures and pattern alignments are shown on the asbuilt plan sheets within Appendix D.

River Works started site preparation on Big Cedar Creek and UT2 by installing a temporary rock check dam at station 60+00 on Big Cedar. Two temporary stream crossings were established at station 34+50 and 60+40 on Big Cedar Creek. Staging areas, haul roads, and stockpile areas were established. Silt fencing was installed between stockpiles and along the active channel to prevent erosion of sediment into the channel. Clearing, grubbing, and harvesting of root wads along Big Cedar and UT2 followed. Materials were stockpiled as needed for the initial stages of construction.

Three crews were staged on Big Cedar Creek. One crew started construction of UT2 (station 10+00 - 16+09) and then proceeded onto Big Cedar Creek reach 1 (station 10+00 - 16+03). A second crew began construction on Big Cedar Creek reach 2 (station 16+03 - 38+92) and a third began construction of Big Cedar Creek reach 3 (station 38+92 - 57+19). All offline sections of the channels were constructed first. A pump-around operation was used in certain sections of the project reaches where offline sections were tied back into the existing channel. In-stream structures varied slightly from the design plans along UT2 and Big Cedar Creek due to seasonality and in areas where bedrock was encountered. Because brush mattresses need to be installed during the dormant season (November-March), rootwads were substituted for brush mattresses in many areas along UT2 and Big Cedar during the summer construction months. Seeding, mulching, and coir matting where used in areas where bedrock was encountered and structures could not be installed. Riffles were constructed entirely of on-site alluvium on both Big Cedar Creek and UT2. All disturbed areas were covered with temporary and permanent seed and straw before mobilizing to the next project area.

After the completion of Big Cedar Creek reaches 1 through 3 and UT2, construction activities continued on Big Cedar Creek reach 4 (station 57+19 - 61+29) and reach 6 (Sta. 67+57 - 78+03). A temporary rock dam was installed near station 77+00 as construction crews worked downstream simultaneously on each reach. Construction procedures and activities were consistent with the upstream reaches. Enhancement activities on Big Cedar Creek reach 6 consisted of adding a log j-hook structure (station 68+00), a rock cross vane (station 77+25), and bank stabilization (bank sloping and a geolift). Channel construction activities concluded with the completion of Big Cedar Creek reach 4. All disturbed areas including the access routes were covered with temporary and permanent seed and straw before demobilizing from the site. Planting of bare roots and live stakes was completed in February 2009.

All riparian buffer areas within the project boundaries are a minimum of fifty feet from the top of the stream bank and are protected in perpetuity by a conservation easement that totals 40.7 acres. High tensile woven wire fencing was installed along the left side and a portion of the right side of Big Cedar Creek on reaches 1-4, and on the left side of Big Cedar Creek on reaches 5 and 6 as shown on the As-built Plan Sheets in Appendix D.

Slight changes to construction sequencing were made during construction to increase efficiency during high flow periods, such as continuing to construct offline channel sections further downstream and waiting to tie the channel back in until high flow conditions had abated. Other on-site changes involved the location and selection of in-stream structures and bank stabilization practices. Substitutions and/or omissions were made based on existing field conditions and best professional judgment. These changes, along with the as-built cross-sections and longitudinal profiles are documented in the attached as-built plan sheets in Appendix D. The as-built stream lengths for the project areas total 12,786 LF as indicated in Table 2 in Appendix A.

3.0 MONITORING PLAN

Channel stability, vegetation survival, and macroinvertebrate communities will be monitored on the project site. Post-restoration monitoring will be conducted for five years following the completion of construction to document project success.

3.1 Stream Monitoring

Geomorphic monitoring of restored stream reaches will be conducted for five years to evaluate the effectiveness of the restoration practices. Monitored stream parameters include bankfull flows, stream dimension (cross-sections), pattern and profile (longitudinal profile survey), and photographic documentation. The methods used and any related success criteria are described below for each parameter. For monitoring stream success criteria, 33 permanent cross-sections, 2 crest gauges, and 104 photo identification points were established. The specific locations of these monitoring features are represented on the as-built plan sheets in Appendix D.

3.1.1 Bankfull Events

The occurrence of bankfull events within the monitoring period will be documented by the use of crest gauges and photographs on each project reach. Two crest gauges were installed on the floodplain within 10 feet of the restored channel. The crest gauges will record the highest watermark between site visits, and the gauge will be checked at each site visit to determine if a bankfull event has occurred. Photographs will be used to document the occurrence of debris lines and sediment deposition on the floodplain during monitoring site visits.

Two bankfull flow events must be documented at the crest gauge within the 5-year monitoring period. The two bankfull events must occur in separate years; otherwise, the stream monitoring will continue until two bankfull events have been documented in separate years.

3.1.2 Cross-sections

Thirty three permanent cross-sections were installed throughout the entire Site. Within each project reach the distance interval between cross-sections was approximately equal to the combined length of 20 bankfull widths. An emphasis has been placed on riffle data collection because many of the project design parameters are based on riffle dimensions. This is reflected in a higher ratio of riffle to pool cross sections selected for monitoring. Each cross-section was marked on both banks with

permanent pins to establish the exact transect used. A common benchmark will be used for cross-sections and consistently referenced to facilitate comparison of year-to-year data. The annual cross-sectional survey will include points measured at all breaks in slope, including top of bank, bankfull, inner berm, water surface, and thalweg, if the features are present.

There should be little change in as-built cross-sections. If changes do take place, they will be evaluated to determine if they represent a movement toward a more unstable condition (e.g., down-cutting or erosion) or a movement toward increased stability (e.g., settling, vegetative changes, deposition along the banks, or decrease in width/depth ratio). Riffle cross-sections will be classified using the Rosgen Stream Classification System, and all monitored cross-sections should fall within the quantitative parameters defined for channels of the design stream type.

3.1.3 Pattern

Annual measurements taken for the plan view of the Site will include sinuosity and meander width ratio. Radius of curvature measurements will be taken on newly constructed meanders for the first year of monitoring only. Pattern measurements should show little adjustment over the five year monitoring period. If adjustments to occur, they will be evaluated to ensure that the new measurements fall within the quantitative parameters defined for channels of the design stream type.

3.1.4 Longitudinal Profile

A longitudinal profile will be completed annually during each year of the monitoring period. The profile will be conducted for 3,331 LF of restored stream reaches where pattern has been adjusted. The exact location of the annual longitudinal profile is marked on the As-built plan sheets in Appendix D. Measurements will include thalweg, water surface, inner berm, bankfull, and top of low bank. Each of these measurements will be taken at the head of each feature (e.g., riffle, run, pool, glide) and at the maximum pool depth. The survey will be tied to a permanent benchmark.

The longitudinal profiles should show that the bedform features are remaining stable (i.e., they are not aggrading or degrading). The pools should remain deep, with flat water surface slopes, and the riffles should remain steeper and shallower than the pools. Bedforms observed should be consistent with those observed for channels of the design stream type.

3.1.5 Bed Material Analysis

One substrate sample was taken at a constructed riffle on UT1 to show a general particle distribution at the baseline condition. These data are provided in Appendix B. Six post-restoration pebble counts will be performed on Big Cedar, six on UT1, and two on UT2. Pebble counts will be conducted during post-restoration monitoring years 1, 3, and 5 at the time the cross sectional data is collected. This data will be compared to known distributions from the existing conditions surveys. Results should indicate either maintenance of seeded bed material or a progression towards previous distributions.

3.1.6 Watershed Observations

As part of the post-construction monitoring following construction, any observed activities or changes in the watershed will be noted and connections to onsite observations will be drawn, where appropriate.

3.1.7 Photo Reference Sites

Photographs will be used to document restoration success visually. Reference stations will be photographed after construction and for five years following construction. Reference photos will be taken once a year, from a height of approximately five to six feet. Permanent markers will be established to ensure that the same locations (and view directions) on the Site are monitored during

each monitoring period. Photographs taken at cross sections are provided in Appendix B, while structure photographs are shown in Appendix E.

3.1.7.1 Lateral Reference Photos

Reference photo transects will be taken at each permanent cross-section. Photographs will be taken of both banks at each cross-section. The survey tape will be centered in the photographs of the bank. The water line will be located in the lower edge of the frame, and as much of the bank as possible will be included in each photo. Photographers will make an effort to consistently document the same view in each photo point over time.

3.1.7.2 Structure Photos

Photographs will be taken at grade control structures along the restored streams. Photographers will make every effort to consistently document the same area in each photo point over time. Photographs will be used to evaluate channel aggradation or degradation, bank erosion, success of riparian vegetation, and effectiveness of erosion control measures subjectively. Lateral photos should not indicate excessive erosion or continuing degradation of the banks. A series of photos over time should indicate successive maturation of riparian vegetation. The position of each structure photo point is located on the as-built plan sheets in Appendix D.

3.2 Vegetation Monitoring

Successful restoration of the vegetation on a mitigation site is dependent upon hydrologic restoration, active planting of preferred canopy species, and volunteer regeneration of the native plant community. In order to determine if the criteria are achieved, twenty-three vegetation monitoring quadrants were installed across the Site as directed by EEP monitoring guidance. The number of quadrants required is based on the plot number spreadsheet (07312006-2) provided by NCEEP that captures approximately five percent of the total conservation easement. The sizes of individual quadrants are 100 square meters for woody tree species. Vegetation monitoring will occur in the fall, prior to the loss of leaves. Individual quadrant data will be provided and will include species composition, density, and survivability. Individual seedlings will be marked to ensure that they can be found in subsequent monitoring years. Mortality will be determined from the difference between the previous year's living, planted seedlings and the current year's living, planted seedlings.

At the end of the first growing season, species composition, density, and survival will be evaluated. For each subsequent year, until the final success criteria are met, the Site will be evaluated between June and November.

The interim measure of vegetative success for the Site will be the survival of at least 320, three-year-old, planted trees per acre at the end of Year 3 of the monitoring period. The final vegetative success criterion will be the survival of 260, five-year old, planted trees per acre at the end of Year 5 of the monitoring period. While measuring species density is the current accepted methodology for evaluating vegetation success on restoration projects, species density alone may be inadequate for assessing plant community health. For this reason, the vegetation monitoring plan will incorporate the evaluation of additional plant community indices to assess overall vegetative success.

Herbaceous vegetation, primarily native grasses, were planted at the site shall have at least 80 percent coverage of the seeded/planted area. Any herbaceous vegetation not meeting these criteria shall be replanted. At a minimum, at all times ground cover at the project site shall be in compliance with the North Carolina Erosion and Sedimentation Control Ordinance.

3.3 Biological Monitoring

Benthic macroinvertebrates can be used to assess quantity and quality of life in the creek. In particular, specimens belonging to the insect orders Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) are useful as an index of water quality. These groups are generally the least tolerant to water pollution and therefore are very useful indicators of water quality. Sampling for these three orders is referred to as EPT sampling. Because of the importance of biological success of a stream restoration project, benthic macroinvertebrate sampling will be conducted for post-restoration years 1, 3, and 5 on the Site.

Pre-construction monitoring was conducted at three sites within the project limits and at one upstream reference site in September 2006 (Figure 3). The results of this sampling event will be used as a baseline for comparison of post restoration monitoring results. Post restoration monitoring sites shall be located in the same general vicinity as the pre restoration monitoring sites. In general, post restoration monitoring results should show trends towards biological distributions similar to that observed at the reference site.

The sampling methodology shall follow the Qual 4 method listed in North Carolina Division of Water Quality's (NCDWQ) <u>Standard Operating Procedures for Benthic Macroinvertebrates</u> (2006). Laboratory identification of collected species will be conducted by a lab properly certified by NCDWQ.

3.4 Maintenance and Contingency Plan

Maintenance requirements vary from site to site and are generally driven by the following conditions:

- Projects without established, woody floodplain vegetation are more susceptible to erosion from floods than those with a mature, hardwood forest.
- Projects with sandy, non-cohesive soils are more prone to short-term bank erosion than cohesive soils or soils with high gravel and cobble content.
- Alluvial valley channels with wide floodplains are less vulnerable than confined channels.
- Wet weather during construction can make accurate channel and floodplain excavations difficult.
- Extreme and/or frequent flooding can cause floodplain and channel erosion.
- Extreme hot, cold, wet, or dry weather during and after construction can limit vegetation growth, particularly temporary and permanent seed.
- The presence and aggressiveness of invasive species can affect the extent to which a native buffer can be established.
- The presence of beaver can affect vegetation survivability and stream function.

Maintenance issues and recommended remediation measures will be detailed and documented in the monitoring reports. Factors that may have caused any maintenance needs, including any of the conditions listed above, shall be discussed. NCEEP approval will be obtained prior to any remedial action.

4.0 MONITORING RESULTS – 2009 AS-BUILT DATA

The five-year monitoring plan for the Site includes criteria to evaluate the success of the vegetation and stream components of the project. The specific locations of vegetation plots, permanent cross-sections, and the crest gauges are shown on the as-built plan sheets. Photo points, located at each of the grade control structures along the restored stream channel, are also located on the as-built plan sheets in Appendix D.

4.1 Stream Data

For monitoring stream success criteria, 33 permanent cross-sections, 2 crest gauges, and 104 photo identification points were installed on the Site. The permanent cross-sections will be used to monitor channel dimension and bank stability over time. The crest gauges will be used to document the occurrence of bankfull events. In addition, a longitudinal survey was completed for the restored stream channels to provide a baseline for evaluating changes in bed conditions over time. The longitudinal profile included the elevations of all grade control structures. The as-built permanent cross-sections (with photos) and as-built longitudinal data as well as the quantitative pre-construction, reference reach, and design data used to determine restoration approach are provided in Appendix B. The locations of the permanent cross-sections and the crest gauges are shown on the as-built plan sheets in Appendix D. Photographs are provided in Appendix E.

4.1.1 Results and Discussion

No results were available at the submittal of this report. As-built data will be compared with first year monitoring data in the Year 1 Monitoring Report, scheduled for submittal to NCEEP during December 2009.

4.2 Vegetation Data

Bare-root trees and shrubs were planted within all areas of the conservation easement. A minimum 30-foot buffer was established along all restored stream reaches. In general, bare-root vegetation was planted at a target density of 680 stems per acre, in an 8-foot by 8-foot grid pattern. Planting of bare-root trees and shrubs were completed in February 2009. Species planted are summarized in Tables 8 and 9.

The restoration plan for the Site specifies that the number of quadrants required is based on the CVS-NCEEP monitoring guidance. The number of quadrants required was determined using the plot number spreadsheet (07312006-2) provided by NCEEP that captures five percent of the total conservation easement. The sizes of individual quadrants are 100 square meters. A total of 23 vegetation plots, each 10 meters by 10 meters in size, were established across the restored site. The initial planted density within each of the vegetation monitoring plots is given in Table 5. The average density of planted bare root stems, based on the data from the 23 monitoring plots, is 892 stems per acre. The locations of the vegetation plots are shown on the as-built plan sheets in Appendix 3.

4.2.1 Results and Discussion

No results were available at the submittal of this report. Vegetation survival will be compared with first year monitoring data in the Year 1 Monitoring Report, scheduled for submittal to NCEEP during December 2009.

4.3 Areas of Concern

No areas of concern have been identified during the first months following completion of the project.

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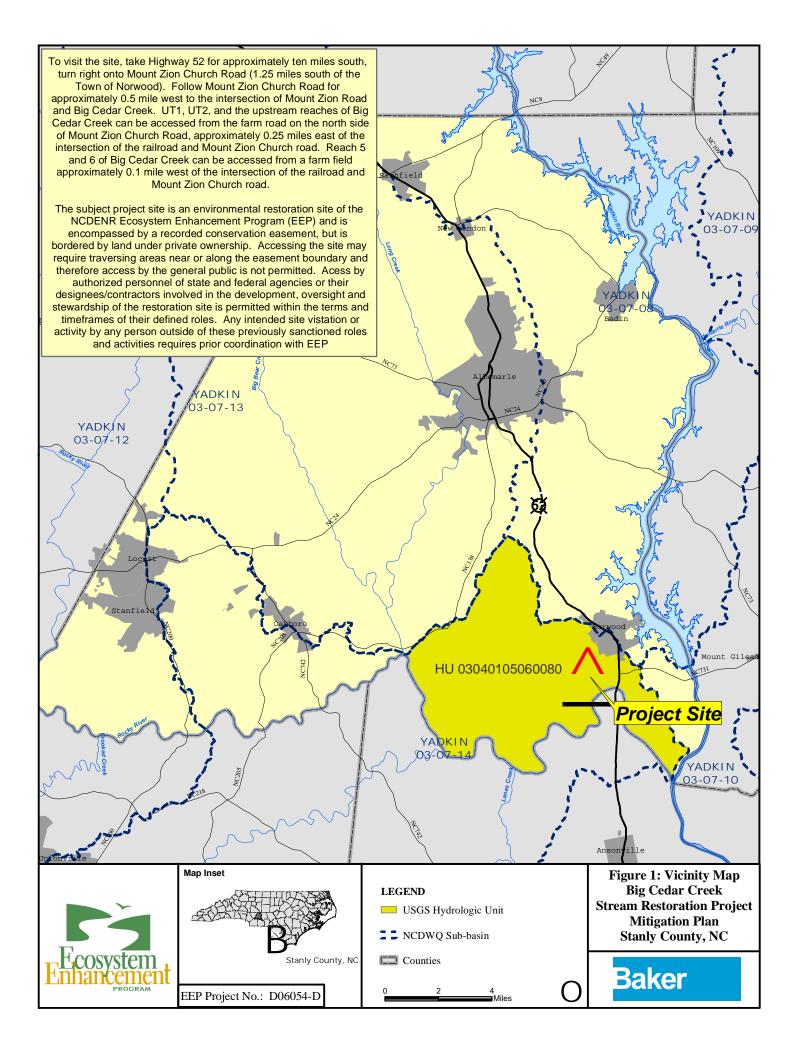
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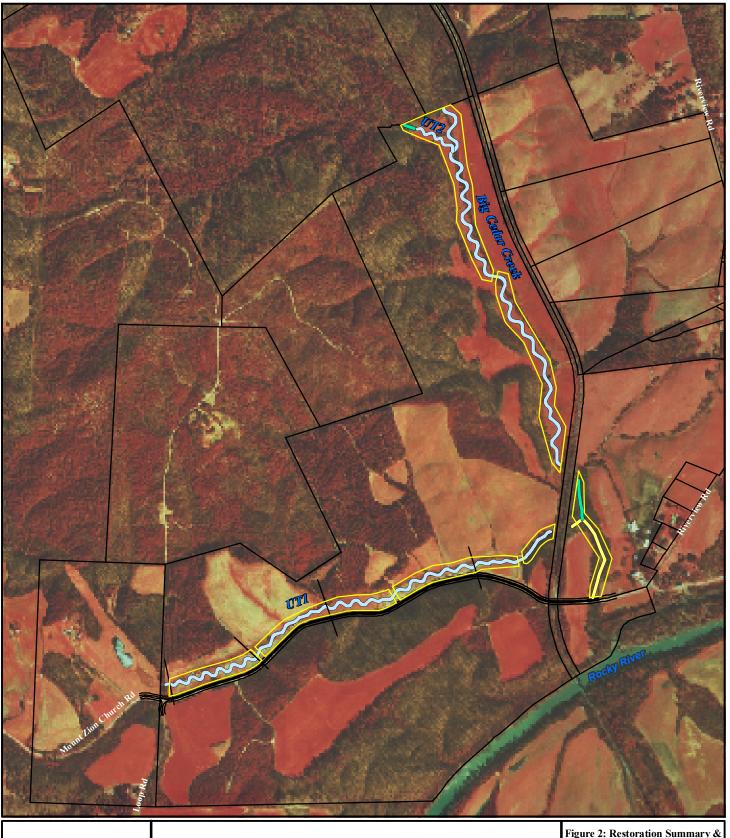
US Army Corps of Engineers, 2003. Stream Mitigation Guidelines. Prepared with cooperation from US Environmental Protection Agency, NC Wildlife Resources Commission, and the NC Division of Water Quality. www.saw.usace.army.mil/wetlands/Mitigation/stream_mitigation.html

Appendix A

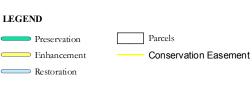
General Tables and Figures

Vicinity Map
Project Components Map
Benthic Macroinvertebrate Sampling Map
Tables 1 - 5





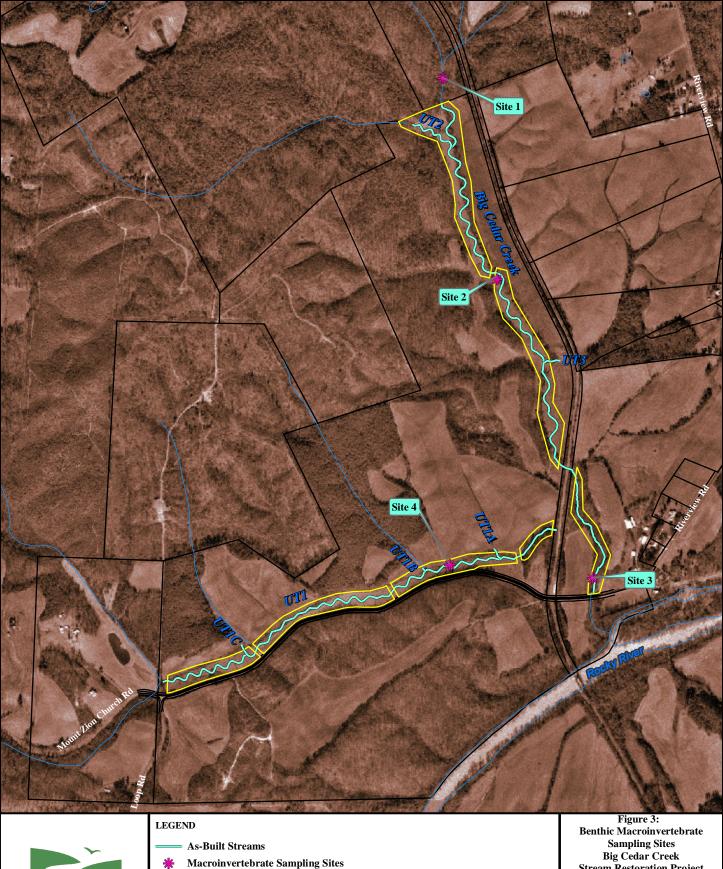




EEP Project No.: D06054-D







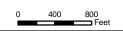


Conservation Easement

Parcels

Streams

EEP Project No.: D06054-D



Stream Restoration Project Mitigation Plan Stanly County, NC

Baker

| Table 1 | | | | | |
|--|---|--|---|--|---|
| Restoration and Mitigation Compone | nts | | | | |
| Pre-Construction Site Conditions | | | | | |
| Site | | | | | |
| Location | | ure 1), approximately ten mile | S | | |
| | south of the City of Albemar | ie, NC. | | | |
| USGS Hydro Unit | 3040105060080 | | | | |
| | | | | | |
| NCDWQ Sub-basin | 03/07/14 | | | | |
| | | | | | |
| Contract Mitigation Units | 11,640 SMU | | | | |
| Pre-Construction Site Conditions | | | | | |
| Stream | | | | | |
| Donak | | a | G 1G 19 | 1.64 15 | D |
| Reach | | ngth | | n and Stream Type | _ |
| Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 | | 0 LF | Channelized & incis | | 2.85 mi ² |
| Big Cedar Creek – Reach 2 | | 16 LF 46 LF | Channelized & incis | | 2.91 mi ² |
| Big Cedar Creek – Reach 4 | | | Channelized & incis | | 3.30 mi ² |
| Big Cedar Creek – Reach 5 | | 6 LF 4LF | Channelized & incis Stable & quasi-equi | | 3.35 mi ² |
| Big Cedar Creek – Reach 6 | | 4 LF | Incised & aggrading | | 4.67 mi ² |
| UT1 – Reach 1 | | 98 LF | Channelized & incis | | 4.71 mi ² |
| UT1 – Reach 2 | | | Channelized & incis | | 0.93 mi ² |
| UT1 – Reach 2 | | 9 LF 18 LF | Channelized & incis | | 0.98 mi ² |
| UT1 – Reach 4 | | 5 LF | Channelized & incis | | 1.18 mi ² 1.21 mi ² |
| - Itouch i | | | Channenzed & Iller | , CT/ 1 | |
| UT2 | 62: | 5 LF | Channelized & incis | sed, G4 | 0.55 mi^2 |
| Total | 11.6 | 61 LF | in a mon | | 4.71 mi ² |
| Restoration Plan | 11,0 | | | | 7./ 1 mil |
| Stream | | | | | |
| Reach | Dac | toration/Enhancement Type | | | Length (LF) |
| Big Cedar Creek – Reach 1 | | toration – Priority Level II app | roach | | 573 |
| Big Cedar Creek – Reach 2 | | toration – Priority Level I appr toration – Priority Level I appr | | | 2,190 |
| Big Cedar Creek – Reach 3 | | toration – Priority Level I approtoration – Priority Level I appro | | | 1,809 |
| Big Cedar Creek – Reach 4 | | toration - Priority Level II app | | | 400 |
| Big Cedar Creek – Reach 5 | | servation | rouen | | 435 |
| Big Cedar Creek – Reach 6 | | ancement - Level II approach | | | 969 |
| UT1 – Reach 1 | | toration – Priority Level I appr | oach | | 1,235 |
| UT1 – Reach 2 | | toration – Priority Level I appr | | | 973 |
| UT1 – Reach 3 | | toration – Priority Level I appr | | 1,899 | |
| UT1 – Reach 4 | | toration - Priority Level I and I | oaches | 993 | |
| | | servation | | | 162 |
| UT2 | Rest | toration - Priority Level I & II | approaches | | 605 |
| Total | | • | ** | | 12,243 |
| Post-Construction Site Conditions | | | | | |
| Stream | | | | | |
| | | | | | |
| Reach | Restoration/Enhancement | Туре | | Length (LF) | SMU |
| | Restoration/Enhancement Restoration – Priority Level | | | Length (LF) | SMU 603 |
| Reach | | II approach | | | |
| Reach Big Cedar Creek – Reach 1 | Restoration - Priority Level | II approach I approach | | 603 | 603 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 | Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach | | 603 2,239 | 603 2239 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 | Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach | | 603 2,239 1,827 | 603 2239 1,827 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 | Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach II approach | | 603 2,239 1,827 410 | 603 2239 1,827 410 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 | Restoration - Priority Level Restoration - Priority Level Restoration - Priority Level Restoration - Priority Level Restoration - Preservation | II approach I approach I approach I approach III approach III approach | | 603 2,239 1,827 410 378 | 603 2239 1,827 410 76 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 | Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach II approach III approach II approach I approach I approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 | 603 2239 1,827 410 76 418 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 | Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Preservation Enhancement – Level II app Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach II approach III approach II approach I approach I approach I approach I approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appr Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach II approach III approach II approach I approach I approach I approach I approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 | Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Preservation Enhancement – Level II app Restoration – Priority Level Enhancement II | II approach I approach I approach II approach III approach II approach I approach I approach I approach I approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 | 603 2239 1.827 410 76 418 1.248 1.016 1.885 996 50 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appr Restoration – Priority Level I Enhancement II Preservation | II approach I approach I approach II approach III approach II approach I approach I approach I approach I approach I approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appr Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level I Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I & II approach I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries | Restoration – Priority Level Restoration – Preservation Enhancement – Level II app Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level II Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level Restoration – Priority Level | II approach I approach I approach II approach II approach II approach I WII approaches I WII approaches Type | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 Length (LF) | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appr Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level I Restoration – Priority Level | II approach I approach I approach II approach II approach II approach I & II approaches I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 125 161 73 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appl Restoration – Priority Level | II approach I approach I approach II approach III approach III approach I approach I approach I approach I approach I approach I W II approach I W II approach I W II approach I W II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 Length (LF) 73 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1B | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I approach I approach I approach I approach I approach I & II approaches I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 Length (LF) 73 85 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1B UT1C | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appl Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I approach I approach I approach I approach I approach I & II approaches I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1B UT1B UT1C Total | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I approach I approach I approach I approach I approach I & II approaches I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 Length (LF) 73 85 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1B UT1B UT1C Total Riparian Buffer Acreage | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I approach I approach I approach I approach I approach I & II approaches I & II approaches | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach III approach III approach II approach I approach I approach I approach I approach I approach I & II approaches I & II approaches | ~40.7 AC | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1B UT1B UT1C Total Riparian Buffer Acreage | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach | | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 125 161 609 73 85 34 78 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach II approach II approach II approach I & II approaches I & II approaches I & II approaches I approach | on reduction; increase | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 Length (LF) 73 85 34 78 112,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach II approach II approach I & II approaches I & II approaches I approach | on reduction; increase stream bank stability | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 12,813 | 603 2239 1.827 410 76 418 1.248 1.016 1.885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach | on reduction; increase stream bank stability control; reduced dow | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 125 161 609 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,016 1,885 1,016 1,01 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approach II approach II approach I & II approaches I & II approaches I & II approaches I approach | on reduction; increase stream bank stability control; reduced dow | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 125 161 609 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,016 1,885 1,016 1,01 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II approach | on reduction; increase stream bank stability control; reduced dow | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 125 161 609 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 128 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,885 1,016 1,016 1,885 1,016 1,01 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 10 Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality Water Quantity/Flood Attenuation | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approach II approach II approach I & II approaches I & II approaches I & II approaches I approach | on reduction; increase stream bank stability control; reduced dov groundwater recharg | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approa | on reduction; increase stream bank stability control; reduced dov groundwater recharg | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 73 85 34 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 concentrations an |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality Water Quantity/Flood Attenuation | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approach II approach II approach I appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 996 125 161 609 73 85 34 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 concentrations an |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approach II approach II approach I appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 concentrations an y reconnecting streat i hydrologic |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to manent cross-section: | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1,996 125 161 609 125 161 609 125 161 409 128 134 14 12,813 12,813 | 603 2239 1,827 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 11,679 concentrations an y reconnecting streat d hydrologic s; reduced water proved aesthetics. |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to manent cross-sections I annually for a perio | 603 2,239 1,287 410 378 1,046 1,248 1,016 1,885 1996 125 161 609 Length (LF) 73 85 34 78 12,813 2d dissolved oxygen vnstream flooding by e; improved/restored | 603 2239 1.827 410 76 418 1.248 1.016 1.885 1.996 50 32 609 SMU 73 85 34 478 11,679 concentrations an any reconnecting strear and hydrologic s; reduced water proved aesthetics. |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1A UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quality Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approa | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to nament cross-section: annually for a perio le aggradation or dej ontrol measures. | 603 2,239 1,827 410 378 1,046 1,248 1,016 1,885 1,996 125 161 609 12s 161 173 85 12,813 12,813 12,813 12,813 14 15 16 16 17 17 18 18 19 19 19 19 19 19 19 19 19 19 19 19 19 | 603 2239 1,827 1,827 410 76 418 1,248 1,016 1,885 996 50 32 609 SMU 73 85 34 78 11,679 concentrations an y reconnecting strear al hydrologic with a provided and a littionally, photographs ion, riparian vegetation |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to manent cross-section I annually for a perio tel aggradation or dej control measures. | 603 2,239 1,287 410 378 1,046 1,248 1,016 1,885 1,996 125 161 609 Length (LF) 73 85 34 78 112,813 2d dissolved oxygen wnstream flooding by e; improved/restored of large woody debrierrestrial habitat; im s, vegetation plots, cd d of five years. Add gradation, bank erosi ed annually and tied | 603 2239 1.827 410 76 418 1.248 1.016 1.885 1.996 50 32 609 SMU 73 85 34 478 11,679 concentrations an any reconnecting stread hydrologic s; reduced water proved aesthetics. rest gauges, and a litionally, photographs ion, riparian vegetation to a common benchma |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 3 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan Success Criteria | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to annually for a perio el aggradation or dej ontrol measures. al profile are surveye es (2) will monitor fle | 603 2,239 1,239 1,248 1,046 1,248 1,016 1,885 1,996 125 161 160 1609 173 185 144 178 112,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 1,096 50 32 609 SMU 73 85 34 78 11,679 concentrations an average and a litionally, photographs for, riparian vegetation to a common benchmaring post-restoration |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 2 UT1 – Reach 2 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach I approach II approa | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to annually for a perio el aggradation or dej ontrol measures. al profile are surveye es (2) will monitor fle | 603 2,239 1,239 1,248 1,046 1,248 1,016 1,885 1,996 125 161 160 1609 173 185 144 178 112,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 1,096 50 32 609 SMU 73 85 34 78 11,679 concentrations an average and a litionally, photographs for, riparian vegetation to a common benchmaring post-restoration |
| Reach Big Cedar Creek – Reach 1 Big Cedar Creek – Reach 2 Big Cedar Creek – Reach 3 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 4 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 5 Big Cedar Creek – Reach 6 UT1 – Reach 1 UT1 – Reach 1 UT1 – Reach 3 UT1 – Reach 3 UT1 – Reach 4 UT2 Additional Tributaries UT3 to Big Cedar Creek UT1A UT1B UT1C Total Riparian Buffer Acreage Planted Riparian Buffer Acreage Ecological Benefits Water Quantity/Flood Attenuation Aquatic and Terrestrial Habitat Monitoring Plan Success Criteria | Restoration – Priority Level Restoration – Preservation Enhancement – Level II appu Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Restoration – Priority Level Enhancement II Preservation Restoration – Priority Level | II approach I approach I approach II appro | on reduction; increase stream bank stability control; reduced dov groundwater recharg eam cover; addition of ding; restoration of to annually for a perio el aggradation or dej ontrol measures. al profile are surveye es (2) will monitor fle | 603 2,239 1,239 1,248 1,046 1,248 1,016 1,885 1,996 125 161 160 1609 173 185 144 178 112,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 12,813 | 603 2239 1,827 410 76 418 1,248 1,016 1,885 1,096 50 32 609 SMU 73 85 34 78 11,679 concentrations an average and a litionally, photographs for, riparian vegetation to a common benchmar ring post-restoration |

| | | | | | ion Components Site: Project No | . D06054-D | | |
|--------------------------------|-------------------------|----------------------|------------------|----------------------------------|------------------------------------|-------------------|----------------|--|
| Project Segment or Reach ID | Existing Feet/Acres* | Mitigation Type | Approach | Linear Footage or Acreage* | Mitigation Ratio | Migation Units | Stationing | Comment |
| | | | | | | | | Installed in-stream structures to control grade and reduce bank erosion. Priority 2 was in this section of transition to |
| BCC_R1 | 350 | R | P2 | 603 | 1:1 | 603 | 10+00 to 16+03 | bring the channel up into the historic floodplain as quick as possible. |
| BCC_R2 | 1,016 | R | P1 | 2,239 | 1:1 | 2,239 | 16+03 to 38+92 | Installed in-stream structures to control grade and reduce bank erosion |
| BCC_R3 | 2,046 | R | P1 | 1,827 | 1:1 | 1,827 | 38+92 to 57+19 | Installed in-stream structures to control grade and reduce bank erosion |
| BCC_R4 | 976 | R | P2 | 410 | 1:1 | 410 | 57+19 to 61+29 | Installed in-stream structures to control grade and reduce bank erosion. Priority 2 was employeed to tie the channel into the box culvert at the railroad crossing. |
| BCC_R5 | 534 | P | P | 378 | 1:5 | 76 | 63+79 to 67+57 | Preservation |
| BCC_R6 | 904 | Е | EII | 1,046 | 1:2.5 | 418 | 67+57 to 78+03 | Regraded banks, installed one grade control cross-vane and one log vane. |
| UT1_R1 | 1,998 | R | P1 | 1,248 | 1:1 | 1,248 | 10+46 to 22+94 | Installed in-stream structures to control grade and reduce bank erosion |
| UT1_R2 | 759 | R | P1 | 1,016 | 1:1 | 1,016 | 22+94 to 33+36 | Installed in-stream structures to control grade and reduce bank erosion. The valley narrows and slopes increase to accommodate the decrease in floodplain area. |
| UT1_R3 | 1,518 | R | P1 | 1,885 | 1:1 | 1,885 | 33+36 to 53+04 | Installed in-stream structures to control grade and reduce bank erosion |
| UT1_R4 | 935 | R | P1 | 996 | 1:1 | 996 | 53+04 to 63+52 | Installed in-stream structures to control grade and reduce bank erosion. The reach was designed to transition from the original floodplain elevation to a new floodplain elevation. |
| | 125 | E | EII | 125 | 1:2.5 | 50 | N/A | Regraded banks and existing riffle. |
| UT2 | 625 | R | P1, P2 | 609 | 1:1 | 609 | 10+00 to 16+09 | Installed in-stream structures to control grade and reduce bank erosion |
| 012 | 162 | P | P | 161 | 1:5 | 32 | N/A | Preservation |
| UT3 to Big Cedar Creek | 73 | R | P1 | 73 | 1:1 | 73 | 11+08 to 11+82 | Installed in-stream structures to control grade. Regraded banks, stabilized with matting, installed stable cattle crossing outside easement to protect reach. |
| UT1A | 85 | R | P1 | 85 | 1:1 | 85 | 10+41 to 11+26 | Constructed new pattern to connect tributary to UT1. Installed coir matting and planted. |
| UT1B | 33 | R | P1 | 34 | 1:1 | 34 | 10+00 to 10+34 | Constructed new pattern to connect tributary to UT1. Installed coir matting and planted. |
| UT1C | 78 | R | P1 | 78 | 1:1 | 78 | 10+54 to 11+32 | Constructed new pattern to connect tributary to UT1. Installed coir matting and planted. |
| SUM | | | | | | 11,679 | | |
| * Existing reach breaks and d | lesign reach break | s varied based on in | itial geomorphic | differences and | design requiremen | nts. | | |
| | | | | Component | Cummations | | | |
| Restoration Level | | Stream (LF) | Ripa Wetlan | d (Ac) | Non-Ripar (Ac) | Upland (Ac) | Buffer (Ac) | ВМР |
| Restoration | | 11,103 | Riverine | Non-Riverine | | | | |
| Enhancement I Enhancement II | | 1,171 | | | | | | |
| Creation Preservation | | 539 | | | | | | |
| HQ Preservation | | | | | | | | |
| | Totals | 12,813 | | | | | 40.7 | |

Table 3. Project Activity and Reporting History

| Big Cedar Creek Restor | cation Site: Project No. D06054 | l-D | |
|--|---------------------------------|-----------------------------|-------------------------------|
| Activity or Report | Scheduled Completion | Data Collection Complete | Actual Completion or Delivery |
| Restoration Plan Prepared | N/A | N/A | Jul-07 |
| Restoration Plan Amended | N/A | N/A | Jul-07 |
| Restoration Plan Approved | Mar-07 | N/A | Jul-07 |
| Final Design – (at least 90% complete) | N/A | N/A | Jun-07 |
| Construction Begins | Oct-07 | N/A | Nov-07 |
| Temporary S&E mix applied to entire project area | NA | N/A | Dec-08 |
| Permanent seed mix applied to entire project area | Dec-07 | N/A | Dec-08 |
| Planting of live stakes | Dec-07 | N/A | Feb-09 |
| Planting of bare root trees | Dec-07 | N/A | Feb-09 |
| End of Construction | Dec-07 | N/A | Feb-09 |
| Survey of As-built conditions (Year 0 Monitoring-baseline) | May-09 | Feb-09 | May-09 |
| Year 1 Monitoring | Scheduled Dec-09 | Scheduled Nov-09 | N/A |
| Year 2 Monitoring | Scheduled Dec-10 | Scheduled Nov-10 | N/A |
| Year 3 Monitoring | Scheduled Dec-11 | Scheduled Nov-11 | N/A |
| Year 4 Monitoring | Scheduled Dec-12 | Scheduled Nov-12 | N/A |
| Year 5 Monitoring | Scheduled Dec-13 | Scheduled Nov-13 | N/A |

Table 4. Project Contact Table

| Big Cedar Creek Restoration Site: Project No. D06054-D | | | | | | | | |
|--|---|--|--|--|--|--|--|--|
| Designer | | | | | | | | |
| Michael Baker Engineering, Inc. | 1447 South Tryon Street, Suite 200 Charlotte, NC 28203 | | | | | | | |
| | Contact: Christine Miller, Tel. 704-319-7898 | | | | | | | |
| Construction Contractor | | | | | | | | |
| River Works, Inc. | 8000 Regency Parkway, Suite 200 Cary, NC 27518 | | | | | | | |
| | Contact: | | | | | | | |
| | Will Pedersen, Tel. 919-459-9001 | | | | | | | |
| Planting Contractor | | | | | | | | |
| River Works, Inc. | 8000 Regency Parkway, Suite 200 Cary, NC 27518 | | | | | | | |
| | Contact: Will Pedersen, Tel. 919-459-9001 | | | | | | | |
| Seeding Contractor | | | | | | | | |
| River Works, Inc. | 8000 Regency Parkway, Suite 200 Cary, NC 27518 | | | | | | | |
| | Contact: | | | | | | | |
| | Will Pedersen, Tel. 919-459-9001 | | | | | | | |
| Seed Mix Sources | Mellow Marsh Farm, 919-742-1200 | | | | | | | |
| Nursery Stock Suppliers | International Paper, 1-888-888-7159 | | | | | | | |
| Monitoring Performers | | | | | | | | |
| Michael Baker Engineering, Inc. | 1447 South Tryon Street, Suite 200 Charlotte, NC 28203 | | | | | | | |
| Stream Monitoring Point of Contact: Vegetation Monitoring Point of Contact: | Ian Eckardt, Tel. 704-334-4454 | | | | | | | |

| | Table 5. Project Attribute Table Big Cedar Creek Restoration Site: Project No. D06054-D | | | | | | | | | | | | | | |
|--|---|---|-----------|-----------|-----------|------------|-----------|--------------|-----------------|------------|--------------|--------------|--------------|-----------|-----------|
| Project County | Stanly County, NC | | | | | | | | | | | | | | |
| Physiographic Region | Piedmont | | | | | | | | | | | | | | |
| Ecoregion | | eamont radina Slate Belt | | | | | | | | | | | | | |
| Project River Basin | Yadkin/Pee De | | | | | | | | | | | | | | |
| USGS HUC for Project and Reference sites | | INITITE DOE 10030 (Project); 03040101080010 (Ref.) | | | | | | | | | | | | | |
| NCDWQ Sub-basin for Project and Reference | | | | | | | | | | | | | | | |
| Within extent of EEP Watershed Plan ? | | 12-01 (Project): 03-07-02 (Ref.) | | | | | | | | | | | | | |
| WRC Class (Warm, Cool, Cold) | Warm | lkin-Pee Dee, 2003 | | | | | | | | | | | | | |
| % of project easement fenced or demarcated | 100% | | | | | | | | | | | | | | |
| Beaver activity observed during design phase ? | None | | | | | | | | | | | | | | |
| Beaver activity observed during design phase ? | None | ne | | | | | | | | | | | | | |
| | | Restoration Component Attribute Table | | | | | | | | | | | | | |
| | DCC Deach 4 | RESTORATION CHARGE TO THE RESTORATION COMPONENT ATTITUDE 1 BDC RESTORATION CHARGE 1 BCC Reach 2 BCC Reach 3 BCC Reach 4 BCC Reach 6 UT1 Reach 1 UT1 Reach 2 UT1 Reach 3 UT1 Reach 4 UT1A UT1B UT1C UT2 UT3 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Drainage area | 2.85 | 2.91 | 3.3 | 3.35 | 4.67 | 4.71 | 0.93 | 0.98 | 1.18 | 1.21 | 0.02 | 0.12 | 0.10 | 0.55 | 0.15 |
| Stream order | 3rd | 3rd | 3rd | 3rd | 3rd | 3rd | 2nd | 2nd | 2nd | 2nd | 1st | 1st | 1st | 1st | 1st |
| Restored length | 603 | 2,220 | 1,823 | 410 | N/A | N/A | 1,247 | 1,016 | 1,885 | 997 | 85 | 33 | 78 | 609 | 73 |
| Perennial or Intermittent | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Perennial | Intermittent | Intermittent | Intermittent | Perennial | Perennial |
| Watershed type (Rural, Urban, Developing etc.) | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural | Rural |
| Watershed LULC Distribution (e.g.) | | | | | | | | | | | | | | | |
| Developed Low-Medium Intensity | / | | | | | | | 1.3 | | | | | | | |
| Ag-Cultivated Crops | S | | | | | | | 1.5 | | | | | | | |
| Ag-Pasture/Hay | | | | | | | | 26 | | | | | | | |
| Forested | | | | | | | | 56 | | | | | | | |
| Other (Open water, Grassland, Etc. | | | | | • | | • | 15.2 | | 1 | • | | | • | |
| Watershed impervious cover (%) | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| NCDWQ AU/Index number | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 | 13-17-44 |
| NCDWQ classification | С | C | C | С | C | С | C | С | С | C | С | C | C | C | С |
| 303d listed ? | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Upstream of a 303d listed segment? | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Reasons for 303d listing or stressor Total acreage of easment | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A 40.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Total planted arceage as part of the restoration | | | | | | | | 40.7 | | | | | | | |
| Rosgen classification of pre-existing | E4/1 | B4/1c | C4/1 | C4/1 | B3/1c | F3/1 | C4/1 | 40.7 E4/1 | C4/1 | C4/1 | G | G | G | G4 | G |
| Rosgen classification of pre-existing Rosgen classification of As-built | E/C | E/C | E/C | E/C | B3/1c | F3/1 | E/C | E4/1 | E/C | C4/1 | E/C | E/C | E/C | E E | E/C |
| Valley type | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial | Alluvial |
| Valley type Valley slope | U | U | U | U | U | U | U | U | U | U | U | U | U | U | U |
| Valley side slope range (e.g. 2-3%) | U | IJ | Ü | U | U | Ü | U | U | IJ | U | U | Ü | U | U | Ü |
| | | U | U II | - | | | U II | U II | U II | | | | | | |
| Valley toe slope range (e.g. 2-3%) | U | U | U | U | U | U | Ū | · · | U | U | U | U | U | U | U |
| Cowardin classification | ļ | | 1 | | | | 7 - 11 | | ed Bottom, Cobb | | | ı | 1 | | 1 |
| Trout waters designation | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Species of concern, endangered etc.? (Y?N) | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
| Dominant soil series and characteristics | | | | | | | | | | | | | | | |
| Series | Oa | Oa | Oa | Oa | Co | Co, BaF | Oa | Oa, GoF | Oa, GoF | Oa, Co | Oa | Oa | Oa | Oa | Oa |
| Depth | 10 | 10 | 10 | 10 | 10 | 10, 6 | 10 | 10, 7 | 10, 7 | 10, 10 | 10 | 10 | 10 | 10 | 10 |
| , | | | | | | | | | | | | | | | |
| Clay % | 27 | 27 | 27 | 27 | 15 | 15, 27 | 27 | 27, 15 | 27, 15 | 27, 15 | 27 | 27 | 27 | 27 | 27 |
| K | 0.28 | 0.28 | 0.28 | 0.28 | 0.24 | 0.24, 0.15 | 0.28 | 0.28, 0.5 | 0.28, 0.5 | 0.28, 0.24 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| Т | 3 | 3 | 3 | 3 | 5 | 5. 3 | 3 | 3. 2 | 3. 2 | 3, 5 | 3 | 3 | 3 | 3 | 3 |

Appendix B

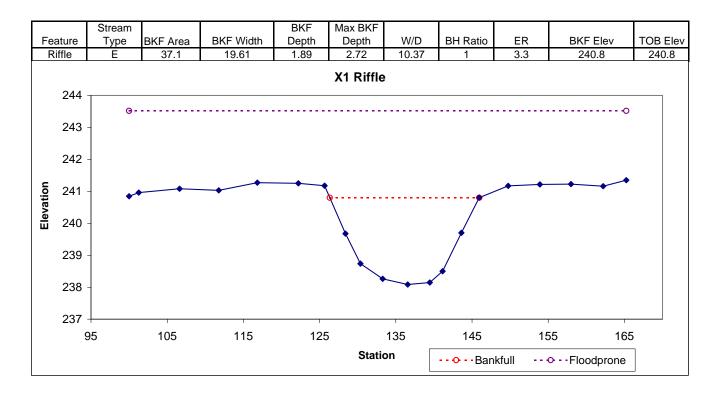
Morphological Summary Data
Cross-section Plots
Profile Plots
Tables 6 & 7
Sediment Data



Looking at the Left Bank



Looking at the Right Bank

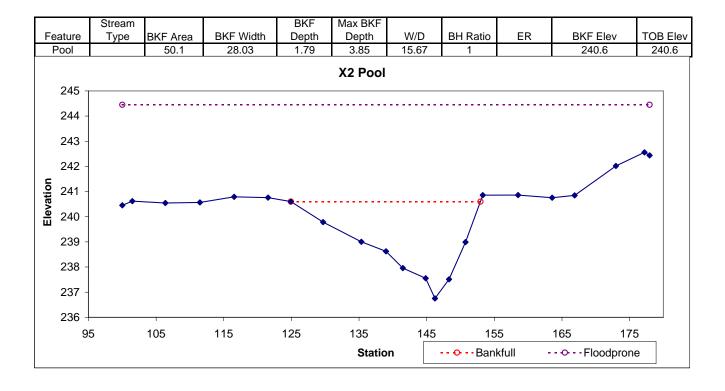




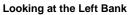
Looking at the Left Bank



Looking at the Right Bank

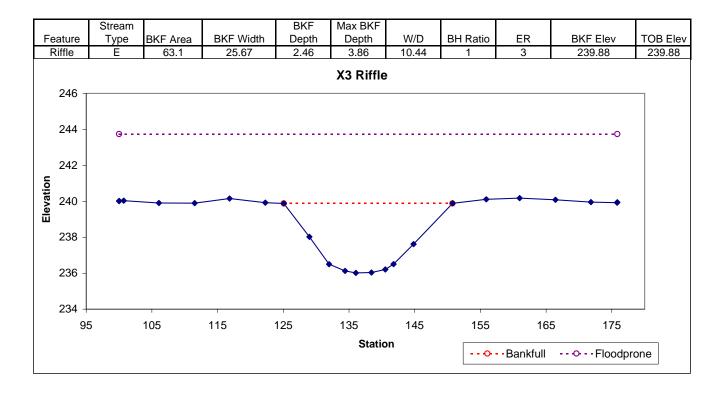








Looking at the Right Bank

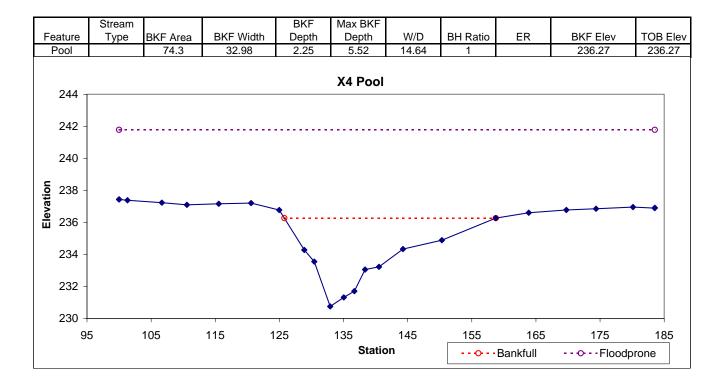




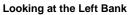




Looking at the Right Bank

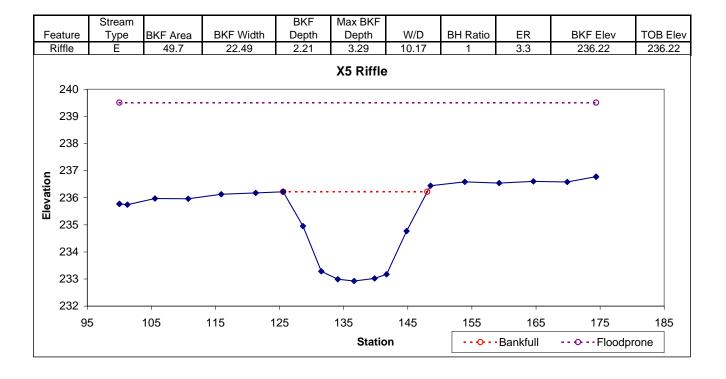








Looking at the Right Bank

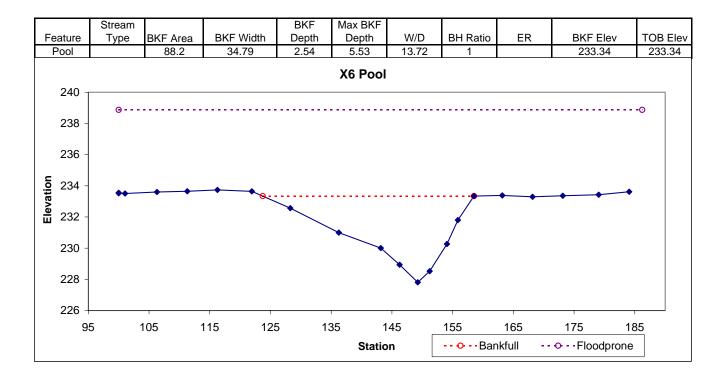




Looking at the Left Bank



Looking at the Right Bank



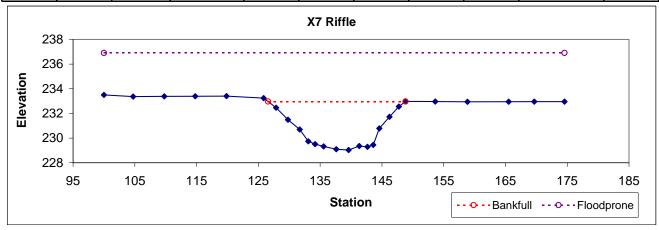


Looking at the Left Bank (February 2009)



Looking at the Right Bank (February 2009)

| | Stream | | | BKF | Max BKF | | | | | |
|---------|--------|----------|-----------|-------|---------|------|----------|-----|----------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | E | 55.6 | 22.25 | 2.5 | 3.94 | 8.91 | 1 | 3.4 | 232.97 | 232.97 |

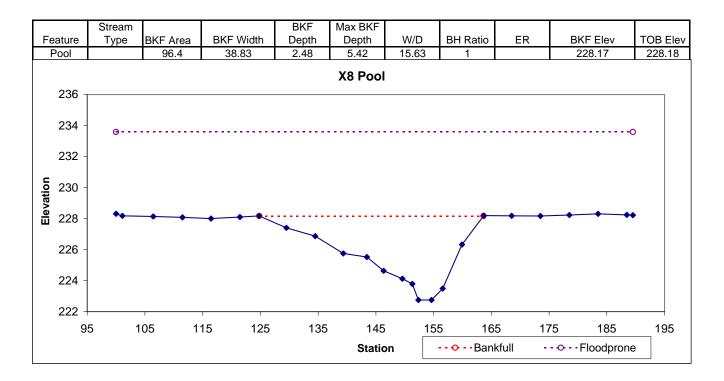








Looking at the Right Bank



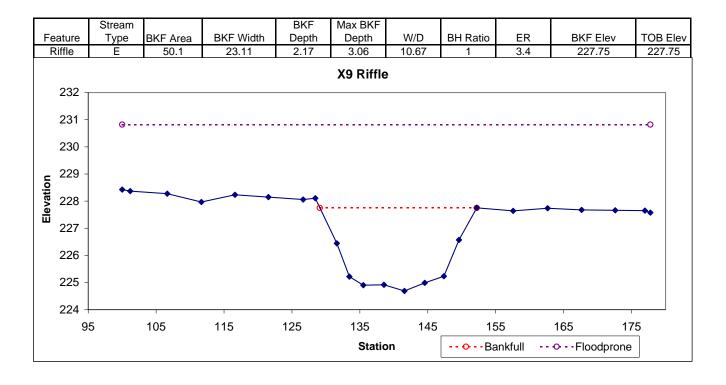




Looking at the Left Bank



Looking at the Right Bank







Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|-----------------|--------|----------|-----------|----------|------------|-------|----------|--------|----------|------------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | E | 51.8 | 24.64 | 2.1 | 3.11 | 11.73 | 1 | 3.2 | 225.25 | 225.25 |
| 229 ⊤ | | | | | X10 Riffle | • | | | | |
| 228 - | Θ | | | | | | | | | 0 |
| 227 - | | | | | | | | | | |
| <u>s</u> 226 - | •• | - | * | | | | | | | |
| Elevation 225 - | | | | 4 | | | | | | |
| 224 - | | | | | • | | / | | | |
| 223 - | | | | | | / | | | | |
| 222 - | | | | | | | | | | |
| 9: | 5 | 105 | 115 | 125 | 135 | 145 | 15 | 55 | 165 17 | 7 5 |
| | | | | | Statio | n [| •-Ba | nkfull | | • |

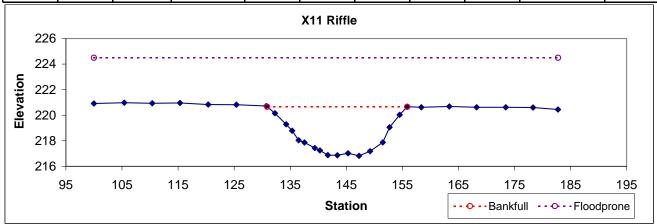


Looking at the Left Bank (February 2009)

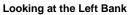


Looking at the Right Bank (February 2009)

| | Stream | | | BKF | Max BKF | | | | | |
|---------|--------|----------|-----------|-------|---------|------|----------|-----|----------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | E | 63.2 | 24.97 | 2.53 | 3.84 | 9.86 | 1 | 3.3 | 220.66 | 220.66 |

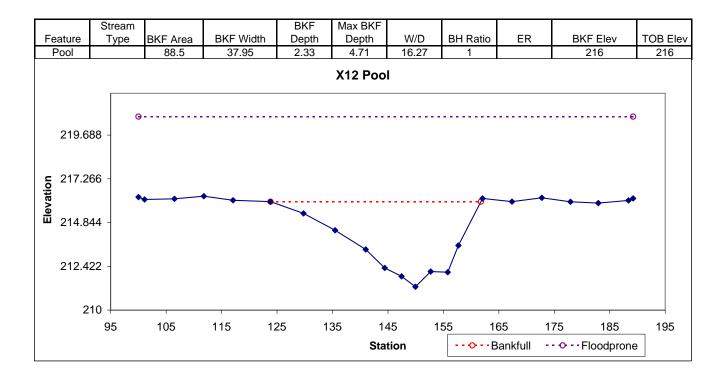








Looking at the Right Bank

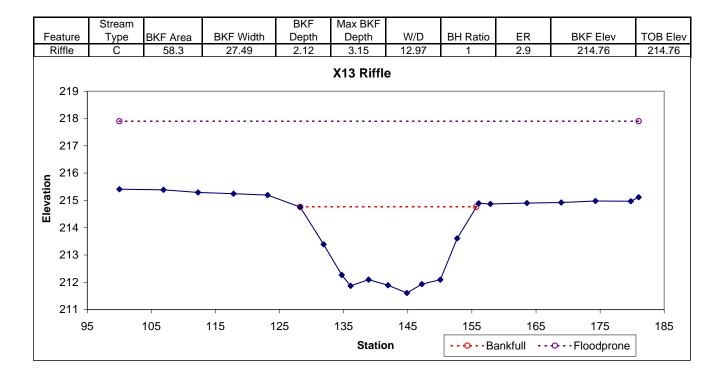




Looking at the Left Bank



Looking at the Right Bank

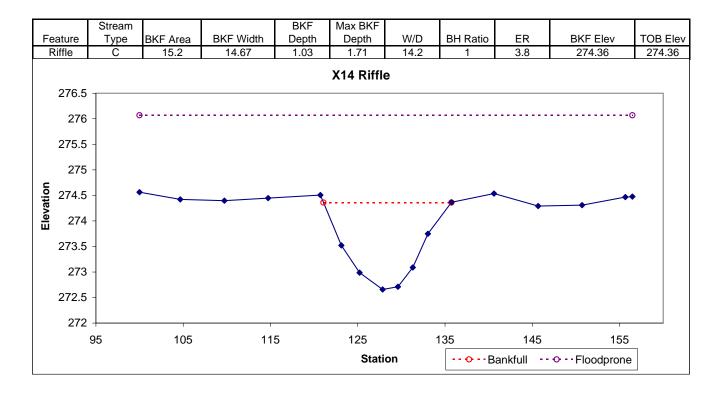




Looking at the Left Bank



Looking at the Right Bank



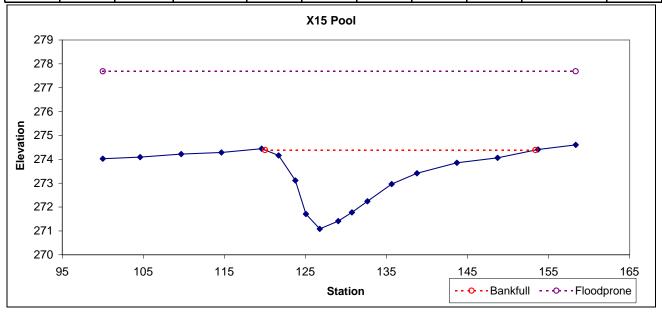


Looking at the Left Bank



Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|---------|--------|----------|-----------|-------|---------|-------|----------|----|----------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Pool | | 41.6 | 33.37 | 1.25 | 3.3 | 26.75 | 1 | | 274.39 | 274.41 |

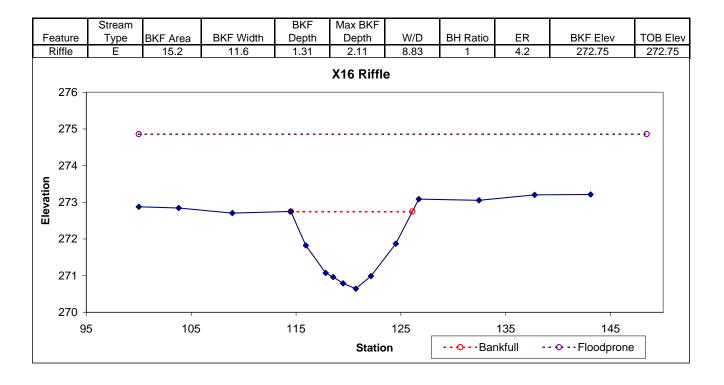




Looking at the Left Bank



Looking at the Right Bank







Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|---------------------|--------|------|-----------|-------|----------|-------|-------------------------|-----|----------|----------|
| Feature | Type | | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Pool | | 31.6 | 24.31 | 1.3 | 2.86 | 18.67 | 1 | | 270.45 | 270.45 |
| 274 — | | | | | X17 Pool | | | | | |
| 273 - | Θ | | | | | | | | | |
| 272 - | | | | | | | | | | |
| | | | | | | | | | | |
| 271 - 270 - 270 - | • | • | | | | •••• | • | • | | |
| 269 | | | | | | | | | | |
| | | | | | _ / | | | | | |
| 268 - | | | | | | | | | | |
| 267 95 | | 105 | 115 | | 125 | 135 | | 145 | 155 | |
| | | | | | Station | | <mark>o</mark> - · Banl | | | one |

Permanent Cross Section X18 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|-----------------|--------------|------|-----------|------|------------|----------|----------|---------|----------|--------|
| Feature | Type | | BKF Width | | Depth | W/D | BH Ratio | ER | BKF Elev | |
| Riffle | С | 14.2 | 13.24 | 1.07 | 1.8 | 12.34 | 1 | 4 | 268.04 | 268.04 |
| 270.5 | _ | | | | X18 Riffle | | | | | |
| 270 | | | | | | | | | | 0 |
| 269.5 | - | | | | | | | | | |
| 269 | - | | | | | | | | | |
| Elevation 268.5 | - | | | • | | | | | | |
| 268 | _ | | | Ø- | | | | | | • |
| 267.5 | | | | · | | * | | | | |
| 267 | | | | | | | | | | |
| 266.5 | | | | | | 46 | | | | |
| 266 | | 105 | | 115 | 105 | | 125 | 4.4 | E | 155 |
| | 95 | 105 | | 115 | 125 | | 135 | 14 | | 155 |
| | | | | | Statio | n | oBankfu | II O- | Floodpro | ne |

Permanent Cross Section X19 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | | Stream | | | BKF | Max BKF | | | | | |
|-----------|--------|--------|----------|-----------|----------|------------|-------|---------------|--------|------------|--------|
| | ature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | |
| R | liffle | С | 14.5 | 13.4 | 1.08 | 1.83 | 12.37 | 1 | 4.2 | 263.77 | 263.77 |
| | 266 | | | | , | X19 Riffle | | | | | |
| | 265.5 | Θ- | | | | | | | | | |
| | 265 | _ | | | | | | | | | |
| | 264.5 | | | | | | | | | | |
| ion | 264 | _ | | • | — | | | _ | | | • |
| Elevation | 263.5 | • | | | \ | • | | | | | |
| | 263 | _ | | | | | | | | | |
| | 262.5 | - | | | | | | | | | |
| | 262 | _ | | | | | | | | | |
| | 261.5 | _ | | | | | | | | | |
| | 261 | | ı | 1 | | 1 | - | | 1 | 1 | |
| | 9 |)5 | 105 | 115 | 5 | 125 | 135 | 5 | 145 | 155 | _ |
| | | | | | | Station | n | · • · · Bankf | ull •- | -Floodproi | ne |

(As-built Data - collected February 2009)





Looking at the Left Bank

105

115

259 -

258

257 + 95

Looking at the Right Bank

145

155

-- • -- Bankfull -- • -- Floodprone

165

| Footure | Stream | DICE Area | DICE Width | BKF | Max BKF | W/D | DII Dotio | ED. | DICE Flow | TOP Flow |
|-----------------|--------|-----------|------------|-------|----------|--|------------|-----|-----------|----------|
| Feature | Туре | | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | |
| Pool | | 26.7 | 21.19 | 1.26 | 2.84 | 16.83 | 1 | | 260.65 | 260.65 |
| | | | | | X20 Pool | | | | | |
| 264 - | Θ | | | | | | | | | 0 |
| 263 - | | | | | | | | | | |
| 262 - | • | | | | | | | | | |
| Elevation 261 - | | | | • | | | | | + | • |
| 260 - | | | | | | a de la companya de l | <i>-</i> - | | | |

125

Station

135

Permanent Cross Section X21 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|----------------------------|--------|----------|-----------|-------|------------|-------|----------------|-----|-------------|----------|
| Feature | | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | C | 17.9 | 15.87 | 1.13 | 1.93 | 14.04 | 1 | 3.7 | 260.25 | 260.25 |
| 262.5 | | | | | X21 Riffle | | | | | |
| 262 | Θ- | | | | | | | | | |
| 261.5 | | | | | | | | | • | |
| 261 | | - | • | | | | _ | | | |
| 260.5 Elevation 260 | - | | | •••• | | | | | | |
| | - | | | | | | | | | |
| 259.5 | 1 | | | 1 | \ | | | | | |
| 259 | _ | | | | | | | | | |
| 258.5 | | | | | | * | | | | |
| 258 | - | ı | 1 | | Т | Г | 1 | | T | |
| 9 | 95 | 105 | 115 | 1 | 125 | 135 | 145 | | 155 | 165 |
| | | | | | Station | - | - • - · Bankfu | | - Floodpror | ne |

Permanent Cross Section X22 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|------------------------|--------|------|-----------|------|------------|----------|-----------------|--------|------------|----------|
| Feature | | | BKF Width | | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 16.3 | 14.05 | 1.16 | 1.8 | 12.08 | 1 | 4.3 | 254.26 | 254.26 |
| 256.5 | | | | 2 | X22 Riffle | | | | | |
| 256 | Θ- | | | | | | | | 0 | |
| 255.5 | _ | | | | | | | | • | |
| 255 | • | | • | | | | | | | |
| Elevation 254.5 | _ | | | Q | | ····• | | * | | |
| | _ | | | \ | | | | | | |
| 253.5 | - | | | | | <i>*</i> | | | | |
| 253 | - | | | | | | | | | |
| 252.5 | 1 | | | | ~ | | | | | |
| 252 | _ | 1 | | | 1 | | | | | |
| | 95 | 105 | 115 | 1 | 125 | 135 | 145 | | 155 | 165 |
| | | | | | Station | ı [| · • - · · Bankf | ull •- | -Floodpror | ne |

Permanent Cross Section X23 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|-------------------|--------|----------|-----------|-------|----------|--------|------------|--------|----------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Pool | | 33.3 | 21.82 | 1.53 | 3.01 | 14.31 | 1 | | 250.05 | 250.05 |
| 254 _T | | | | | X23 Pool | | | | | |
| 253 - | Θ | | | | | | | | ⊙ | |
| 252 - | | | | | | | | | | |
| 251 - <u>5</u> | • | - | | | | | _ | | ** | |
| Elevation - | | | | | | ·····ø | | | | |
| 249 - | | | | | * | | | | | |
| 248 - | | | | | | pe de | | | | |
| 247 - | | | | | • | / | | | | |
| 246 | | - | | - | | | | | - | |
| 99 | 5 | 105 | 115 | 125 | 13 | 35 | 145 | 155 | 168 | 5 |
| | | | | | Station | | • - · Banl | kfull• | Floodpr | one |

Permanent Cross Section X24 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|---------------|-----------|----------|-----------|------------|------------|------------|---------------|------|--------------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 17.9 | 15.07 | 1.19 | 1.72 | 12.67 | 1 | 3.8 | 248.07 | 248.07 |
| 250 | | | | | X24 Riffle | | | | | |
| 200 | Θ- | | | | | | | | | • |
| 249.5 | | | | | | | | | | |
| 249 | _ | | | | | | | | • | |
| 248.5 | _ | | | | | | | _ | • | |
| Elevation 845 | • | | • | 6 - | | | | | | |
| 247.5 | - | | | · | | | | | | |
| 247 | - | | | | | | | | | |
| 246.5 | - | | | | * | | | | | |
| 246 | \ <u></u> | 405 | 445 | | 405 | 405 | | 4.45 | 455 | |
| | 95 | 105 | 115 |) | 125 | 135 | | 145 | 155 | |
| | | | | | Station | ı <u>-</u> | · • - · Bankf | ull• | - · Floodpro | ne |

Permanent Cross Section X25 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|--------------|--------|----------|-----------|-------|------------|----------|---------------|------|----------|----------|
| Feature | | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 17.8 | 15.26 | 1.17 | 1.83 | 13.1 | 1 | 3.7 | 239.68 | 239.68 |
| 040 | | | | ; | X25 Riffle | | | | | |
| 242 | | | | | | | | | | |
| 241.5 | Θ- | | | | | | | | | Θ |
| 241 | - | | | | | | | | | |
| 240.5 | _ | | | | | | | | | |
| 240 239.5 | • | | | | | | | | | • |
| 239.5 | - | | · | | | | • | • | | |
| 239 | _ | | | 7 | • | * | | | | |
| 238.5 | _ | | | | * | | | | | |
| 238 | _ | | | | | | | | | |
| 237.5 | | ı | ı | | - | 1 | | - | 1 | |
| 9 | 95 | 105 | 115 | 5 | 125 | 135 | 5 | 145 | 155 | |
| | | | | | Station | 1 | · • - · Bankf | ull• | Floodpro | ne |

Permanent Cross Section X26 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|-------------|--------|----------|-----------|-------|------------|-------|---------------|---------|--------------|----------|
| Feature | | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 20.9 | 16.24 | 1.29 | 2.16 | 12.59 | 1 | 3.6 | 236.96 | 236.96 |
| 240 — | | | | , | X26 Riffle | | | | | |
| 239 - | Θ | | | | | | | | | 0 |
| 238 - | • | - | • | | | | | | | |
| Elevation - | | | | 8 | | | | • | | |
| 236 - | | | | * | | | | | | |
| 235 - | | | | | A. | | | | | |
| 234 | | 1 | ı | | - | 1 | | ı | 1 | |
| 95 | | 105 | 115 | | 125 | 135 | | 145 | 155 | |
| | | | | | Station | | · • · · Bankf | ull 👁 · | · · Floodpro | ne |
| | | | | | | | | | | |

Permanent Cross Section X27 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|------------------------|--------|----------|-----------|-------|----------|-------|----------|--------|----------|----------|
| Feature | Type | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Pool | | 32.5 | 24.3 | 1.34 | 2.96 | 18.14 | 1 | | 235.22 | 235.22 |
| 239 — | | | | | X27 Pool | | | | | |
| 238 - | Θ | | | | | | | | | |
| 237 - | | | | | | | | | • | |
| 236 - | • | | | | | ر | | _ | | |
| Elevation - 235 - | · | • | • | • | | | | | | |
| 234 - | | | | | * | • | | | | |
| 233 - | | | | | | | | | | |
| 232 - | | | | | · | | | | | |
| 231 95 | | 105 | 115 | 125 | 13 | 35 | 145 | 155 | 165 | |
| | | | | | Station | | • Banl | kfull• | Floodpro | one |

Permanent Cross Section X28 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|---------------|--------|----------|-----------|------|------------|----------|-------------|--------|----------|----------|
| Feature | | BKF Area | BKF Width | | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 21.3 | 16.68 | 1.28 | 2.01 | 13.05 | 1 | 3.5 | 229.39 | 229.39 |
| 232 | | | | | X28 Riffle | | | | | |
| 231.5 | Θ- | | | | | | | | | 0 |
| 231 | - | | | | | | | | | |
| 230.5 | - | | | | | | | | | |
| <u>s</u> 230 | - | | | | | | | | | |
| Elevation 230 | - | | • | ••• | | | • | - | - | |
| 229 | - | | | | \ | / | , | | | |
| 228.5 | - | | | | | * | | | | |
| 228 | - | | | | | / | | | | |
| 227.5 | - | | | | * | | | | | |
| 227 | | | 1 | | 1 | - | | 1 | 1 | |
| | 95 | 105 | 115 | 5 | 125 | 135 | | 145 | 155 | |
| | | | | | Station | 1 - | - • - ·Bank | full ↔ | Floodpro | ne |

Permanent Cross Section X29 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| Feature Type BKF Area BKF Width Depth Depth W/D BH Ratio ER BKF Elev 7 Pool 42 19.15 2.19 4.58 8.73 1 228.69 X29 Pool 234 G 230 - 60 | TOB Elev 228.69 |
|---|--------------------|
| X29 Pool 234 232 - 230 - | 228.69 |
| 234 232 - 230 - | |
| 232 - 230 - | |
| | |
| Elevatio | |
| | |
| 226 - | |
| 224 - | |
| 222 | |
| 95 105 115 125 135 145 155 165 | |
| Station O Bankfull O Floodpror | ne |

Permanent Cross Section X30 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|-------------|--------|----------|-----------|-------|------------|----------|----------------|-------|----------|----------|
| Feature | | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | E | 25.3 | 16.82 | 1.5 | 2.28 | 11.18 | 1 | 3.8 | 222.35 | 222.35 |
| 225 — | | | | | X30 Riffle | | | | | |
| 224 - | Θ | | | | | | | | | |
| 223 - | •• | - | | | | • | | • | | |
| Elevation - | | | | | | ø | | | | |
| 221 - | | | | | | | | | | |
| 220 - | | | | | | √ | | | | |
| 219 | | | | | ı — | | | | | |
| 95 | | 105 | 115 | 12 | 25 | 135 | 145 | | 155 | 165 |
| | | | | | Station | - | - • - · Bankfı | ull • | Floodpro | ne |

Permanent Cross Section X31 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | Stream | | | BKF | Max BKF | | | | | |
|--------------|--------|------|------------|-----------|------------|------------|---------------|------|----------|----------|
| Feature | | | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | С | 27.8 | 22.62 | 1.23 | 1.76 | 18.43 | 1 | 2.3 | 215.05 | 215.05 |
| 217.5 | | | | | X31 Riffle | | | | | |
| 217 | • | | ◆ ⊕ | | | | | | | |
| 216.5 | _ | | * | * | | | | | | |
| 216 | - | | | | | | | | | |
| 215.5 215 | | | | \ | | | | | | |
| 215 | _ | | | \$ | | | | | | |
| 214.5 | _ | | | | | , | | * | | |
| 214 | - | | | | | | | | | |
| 213.5 | - | | | | *** | | | | | |
| 213 | | 105 | 115 | 105 | | 35 | 1.15 | 155 | 46 | |
| | 95 | 105 | 115 | 125 | | | 145 | 155 | 165 | |
| | | | | | Station | ı <u>-</u> | - • - · Bankt | ruli | Floodpro | ne |

Permanent Cross Section X32 (As-built Data - collected February 2009)





Looking at the Left Bank

Looking at the Right Bank

| | | Stream | | | BKF | Max BKF | | | | | |
|-------------|-------|--------|----------|-----------|-------|------------|----------|-----------------|-------|----------|----------|
| Featur | | | BKF Area | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | TOB Elev |
| Riffle | ; | E | 18.1 | 13.37 | 1.35 | 1.88 | 9.88 | 1 | 4.7 | 246.76 | 246.76 |
| 2 | 249 ⊤ | | | | | X32 Riffle | | | | | |
| 248 | 8.5 - | Θ- | | | | | | | | | 0 |
| 2 | 48 - | | | | | | | | | | |
| 247 | 7.5 - | | | | | | | | | | |
| <u>.</u> 2 | 47 - | | ^ | • | | • | | | | | |
| Elevation 2 | 6.5 | | | • | · | | | | - | • | |
| 2 | 46 - | | | | | | | | | | |
| 245 | 5.5 - | | | | | | | | | | |
| 2 | 45 - | | | | | | , | | | | |
| 244 | 4.5 - | | | | | | | | | | |
| 2 | 44 + | | - | 1 | | 1 | | 1 | | 1 | |
| | 95 | 5 | 105 | 115 | • | 125 | 135 | 145 | | 155 | 165 |
| | | | | | | Station | ı | · · • · · Bankf | ull 🌣 | Floodpro | ne |

(As-built Data - collected February 2009)





Looking at the Left Bank

105

115

Stream

241

95

Looking at the Right Bank

| Feature | Type | | BKF Width | Depth | Depth | W/D | BH Ratio | ER | BKF Elev | |
|-----------------|------|------|-----------|----------|----------|------------|----------|----|----------|--------|
| Pool | | 29.4 | 26.78 | 1.1 | 2.9 | 24.38 | 1 | | 244.56 | 244.56 |
| | | | | , | X33 Pool | | | | | |
| 248 7 | | | | | | | | | | |
| 247 - | Θ | | | | | | | | | |
| 246 - | | | | | | | | | | |
| Elevation 245 - | • | • | | Q | | <u>"</u> . | | • | | |
| <u>\$</u> 244 - | | | | | | 1 | | | | |
| 243 - | | | | 1 | | / | | | | |
| 242 - | | | | \ | | | | | | |

135

Station

145

155

165

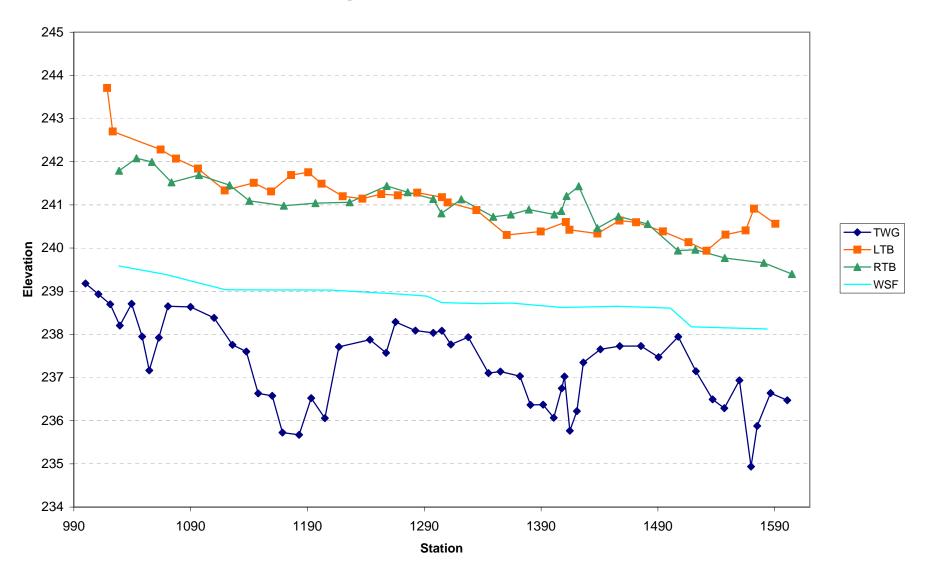
-- • -- Bankfull -- • -- Floodprone

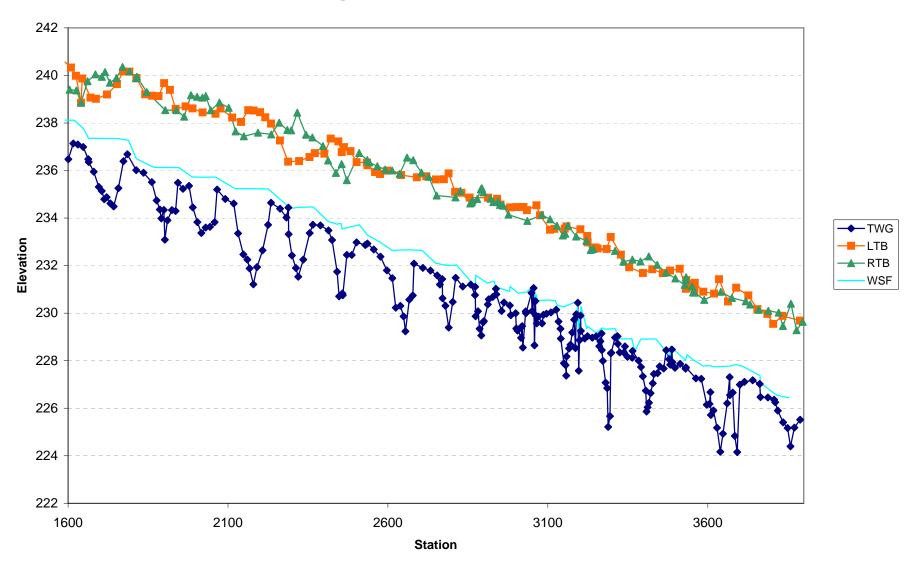
175

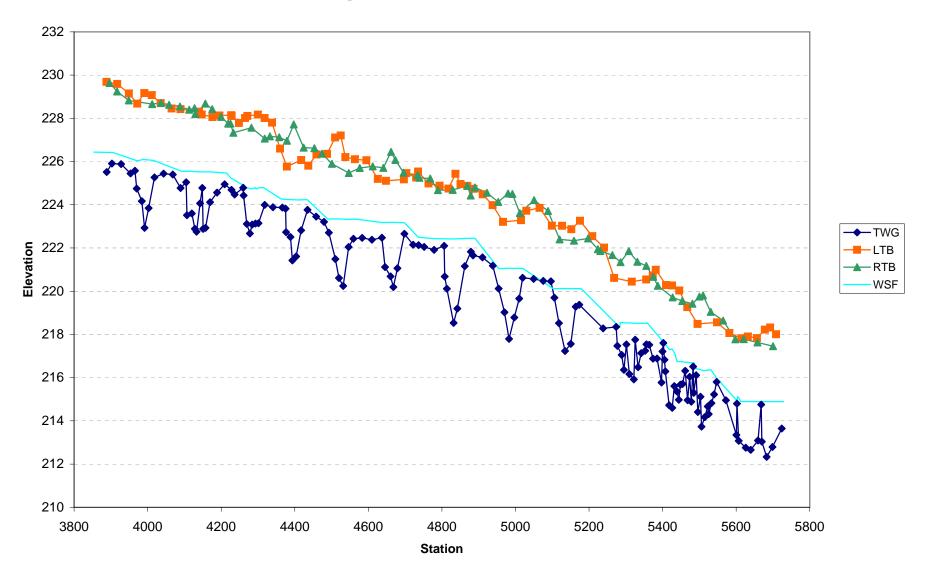
Max BKF

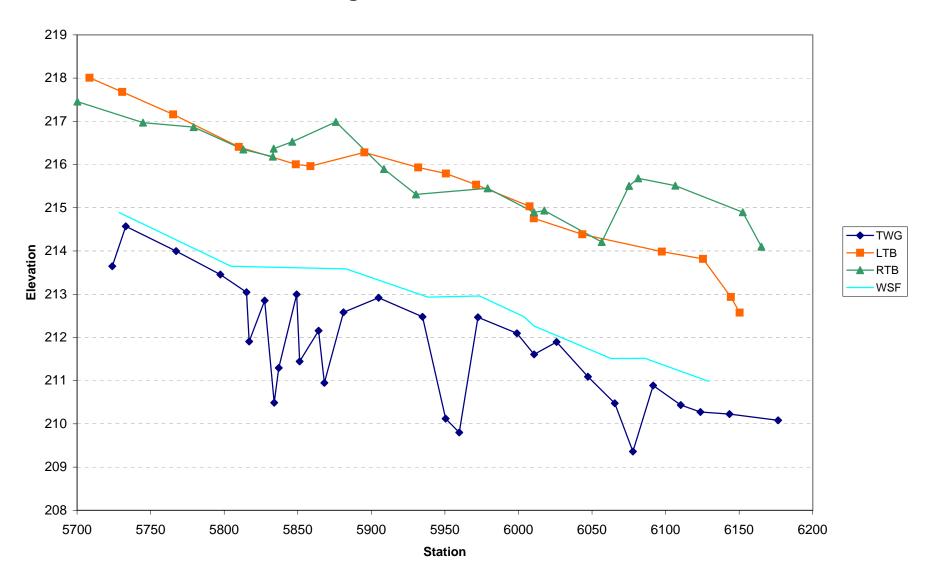
BKF

125

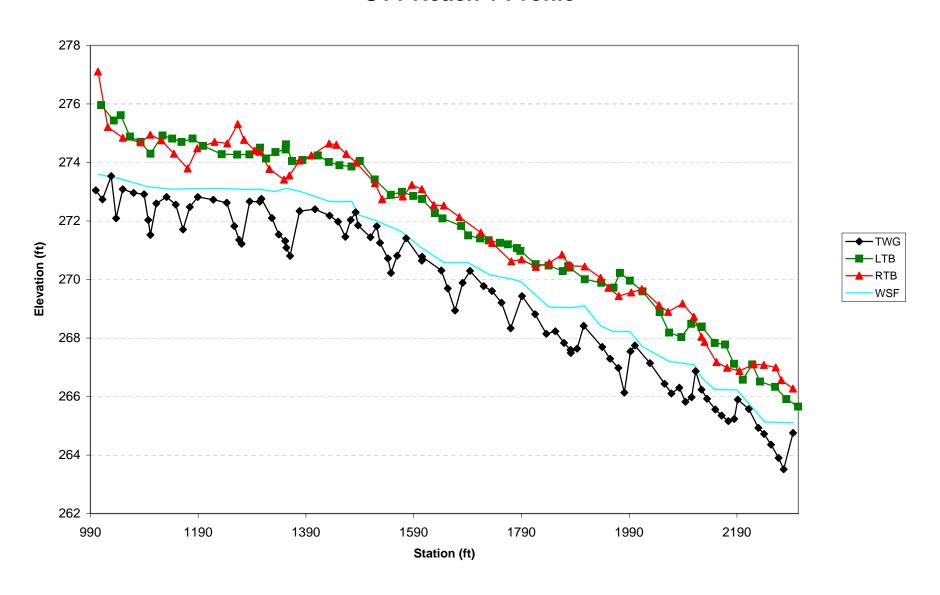




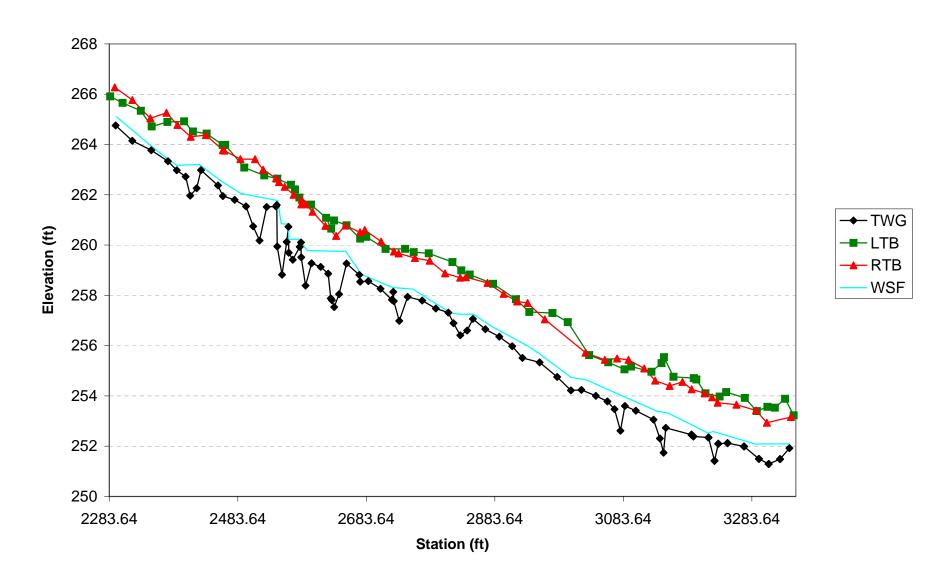




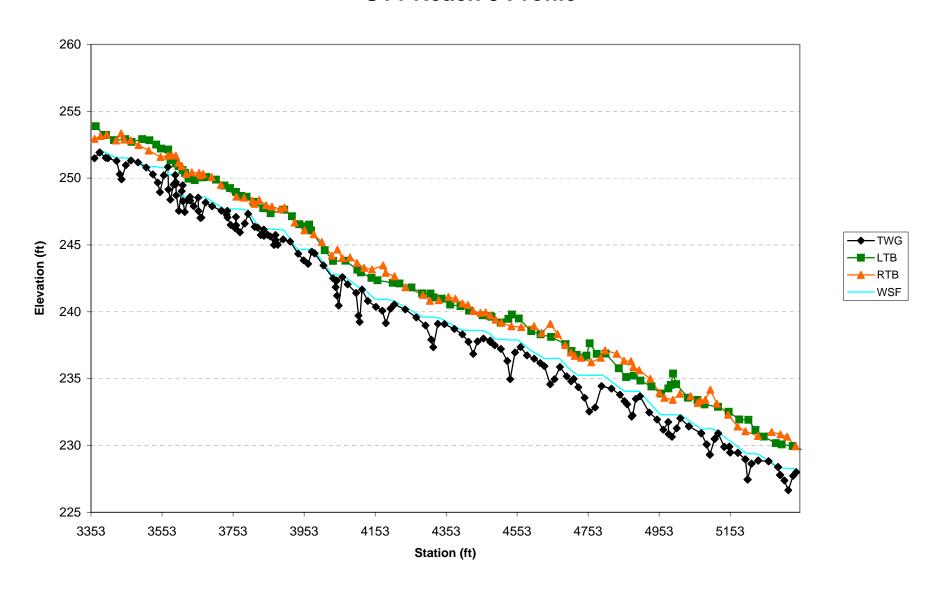
UT1 Reach 1 Profile



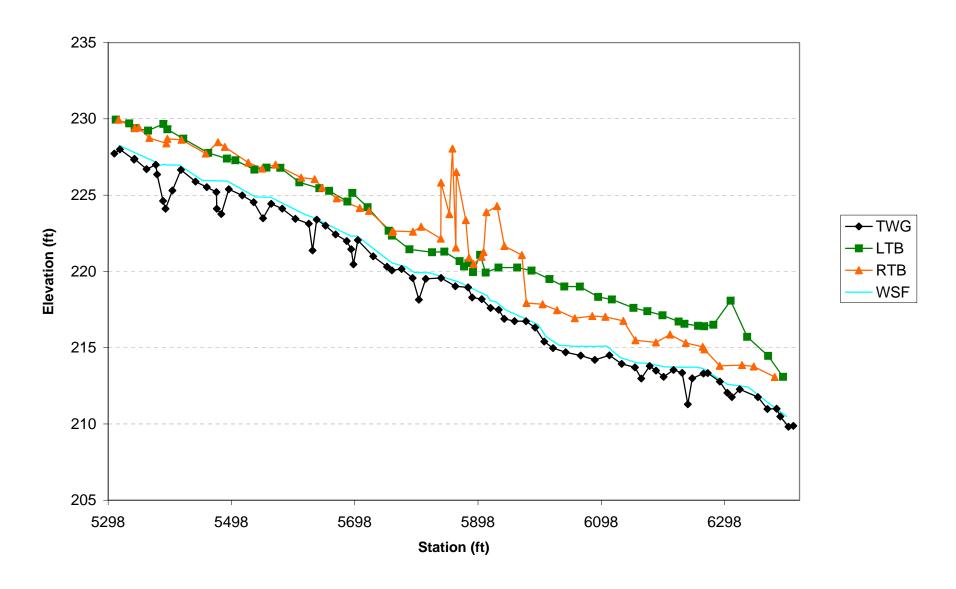
UT1 Reach 2 Profile



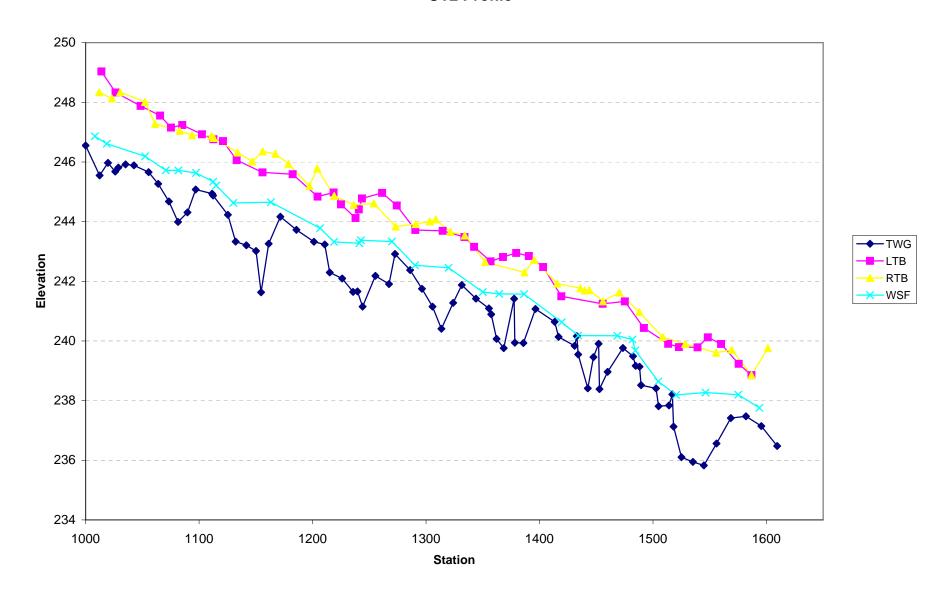
UT1 Reach 3 Profile



UT1 Reach 4 Profile



UT2 Profile



| | | | | | | | | | | | | | am Summ | | | | | | | | | | | | | | | |
|--|---------------|--------------------------|------------------------------------|------------------------|------|---|--------------|---------------|--------|--|--------------|--|---|--|--|--|---|--|-----|---------------|-----|---|--|--|---|---|--|--|
| | USGS | 1 | | | 1 | | | | | Big | Cedar Cr | | h 1 (603 LF Reference F | | Tata | | 1 | | | | | | ı | | | | | |
| Parameter | Gauge | Regio | nal Curve I | Interval | | | | g Conditio | | | | | Morga | n Creek | | | | | | sign | | | | | | built | | |
| Dimension and Substrate - Riffle BF Width (ft) | | 10.0 | 35.0 | Eq. 18.7 | Min | Mean 16.3 | Med | Max | SD | n 1 | Min | Mean 33.2 | Med | Max | SD | n 2 | Min | Mean 20.0 | Med | Max | SD | n 1 | Min | Mean 19.6 | Med | Max | SD | n 1 |
| Floodprone Width (ft) | | | | | | >126.6 | | | | 1 | | 77.5 | | | | 2 | | 87.0 | | | | 1 | | 65.3 | | | | 1 |
| BF Mean Depth (ft) BF Max Depth (ft) | | 1.3 | 3.1 | 2.1 | | 2.3 | | | | 1 | | 2.3 | | | | 2 | | 2.0 | | | | 1 | | 1.9 | | | | 1 |
| BF Cross-sectional Area (ft²) | | 18.0 | 68.0 | 43.7 | | 36.7 7.1 | | | | 1 | | 75.1 14.1 | | | | 2 | | 39.0 10.0 | | | | 1 | | 37.0 10.4 | | | | 1 |
| Width/Depth Ratio | | | | | | >7.1 | | | | 1 | | 2.3 | | | | 2 | | 4.4 | | | | 1 | | 3.3 | | | | 1 |
| Bank Height Ratio | | | | | | 1.8 | | | | 1 | | 1.0 | | | | 2 | | 1.0 | | | | 1 | | 1.0 | | | | 1 |
| Pattern d50 (mm) | | | | | | 14.0 | | | | | | 3.0 | | | | ' | | | | | | | | | | | | |
| Channel Beltwidth (ft) Radius of Curvature (ft) | | | | | | | | | | | | | | | | | 103.0 50.0 | | | 132.0 70.0 | | 3 | 106.6 48.0 | 116.1 59.7 | 109.8 61.0 | 132.0 70.0 | 13.8 11.1 | 3 |
| Rc:Bankfull width (ft/ft) | | | | | | | | | | | | | | | | | 2.5 | | | 3.5 | | 3 | 2.5 | 3.0 | | 3.6 | | 3 |
| Meander Wavelength (ft) Meander Width Ratio | | | | | | | | | | | | | | | | | 281.0 5.2 | | | 285.0 6.6 | | 3 | 251.7 5.4 | 272.8 | 257.2 | 309.4 6.7 | 31.8 | 3 |
| Profile | | | | | | | | | | | | | | | | | 0.2 | | | 0.0 | | | | | | | | |
| Riffle Length (ft) Riffle Slope (ft/ft) | | | | | 0.01 | | | 0.04 | | | 0.01 | | | 0.02 | | 2 | 0.0073 | | | 0.0079 | | 4 | 52.0 0.0 | 69.0 | 73.0 | 83.0 0.0 | 12.9 0.0 | 3 |
| Pool Length (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pool Spacing (ft) Pool Max Depth (ft) | | | | | 46.0 | 3.8 | | 98.0 | | | 146.0 4.1 | | | | | 1 | 150.0 | 6.5 | | 205.0 | | 1 | 128.0 | 172.0 3.9 | 155.0 | 232.0 | 44.0 | 3 |
| Pool Volume (ft ³) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Substrate and Transport Parameters | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% SC% / Sa% / G% / B% / Be% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d16 / d35 / d50 / d84 / d95 | | | | | | | | 14 / 100 / 30 | | | | | | 3 / 77 / 800 | | | | | | | | | | | | | | |
| Reach Shear Stress (competency) lb/f Max part size (mm) mobilized at bankfull (Rosgen Curve) | | | | | | 0.88 250.0 | | | | | | | | | | | | 0.31 80.0 | | | | | | 0.2 53.0 | | | | 1 |
| Stream Power (transport capacity) W/m ² Additional Reach Parameters | | | | | | | | | | | | | | | | | | | | | | | | 11.6 | | | | 1 |
| Additional Reach Parameters Drainage Area (SM) | | | | | 2.3 | | | 2.9 | | | | | | 8.4 | | | 2.3 | | | 2.3 | | | 2.3 | | | 2.3 | | |
| Impervious cover estimate (%) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rosgen Classification BF Velocity (fps) | | | | | | E4/1 | | | | | | C4 6.6 | | | | | | E/C4 3.8 | | | | | | E/C 4.1 | | | | |
| BF Discharge (cfs) | | 58.0 | 450.0 | 189.7 | | | | | | | | 524.0 | | | | | | 150.0 | | | | | | 150.0 | | | | |
| Valley Length Channel length (ft) | | | | | | 350.0 350.0 | | | | | | | | | | | | 573.0 | | | | | | 460.0 603.0 | | | | |
| Sinuosity | | | | | | 1.00 | | | | | | | | | | | | 1.30 | | | | | | 1.31 | | | | |
| Water Surface Slope (Channel) (ft/ft) BF slope (ft/ft) | | | | | | 0.0080 | | | | | | 0.0070 | | | | | | 0.0030 | | | | | | 0.0 | | | | |
| Bankfull Floodplain Area (acres) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BEHI VL% / L% / M% / H% / VH% / E% Channel Stability or Habitat Metric | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Biological or Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| | | 1 | | | + | | | | | | | | | | - | | | | | | | | ļ | | | | | |
| | | | | | | | | | | Die | Cadas Cas | al- Danah | 2 (2220 1 | | | | | | | | | | | | | | | |
| Recorder | USGS | Pomie | and Curve I | lutarial. | | | Dec Eviction | a Condition | | Big | Cedar Cre | | 2 (2239 L Reference F | | Data | | | | Dec | | | | | | | h!le | | |
| Parameter | USGS Gauge | | onal Curve I | | Min | | | g Condition | | | | F | Reference R Morga | reach(es) E n Creek | | | Min | Mana | | sign | c n | | Min | Maga | | built | en. | |
| Parameter Dimension and Substrate - Riffle BF Width (ft) | | Regio | onal Curve I | Interval Eq. 18.8 | Min | Mean 22.0 | Pre-Existin | g Condition | SD | Big | Cedar Cre | | Reference F | Reach(es) D | Data SD | n 2 | Min | Mean 23 | De: | sign Max | SD | n 1 | Min 22.5 | Mean 23.9 | As- Med 23.4 | built Max 25.7 | SD 1.3 | n 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) | Gauge | LL 12.0 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 | Med | Max | SD | n 1.0 1.0 | Min | Mean 33.2 77.5 | Med | Reach(es) E an Creek Max | SD | n 2 2 2 2 | | 23 100.0 | Med | Max | | 1 | 22.5 74.4 | 23.9 74.9 | Med 23.4 74.5 | Max 25.7 75.8 | 1.3 0.7 | 3 |
| Dimension and Substrate - Riffle BF Width (t) Floodprone Width (t) BF Mean Depth (t) | Gauge | LL | UL | Eq. | | Mean 22.0 | Med | Max | SD | n 1.0 | Min | Mean 33.2 | Reference F Morga Med | Reach(es) E an Creek Max | SD | n 2 2 2 2 2 2 | | 23 | Med | Max | | 1 | 22.5 | 23.9 | Med 23.4 | Max 25.7 | 1.3 | 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Ars-Sectional Area (ft²) | Gauge | LL 12.0 1.4 | 39.0 3.3 85.0 | Eq. 18.8 2.1 | | Mean 22.0 33.0 1.8 2.6 39.7 | Med | Max | SD | 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 | Reference F Morga Med | Max | SD | n 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | 23 100.0 2.3 3.3 52.7 | Med | Max | | 1 1 1 | 22.5 74.4 2.2 3.3 49.7 | 23.9 74.9 2.4 3.6 56.6 | Med 23.4 74.5 2.4 3.5 56.9 | Max 25.7 75.8 2.5 3.9 63.1 | 1.3 0.7 0.1 0.2 5.5 | 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft) BF Cross-sectional Area (ft ²) Width/Depth Ratio | Gauge | 12.0 1.4 | 39.0 3.3 | Eq. 18.8 2.1 | | Mean 22.0 33.0 1.8 2.6 | Med | Max | SD | n 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 | Reference F Morga Med | Reach(es) E an Creek Max | SD | n 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | 23 100.0 2.3 3.3 | Med | Max | | 1 1 1 | 22.5 74.4 2.2 3.3 | 23.9 74.9 2.4 3.6 | Med 23.4 74.5 2.4 3.5 | Max 25.7 75.8 2.5 3.9 | 1.3 0.7 0.1 0.2 | 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratic Bank Height Ratio | Gauge | 1.4 23.0 | 39.0 3.3 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 | Med | Max | SD | n 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 | Reference F Morga Med | leach(es) E In Creek Max | SD | n 2 2 2 2 2 2 2 2 2 2 4 4 4 4 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 | | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft) BF Cross-sectional Area (ft ²) Width/Depth Ratio | Gauge | 1.4 23.0 | 39.0 3.3 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 | Med | Max | SD | n 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 | Med | leach(es) E In Creek Max | SD | n 2 2 2 2 2 2 2 2 2 1 1 | | 23 100.0 2.3 3.3 52.7 10.0 4.3 | Med | Max | | 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 | 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mex Depth (ft) BF Gross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mp) Pattern Channel Beltwidth (ft) | Gauge | 1.4 23.0 | 39.0 3.3 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | n 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morgs Med | leach(es) Ean Creek Max | SD | 2 1 | 73.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Asso-sectional Area (ft²) Width/Depth Ratio Entrenchment Batalo Bank Height Ratio d50 (mm) Pattern | Gauge | 1.4 23.0 | 39.0 3.3 3.3 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 | Med | Max | SD | n 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 | Reference F Morga Med | leach(es) E In Creek Max | SD | 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 1 | | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft) BF Max Depth (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Re:Bankfull width (fth) Meander Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) | Gauge | 1.4 | 39.0 3.3 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Med | leach(es) E In Creek Max | SD | 2 1 | 73.0 44.0 1.9 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 | 3 3 3 3 3 3 3 3 3 3 4 14 15 15 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ft, Radius of Curvature (ft) Re:Bankfull width (ft/ft) | Gauge | 12.0 | 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morga Med | leach(es) E in Creek Max | SD | 2 1 | 73.0 44.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 | 3 3 3 3 3 3 3 3 3 3 4 14 15 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft) BF Max Depth (ft) BF Area (ft²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwith (ft Radius of Curvature (ft) ReBankfull width (ft/ft) Meander Wavelength (ft,) Meander Wavelen | Gauge | 23.0 | 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Med | leach(es) E in Creek Max | SD | 2 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 216.6 59.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 | 3 3 3 3 3 3 3 3 3 3 3 4 15 15 14 14 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio G50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Re:Banfull width (ft/ft) Meander Wavelength Meander Wavelength Profile | Gauge | 12.0 | 85.0 | Eq. 18.8 2.1 44.3 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Med | leach(es) E in Creek Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 216.6 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 1 5 15 15 14 14 14 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) RcBankfull width (ft/ft) Meander Wavelength (ft) Meander Width Ratio Frofile Riffle Length (ft) Riffle Slopt (ft) Riffle Slopt (ft) Pool Spacing (ft) Pool Spacing (ft) | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.8 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Morge Med | leach(es) E in Creek Max | SD | 2 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 135.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 47.0 | Max 25.7 75.8 25.7 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft. BF Max Depth (ft. BF Max Depth (ft. BF Max Depth (ft. AFF Cross-sectional Area (ft?) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic AFF Cross-sectional Area (ft?) Width/Depth Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic AFF (ft.) AFF (ft.) Radius of Curvature (ft.) Resankfull width (ft/ft.) Meander Wavelength (ft.) Meander Width Ratic Profile Riffle Length (ft.) Riffle Slope (ft/ft.) Pool Length (ft.) Pool Length (ft.) | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Med | leach(es) E in Creek Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 0.0070 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 62.0 0.0110 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 25.7 3.9 63.1 10.4 3.3 1.0 11.0 11.0 11.0 11.0 11.0 11.0 1 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 1 5 15 15 14 14 14 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft²) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Re:Bankfull width (fth) Meander Wavelenght (ft) Meander Width Ratic Profile Riffle Slope (fth) Riffle Slope (fth) Pool Length (ft Pool Max Depth (ft) Pool Max Depth (ft) Pool Wavelength (ft) Pool Volume (ft²) Substrate and Transport Parameters | Gauge | 12.0 1.4 1.4 1 1 1 1 1 1 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 4.2 4.2 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Med | leach(es) E in Creek Max Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 0.0070 101.0 5.5 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 135.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 150.0 0.0110 150. | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Resankfull width (ft)ft) Meander Wavelength (ft) Meander Width Size Profile Riffle Length (ft) Riffle Slope (ft)ft) Pool Map Depth (ft) Pool Spacing (ft) Pool Map Depth (ft) Substrate and Transport Parameters | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Morge Med | leach(es) E in Creek Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 135.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 150.0 0.0110 150.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 18.5 0.0030 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 15 15 15 14 14 14 14 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft. BF Mean Depth (ft. BF Mas Depth (ft. BF Mass-sectional Area (ft. Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Channel Beltwidth (ft. Radius of Curvature (ft. Radius of Curvature (ft. Radius of Curvature (ft. Resankfull width (ft/ft) Meander Wavelength (ft. Meander Width Ratic Profile Riffle Length (ft.) Riffle Length (ft.) Rool Langth (ft.) Pool Spacing (ft.) Pool Max Depth (ft.) Pool Max Depth (ft.) Substrate and Transport Parameters Riffs / Ru% / P% / G% / S% SC% / Sa% / G% / B% / B% / B% | Gauge | 1.4 | UL 39.0 | Eq. 18.8 2.1 44.3 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Med | Eeach(es) E in Creek In Creek Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 | 23.9 74.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 135.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 47.0 150.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 102.0 0.0170 225.0 5.5 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio (50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Rec-Bankfull width (ft/ft) Meander Wavelength (ft) Meander Width Ratio Profile Riffle Length (ft) Riffle Signe (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Aspacing (ft) Pool Max Depth (ft Pool Syacing (ft) Substrate and Transport Parameters Riffs (Ruk) / P% / G% / S% SC% / Sa% / G% / B% / B% / S% SC% / Sa% / S% / S% / S% / B% / B% | Gauge | 1.4 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 2.6 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Med | Leach(es) E in Creek Max | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 0.0092 | 23 100.0 2.3 3.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 5.5 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 150.0 0.0110 150.0 0.0110 150.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ftf) Radius of Curvature (ft) Reander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio Frofile Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Aspacing (ft) Pool Max Depth (ft) Pool Spacing (ft) Substrate and Transport Parameters Riff, Ru%, IP%, IG%, IS%, SC%, IS%, IS%, IS%, IS%, IS%, IS%, IS%, IS | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.00 3.0 | Reference R Morge Med | Eeach(es) E in Creek Max | SD | 2 1 | 73.0 44.0 1.9 197.0 3.2 110.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 0.0070 101.0 5.5 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 229.4 135.0 135.0 0.62 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 | Max 25.7 75.8 2.5.7 75.8 2.5.5 3.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 102.0 0.0170 225.0 5.5 | 1.3 0.7 0.1 0.2 0.7 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 39.2 39.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Radius of Curvature (ft) Reander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratic Profile Riffle Langth (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Aspacing (ft) Pool Max Depth (ft Pool Spacing (ft) Substrate and Transport Parameters Riffle (Ru% / P% / 6% / 5% SC% / Sa% / P% / 6% / 5% SC% / Sa% / G% / B% / Be% d16 / d35 / d50 / d84 / d35 Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wimi Additional Reach Parameters | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Med | Reach(es) Each(es) Each(es) | SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 110.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.4 37.0 1.6 184.9 3.0 1.0 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 47.0 150.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 102.0 0.0170 5.5 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft²) Width/Depth Ratic Enternehment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Resankful width (fth) Meander Wavelength (ft) Meander Width Ratic Profile Riffle Slope (fth) Riffle Slope (fth) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Riffle Slope (fth) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Robustrate and Transport Parameters Riffle Slope (fth) GSWs / Swk / (Swk / Psk / Bewk Gd 16 / d35 / d50 / d84 / d55 Reach Shear Stress (competency) Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wirm' Additional Reach Parameters Drainage Area (SM) Imperious cover estimate (%) | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 777.5 2.3 2.8 75.1 14.1 1.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | Reference R Morge Morge Med | Ceach(es) E in Creek Max | SD | 2 1 | 73.0 44.0 1.9 197.0 3.2 110.0 2.3 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 0.0070 101.0 5.5 2.3 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Radius of Curvature (ft) Reander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratic Profile Riffle Langth (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Aspacing (ft) Pool Max Depth (ft Pool Spacing (ft) Substrate and Transport Parameters Riffle (Ru% / P% / 6% / 5% SC% / Sa% / P% / 6% / 5% SC% / Sa% / G% / B% / Be% d16 / d35 / d50 / d84 / d35 Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wimi Additional Reach Parameters | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Morge Med | Eeach(es) E in Creek Max | SD SD | 2 1 | 73.0 44.0 1.9 197.0 3.2 0.0092 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 5.5 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 62.0 0.0110 135.0 0.62 170.0 29.3 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 47.0 216.6 159.0 0.0110 150.0 150 | Max 25.7 75.8 2.5 75.8 2.5 3.9 63.1 10.4 .0 89.0 3.8 297.5 60.0170 102.0 0.0170 102.0 0.0170 102.0 3.1 3.1 3.1 3.1 3.1 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Realius of Curvature (ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft, Substrate and Transport Parameters Rijs (Ru% / P% / P% / G% / S% SC% / Sa% / G% / B% / B% / B% G16 / G35 / d30 / d84 / d85 G16 / G35 / d30 / d84 / d85 Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rospen Curve) Stream Power (transport capacity) Wiming Additional Reach Parameters Drainage Area (SM) Impervious cover estimate (%) Rospen Classification BF Velocity (fps) BF Pilscharge (ds) BF Pilscharge (ds) | Gauge | 1.4 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 1.9 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Morge Med | Eeach(es) E in Creek Max | SD SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 110.0 2.3 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 2.3 2.3 2.3 2.3 2.3 2.3 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 135.0 170.0 29.3 E/C 3.3 185.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 | Max 25.7 75.8 2.5.7 75.8 2.5.3.9 63.1 10.4 3.3 1.0 | 1.3 0.7 0.1 0.2 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 18.5 0.0030 39.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratio G50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Meander Wavelength (ft) Meander Width Ratio Profile Riffle Slopp (ft/ft) Pool Length (ft) Pool Length (ft) Pool Apacing (ft) Pool Max Depth (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Spacing | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Morge Med | Ceach(es) E in Creek Max | SD S | 2 1 | 73.0 44.0 1.9 197.0 3.2 | 2.3 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 0.0070 101.0 2.3 2.3 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 52.7 2.2 2.2 4 135.0 0.0110 135.0 0.62 170.0 29.3 185.0 1854.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 216.6 | Max 25.7 75.8 2.5.7 75.8 2.5.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 102.0 0.0170 225.0 5.5.5 3.1 3.1 3.1 | 13. 0.7 0.1 0.2 0.2 5.5 0.3 0.1 0.0 18.9 14.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft²) Radius of Curvature (ft) Realaus of Curvature (ft) Reanaful width (ft²) Meander Wavelength (ft; Meander Width Ratic Profile Riffle Slope (ft/ft) Pool Length (ft; Pool Spacing (ft) Pool Aspacing (ft) Pool Max Depth (ft; Pool Spacing (ft) Substrate and Transport Parameters Riffs / Ru% / P% / G% / 5% SC% / Sa% / G% / B% / Be% d16 / d35 / d50 / d84 / d55 Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wim Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classification BF Velocity (fts) BF Discharge (cfs) Valley Length (ft, Channel Iength (ft, Channel Iength (ft, Channel Iength (ft, Sinuosity) | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.00 3.0 | N/A / 1.2 / | Ceach(es) E | SD S | 2 1 | 73.0 44.0 1.9 197.0 3.2 110.0 110.0 110.0 110.0 110.0 110.0 110.0 110.0 110.0 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 5.5 | 23.9 74.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 2.9 62.0 0.0110 135.0 0.62 170.0 220.0 1.31 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5.7 75.8 2.5.9 63.1 10.4 3.3 1.0 144.0 89.0 3.8 297.5 6.0 102.0 0.0170 225.0 5.5.5 3.1 3.1 | 1.3 0.7 0.1 0.2 5.5 0.3 0.1 0.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft²) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwätte (ft) Radius of Curvature (ft) Reandus of Curvature (ft) Reandus of Curvature (ft) Reander Width Ratic Meander Width Ratic Profile Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Spacing (ft) Substrate and Transport Parameters Ri% (Ru% / P% / G% / 5% / 8% Sc% / Sa% / 6% / 8% / 6% / 6% / 8% / 6% / 8% / 6% / 6 | Gauge | 1.4 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 77.5 1 14.1 2.3 1.0 3.0 3.0 | Med Med | Eeach(es) E in Creek Max | SD SD | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 110.0 2.3 2.3 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 2.2 3.3 2.3 3.0 2.3 3.0 4.1 2.3 3.0 4.1 3.0 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4.1 | 23.9 74.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5.7 75.8 2.5.3.9 63.1 10.4 3.3 1.0 | 18.9 14.2 18.5 0.0030 18.9 14.2 18.5 18.5 18.5 18.5 18.5 18.5 18.5 18.5 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft²) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Re-Bankfull width (fth) Meander Width Ratic Profile Riffle Slope (fth) Meander Width Ratic Prool Begon (fth) Pool Length (ft Pool Max Depth (ft) Substrate and Transport Parameters Ri% (7 % 6 % 7 % 6 % 6 % 6 % 6 % 6 % 6 % 6 % | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 40.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference F Morge Morge Med | Reach(es) Each(es) Each(es) | SD S | 2 1 | 73.0 44.0 1.9 197.0 3.2 110.0 2.3 2.3 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 0.0070 101.0 5.5 | 23.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5 3.9 63.1 10.4 3.3 1.0 | 13.0.7 0.1 0.2 0.5 0.3 0.1 0.0 18.9 14.2 33.1 33.1 33.1 33.2 39.2 39.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Aera (ft²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ftf) Radius of Curvature (ft) Reanaful width (ftf) Meander Wavelength (ft.) Meander Width Ratio Profile Riffle Length (ft.) Riffle Sippe (ft.) Roll Sankul width (ft.) Substrate and Transport Parameters Riff (Ru% / P% (P% / S% SC% / Sa% / G% / B% / Be% GC% / Sa% G% / B% / Be% GC% / Sa% G% / B% / Be% Greater (SM / Rosgen Curve) Stream Power (transport capacity) Wim Additional Reach Parameters Provious cover estimate (%) Rosgen Classification BF Velocity (fts) BF Discharge (ds) Valley Length (ft.) Channel length (ft.) Sinussity Water Surface Slope (th/ft.) | Gauge | 23.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 5.2 3.0 5.0 5.1 14.1 12.3 1.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5 | N/A / 1.2 / | Ceach(es) E | SD S | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 184.9 3.0 0.0070 101.0 5.5 2.3 2.3 | 23.9 74.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 62.0 0.0110 135.0 150.0 1 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 | Max 25.7 75.8 2.5.7 75.8 2.5.9 63.1 10.4 3.3 1.0 144.0 88.0 3.8 297.5 6.0 102.0 0.0170 102 | 1.3 0.7 0.1 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ftf) Radius of Curvature (ft) Reander Wavelength (ft) Meander Wavelength (ft) Reander Width Ratic Profile Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Aspacing (ft) Pool Aspacing (ft) Pool Spacing (ft) Assubstrate and Transport Parameters Riff (Ru% / P% / P% / 6% / 5% SC% / Sa% / P% / 6% / 5% SC% / Sa% / P% / 6% / 5% Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wim Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classification BF Velocity (fts) BF Discharge (cts) Valley Length (ft) Channel (ftft) BF slope (ft/ft) | Gauge | LL 12.0 | UL 39.0 | Eq. 18.8 | 0.0 | Mean 22.0 33.0 1.8 2.6 39.7 12.2 1.5 1.9 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 | Med | Max | SD | 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Reference R Morge Morge Med | Each(es) E in Creek Max | SD S | 2 1 1 | 73.0 44.0 1.9 197.0 3.2 | 23 100.0 2.3 3.3 52.7 10.0 4.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 22.5 74.4 2.2 3.3 49.7 9.6 3.0 1.0 72.4 37.0 1.6 184.9 3.0 41.0 0.0070 101.0 5.5 2.3 2.3 | 23.9 74.9 74.9 2.4 3.6 56.6 10.1 3.2 1.0 99.2 52.7 2.2 229.4 62.0 0.0110 135.0 169.4 170.0 189.0 | Med 23.4 74.5 2.4 3.5 56.9 10.2 3.2 1.0 99.7 47.0 10.1 10.1 10.1 10.1 10.1 10.1 | Max 25.7 75.8 2.5.7 75.8 2.5.9 63.1 10.4 .0 89.0 3.8 297.5 6.0 .0 170 10.2 25.0 5.5 10.2 225.0 5.5 10.2 225.0 5.5 10.2 225.0 5.5 10.2 225.0 5.5 10.2 225.0 5.5 10.2 225.0 5.5 | 1.3 0.7 0.1 0.1 0.2 5.5 0.3 0.1 0.0 18.9 14.2 33.1 18.5 0.0030 39.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |

| | | | | | - | | | | | | | | | | | | | | | | | - | | - | | | | |
|--|---------------|---------------------------------------|-----------------------|---|----------|---|--|--------------------------------|--------|--------|-----------|--|---|---|------|---|---|--|---------|--|----|--|--|---|---|----------------|--|---|
| | | | | | | | | | | Big | Cedar Cre | | | | | - | | | | | | | | | | | | |
| Parameter | USGS Gauge | Regio | nal Curve I | nterval | | | Pre-Existin | g Condition | 1 | | | R | eference R Morga | each(es) D in Creek | ata | | | | Des | sign | | | | | As- | built | | |
| Dimension - Riffle BF Width (ft) | | LL 13.0 | UL 40.0 | Eq. 19.9 | Min | Mean 19.5 | Med | Max | SD | n 1 | Min | Mean 33.2 | Med | Max | SD | n | Min | Mean 24.4 | Med | Max | SD | n 1 | Min 23.1 | Mean 24.5 | Med 24.6 | Max 25.7 | SD 1.1 | n 3 |
| Floodprone Width (ft) | | | | | | >111.4 | | | | 1 | | 77.5 | | | | 2 | | 100+ | | | | 1 | 77.8 | 79.5 | 77.9 | 82.9 | 2.4 | 3 |
| BF Mean Depth (ft BF Max Depth (ft | | 1.4 | 3.5 | 2.2 | | 1.7 2.7 | | | | 1 | | 2.3 | | | | 2 | | 3.0 | | | | 1 | 2.1 3.1 | 3.2 | 3.1 | 3.3 | 0.0 | 3 |
| BF Cross-sectional Area (ft² Width/Depth Ratio | | 25.0 | 90.0 | 48.3 | | 32.8 11.5 | | | | 1 | | 75.1 14.1 | | | | 2 | | 52.1 11.6 | | | | 1 | 50.1 10.7 | 52.7 11.4 | 51.8 11.7 | 56.2 11.8 | 2.6 0.5 | 3 |
| Entrenchment Ratio | | | | | | >5.7 | | | | 1 | | 2.3 | | | | 2 | | 4.1+ | | | | 1 | 3.2 | 3.3 | 3.2 | 3.4 | 0.5 | 3 |
| Bank Height Ratio | | | | | | 1.6 17.0 | | | | 1 | | 1.0 3.0 | | | | 2 | | 1.0 | | | | 1 | 1.0 | 1.0 | 1.0 | 1.0 | 0.0 | 3 |
| Pattern | | | | | | | | | | | | | | | | | 50.0 | | | 1110 | | 40 | 500 | 70.0 | 70.5 | 100.0 | 440 | 40 |
| Channel Beltwidth (ft Radius of Curvature (ft) | | | | | | | | | | | | | | | | | 52.0 44.0 | | | 114.0 83.0 | | 12 | 50.0 40.0 | 76.8 57.2 | 79.5 50.0 | 103.0 103.0 | 14.3 17.6 | 12 13 |
| Rc:Bankfull Width (ft/ft) Meander Wavelength (ft | | | | | | | | | | | | | | | | | 1.8 187.0 | | | 3.4 | | 13 | 1.6 176.5 | 240.0 | 247.6 | 4.2 285.0 | 35.6 | 13 13 |
| Meander Width Ratio | | | | | | | | | | | | | | | | | 2.1 | | | 4.7 | | 12 | 2.0 | | | 4.2 | | 12 |
| Profile Riffle Length (ft) | | | | | | | | | | | | | | | | | | | | | | | 37 | 70 | 66 | 127 | 25 | 12 |
| Riffle Slope (ft/ft) Pool Length (ft | | | | | 0.0100 | | | 0.0490 | | | 0.0140 | | | 0.0240 | | 2 | 0.0080 | | | 0.0169 | | 13 | 0.0020 | 0.0130 | 0.0110 | 0.0310 | 0.0076 | 13 |
| Pool Spacing (ft | | | | | 59.0 | | | 242.0 | | | 146.0 | | | | | 2 | 83.0 | | | 185.0 | | 13 | 87.0 | 140.0 | 141.0 | 183.0 | 26.4 | 13 |
| Pool Max Depth (ft Pool Volume (ft ³ | | | | | | 3.3 | | | | | 4.1 | | | | | 1 | | 5.2 | | | | 1 | | 5.42 | | | | 1 |
| Substrate and Transport Parameters | | | | | . | | | | | | | | | | | | | | | | | | | | | | | |
| Ri% / Ru% / P% / G% / S% SC% / Sa% / G% / B% / Be% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d16 / d35 / d50 / d84 / d95 Reach Shear Stress (competency) lb/f | | | | | | 0.4 | <0.063/8/ | 17 / 85 / 350 |) | | | | N/A / 1.2 / | 3 / 77 / 800 | | | | 0.8 | | | | | | 0.68 | | | | 1 |
| Max part size (mm) mobilized at bankfull (Rosgen Curve) | | | | | | 100.0 | | | | | | | | | | | | 190.0 | | | | | | 180 | | | | 1 |
| Stream Power (transport capacity) W/m Additional Reach Parameters | | | | | | | | | | | | | | | | | | | | | | | | 36.8 | | | | 1 |
| Drainage Area (SM Impervious cover estimate (%) | | | | | 2.9 | | | 3.3 | | | | | | 8.4 | | | 3.1 | | | 3.3 | | | 3.1 | | | 3.32 | | |
| Rosgen Classification | | | | | | C4/1 | | | | | | C4 | | | | | | E/C4 | | | | N/A | | E/C | | | | |
| BF Velocity (fps BF Discharge (cfs | | 68.0 | 590.0 | 210.9 | | | | | | | | 6.6 524.0 | | | | | | 3.7 195.0 | | | | N/A | | 3.7 195.0 | | | | |
| Valley Length (ft Channel length (ft | | | | | | 1860.0 2046.0 | | | | | | | | | | | | 1809.0 | | | | | | 1558.0 1823.0 | | | | |
| Sinuosity | | | | | | 1.10 | | | | | | | | | | | | 1.10 | | | | | | 1.17 | | | | |
| Water Surface Slope (Channel) (ft/ft) BF Slope (ft/ft) | | | | | | 0.0045 | | | | | | 0.0070 | | | | | | 0.0077 | | | | | | 0.0060 | | | | |
| Banfull Floodplain Area (Acres BEHI VL% / L% / M% / H% / VH% / E% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Channel Stability or Habitat Metric | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Biological or Other | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | - | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | Big | Cedar Cr | | | | | | | | | | | | | | | | | |
| Parameter | USGS Gauge | Regio | nal Curve I | nterval | | | Pre-Existin | g Condition | 1 | Big | Cedar Cro | | eference R | each(es) D | Pata | | | | Des | sign | | | | | As- | built | | |
| Dimension - Riffle | Gauge | LL | UL | Eq. | Min | Mean | Med | Max | SD | n | Min | Mean R | eference R Morga Med | each(es) D n Creek Max | SD | n | Min | Mean | Med | Max | SD | n | Min | Mean | Med | Max | SD | n |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) | | LL 13.0 | UL 40.0 | Eq. 20.0 | Min | Mean 29.6 >109.7 | | | | | | Mean 33.2 77.5 | eference R Morga | each(es) D n Creek | | n 2 2 2 | Min i | 26.0 94.0 | | | SD | n 1 | Min | 27.5 81.0 | | | SD | 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft | Gauge | LL | UL 40.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 | Morga Med | each(es) D n Creek Max | SD | n 2 2 2 2 2 2 2 | Min | 26.0 94.0 2.2 | Med | Max | | 1 | Min | 27.5 81.0 2.1 | Med | Max | | 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Ars-sectional Area (ft² | Gauge | 13.0 1.4 | UL 40.0 3.5 | Eq. 20.0 2.2 48.8 | | Mean 29.6 >109.7 1.6 2.3 47.1 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 | Morga Med | Max | SD | | | 26.0 94.0 2.2 3.0 57.2 | Med | Max | | 1 1 1 1 | | 27.5 81.0 2.1 3.2 58.3 | Med | Max | | 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mex Depth (ft BF Cross-sectional Area (ft² Width/Depth Ratio | Gauge | 13.0 1.4 | UL 40.0 3.5 | Eq. 20.0 2.2 | | Mean 29.6 >109.7 1.6 2.3 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 | Morga Med | Max | SD | | | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 | Med | Max | | 1 1 1 1 1 1 | | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 | Med | Max | | 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mx Depth (ft BF Cross-sectional Area (ft' Width/Depth Ratic Entrenchment Ratic Bank Height Ratic | Gauge | LL 13.0 1.4 25.0 | UL 40.0 3.5 90.0 | Eq. 20.0 2.2 48.8 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 | eference R Morga Med | leach(es) E In Creek Max | SD | 2 2 2 | | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 | Med | Max | | 1 1 1 1 1 1 1 | | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 | Med | Max | | 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern | Gauge | 13.0 13.0 1.4 25.0 | 90.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Morga Med Morga Med Morga Med Morga Med Morga Med Morga Morga Morga Morga Morga Morga Morga Morga Morga Morga Morga Med Morga | each(es) E | SD | 2 2 2 2 2 2 1 | | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 | Med | Max | | 1 | | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 | Med | Max | | 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mex Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) | Gauge | LL 13.0 1.4 25.0 | UL 40.0 3.5 90.0 | Eq. 20.0 2.2 48.8 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 | eference R Morga Med | leach(es) E In Creek Max | SD | 2 2 2 2 | | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 | Med | Max | | 1 1 1 1 1 1 1 | | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 | Med | Max | | 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Gross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic GSO (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Rec's Bankfull Width (ft/ft) | Gauge | 13.0 13.0 1.4 25.0 | 90.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Morga Med | each(es) E n Creek Max | SD | 2 2 2 2 2 2 1 | 58.0 52.0 2.0 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 3 3 3 | 57.0 27.0 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 3 3 3 |
| Dimension - Riffle BF Width (ft); BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft ft) Re:Bankfull Width (ft/ft) Meander Wavelength (ft) | Gauge | 1.4 | UL 40.0 3.5 90.0 | Eq. 20.0 2.2 48.8 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Med | each(es) E n Creek Max | SD | 2 2 2 2 2 2 1 | 58.0 52.0 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 3 3 | 57.0 27.0 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 3 3 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Re:Bankkull Width (ft/ft) Meander Wavelength (ft Meander Width Ratic | Gauge | 25.0 | 90.0 | Eq. 20.0 2.2 48.8 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 3.0 | Morga Med | each(es) E n Creek Max | SD | 2 2 2 2 2 2 1 | 58.0 52.0 2.0 207.0 2.2 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 3 3 3 2 | 57.0 27.0 224.3 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 89.3 46.0 | Med | Max | 29.3 | 1 1 1 1 1 1 1 1 1 1 1 1 3 3 3 3 2 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF General Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic G50 (mm) Pattern Channel Beltwidth (ft?) Redius of Curvature (ft) Redius of Curvature (ft) Redius of Curvature (ft) Redius of Wartern Meander Wavelength (ft Meander Wavelength (ft) Meander Width Ratic Profile Riffle Slope (ft/ft) Riffle Slope (ft/ft) | Gauge | 13.0 | 90.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | eference R Morga Med | each(es) E n Creek Max | SD | 2 2 2 2 2 2 1 | 58.0 52.0 207.0 2.2 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 3 3 3 3 3 3 | 57.0 27.0 1.0 224.3 2.1 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 89.3 46.0 | Med | Max | 29.3 | 1 1 1 1 1 1 1 1 1 1 1 3 3 3 3 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Rc:Bankfull Width (ft/ft) Meander Wavelength (ft Meander Width Ratic Frofile Riffle Length (ft Riffle Slope (ft/ft Pool Spacing (ft) Pool Spacing (ft) Pool Spacing (ft) | Gauge | 1.4 | UL 40.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 2.3 47.1 1.8.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | eference R Morga Med | each(es) E n Creek Max | SD | 2 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 3 3 3 3 2 3 | 57.0 224.3 2.1 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 236.6 66.5 0.0140 | 97.0 51.0 67.0 0.0140 122.0 | Max | 29.3 | 1 1 1 1 1 1 1 1 1 1 1 1 3 3 3 3 2 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Enterchment Ratic Bank Height Ratic Bank Height Ratic Channel Beltwidth (ft') Radius of Curvature (ft Re:Bankfull Width (ft'ft) Meander Width Ratic Profile Riffle Length (ft' Riffle Slope (ft/ft) Pool Length (ft') Pool Length (ft') Pool Length (ft') Pool Length (ft') | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | | Mean 29.6 >109.7 1.6 2.3 47.1 18.5 >3.7 1.6 17 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | eference R Morga Med | each(es) E n Creek Max Max | SD | 2 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | 91.0 2.0 247.0 3.5 | | 1 1 1 1 1 1 1 1 1 1 1 1 3 3 3 2 3 | 57.0 1.0 224.3 2.1 43.0 0.0120 | 89.3 46.0 66.5 0.0140 | 97.0 51.0 236.6 67.0 0.0140 | Max | 29.3 17.1 17.4 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Radius of Curvature (ft') Reader Width Ratic Profile Riffle Length (ft') Riffle Sloope (ft') Pool Max Depth (ft') Pool Max Depth (ft') Pool Max Depth (ft') Pool Volume (ft') Substrate and Transport Parameters | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 2.8 1.0 3.0 3.0 | Med | each(es) D n Creek Max | SD | 2 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 5.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 236.6 66.5 0.0140 122.0 4.7 | 97.0 51.0 236.6 122.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Bank Bank Bank Bank Bank Bank Bank | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Med | each(es) E in Creek Max | SD | 2 2 2 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 2.1 0.0119 | 26.0 94.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | 91.0 91.0 2.0 247.0 3.5 112.0 | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 1.0 224.3 2.1 118.0 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 236.6 122.0 4.7 | 97.0 97.0 0.0140 | Max | 29.3 17.1 17.4 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Gross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic GSO (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Resharkfull Width (ft/ft) Meander Wavelength (ft Meander Width Stepth (ft) Frofile Riffle Length (ft Riffle Slope (ft/ft) Pool Length (ft Pool Spacing (ft) Pool Max Depth (ft) Substrate and Transport Parameters Rij6 (Ru% / P% / G% / S% | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | 0.0498 | SD | | Min | Mean 33.2 77.5 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Med | each(es) E n Creek Max | SD | 2 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 0.0119 | 26.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 118.0 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 236.6 66.5 0.0140 4.7 | 97.0 51.0 | Max | 29.3 17.1 17.4 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Helght Ratic d50 (mm) Channel Beltwidth (ft Radius of Curvature (ft Radius of Curvature (ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratic Profile Riffle Length (ft Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Max Depth (ft Pool Max Depth (ft) Substrate and Transport Parameters Riffle / Ft/W / Pf/ / Gf/ Sf/ Sc%/ Sa%/ Gf/s/ Bf/s/ Be%/ Gf/s/ Sf/ Sc%/ Sa%/ Gf/s/ Bf/s/ Be%/ Gf/s/ Gf/s/ Sf/ Sc%/ Sa%/ Sf/s/ Sf/s/ Sex/ Gf/s/ Sf/s/ Be%/ Gf/s/ Sf/s/ Sf/s/ Sex/ Sf/s/ Sf/s/s/ Sf/s/s/ Sf/s/s/ Sf/s/s/s/s/s/s/s/s/s/s/s/s/s/s/s/s/s/s/s | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 2.2 2.2 48.8 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Morga Morga Med | Cach(es) E Cac | SD | 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 2.2 0.0119 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 5.0 1.2 275.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 89.3 46.0 122.0 4.7 122.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Max Depth (ft Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Radius of Curvature (ft Re.Banktull Width (ftr) Beander Width Ratic Banktull Width (ft Ratic Ba | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 2.2 2.2 48.8 | 0.0138 | Mean 29.6 29.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10 | Med | Max | SD | n | Min | Mean 33.2 77.5 77.5 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Mora | Cach(es) E Cac | SD | 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 2.2 105.0 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 3 3 3 3 3 3 3 4 4 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 97.0 51.0 236.6 122.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Wax Depth (ft) BF Wax Depth (ft) BF Wax Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic ABO (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Ri% / Ray (Fw) / P% / P | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 2.2 2.2 48.8 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Morga Morga Med | Cach(es) E Cac | SD | 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 2.2 0.0119 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 5.0 1.2 275.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 89.3 46.0 122.0 4.7 122.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Brank Height Ratic Brank Height Ratic Brank Height Ratic Brank Height Ratic ASO (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Radius (Fw) Fw, (7%, 16%, 16%, 16%, 16%, 16%, 16%, 16%, 16 | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | 0.0498 | SD | n | Min | Mean 33.2 77.5 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Morga Morga Med | Cach(es) E Cac | SD | 2 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 2.0 0.0119 | 26.0 94.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 236.6 122.0 4.7 1.1 260.0 53.6 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft) Radit Length (ft Pool Max Depth (ft Pool Volume (ft) Pool Volume (ft) Substrate and Transport Parameters Radius (ft) (fas) (ft) (ft) Raditional Reach Parameters Drainage Area (SM Impervious cover estimate (acres Rosgen Classification Bankfull Velocity (fps) BF Discharge (cfs) BF Discharge (cfs) | Gauge | LL 13.0 | UL 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Mora | Control Cont | SD | 2 2 2 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 118.0 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 89.3 46.0 236.6 122.0 4.7 1.1 260.0 53.6 53.6 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) Bank Height Ratic Radius of Curvature (ft) Ratifile Sloope (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Riff, Ruf, Py / Py / Py / Py / Py At (15 / 435 / 450 / 454 / 495 Reach Shear Stress (competency) Lift Max Part Size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wim Additional Reach Parameters Drainage Area (SM) Impervious cover estimate (acres) Bankfull Velocity (fts) BF Discharge (cfs) Valley Length (ft) Valley Length (ft) | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 2.2 2.2 48.8 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 2.2 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Moral Mora | each(es) E (es) | SD | 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 207.0 3.3 3.3 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | 91.0 91.0 92.0 247.0 3.5 112.0 112.0 112.0 112.0 112.0 112.0 112.0 112.0 112.0 | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 118.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 89.3 46.0 122.0 122.0 4.7 122.0 53.6 53.6 53.6 53.4 199.0 | 97.0 51.0 236.6 122.0 122.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) Br Max Depth (ft) Br Max Depth (ft) Br Max Depth (ft) Radius of Curvature (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters RW / 7 Rw / P / P / G / S / S (S / S / S / S / S / S / S / S | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | 0.0498 236.0 236.0 3.4 3.4 3.4 | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 3.0 | Morga Med | Control Cont | SD | 2 2 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 0.0119 | 26.0 94.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 236.6 236.6 122.0 4.7 1.1 260.0 53.6 53.6 53.4 199.0 350.0 410.0 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic doS (mm) Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Re:Bankfull Width (ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Amax Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Riffle (Slope (ft/ft) Pool Volume (ft) Row / Fw/ / F | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Morga Morg | Cach(es) E Cac | SD | 2 2 2 2 2 1 1 | 58.0 52.0 207.0 207.0 2.2 207.0 3.3 | 26.0 94.0 94.0 94.0 94.0 94.0 94.0 94.0 94 | Med | Max | | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 1.0 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Wax Depth (ft) BF Gross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Helght Ratic d50 (mm) Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Re:Bankfull Width (ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Length (ft) Riffle Slope (ft/ft) Pool Spacing (ft) Pool Apacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Spacing (ft) Pool Spacing (ft) Pool Max Depth (ft) Br Slope (ft) Br Slope (ft/ft) Br Slope (ft/ft) Br Slope (ft/ft) Br Slope (ft/ft) | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 7 1.6 2.3 47.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.6 17.1 18.5 2.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1 | Med | Max | SD | n | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Morga | Cach(es) E Cac | SD | 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 207.0 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 5.0 1.2 275.0 400.0 1.10 0.0098 | Med | Max | | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 118.0 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Med | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Bellwidth (ft/ft) Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft) Research Wearder Wavelength (ft/ft) Meander Wavelength (ft/ft) Meander Wavelength (ft/ft) Riffle Sloope (ft/ft) Pool Langth (ft/ft) Pool Max Depth (ft/ft) Banklul (Rosgen Curve) Stream Power (transport capacity) Wim: Additional Reach Parameters Drainage Area (SM Impervious cover estimate (acres) Banklul (Velocity (ft/ft) Banklul (Velocity (ft/ft) Banklul (Floodplain Area (acres) Sinuosity Water Surface Slope (Channel) (ft/ft) Banklul Floodplain Area (acres) BEHI VL% / L% / M% / H/8 / H/4% / Ft/ft Channel Banklul Floodplain Area (acres) BEHI VL% / L% / M% / Habitat Methy / Et/ft Channel Stabibity of Habitat Methy / Et/ft Channel Banklul Floodplain Area (acres) BEHI VL% / L% / M% / Habitat Methy / Et/ft Channel Banklul Floodplain Area (acres) | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | 0.0498 236.0 | SD | | Min | Mean 33.2 77.5 2.3 2.8 75.1 14.1 2.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Morga Morg | Cach(es) E Cac | SD | 2 2 2 2 1 1 | 58.0 52.0 2.0 207.0 2.2 | 26.0 94.0 94.0 2.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 118.0 1.0 119.0 11 | 27.5 81.0 2.1 3.2 58.3 13.0 1.0 1.0 2.1 3.2 66.5 0.0140 1.22.0 53.6 1.260.0 53.6 1.17 0.0094 | 97.0 51.0 236.6 122.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| Dimension - Riffle BF Width (ft) BF Mean Depth (ft) BF Mac Depth (ft) Br Mac Depth (ft) Br Mac Depth (ft) Br Mac Depth (ft) Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reander Wavelength (ft) Reander Wavelength (ft) Reander Wavelength (ft) Reander Width Ratic Riffle Length (ft) Riffle Slope (ft) Pool Spacing (ft) Pool Spacing (ft) Pool Olampth (ft) Pool Volume (ft) Pool Volume (ft) Substrate and Transport Parameters Riffle (Ft) (73% / 5% SC% / 53% / 6% / 58% / 58% SC% / 53% / 6% / 58% / 58% SC% / 53% / 50% / 58% / 68% BF Depth (ft) Max Part Size (mm) mobilized at bankfull (Rospen Curve) Stream Power (transport capacity) Win- Additional Reach Parameters Drainage Area (SM Impervious cover estimate (acres) Rospen Classification Bankfull Velocity (ft)s BF Discharge (65) Valley Length (ft) Channel length (ft) Sincosis) Water Surface Slope (Channel) (iff), Bankfull Floodplain Area (acres) BEH IVL% / L% / M% / H% / H% / H% / H% / H% / H% / H | Gauge | LL 13.0 | UL 40.0 40.0 | Eq. 20.0 | 0.0138 | Mean 29.6 | Med | Max | SD | n | Min | Mean 33.2 77.5 77.5 2.3 77.5 1 14.1 2.3 1.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Morga Med | Control Cont | SD | 2 2 2 2 1 1 | 58.0 52.0 207.0 2.2 0.0119 | 26.0 94.0 94.0 92.2 3.0 57.2 11.8 3.6 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 57.0 27.0 1.0 224.3 2.1 43.0 0.0120 | 27.5 81.0 2.1 3.2 58.3 13.0 3.0 1.0 89.3 46.0 236.6 122.0 4.7 1.1 260.0 53.6 56.5 0.0140 1.1,1 260.0 3.4 199.0 350.0 410.0 1.17 0.0094 | 97.0 51.0 | Max | 29.3 17.1 17.4 18.0 0.0020 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |

| Column C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-------|--|-----------------------------------|---|--------------|--|-------------|-------------------------|--------|--|-------------------------|---|--|--|------|--|---|--|-----|---|----|---|--|---|--|--|--|--|
| Segretary No. 1969 - 19 | | IISGS | | | | 1 | | | | | | UT1 Rea | | | Paach(as) I | Tata | | | | | | | | 1 | | | | | |
| Part | | | Regio | nal Curve I | nterval | | | Pre-Existin | | | | | | Spenc | er Creek | Jala | | | | | | | | | | | | | |
| Property of the property of | | | | | | | | | | | n 1 | | | | | | n 1 | | | | | | | | | | | | |
| Part | Floodprone Width (ft) | | | | | | >135.3 | | | | 1 | | 228.5 | | | | 1 | | 73.8 | | | | 1 | 48.4 | 52.8 | 53.6 | 56.5 | 3.3 | 3 |
| ## Company of the content of the con | | | 0.9 | | | + | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Secretary 1. | BF Cross-sectional Area (ft² | | 10.0 | | | + | | | | | | | | | | | 1 | | | | | | | | | | 15.2 | 0.5 | 3 |
| Set | | | | | | | | | | | | | | | | | 1 | | | | | | 1 1 | | | | | | |
| See Control Co | | | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Separate Methods (1988) 1989 1989 1989 1989 1989 1989 1989 | d50 (mm) | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| The proper prope | | | | | | | | | | | | 24.0 | | | 52.0 | | 2 | 29.0 | | | 64.0 | | 13 | 42.0 | 65.6 | 67.0 | 75.0 | 10.2 | 13 |
| Separate Minorial Property of the control of the co | Radius of Curvature (ft | | | | | | | | | | | 5.4 | | | 22.1 | | 5 | 28.0 | | | | | 14 | 22.0 | 32.4 | 33.0 | 41.0 | 5.2 | 14 |
| Separation of the content of the con | | | | | | | | | | | + | | | + | | | | | | | | | | | | | | | |
| Separate Sep | Meander Width Ratio | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ## Property of the control of the c | | | | l | | | | | | | | | | | | | | | | | | | | 20.0 | 47.0 | 46.0 | 78.0 | 15.0 | 1/ |
| Fig. 19. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed control of the proposed of the propos | | | | | | 0.0 | | | 102 | | | 12.0 | | | 46.5 | | 5 | 62.0 | | | 115.0 | | 12 | 61.0 | 05.0 | 102.0 | 112.0 | 17.0 | 12 |
| Seement seemen | | | | | | | 2.2 | | | | | | | | | | 1 | | | | | | | | | | | | |
| The content of the co | Pool Volume (ft ³ | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| See | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| March Provide Mine compromy of Mine | SC% / Sa% / G% / B% / Be% | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May not a minimate almost al | | | | | | + | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Addition figure Processor State (1985) | Max part size (mm) mobilized at bankfull (Rosgen Curve) | | | | | | | | | | | | | | | | | | 125.0 | | | | | | 95.0 | | | | 1 |
| Company Anne Mary Ma | | | | | | | | | | | | | | | | | | | | | | | | | 24.4 | | | | 1 |
| Brown Charlester | Drainage Area (SM | | | | | 0.7 | | | 0.9 | | | | | | 0.5 | | | 0.7 | | | 0.8 | | | 0.7 | | | 0.8 | | |
| For Search Service Control of the Control of th | | | | | | | C4/4 | | | | | | E4/C4 | | | | | | | | | | | | | | | | |
| General Control of Con | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Commission of the control of the con | BF Discharge (cfs | | 30.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Winter Enforcement of March | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Part | Sinuosity | | | | | | 1.10 | | | | | | | | | | | | 1.30 | | | | | | 1.30 | | | | |
| Bettal Propriet Anna Involved | | | | | | + | | | | | | | | | | | | | | | | | | | | | | | |
| Charlest Statics Charlest St | Bankfull Floodplain Area (acres | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Presented | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parameter 1988 Rejoration Internal Parameter | | | | | | | + | | | | | | | | | | | | | | | | | | | | | | |
| Parameter 1988 Rejoration Internal Parameter | | 1 | ſ | | | | | | | | | 1 1 | | | | | 1 | | | | | | | | | | | | |
| Parameter Capyar | | | | | † | - | | | | | | | | | | | | | | | | | | | | | | | |
| Direction and Substrates (Riffle U. U. St. Min Mean Med Max St. No. Mean Med Mex St. No. Mean Med Mex St. No. Mean Med Mex St. No. Mean Mex Me | | | | | | | | | | | | UT1 Rea | ach 2 (101 | 16 LF) | | | | | | | | | | | | | | | |
| Processor Width (i) | Parameter | | Regio | nal Curve I | nterval | | | Pre-Existin | g Condition | | | UT1 Rea | | Reference F | | Data | | | | Des | sign | | | | | As-k | ouilt | | |
| BF Man Digny 10 | | | | | | Min | | | | | n | | F | Reference F Spenc | er Creek | | n | Min | Mean | | | SD | n | Min | Mean | | | SD | n |
| BF Make Capen IN | Dimension and Substrate- Riffle BF Width (ft) | | LL | UL | Eq. | | Mean 13.1 | Med | Max | SD | 1 | | Mean 8.7 | Reference F Spenc | er Creek Max | SD | n 1 | Min | 15.0 | | Max | | 1 | 13.4 | 14.4 | Med 14.1 | Max 15.9 | 1.1 | 3 |
| With Depth Red With | Dimension and Substrate- Riffle BF Width (t) Floodprone Width (t) | Gauge | 7.0 | UL 27.0 | Eq. 11.8 | | Mean 13.1 48.8 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 | Reference F Spenc Med | Max | SD | n 1 1 | | 15.0 85.5 | Med | Max | | 1 | 13.4 56.4 | 14.4 58.4 | Med 14.1 58.8 | Max 15.9 60.2 | 1.1 | 3 |
| Enterochment Ratio | Dimension and Substrate-Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft | Gauge | 7.0 0.9 | UL 27.0 1.5 | Eq. 11.8 1.5 | | Mean 13.1 48.8 1.4 2.2 | Med | Max | SD | 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 | Reference F Spenc Med | Max | SD | n 1 1 1 | | 15.0 85.5 4.5 1.5 | Med | Max | | 1 1 1 | 13.4 56.4 1.1 1.8 | 14.4 58.4 1.1 1.9 | Med 14.1 58.8 1.1 1.8 | Max 15.9 60.2 1.2 1.9 | 1.1 1.6 0.0 0.1 | 3 3 3 |
| ### Additional Control Estate (In Fig. 1) 1 | Dimension and Substrate- Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft's) | Gauge | 7.0 0.9 | UL 27.0 1.5 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 | Med | Max | SD | 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 | Reference F Spenc Med | Max | SD | n 1 1 1 1 | | 15.0 85.5 4.5 1.5 16.8 | Med | Max | | 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 | 14.4 58.4 1.1 1.9 16.3 | Med 14.1 58.8 1.1 1.8 16.3 | Max 15.9 60.2 1.2 1.9 17.9 | 1.1 1.6 0.0 0.1 1.4 | 3 3 3 3 3 |
| Pattern Gamer Betwidth | Dimension and Substrate- Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area Inf' Width/Depth Ratic | Gauge | LL 7.0 0.9 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 | Med | Max | SD | 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 | Reference F Spenc Med | er Creek Max | SD | n 1 1 1 1 1 1 | | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 | Med | Max | | 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 | 3 3 3 3 3 3 |
| Redised Ocurators (ft) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic | Gauge | LL 7.0 0.9 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 | Med | Max | SD | 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 | Reference F Spenc Med | er Creek Max | SD | n 1 1 1 1 1 1 1 | | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 | Med | Max | | 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 |
| Rebankful Wind (Rft) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern | Gauge | LL 7.0 7.0 0.9 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 | | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 |
| Profile Riffs Langer (1) Riffs Says (1) Riff Says (1) Riffs Says (1) Riff Says (1) Riffs Says (1) Riff Says (1) Riffs Says (1) | Dimension and Substrate-Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) | Gauge | 11.0 | UL 27.0 1.5 40.0 40 | Eq. 11.8 1.5 21.1 21 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 | SD | 1 1 1 1 1 1 1 1 1 1 | 30.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 3 |
| Frofite | Dimension and Substrate-Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft') With/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Re:Bankfull Width (ft)) | Gauge | 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 2.5 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 3 10 11 |
| Riffis Sippe (firth) | Dimension and Substrate-Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic G50 (mm) Pattern Channel Beltwidth (ft') Re.Bankfull Width (ft') Meander Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) | Gauge | 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 2.5 196.0 | SD | 1 1 1 1 1 1 1 1 1 1 1 2 5 5 | 30.0 30.0 2.0 134.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 3 10 11 11 |
| Pool Length (ff) | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic GS (mm) Pattern Channel Bellwidth (ft') Radius of Curvature (ft R.Bankul Width (ft') Meander Width Ratic Profile | Gauge | 11.0 | UL 27.0 1.5 40.0 | Eq. 11.8 1.5 21.1 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 2.5 196.0 | SD | 1 1 1 1 1 1 1 1 1 1 1 2 5 5 | 30.0 30.0 2.0 134.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 146.3 36.0 146.3 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 3 3 10 11 11 11 |
| Pool Volume (ft) | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ftf) Radius of Curvature (ft Re:Bankfull Width (ttf) Meander Width Ratic Profile Riffle Length (ft | Gauge | 11.0 | UL 27.0 | Eq. 11.8 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 1.0 8.6 | Reference R Spenc Med | Er Creek Max 52.0 22.1 2.5 196.0 6.0 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 | Med 14.1 58.8 11.1 1.8 16.3 12.4 4.2 1.0 | Max 15.9 60.2 1.2 1.9 1.9 17.9 14.0 58.0 47.0 3.3 222.4 4.0 94.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 11.7 6.2 44.6 14.0 | 3 3 3 3 3 3 3 3 3 3 3 10 11 11 11 1 |
| Pool Volume (ft ²⁾ | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Channel Bellwidth (ft') Radius of Curvature (ft Re:Bankfull Width (ft'ft) Meander Width Ratic Profile Riffle Length (ft' Riffle Slope (ft'ft) Pool Length (ft') Pool Le | Gauge | 11.0 | UL 27.0 | Eq. 11.8 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 1.0 8.6 | Reference R Spenc Med | For the second s | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 146.3 146.3 6.0 146.3 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 94.0 0.0220 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 1.0 1.7 6.2 44.6 14.0 0.0045 | 3 3 3 3 3 3 3 3 3 3 10 11 11 11 11 10 |
| RP6 / RN6 / P96 / G96 / S98 G96 / G96 | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic 450 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of | Gauge | 11.0 | UL 27.0 | Eq. 11.8 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 74.0 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 64.0 0.0170 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 94.0 0.0220 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 | 3 3 3 3 3 3 3 3 3 10 11 11 11 10 |
| SC%/ 158/y (198/) (19 | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Mean Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic AGS0 (mm) Pattern Channel Beltwidth (ft') Re:Bankfull Width (ft't) Meander Wavelength (ft) Meander Width Ratic Profile Riffle Length (ft' Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) | Gauge | 11.0 | UL 27.0 | Eq. 11.8 | | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | 0.178 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Spenc Med | er Creek Max | SD | 1 | 30.0 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 145.3 35.3 145.1 67.0 0.0160 74.0 2.6 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 64.0 0.0170 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 0.0220 116.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 11.7 6.2 14.0 0.0045 28.0 | 3 3 3 3 3 3 3 3 3 10 11 11 11 10 10 |
| Comparison Com | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Bank Bank Bank Bank Bank Bank Bank | Gauge | UL 7.0 | UL 27.0 27.0 1.5 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 2.1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | For Creek Max | SD | 1 | 30.0 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 74.0 2.6 | Med 14.1 58.8 51.8 1.1 1.8 16.3 12.4 4.2 1.0 146.3 64.0 0.0170 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 0.0220 116.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 11.7 6.2 14.0 0.0045 28.0 12.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 3 3 3 3 3 3 3 3 3 3 3 3 10 11 11 1 1 1 1 |
| Max part size (mm) mobilized at bankfull (Rosgen Curve) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Bank Height Ratic ASO (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Radius of Curvature (ft Re:Bankfull Width (ft/ft) Meander Wavelength (ft Meander Width Ratic Profile Riffle Slope (ft/ft Pool Spacing (ft/ft Pool Max Depth (ft Pool Max Depth (ft Pool Max Depth (ft Substrate and Transport Parameters R)% / Rw% / Pw/ / G% / S% | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 1.0 8.6 | Reference R Spenc Med | Free Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 134.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 74.0 2.6 | Med 14.1 58.8 51.1 1.1 1.1 1.8 16.3 12.4 4.2 1.0 146.3 146.3 146.3 146.3 146.3 146.3 177.0 77.0 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 | 1.1 1.6 0.0 0.0 0.1 1.4 0.9 0.3 1.0 1.1.7 6.2 44.6 14.0 0.0045 28.0 28.0 | 3 3 3 3 3 3 3 3 3 3 3 3 10 11 11 11 11 10 10 10 |
| Stream Power (transport capacity) W/m² | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft') Width/Depth Ratic Entrenchment Ratic Bank Height Ratic dS0 (mm) Pattern Channel Beltwidth (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft) Meander Wavelength (ft) Meander Wavelength (ft) BRiffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Volume (ft) Pool Volume (ft) Pool Volume (ft) Substrate and Transport Parameters Riff Rw Pw C% S% SC% Sa% (9% F8% Sew did 6/35 (60) (484 485 600 (484 485 6 | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 29.5 1.9 10.6 7.3 1.0 8.6 | Reference F Refere | Fer Creek Max | SD | 1 | 30.0 30.0 30.0 2.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 74.0 | Med 144.1 58.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 77.0 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 58.0 47.0 3.3 222.4 4.0 94.0 0.0220 | 1.1 1.6 0.0 0.0 0.1 1.4 0.9 0.3 1.0 11.7 6.2 14.6 0.0045 28.0 28.0 28.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 10 11 11 11 11 10 10 |
| Drainage Area (SM) | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic AGS (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Resolution (ft) Rool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Rfth (Ruft) / Ph (Ph | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 40.0 1.0 1.0 1.0 1.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | 52.0 22.1 2.5 196.0 6.0 6.0 6.0 6.0 6.5 6.0 6.0 6.5 6.0 6.5 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 | SD | 1 | 30.0 30.0 2.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 1.4 68.6 2.0 48.0 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 35.3 67.0 0.0160 74.0 2.6 0.8 | Med 14.1 58.1 58.8 1.1 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 17.0 0.0170 77.0 77.0 77.0 77.0 77.0 77.0 | Max 15.9 60.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 1.1 1.7 6.2 1.1 1.4 0.0 0.0 0.1 1.7 6.2 1.1 1.7 6.2 1.1 1.7 6.2 1.1 1.7 6.2 1.1 1.7 6.2 1.1 1.7 1.7 6.2 1.1 1.7 1.7 6.2 1.1 1.7 1.7 6.2 1.1 1.7 1.7 6.2 1.1 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Imperious cover estimate (%) | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Bank Height Ratic Radius of Curvature (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Ri% / Ru% / P% / G% / S% SC% / Sa% / G% / G% / B% / B% Government (ft) Reach Shear Stress (competency) Life Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport Capacity) Wife Stream Power (transport Capacity) | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 48.8 1.4 2.2 18.5 9.4 40.0 40.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference F Refere | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 2.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 17.0 17.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 145.1 67.0 0.0160 74.0 2.6 0.8 200.0 | Med 14.1 58.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 77.0 77.0 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 | 1.1 1.6 0.0 0.0 0.1 1.4 0.9 0.3 1.0 1.1.7 6.2 44.6 1.0 0.0045 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 10 11 11 11 11 11 11 11 11 11 11 11 |
| BF Velocity (fts) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft BF Mean Depth (ft BF Max Depth (ft Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Radius of Curvature (ft) Reader Width (ftr) Meander Width Ratic Ratifie Length (ft) Ratifie Slope (ftr) Pool Spacing (ft) Pool Max Depth (ft) Pool Wax Depth (ft) Pool Wax Depth (ft) Pool Wax Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Righ / Rugh / Ph / Gh / Sh / Sh & Sh & Sh & Sh & Sh & Sh & S | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 40.0 1.0 250.0 | Med | 0.178 118.2 1/>2048/> | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 2.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 3.5 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 17.0 17.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 14.1 58.8 1.1.1 1.1 1.1 1.1 1.0 1.0 | Max 15.9 60.2 1.2 1.2 1.9 17.9 14.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 1.1 1.7 6.2 1.1 1.4 4.6 1.1 1.4 1.0 0.0045 1.1 1.1 1.2 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | 3 3 3 3 3 3 3 3 3 3 3 3 1 10 111 1 1 1 1 |
| BF Discharge (cfs) 30.0 260.0 87.7 | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Radius of Curvature (ft) Readius o | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 40.0 40.0 1.0 250.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference Reference Spenc Spenc Med | er Creek Max | SD | 1 | 30.0 30.0 30.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 3.5 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 0.0080 17.0 17.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 45.3 35.3 67.0 0.0160 74.0 2.6 0.8 200.0 54.1 | Med 144.1 58.8 58.8 1.1 1.8 16.3 12.4 4.2 1.0 48.0 36.0 146.3 146.3 177.0 146.3 177.0 146.3 | Max 15.9 60.2 1.2 1.9 14.0 14.3 1.0 58.0 47.0 3.222.4 4.0 0.0220 116.0 116.0 116.0 116.0 0.9 0.9 0.9 | 1.1 1.6 0.0 0.1 1.4 1.4 0.9 0.3 1.0 1.1 1.7 6.2 1.1 1.4 0.0045 1.1 1.4 0.0045 1.1 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Valley Length (ft) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Entrenchment Ratic Bank Height Ratic Bank Height Ratic Body (ft) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Render Wavelength (ft) Render Wavelength (ft) Meander Wavelength (ft) Ratifle Length (ft) Riffle Slope (ft) Rost Spacing (ft) Pool Spacing (ft) Pool Valume (ft) Substrate and Transport Parameters Riffle / Riffle / Side | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 2.1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 3.5 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 1.0 29.0 20.0 1.4 68.6 2.0 1.7 0.0080 17.0 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 0.0080 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 144.1 58.8 58.8 1.1 1.8 16.3 12.4 4.2 1.0 146.3 146 | Max 15.9 60.2 1.2 1.9 17.9 14.0 4.3 1.0 4.3 1.0 4.3 222.4 4.0 0.0220 | 1.1 1.6 0.0 0.0 0.1 1.4 0.9 0.3 1.0 1.1.7 6.2 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1 10 10 11 1 1 1 |
| Sinusity | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft ² Width/Depth Ratic Bank Height Ratic Radius of Curvature (ft) Research Weavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Max Depth (ft) Busstrate and Transport Parameters Riff, Ruff, Puff, Pf, 16% 5% 5% Sc% Sa% (13% (15%) 15% 15% | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 40.0 1.0 250.0 | Med | 0.178 118.2 1.0 1.0 | SD | 1 | Min | Mean 8.7 228.5 1.2 28.5 1.9 10.6 7.3 26.3 1.0 8.6 8 | Reference R Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 20 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.6.8 13.6 5.7 1.0 3.5 3.5 3.5 3.5 3.5 3.6 3.6 3.7 3.7 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 144.1 58.8 58.8 1.1.1 1.8 16.3 12.4 4.2 1.0 146.3 146.3 146.3 146.3 146.3 146.3 177.0 | Max 15.9 60.2 1.9 1.9 1.10 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1. | 1.1 1.6 0.0 0.1 1.4 0.9 0.9 0.3 1.0 1.1 11.7 6.2 1.1 11.7 6.2 1.1 11.7 6.2 1.1 11.7 6.2 1.1 11.7 1.1 11.7 11.7 11.7 11.7 11.7 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Water Surface Slope (Channel) (fuff) | Dimension and Substrate- Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mac Depth (ft) BAR Depth (ft) Bank Height Ratic Bank Bellwidth Ratic Bank Bellwidth Ratic Bank Bank Bellwidth Ratic Bank Bank Bank Bank Bank Bank Bank Bank | Gauge | LL 7.0 | UL 27.0 27.0 1.5 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 2.1 2.1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 28.5 1.9 10.6 7.3 26.3 1.0 8.6 8.5 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference R Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.6.8 13.6 5.7 1.0 3.5 3.5 3.5 3.5 3.6 5.7 1.0 3.5 3.6 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 48.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 14.1 58.8 1.1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1. | Max 15.9 60.2 1.9 1.9 1.79 14.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 1.0 1.1 1.7 6.2 1.1 1.4 0.0 0.0045 1 1 1 1 1 1 1 1. | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| Barfull Floodplain Azea (Acres) | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratic Bank Height Ratic Radius of Curvature (ft Radius of Curvature (ft) Radius of Curvature (ft) Raditional Reach Parameters Drainage Area (SM Impervious cover estimate (% Radige Classification BF Velocity (ft)s BF Discharge (cs) Valley Length (ft) Channel Length (ft) | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 2.1 2.1 | Med | Max | SD | 1 | 24.0 5.4 0.6 54.0 2.8 2 | Mean 8.7 228.5 1.2 28.5 1.9 10.6 7.3 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference Reference Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 2.0 134.0 2.0 0.01920 | 15.0 85.5 85.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 0.8 200.0 4.5 76.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 14.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Max 15.9 60.2 1.9 1.9 14.0 4.3 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.3 1.0 1.1 1.7 6.2 1.1 1.7 6.2 1.1 1.4 1.4 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| BEHI VL% / L% / M% / H% / VH% / E% | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Wax Depth (ft) BF Wax Depth (ft) BF Wax Depth (ft) Entirenchment Ratic Bank Height Ratic d50 (mm) Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Re:Bankfull Width (ft)(ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Spacing (ft) Pool Max Depth (ft) Substrate and Transport Parameters Riff, Ft/ft, F | Gauge | LL 7.0 7.0 9.9 11.0 11.0 11.0 11.0 11.0 11.0 11. | UL 27.0 | Eq. 11.8 11.8 11.8 11.8 11.8 11.8 11.8 11 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 2.1 2.1 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 | Min | Mean 8.7 228.5 1.2 2.8.5 1.9 10.6 7.3 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference Reference Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 2.0 134.0 2.0 | 15.0 85.5 4.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.6 3.7 3.7 3.8 3.7 3.8 | Med | 45.0 45.0 45.0 45.0 199.0 3.2 199.0 3.0 0.02800 | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 1.0 20.0 1.1 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 14.1 58.8 1.1 1.8 16.3 12.4 4.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Max 15.9 60.2 1.9 1.9 14.0 4.3 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.9 0.3 1.0 0.1 11.7 6.2 11.7 6.2 12.8 0.0045 11.7 6.2 11. | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Bank Height Ratic Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Ratifle Length (ft) Ratifle Length (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Ri% / Ray (Fw) / 70% / 70% SC% / Sa% / G% / 6% / 6% / 6% / 6% / Racy (Ft) / 70% / 70% Ratic (Ft) / 70% / 70% Ratic (Ft) / 70% / 70% Bank Height (ft) Bank Height (ft) Bank Height (ft) Bank Height (ft) Channel length (ft) Sinucially Br Slope (ft) Sinucially Br Slope (ft) | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 0.0242 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 2.1 2.1 | Med | 0.178 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 | Reference Reference Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 134.0 2.0 0.01920 | 15.0 85.5 85.5 1.5 16.8 13.6 5.7 1.0 3.5 3.5 3.5 4.5 76.0 1.025.0 1.00 0.0128 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 17.0 17.0 17.0 18.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19 | 14.4 58.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 14.1 58.8 1.1 1.8 1.8 1.1 1.8 1.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Max 15.9 60.2 1.2 1.2 1.9 14.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | 1.1 1.6 0.0 0.1 1.4 1.4 0.9 0.9 0.3 1.0 1.1 11.7 6.2 1.1 11.7 6.2 1.1 11.7 6.2 1.1 11.7 1.1 11.7 1.1 11.7 1.1 11.7 1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft? Width/Depth Ratic Bank Height Ratic Ration of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Ration Radius of Curvature (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters Ri% / Rav, / P% / Q% / S% / S% SC% / Sa% / G% / B% / B% d16 / d35 / d50 / d84 / d95 Radius Stream Power (transport capacity) Wimf Max part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wimf Additional Reach Parameters Drainage Area (SM Impervious cover estimate (% Rosgen Classification BF Velocity (fps BF Discharge (65) Valley Length (ft Channel length (ft Sinucois) Water Surface Slope (Channel) (fift) Banfull Floodplain Area (Acres BEH IV L% / L% / M% / H% / H% / H% / H% / H% / H% / H | Gauge | LL 7.0 | UL 27.0 27.0 1.5 | Eq. 11.8 | 9.8 | Mean 13.1 48.8 1.4 48.8 1.4 2.2 18.5 9.4 40.0 40.0 40.0 1.0 40.0 1.0 40.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | Reference Reference Spence Spence Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 20 0.01920 | 15.0 85.5 4.5 16.8 13.6 5.7 1.0 3.5 3.5 3.5 3.5 3.5 1025.0 1025.0 1025.0 10.0 1025.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 56.4 1.1 1.8 14.5 12.1 1.0 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 144.1 58.8 1.1.1 1.1 1.1.1 | Max 15.9 60.2 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.9 0.3 1.0 1.1 1.7 6.2 1.1 1.4 1.0 1.0 1.1 1.7 6.2 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| | Dimension and Substrate-Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Gross-sectional Area (ft² Width/Depth Ratic Bank Height Ratic Radius of Curvature (ft) Radius of Curvature (ft) Research Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Max Depth (ft) Pool Max Part size (mm) mobilized at bankfull (Rosgen Curve) Stream Power (transport capacity) Wim: Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classification BF Velocity (ft)s BF Slope (ft) Channel length (ft) Channel length (ft) BF Slope (ft) Banfull Floodplain Area (Acres BEHI VL%, / L%, / M%, / H%, / H%, / H&/c (Ft) Chanled Stability or Habitat Mettic Chanled Length (ft) Chanled Stability or Habitat Mettic Chanled Length (ft) Chanled Length (ft) BF Slope (ft) BF S | Gauge | LL 7.0 | UL 27.0 | Eq. 11.8 | 9.8 | Mean 13.1 48.8 1.4 2.2 18.5 9.4 3.7 2.1 40.0 40.0 1.0 250.0 | Med | 0.178 118.2 1.0 1.0 1.0 | SD | 2 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | Reference Reference Spence Spence Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 30.0 30.0 30.0 20 134.0 2.0 0.01920 | 15.0 85.5 4.5 1.6.8 13.6 5.7 1.0 3.5 3.5 3.5 3.5 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 13.4 56.4 1.1 1.8 56.4 1.1 1.8 14.5 12.1 3.7 1.0 29.0 20.0 1.4 68.6 2.0 1.4 1.5 12.1 | 14.4 58.4 1.1 1.9 16.3 12.8 4.1 1.0 | Med 144.1 58.8 58.8 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | Max 15.9 60.2 1.0 60.2 1.2 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 1.1 1.6 0.0 0.1 1.4 0.9 0.9 0.3 1.0 1.0 1.1 1.7 6.2 1.1 1.7 6.2 1.1 1.1 1.7 6.2 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1 | 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |

| | USGS | | | | | | | | | | UT1 Rea | ach 3 (188 | 85 LF) Reference F | Paach(as) I | Nata | | 1 | | | | | | | | | | |
|--|---------------|----------------------------------|-----------------------------------|--|--------|--|---------------|---------------|--------|---|-------------------------|--|--|--|------|--|---|---|-------------------|-------------------------------------|----|---|---|--|--|--|--|
| Parameter | Gauge | Regio | nal Curve I | nterval | | | | g Condition | | | | | Spenc | er Creek | Jala | | | | | sign | | | | | As-t | | |
| Dimension and Substrate - Riffle BF Width (ft) | | 7.5 | UL 27.0 | Eq. 12.8 | Min | Mean 17.6 | Med | Max | SD | n 1 | Min | Mean 8.7 | Med | Max | SD | n 1 | Min | Mean 15.0 | Med | Max | SD | n 1 | Min 15.1 | Mean 15.5 | Med 15.3 | Max 16.2 | SD 0.5 |
| Floodprone Width (ft) | | | | | | >115.2 | | | | 1 | | 228.5 | | | | 1 | | 85.2 | | | | 1 | 56.9 | 57.5 | 57.1 | 58.6 | 0.8 |
| BF Mean Depth (ft) BF Max Depth (ft) | | 1.0 | 2.5 | 1.6 | | 1.2 | | | | 1 | | 1.2 | | | | 1 1 | | 1.2 | | | | 1 1 | 1.2 | 1.2 | 1.2 | 1.3 2.2 | 0.1 |
| BF Cross-sectional Area (ft²) | | 12.0 | 43.0 | 24.0 | | 20.9 | | | | 1 | | 10.6 | | | | 1 | | 17.3 | | | | 1 | 17.8 | 18.9 | 17.9 | 21.0 | 1.5 |
| Width/Depth Ratio | | | | | | 14.7 | | | | 1 | | 7.3 | | | | 1 | | 12.5 | | | | 1 | 12.6 | 12.8 | 12.7 | 13.1 | 0.2 |
| Entrenchment Ratio Bank Height Ratio | | | | | | >6.5 | | | | 1 | | 26.3 | | | | 1 | | 5.7 1.0 | | | | 1 | 1.0 | 3.7 1.0 | 3.7 1.0 | 3.8 1.0 | 0.1 |
| d50 (mm) | | | | | | 16.0 | | | | 1 | | 8.6 | | | | | | | | | | | | | | | |
| Pattern Channel Beltwidth (ft) | | | | | | | | | | | 24.0 | | | 52.0 | | 2 | 22.0 | | | 65.0 | | 18 | 29.0 | 63.7 | 68.0 | 76.0 | 12.9 |
| Radius of Curvature (ft) | | | | | | | | | | | 5.4 | | | 22.1 | | 5 | 30.0 | | | 50.0 | | 19 | 29.0 | 38.4 | 37.0 | 52.0 | 6.8 |
| Rc:Bankfull Width (ft/ft) Meander Wavelength (ft) | | | | | | | | | | | 0.6 54.0 | | | 2.5 196.0 | | 5 | 2.0 127.0 | | | 3.3 198.0 | | 19 | 1.9 | 177.7 | 181.2 | 3.4 220.1 | 22.0 |
| Meander Width Ratio | | | | | | | | | | | 2.8 | | | 6.0 | | 2 | 1.5 | | | 4.3 | | 18 | 1.9 | | | 4.9 | |
| Profile Riffle Length (ft) | | | | | | | | | | | | | | | | | | | | | | | 31.0 | 55.0 | 59.0 | 85.0 | 15.0 |
| Riffle Slope (ft/ft) | | | | | 0.0274 | | | 0.0628 | | 2 | 0.0100 | | | 0.0670 | | 2 | 0.0175 | | | 0.0354 | | 19 | 0.0100 | 0.0220 | 0.0200 | 0.0390 | 0.008 |
| Pool Length (ft) Pool Spacing (ft) | | | | | 27.2 | | | 539.5 | | | 13 | | | 46.5 | | 5 | 61.0 | | | 137.0 | | 19 | 23.0 | 94.0 | 106.5 | 134.0 | 30.0 |
| Pool Max Depth (ft) | | | | | | 2.1 | | | | | | 2.5 | | | | 1 | | 3.3 | | | | 1 | 3.0 | 3.0 | | 3.0 | |
| Pool Volume (ft ³) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Substrate and Transport Parameters Ri% / Ru% / P% / G% / S% | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SC% / Sa% / G% / B% / Be% | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| d16 / d35 / d50 / d84 / d95 Reach Shear Stress (competency) lb/F | | | | | | 0.9 | 0.063 / 8 / 1 | 6 / 110 / 102 | | | | | 0.06/3/8 | 3.6 / 77 / 18 | 0 | | | 0.7 | | | | | | 0.8 | | | |
| Max part size (mm) mobilized at bankfull (Rosgen Curve) | | | | | | 225.0 | | | | | | | | | | | | 190.0 | | | | | | 200.0 | | | |
| Stream Power (transport capacity) W/m ² Additional Reach Parameters | | | | | | | | | | | | | | | | | | | | | | | | 57.9 | | | |
| Drainage Area (SM | | | | | 1.0 | | | 1.2 | | | | | | 0.5 | | | 0.9 | | | 1.1 | | | 0.9 | | | 1.1 | |
| Impervious cover estimate (%) Rosgen Classification | | | | | | C4/1 | | | | | | E4/C4 | | | | | | C4 | | | | | | E/C | | | |
| BF Velocity (fps) | | | | | | | | | | | | | | | | | | 5.5 | | | | | | 5.0 | | | |
| BF Discharge (cfs) Valley Length (ft) | | 35.0 | 290.0 | 100.3 | | 1518.0 | | | | | | | | | | | | 95.0 | | | | | | 95.0 1571.0 | | | |
| Channel length (ft) | | | <u></u> | | | 1518.0 | | | | | | | | | | | | 1954.0 | | | | | | 1885.0 | | | |
| Sinuosity Water Surface Slope (Channel) (ft/ft) | | | | | | 1.00 0.0134 | | | | | | 1.10 0.013 | | | | | | 1.20 0.0118 | | | | | | 1.20 0.0120 | | | |
| Water Surface Slope (Charliner) (1011) BF Slope (ft/ft) | | | | | | 0.0134 | | | | | | 0.013 | | | | | | 0.0116 | | | | | | 0.0120 | | | |
| Banfull Floodplain Area (Acres) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BEHI VL% / L% / M% / H% / VH% / E% Channel Stability or Habitat Metric | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Biological or Other | | ļ | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 1 | | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | Lucas | | | | | | | | | | UT1 Re | ach 4 (996 | |)b/\ | | | | | | | | | | | | | |
| Parameter | USGS Gauge | Regio | nal Curve I | nterval | | | Pre-Existin | g Condition | 1 | | UT1 Re | | Reference F | Reach(es) I | Data | | | | Des | sign | | | | | As-k | ouilt | |
| Dimension and Substrate - Riffle | USGS Gauge | LL | UL | Eq. | Min | Mean | Med | Max | SD | n | UT1 Re | Mean | Reference F | er Creek Max | SD | n | Min | Mean | Des Med | Max | SD | n | Min | Mean | Med | Max | SD |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) | | | | | Min | | | - | | n 1 | | R | Reference R Spenc | er Creek | | n 1 | Min | Mean 16.0 87.0 | | | SD | n 1 | Min 16.7 51.3 | Mean 18.7 57.8 | | | SD 2.8 5.0 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft | Gauge | LL | 27.0 2.5 | Eq. 12.9 1.6 | | Mean 23.1 69.2 1.0 | Med | Max | SD | 1 1 1 | Min | Mean 8.7 228.5 1.2 | Reference F Spenc Med | er Creek Max | SD | n 1 1 | | 16.0 87.0 1.3 | Med | Max | | 1 1 1 | 16.7 51.3 1.2 | 18.7 57.8 1.3 | Med 16.8 58.6 1.3 | Max 22.6 63.5 1.5 | 2.8 5.0 0.1 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft, BF Max Depth (ft, | Gauge | 7.5 1.0 | UL 27.0 2.5 | Eq. 12.9 1.6 | | Mean 23.1 69.2 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 | Reference F Spenc Med | Max | SD | n 1 1 1 1 | | 16.0 87.0 | Med | Max | | 1 | 16.7 51.3 | 18.7 57.8 | Med 16.8 58.6 1.3 2.0 | Max 22.6 63.5 | 2.8 5.0 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft*) Width/Depth Ratio | Gauge | 7.5 | 27.0 2.5 43.0 | Eq. 12.9 1.6 24.4 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 | Med | Max | SD | 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 | Reference F Spenc Med | Max | SD | n 1 1 1 1 1 | | 16.0 87.0 1.3 1.7 20.0 12.3 | Med | Max | | 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 | 18.7 57.8 1.3 2.0 24.8 14.2 | Med 16.8 58.6 1.3 2.0 25.3 13.1 | Max 22.6 63.5 1.5 2.3 27.8 18.4 | 2.8 5.0 0.1 0.2 2.7 3.1 |
| Dimension and Substrate - Riffle BF Width (II) Floodprone Width (II) BF Mean Depth (II BF MX Depth (II BF Cross-sectional Area (II) Width/Depth Ratio Entrenchment Ratio | Gauge | 7.5 1.0 | UL 27.0 2.5 | Eq. 12.9 1.6 24.4 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 | Med | Max | SD | 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 | Reference F Spenc Med | Max | SD | n 1 1 1 1 1 1 1 | | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 | Med | Max | | 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 |
| Dimension and Substrate - Riffle BF Width (It) Floodprone Width (It) BF Mean Depth (It BF Max Depth (It BF Tooss-sectional Area (It ²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio 650 (mm) | Gauge | LL 7.5 1.0 12.0 | UL 27.0 2.5 43.0 | Eq. 12.9 1.6 24.4 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 | Med | Max | SD | 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 | Reference F Spenc Med | Max | SD | n 1 1 1 1 1 1 1 1 1 | | 16.0 87.0 1.3 1.7 20.0 12.3 | Med | Max | | 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 | 18.7 57.8 1.3 2.0 24.8 14.2 | Med 16.8 58.6 1.3 2.0 25.3 13.1 | Max 22.6 63.5 1.5 2.3 27.8 18.4 | 2.8 5.0 0.1 0.2 2.7 3.1 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratic d50 (mm) Pattern | Gauge | 1.0 12.0 | UL 27.0 2.5 43.0 | Eq. 12.9 1.6 24.4 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 | Med | Max | SD | 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 | Reference F Spenc Med | er Creek Max | SD | n 1 1 1 1 1 1 1 1 1 | | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 | Med | Max | | 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Man Depth (ft, BF Max Depth (ft, BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio G50 (mm) Pattern Channel Beltwidth (ft, Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) | Gauge | 1.0 12.0 | UL 27.0 2.5 43.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 | SD | 1 1 1 1 1 1 1 1 1 1 1 2 5 | 31.0 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 41.0 36.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) Floodprone Width (ft) BF Mean Depth (ft BF Max Depth (ft) BF Max Depth (ft) BF Gross-sectional Area (ft) Area (ft) BF Cross-sectional Area (ft) BF Cross-sectional Area (ft) BRAX Depth (ft) B | Gauge | 1.0 12.0 | 27.0 2.5 43.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 2.5 | SD | 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 2.0 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 7 9 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 1112.0 55.0 3.6 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 26.4 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft BF Max Depth (ft BF Max Depth (ft BF Cross-sectional Area (ft') Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ftf) Radius of Curvature (ft) Rc:Bankfull Width (ft/ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio | Gauge | 1.0 12.0 | UL 27.0 2.5 43.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | er Creek Max 52.0 22.1 | SD | 1 1 1 1 1 1 1 1 1 1 1 2 5 | 31.0 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 41.0 36.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 |
| Dimension and Substrate - Riffle BF Width (II) BF Mean Depth (II) BF Mean Depth (II) BF Mac Section Area (II ²) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio GS0 (mm) Pattern Channel Beltwidth (III) Radius of Curvature (II) Re-Bankfull Width (IIII) Meander Wavelength (II) Meander Width Ratio Profile | Gauge | 1.0 1.0 12.0 | UL 27.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | er Creek Max 52.0 22.1 2.5 196.0 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 | 31.0 32.0 2.0 133.0 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 7 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 | 18.7 57.8 1.3 2.0 24.8 14.2 1.0 55.3 36.3 156.1 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 159.8 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 26.4 1.1 62.9 |
| Dimension and Substrate - Riffle BF Width (It) Floodprone Width (It) BF Mean Depth (It BF Max Depth (It BF Max Depth (It BF Cross-sectional Area (It²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic 450 (mm) Pattern Channel Beltwidth (It Radius of Curvature (It) Readauthil Width (Itt)) Meander Wavelength (It) Meander Wavelength (It) Profile Riffle Length (It) Riffle Sloop (Itt)) | Gauge | 12.0 | UL 27.0 2.5 43.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 1 1 1 1 1 1 1 1 1 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 8.6 | Reference F Spenc Med | For Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 2 5 5 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 7 9 9 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 156.1 | Med 16.8 58.6 1.3 25.3 13.1 3.5 1.0 41.0 36.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 26.4 1.1 62.9 13.0 0.0070 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio Bank Height Ratio Bean Height Ratio Bean Height Ratio Bean Height Ratio Bean Height Ratio Radius of Curvature (ft) Re:Bankfull Width (ft/ft) Meander Width Ratio Profile Riffle Length (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Length (ft) | Gauge | 12.0 | UL 27.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 1.0 8.6 | Reference F Spenc Med | Factor of the control | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 7 9 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 159.8 159.8 154.0 0.0230 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 79.0 0.0310 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 |
| Dimension and Substrate - Riffle BF Width (It) BF Mean Depth (It BF Mean Depth (It BF Max Depth (It BF Max Depth (It) BF Cross-sectional Area (It') Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Bank Height Ratic ASO (mn) Pattern Channel Beltwidth (It) Resankfull Width (It') Meander Width Ratic Profile Riffle Length (It) Refile Slope (It') Red Length (It) Refile Slope (It') Pool Spacing (It) Pool Max Depth (It) Pool Max Depth (It) | Gauge | 1.0 | UL 27.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.9 10.6 1.0 8.6 | Reference R Spenc Med | Fig. 1. Sept. 1. Sept | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | 47.0 50.0 3.1 168.0 2.9 | | 1 1 1 1 1 1 1 1 1 1 1 7 9 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 156.1 55.0 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 79.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 26.4 1.1 62.9 13.0 0.0070 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Mac Nepth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (nm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Re-Bankfull Width (ft)ft) Meander Wavelength (ft) Meander Width Ratio Profile Riffle Length (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Volume (ft) Pool Volume (ft) Pool Volume (ft) | Gauge | 1.0 | UL 27.0 | Eq. 12.9 | | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | Francisco (Control of Control of | SD | 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 5 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 7 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 156.1 81.0 | Med 16.8 58.6 1.3 2.0 25.3 13.1 13.1 1.0 41.0 36.0 159.8 54.0 0.0230 75.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 79.0 0.0310 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabankull Width (ft/ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio Profile Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters R% / Rw/, Pw/, P/, P/, P/, P/, P/, P/, P/, P/, P/, P | Gauge | 1.0 | UL 27.0 | Eq. 12.9 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference R Spenc Med | For Creek Max | SD | 1 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 7 9 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 66.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 156.1 55.0 0.0220 81.0 4.6 | Med 16.8 58.6 1.3 2.0 25.3 13.1 3.5 1.0 41.0 36.0 159.8 54.0 0.0230 75.0 | Max 22.6 63.5 1.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 26.4 1.1 62.9 13.0 0.0070 13.0 |
| Dimension and Substrate - Riffle BF Width (It) BF Mean Depth (It) BF Mac Depth (It) BF Cross-sectional Area (It²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Research Wavelength (It) Research Wavelength (It) Riffle Slope (ItN) Pool Length (It) Pool Spacing (It) Pool Max Depth (It) Pool Volume (It²) Substrate and Transport Parameters Riff, Ruff, Pw/ / Pw/ / Gw/ / Sw. | Gauge | 1.0 | UL 27.0 | Eq. 12.9 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | Fig. 1. Sept. 1. Sept | SD | 1 | 31.0 22.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 7 9 9 9 5 7 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 2.4 1.2 3.2 1.0 55.3 36.3 156.1 55.0 0.0220 81.0 4.6 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 159.8 54.0 0.0230 75.0 | Max 22.6 63.5 1.5 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.0 181.0 3.0 18 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1.0 0.7 1.0 0.7 1.1 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabankull Width (ft/ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio Profile Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters R% / Rw/, Pw/, P/, P/, P/, P/, P/, P/, P/, P/, P/, P | Gauge | 1.0 | UL 27.0 | Eq. 12.9 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Med | 0.2521 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 1.0 8.6 | Reference R Spenc Med | Fig. 1. Sept. 1. Sept | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 5 5 2 2 2 | 31.0 32.0 2.0 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 7 9 9 5 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 11.0 38.0 14.0 0.9 136.3 2.0 66.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 55.3 36.3 156.1 81.0 4.6 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.1 3.5 1.0 | Max 22.6 63.5 1.5 63.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 62.9 13.0 0.0070 13.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Beltwidth (ft) Re-Bankfull Width (ft) Re-Bankfull Width (ft) Meander Width Ratio Profile Riffle Length (ft) Refile Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Wax Depth (ft) Pool Wax Depth (ft) Pool Wax Depth (ft) Substrate and Transport Parameters Riffle / Roy (F / Ry / F / G / G / S / S / S / S / S / G / G / G | Gauge | 12.0 | UL 27.0 | Eq. 12.9 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 1.8 3.0 1.0 1.8 3.0 1.8 3.0 1.0 1.8 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference F Refere | er Creek Max | SD | 1 | 31.0 32.0 2.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 11.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 20 24.8 14.2 3.2 1.0 55.3 36.3 81.0 4.6 81.0 4.6 81.0 290.0 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.1 3.5 1.0 41.0 36.0 75.0 | Max 22.6 63.5 1.5 63.5 1.5 2.3 27.8 18.4 3.8 1.0 55.0 3.6 181.0 3.0 181.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 2.6.4 1.1 |
| Dimension and Substrate - Riffle BF Width (It) BF Mean Depth (It BF Mac Depth (It BF Mac Depth (It BF Mac Depth (It) BF Cross-sectional Area (It²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (It) Radius of Curvature (It) Reander Wavelength (It) Reander Wavelength (It) Reside Linguistic Profile Riffle Sloope (It) Pool Mac Depth (It) Pool Mac Depth (It) Pool Volume (It²) Substrate and Transport Parameters R% / Rw% / P% / P% / G% / S% Sc% / Sa% / G% / G% / G% / G% G / G / G / G / G / G / G / G / G / G | Gauge | 12.0 | UL 27.0 | Eq. 12.9 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 32.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 2.8.5 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | 52.0 22.1 2.5 196.0 6.0 | SD | 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 7 9 9 5 7 7 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 0.9 136.3 2.0 37.0 0.0050 66.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 156.1 81.0 4.6 1.2 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 41.0 36.0 159.8 75.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 181.0 110.0 1 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1.0 0.7 1.0 0.7 1.1 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio GB (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Substrate and Transport Parameters Radis / Ray / Ry / Ry / Ry / Ry / Ry / Ry / R | Gauge | 12.0 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 32.0 32.0 33.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Spenc Med | er Creek Max Max 52.0 22.1 2.5 196.0 6.0 0.0670 0.0670 0.0677 / 18 | SD | 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 66.0 66.0 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 1.3 2.0 2.5 3.5 1.0 3.5 1.0 41.0 36.0 0.0230 75.0 0.0230 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 181.0 110.0 110.0 1.0 1.0 1.0 1. | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 2.6.4 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Re.Bankfull Width (ftft) Meander Width Ratic Profile Riffle Length (ft) Riffle Slope (ft/ft) Pool Langth (ft) Pool Spacing (ft) Pool Max Depth ft() Pool Max Depth ft() Pool Max Depth ft() Substrate and Transport Parameters Ri% / Ru% / P% / P% / S% SC% / Sa% / P% / P% / B% / B% d16 / d35 / d50 / d84 / d85 Reach Bear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Respen Curve) Stream Power (transport capacity) Wimi Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 3.0 32.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Reference F Spenc Spenc Med | 62.0 22.1 2.5 196.0 6.0 6.0 6.0 6.0 6.5 6.0 6.5 6.0 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 20 20 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med | Max | | 7 9 9 5 7 7 9 112 9 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 37.0 0.0050 66.0 | 18.7 57.8 1.3 20.2 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 36.0 | Max 22.6 63.5 1.5 63.5 1.5 2.3 27.8 18.4 3.8 1.0 55.0 3.6 181.0 3.0 181.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1. |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Bank Bellwidth (ft/ft) Beader Wavelength (ft) Beader Wavelength (ft) Broot Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Wavelength (ft) Bout Bank Bank Bank Bank Bank Bank Bank Bank | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 32.0 32.0 32.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | Med | 0.2521 156.4 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 | Reference F Spenc Med | 62.0 22.1 25 196.0 6.0 | SD | 1 | 31.0 32.0 20 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 20.0 12.3 1.0 12.3 1.0 12.3 1.0 12.3 1.0 12.3 1.1 1.0 12.3 1.0 12.3 1.0 12.3 1.0 12.3 1.0 12.3 1.0 12.3 12.3 12.3 12.3 12.3 12.3 12.3 12.3 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 66.0 66.0 1.1 | 18.7 57.8 1.3 20.0 24.8 14.2 3.2 1.0 55.3 36.3 156.1 55.0 81.0 0.0220 1.2 290.0 68.2 | Med 16.8 58.6 58.6 58.6 1.3 2.0 2.0 25.3 13.1 3.5 1.0 15.0 15.0 15.0 15.0 15.0 15 | Max 22.6 63.5 1.5 63.5 1.5 2.3 27.8 18.4 3.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1. |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft)* Width/Depth Ratio Entrenchment Ratio Bank Height Ratio Bank Height Ratio ABO (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabankull Width (ft)t) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio Proffie Riffle Slope (ft/ft) Riffle Slope (ft/ft) Pool Spacing (ft) Pool Max Depth (ft, Pool Spacing (ft) Substrate and Transport Parameters R% / Rw/, Pw/, P% / G% / S% SC% / Sa% / G% / B% / B% d ft/ d / d3 x fd/ d0 / d4 x / d3 BF Dischage (dS) Rosgen Classification BF Velocity (fts) BF Discharge (GS) | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 3.0 1.8 20.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Spenc Med | er Creek Max Max 52.0 22.1 2.5 196.0 6.0 0.0670 0.66.5 0.56.777 / 18 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.0 1.0 1.1 250.0 | Med | Max | | 7 9 9 9 5 5 7 7 12 9 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 11.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 1.3 2.0 2.0 1.3 1.1 1.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 112.0 55.0 3.6 181.0 112.0 112.0 112.0 112.0 112.0 1.3.6 1. | 2.8 5.0 0.1 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (nm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabankfull Width (ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Width Ratio Frofile Riffle Slope (ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Volume (ft) Substrate and Transport Parameters R% / Rw/ Pw/ P/ G% / S% SC%/ Sa% / G% / B% / B% d16 / d35 / d50 / d84 / d55 Reach Shear Stress (competency) Ib/F Max part size (mm) mobilized at bankfull (Rosspen Curve) Stream Power (transport capacity) W/m: Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classification BF Velocity (ft)s BF Discharge (c6) Valley Length (ft) Channel length (ft) Channel length (ft) | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1 | 0.0264 | Mean 23.1 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | 0.2521 | SD | 1 | 24.0 5.4 0.6 54.0 2.8 2 | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 1.7 20.0 12.3 1.0 4.0 250.0 1.1 250.0 1.1 250.0 | Med | 47.0 50.0 3.1 168.0 2.9 105.0 1.1.2 | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 66.0 1.1 | 18.7 57.8 1.3 20.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 15.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 28.4 1.1 62.9 13.0 0.0070 13.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Mac Depth (ft) BF Mac Depth (ft) BF Mac Depth (ft) BF Cross-sectional Area (ft ²) Width/Depth Ratio Entrenchment Ratic Bank Height Ratic Bank Height Ratic d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Reander Width Ratic Profile Riffle Slope (ft/ft) Rospean (Ft/ft) Pool Length (ft) Pool Spacing (ft) Pool Max Depth (ft) Pool Volume (ft ²) Substrate and Transport Parameters R/% / Ru% / P% / G% / S% SC% / Sa% / G% / G% / G% / S% SC% / Sa% / G% / G% / G% / G% Reach Shear Stress (competency) Life Max part size (mm) mobilized at bankfull (Rospen Curve) Stream Power (transport capacity) Vmi Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classicitation BF Velocity (fts) BF Discharge (ds) Valley Length (ft) Channel length (ft) | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 32.0 32.0 32.0 32.0 32.0 32.0 32.0 | Med | 0.2521 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 8.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Reference F Spenc Med | 62.0 22.1 2.5 196.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 20.0 12.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 51.3 51.3 1.2 1.8 21.3 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 58.6 1.3 2.0 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1.0 0.7 1.0 0.7 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Max Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio 450 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabankull Width (ft)(ft) Meander Wavelength (ft) Reader Wavelength (ft) Radius of Curvature (ft) Reader Wavelength (ft) Reader Wavelength (ft) Radius of Curvature (ft) Reader Wavelength (ft) Reader Wavelength (ft) Pool Spacing (ft) Pool Spacing (ft) Pool Volume (ft) Substrate and Transport Parameters Riff, Ft, Ft, Ft, Ft, Gt, Gt, Gt, Gt, Gt, Gt, Gt, Gt, Gt, G | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 1.0 1.8 22.6 23.1 3.0 1.8 32.0 | Med | 0.2521 | SD | 1 | 24.0 5.4 0.6 54.0 2.8 2 | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 1.7 20.0 12.3 1.0 4.0 250.0 1.1 250.0 1.1 250.0 | Med | 47.0 50.0 3.1 168.0 2.9 105.0 1.1.2 | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 66.0 1.1 | 18.7 57.8 1.3 20.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 15.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 | 2.8 2.8 5.0 0.1 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Max Depth (ft) BF Stross-sectional Area (ft) GENTAL AREA (ft) BAR Height Ratic Bank Height Ratic BAR BEBARKUI Width (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reander Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Length (ft) Pool Length (ft) Pool Length (ft) Pool Max Depth (ft) Pool Max Depth (ft) Pool Max (BAR) BAR | Gauge | LL 7.5 | UL 27.0 2.5 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 32.0 32.0 32.0 32.0 32.0 32.0 32.0 33.0 | Med | 0.2521 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 | Reference F Spenc Spenc Med | er Creek Max | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 20 20 133.0 1.9 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 20.0 12.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 21.3 11.2 2.3 1.0 | 18.7 57.8 1.3 2.0 24.8 1.4.2 3.2 1.0 24.8 3.2 1.0 3.2 3.2 1.0 3.2 3.2 3.2 3.2 3.2 3.2 3.2 3.2 3.3 36.3 36 | Med 16.8 58.6 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 63.5 1.5 1.5 2.3 27.8 18.4 3.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 2.8 5.0 0.1 0.2 2.7 3.1 0.7 1.0 0.7 1. |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Koss-sectional Area (ft²) Width/Depth Ratio Bank Height Ratic Bank Bellwidth (ft/ft) Meander Wavelength (ft) Riffle Slope (ft/ft) Pool Mac Depth (ft) Bobstrate and Transport Parameters Riff, Ruff, Pf/ft (78) / 5% / 5% / 5% / 5% / 5% / 5% / 5% / 5 | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med | 0.2521 | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Spenc Med | 52.0 22.1 2.5 196.0 6.0 0.0670 0.0677 / 18 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 1.3 1.7 20.0 12.3 5.4 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 66.0 66.0 66.0 1.1 1.1 | 18.7 57.8 1.3 2.0 24.8 14.2 3.2 1.0 | Med 16.8 58.6 58.6 1.3 2.0 2.0 25.3 13.1 3.5 1.0 41.0 36.0 55.0 55.0 55.0 55.0 55.0 55.0 55 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 181.0 112.0 55.0 3.6 181.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3 | 2.8 2.8 5.0 0.1 1.0 |
| Dimension and Substrate - Riffle BF Width (ft) BF Mean Depth (ft) BF Mean Depth (ft) BF Mac Depth (ft) BF Cross-sectional Area (ft) Width/Depth Ratio Entrenchment Ratio Bank Height Ratio d50 (mm) Pattern Channel Beltwidth (ft) Radius of Curvature (ft) Radius of Curvature (ft) Radius of Curvature (ft) Reabentull Width (ft)ft) Meander Wavelength (ft) Meander Wavelength (ft) Reander Width Ratio Profile Riffle Length (ft) Riffle Slope (ft/ft) Pool Spacing (ft) Pool Spacing (ft) Pool Olyangth (ft) Pool Olyangth (ft) Pool Volume (ft) Substrate and Transport Parameters Ri% / Rw/s / Pw/s / G% / S% SC% / Sa% / G% / B% / Be% d16 / d35 / d50 / d84 / d95 Reach Shear Stress (competency) Ib.ff Max part size (mm) mobilized at bankfull (Rospen Curve) Stream Power (transport capacity) Wmł Additional Reach Parameters Drainage Area (SM Impervious cover estimate (%) Rosgen Classification BF Velocity (fps) BF Discharge (65) Valley Length (ft) Channel length (ft) Sinuccisiy Water Surface Slope (Channel) (ft/ft) Banfull Floodplain Area (Acres) BEH IVL% / L/% / M% / H% / HY / VH / W / VH / CH / CRCS | Gauge | LL 7.5 | UL 27.0 | Eq. 12.9 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 | 0.0264 | Mean 23.1 69.2 1.0 1.8 22.6 23.1 3.0 1.8 32.0 23.1 3.0 1.8 20.0 23.1 3.0 23.1 3.0 23.1 3.0 23.1 23.1 23.1 23.1 23.1 23.1 23.1 23.1 | Med | Max | SD | 1 | Min | Mean 8.7 228.5 1.2 1.9 10.6 7.3 26.3 1.0 8.6 | Reference F Spenc Med | 52.0 22.1 2.5 196.0 6.0 0.0670 0.0677 / 18 | SD | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 31.0 32.0 2.0 133.0 1.9 0.0222 | 16.0 87.0 1.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 12.3 1.7 20.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | Med | Max | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 16.7 51.3 1.2 1.8 21.3 11.2 2.3 1.0 38.0 14.0 0.9 136.3 2.0 37.0 0.0050 | 18.7 57.8 1.3 2.0 24.8 11.2 2.3.2 1.0 55.3 36.3 156.1 17.2 290.0 68.2 68.2 6.2 4.0 100.0 915.0 915.0 915.0 915.0 90.0160 | Med 16.8 58.6 58.6 1.3 2.0 25.3 13.1 3.5 1.0 | Max 22.6 63.5 1.5 2.3 27.8 18.4 3.8 1.0 112.0 55.0 3.6 181.0 3.6 181.0 112.0 55.0 3.6 181.0 3.6 181.0 3.6 181.0 3.6 181.0 3.6 181.0 3.6 181.0 3.6 3.6 181.0 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 | 2.8 2.8 5.0 0.1 1.0 |

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| | Gauge | Gauge Regio LL 5.5 | Regional Curve | Regional Curve Interval | Regional Curve Interval | Regional Curve Interval | Cauge Regional Curve Interval Pre-Existin Pre-Exis | Cauge Regional Curve Interval Pre-Existing Condition | Cauge Regional Curve Interval Pre-Existing Condition | Cauge Regional Curve Interval Pre-Existing Condition | USGS Regional Curve Interval Pre-Existing Condition | USGS Cauge Regional Curve Interval Pre-Existing Condition February February | Segura Curve Interval Segu | Use Regional Curve Interval Pre-Existing Condition Separate Reach(es) Separate Creek Separate Cr | USG Regional Curve Interval Pre-Existing Condition | USG Regional Curve Interval Pre-Existing Condition Support Creek Sup | Seage Regional Curve Interval Pre-Existing Condition Seage S | Segretary Segr | Second Curve Interval | Segretarion Pro-Existing Condition Pro-E | Segregor Regional Curve Interval | Seage Regional Curve Interval Pro-Existing Condition Seage Creek Seage Creek Seage Seage | Second Profession Profess | Second colored by Colored Co | Second Curve | Second Curve | Secure Regional Curve Interval Pre-Existing Condition No. No |

Table 7. Morphology and Hydraulic Monitoring Summary

| | | | | g Cedar C | | | | | | Summary D06054-D | | | | | | | | | | |
|--|------|-------|----------|------------|----------|-------------|----|---------|---------|---------------------|------|-----|-----|-----|--------|--------|-----|-----|-----|--------|
| | | | | | Big Ceda | | | | | 3000 F D | | | | | | | | | | |
| | I | Cross | -section | | ng ocu | ai Oice | | | n 2 (Po | ol) | 1 | | | | | Т | | | | |
| Dimension and substrate | Base | MY1 | | MY3 MY4 | MY5 | Base | | | | ΛΥ4 MY5 | Base | MY1 | MY2 | MY3 | MY4 MY | 5 Base | MY1 | MY2 | MY3 | MY4 MY |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | 19.6 | | | | | 28.0 | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | 1.8 | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | 15.7 | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | 50.1 | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | 3.9 | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | >78.0 | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | N/A | | | | | | | | | | | | | | |
| Bank Height Ratio Wetted Perimeter (ft) | | | | | | 1.0 31.6 | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | 1.6 | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | 1.0 | | | | | 1.0 | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) d50 (mm) | - | | | | | - | | | | | | | | | | _ | | | | |
| doo (min) | _ | Cross | -section | 1 (Riffle) | | - | Cı | ross-se | ction 2 | | | | | | | | | | | |
| Dimension and substrate | Base | | | MY3 MY4 | MY5 | Base | | | | MY4 MY5 | Base | MY1 | MY2 | MY3 | MY4 MY | 5 Base | MY1 | MY2 | MY3 | MY4 MY |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | | | | | | | | | | | | | | | | |
| d50 (mm) | | | | | | | | | | | | | | | | | | | | |

| | | | | В | Big Ceda | r Creel | Reach | h 2 (223 | 9 LF) | | | | | | | | | | | |
|--|------|-------|-----------|------------|----------|-------------|-------|-----------|--------|--------|-------------|-----|----------|---------|-----|-------------|-----|-----------|-------|--------|
| | | Cross | | 3 (Riffle) | | | | s-section | | | | | -section | ` / | | | | s-section | _ | , |
| Dimension and substrate | Base | MY1 | MY2 | MY3 MY4 | 4 MY5 | Base | MY1 | MY2 M | MY3 MY | /4 MY5 | Base | MY1 | MY2 N | 1Y3 MY4 | MY5 | Base | MY1 | MY2 M | IY3 M | Y4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | 33.0 | | | | | 22.5 | | | | | 34.8 | | | | |
| BF Mean Depth (ft) | | | | | | 2.3 | | | | | 2.2 | | | | | 2.5 | | | | |
| Width/Depth Ratio | | | | | | 14.6 | | | | | 10.2 | | | | | 13.7 | | | | |
| BF Cross-sectional Area (ft²) | | | | | | 74.3 | | | | | 49.7 | | | | | 88.2 | | | | |
| BF Max Depth (ft) | | | | | | 5.5 | | | | | 3.3 | | | | | 5.5 | | | | |
| Width of Floodprone Area (ft) | | | | | | >83.5 | | | | | >74.4 | | | | | >86.2 | | | | |
| Entrenchment Ratio | | | | | | N/A | | | | | >3.3 | | | | | N/A | | | | |
| Bank Height Ratio Wetted Perimeter (ft) | | | | | | 1.0 37.5 | | | | | 1.0 26.9 | | | | | 1.0 39.9 | | | | |
| | | | | | | 2.0 | | | | | 1.8 | | | | | 2.2 | | | | |
| Hydraulic Radius (ft) | 2.1 | | | | | 2.0 | | | | | 1.0 | | | | | 2.2 | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | - | _ | | | | | _ | | | | | _ | | | | |
| d50 (mm) | - | | | | | - | | | | | - | | | | | - | | | | |
| | | Cross | s-section | 7 (Riffle) | | | | | | | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 | MY3 MY4 | 4 MY5 | Base | MY1 | MY2 M | MY3 MY | /4 MY5 | Base | MY1 | MY2 N | 1Y3 MY4 | MY5 | Base | MY1 | MY2 M | IY3 M | Y4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | l | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | l | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | l | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |

| | | | | | | Big | Ceda | r Creel | Rea | ch 3 (| 1827 | LF) | | | | | | | | | | | | | | | | | |
|---|------|-------|-------|--------|------|-----|------|---------|------|--------|--------|--------|-------|-----|------|-----|------|---------|-------|--------|------|--------|----|-----|-------|-------|--------|---------|-------|
| | | Cross | s-sec | tion 8 | (Poc | ol) | | | Cros | ss-sec | tion 9 | 9 (Rit | ffle) | | | Cı | oss- | section | on 10 | (Riffl | e) | | | Cro | oss-s | ectio | า 11 (| Riffle) | |
| Dimension and substrate | Base | MY1 | M | Y2 M` | Y3 | MY4 | MY5 | Base | MY1 | MY | ′2 N | /IY3 | MY4 | MY5 | Bas | e M | IY1 | MY2 | 2 M | /3 N | Y4 M | Y5 Ba | se | MY | ′1 N | ЛY2 | MY3 | MY | 1 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | 38.8 | | | | | | | 23.1 | | | | | | | 24.6 | 5 | | | | | | 25 | .0 | | | | | | |
| BF Mean Depth (ft) | | | | | | | | 2.2 | | | | | | | 2.1 | | | | | | | 2. | | | | | | | |
| Width/Depth Ratio | | | | | | | | 10.7 | | | | | | | 11.7 | | | | | | | 9. | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | 50.1 | | | | | | | 51.8 | 3 | | | | | | 63 | | | | | | | |
| BF Max Depth (ft) | | | | | | | | 3.1 | | | | | | | 3.1 | | | | | | | 3. | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | >77.8 | | | | | | | >77. | | | | | | | >82 | | | | | | | |
| Entrenchment Ratio | | | | | | | | >3.4 | | | | | | | >3.2 | 2 | | | | | | >3 | | | | | | | |
| Bank Height Ratio | | | | | | | | 1.0 | | | | | | | 1.0 | | | | | | | 1. | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | 27.5 | | | | | | | 28.8 | | | | | | | 30 | | | | | | | |
| Hydraulic Radius (ft) | 2.2 | | | | | | | 1.8 | | | | | | | 1.8 | | | | | | | 2. | 7 | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 1 | - | | | | | | | - | | | | | | | - | | | | | | | | | | | | | | |
| d50 (mm) | - | | | | | | | - | | | | | | | - | | | | | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | M | Y2 M` | Y3 | MY4 | MY5 | Rase | MY1 | MY | ′2 N | /Y3 | MY4 | MY5 | Bas | e M | IY1 | MY2 | 2 M | /3 N | Y4 M | V5 D- | | MY | ′1 N | ЛY2 | MY3 | MY | 1 MY5 |
| | | | | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| | Dasc | IVITI | IVI | | | | | Dasc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation | | IVITI | IVI | | | | | Duoc | 1011 | | | | | | | | | | | | | Y5 Ba: | se | | | | | | |
| | | IVITI | IVII | | | | | Buoc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) | | IVITI | IVII | | | | | Base | | | | | | | | | | | | | | 15 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) | | IVITI | IVII | | | | | Base | | | | | | | | | | | | | | 15 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) | | IVITI | 1011 | | | | | Daoc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) | | IVITI | IVII | | | | | Daoc | | | | | | | | | | | | | | rs Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft ²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio | | IVITI | IVII | | | | | Daoc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | IVITI | IVII | | | | | Daoc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | IVITI | IVII | | | | | Ducc | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | IVITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | IVITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) | | IVITI | | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) Based on current/developing bankfull feature | | IVITI | 1011 | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio | | IVITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) | | IVITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) | | IVITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft²) Hydraulic Radius (ft²) Based on current/developing bankfull feature BF Width (ft²) BF Mean Depth (ft²) Width/Depth Ratio BF Cross-sectional Area (ft²²) BF Max Depth (ft²) Width of Floodprone Area (ft²) | | NITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio BF Hoodprone Area (ft) Entrenchment Ratio | | NITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft?) Entrenchment Ratio Bank Height Ratio | | NITI | IVI | | | | | | | | | | | | | | | | | | | Y5 Ba: | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) BF Width (ft) BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | NITI | IVI | | | | | Date | | | | | | | | | | | | | | Y5 Ba: | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft²) BF Width (ft) BF Mean Depth (ft²) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft²) Width (ft) BF Modern Depth (ft²) Width (ft²) BF Max Depth (ft²) BF Max Depth (ft²) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft²) Hydraulic Radius (ft²) | | IVITI | 1011 | | | | | Date | | | | | | | | | | | | | | YS Ba | se | | | | | | |
| Based on fixed baseline bankfull elevation BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) BF Width (ft) BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft²) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | IVITI | 1011 | | | | | Date | | | | | | | | | | | | | | YS Ba | se | | | | | | |

| | | | | E | Big Ceda | ar Cree | k Reac | h 4 (41 | 0 LF) | | | | | | | | | | | | | |
|--|-------|-------|-------------|----------|----------|---------|--------|---------|-------|---------|-------|------|-----|-------|------|--------|-------|------|-------|-------|-------|-----------|
| | | Cross | -section 12 | | | 0.00 | Cross- | | | Riffle) | | | | | | | | | | | | |
| Dimension and substrate | Base | | MY2 M | | 1 MY5 | Base | | | | | MY5 | Base | MY1 | MY2 | MY3 | MY4 | MY5 | Base | MY1 | MY2 | MY3 | MY4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | 38.0 | | | | | 27.5 | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | 2.3 | | | | | 2.1 | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | 16.3 | | | | | 13.0 | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | 88.5 | | | | | 58.3 | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | 4.7 | | | | | 3.2 | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | >89.2 | | | | | >81.0 | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | N/A | | | | | >2.9 | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | 1.0 | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | 42.6 | | | | | 31.7 | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | 2.1 | | | | | 1.8 | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | | | |
| , , | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | | | |
| , , | | | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft ²) | - | | | | | - | | | | | | | | | | | | | | | | |
| d50 (mm) | - | | | | | - | | | | | | | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 M | Y3 MY4 | 1 MY5 | Base | MY1 | MY2 | MY3 | MY4 | MY5 | Base | MY1 | MY2 | MY3 | MY4 | MY5 | Rase | MY1 | MY2 | MY3 | MY4 MY5 |
| Based on fixed baseline bankfull elevation | Dasc | 14111 | 10112 101 | 10 11111 | · Will | Duoc | 14111 | IVITZ | IVITO | 1411-4 | 14110 | Daoc | | 14112 | WITO | 1411-4 | IVITO | Daoc | 14111 | 10112 | 14110 | WITT WITE |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (it) BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Deptn (π) Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (It-) BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | | | | | | | | | | | | | | | | | | |
| d50 (mm) | | | | | | | | | | | | | | | | | | | | | | |
| aso (mm) | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | UT1 | Read | ch 1 (12 | 48 LF) | | | | | | | | | | | | | | | | |
|--|------|--------|------------|----------|-------|-------|----------|----------|---------|----------|-------|-------|-------|--------|--------|----------|--------|------|----------|-------|-------|-------|---------|-----------|
| | | Cross- | section 14 | (Riffle) | | | Cross | -section | า 15 (F | Pool) | | | Cro | ss-sec | tion 1 | 6 (Riffl | e) | | | Cro | ss-se | ction | 17 (Pc | ol) |
| Dimension and substrate | Base | MY1 | MY2 M | Y3 MY4 | MY5 | Base | MY1 | MY2 | MY3 | MY4 | MY5 | Base | MY | 1 M | /2 N | IY3 N | 1Y4 N | MY5 | Base | MY | 1 M` | /2 M | Y3 N | 1Y4 MY |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | 33.3 | | | | | | 11.6 | | | | | | | 24.3 | | | | | |
| BF Mean Depth (ft) | | | | | | 1.3 | | | | | | 1.3 | | | | | | | 1.3 | | | | | |
| Width/Depth Ratio | 14.2 | | | | | 26.8 | | | | | | 8.8 | | | | | | | 18.7 | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | 41.6 | | | | | | 15.2 | | | | | | | 31.6 | | | | | |
| BF Max Depth (ft) | | | | | | 3.3 | | | | | | 2.1 | | | | | | | 2.9 | | | | | |
| Width of Floodprone Area (ft) | | | | | | >57.2 | | | | | | >48.4 | | | | | | | >55.8 | | | | | |
| Entrenchment Ratio | | | | | | N/A | | | | | | >4.2 | | | | | | | N/A | | | | | |
| Bank Height Ratio | | | | | | 1.0 | | | | | | 1.0 | | | | | | | 1.0 | | | | | |
| Wetted Perimeter (ft) | | | | | | 35.9 | | | | | | 14.2 | | | | | | | 26.9 | | | | | |
| Hydraulic Radius (ft) | 0.9 | | | | | 1.2 | | | | | | 1.1 | | | | | | | 1.2 | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | 1 | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | - | | | | | - | | | | | | - | | | | | | | - | | | | | |
| d50 (mm) | - | 0 | | (D:#I-) | | - | | | | | | - | | | | | | _ | - | | | | | |
| D | D | MY1 | section 18 | . , | MY5 | D | NAV/4 | 141/0 | NA)/O | B 43// 4 | 14)/5 | D | MY | 4 14 | /O. N | 1)/0 1 | 1)/4 1 | 10/5 | <u> </u> | B 437 | 4 84 | (O. N | \/O . N | 1Y4 MY |
| Dimension and substrate | Base | IVITI | MY2 M | 13 W14 | CTIVI | base | IVITI | IVI Y Z | IVITO | IVI Y 4 | CTIVI | Base | IVI Y | I IVI | r Z IV | IY3 N | 114 1 | CTIV | base | IVI Y | I IVI | ĭ∠ IV | 13 1 | 114 1011; |
| Based on fixed baseline bankfull elevation BF Width (ft) | 13.2 | | | | | | | | | | | | | | | | | - | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | 0.9 | | | | | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Denth (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | UT1 | 1 Reac | h 2 (10 | 16 LF) | | | | | | | | | | | | |
|--|--------------|--------|------------|----------|-----|--------------|---------|-----------|---------|--------|--------------|---------|------------|----------|-------|-------------|--------|-----------|---------|---------|
| | | Cross- | section 19 | (Riffle) | | | Cross | s-section | 20 (Poo | l) | | Cross-s | section 21 | (Riffle) | | | Cross- | section 2 | 22 (Rif | le) |
| Dimension and substrate | Base | MY1 | MY2 MY | /3 MY4 | MY5 | Base | MY1 | MY2 I | MY3 MY | Y4 MY5 | Base | MY1 | MY2 MY | ′3 MY4 | MY5 E | Base | MY1 | MY2 N | 1Y3 N | IY4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | 13.4 | | | | | 21.2 | | | | | 15.9 | | | | | 14.1 | | | | |
| BF Mean Depth (ft) | 1.1 | | | | | 1.3 | | | | | 1.1 | | | | | 1.2 | | | | |
| Width/Depth Ratio | 12.4 | | | | | 16.8 | | | | | 14.0 | | | | | 12.1 | | | | |
| BF Cross-sectional Area (ft²) | 14.5 | | | | | 26.7 | | | | | 17.9 | | | | | 16.3 | | | | |
| BF Max Depth (ft) Width of Floodprone Area (ft) | 1.8 >56.4 | | | | | 2.8 >62.4 | | | | | 1.9 >58.8 | | | | | 1.8 60.1 | | | | |
| Entrenchment Ratio | >4.2 | | | | | N/A | | | | | >3.7 | | | | | ×4.3 | | | | |
| Bank Height Ratio | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | | 1.0 | | | | |
| Wetted Perimeter (ft) | | | | | | 23.8 | | | | | 18.1 | | | | | 16.4 | | | | |
| Hydraulic Radius (ft) | 0.9 | | | | | 1.1 | | | | | 1.0 | | | | | 1.0 | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | J | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | - 1 | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | - | | | | | |
| Cross Sectional Area between end pins (ft²) d50 (mm) | - | | | | | - | | | | | - | | | | | - | | | | |
| d50 (IIIII) | - | | | | | | | | | | _ | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 MY | /3 MY4 | MY5 | Base | MY1 | MY2 I | MY3 MY | Y4 MY5 | Base | MY1 | MY2 MY | ′3 MY4 | MY5 E | Base | MY1 | MY2 N | 1Y3 N | IY4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | | | | | | | | | | | | | | | | |
| d50 (mm) | | | | | | | | | | | | | | | | | | | | |

| | | | | UT1 | Reach 3 (| 1885 LF) | | | | | | | | | |
|---|------|----------|------------------|-----------|------------|------------------|-----------|-------------|----------|----------------|------------|-------------|-----------|-------------|-------------|
| | | | ection 23 (Pool) | | | ss-section 24 (F | | | | ection 25 (Rif | | | | ction 26 (R | |
| Dimension and substrate | Base | MY1 I | MY2 MY3 MY4 | 4 MY5 B | ase MY | 1 MY2 MY3 | MY4 MY5 | Base | MY1 N | MY2 MY3 M | MY4 MY5 | Base | MY1 M | Y2 MY3 | MY4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | 1 | 5.1 | | | 15.3 | | | | 16.2 | | | |
| BF Mean Depth (ft) | | | | | 1.2 | | | 1.2 | | | | 1.3 | | | |
| Width/Depth Ratio | | | | | 2.7 | | | 13.1 | | | | 12.6 | | | |
| BF Cross-sectional Area (ft²) | | | | | 7.9 | | | 17.8 | | | | 20.9 | | | |
| BF Max Depth (ft) | | | | | 1.7 | | | 1.8 | | | | 2.2 | | | |
| Width of Floodprone Area (ft) | | | | | 57.1 | | | >56.9 | | | | >58.6 | | | |
| Entrenchment Ratio | | | | | 3.8 | | | >3.7 | | | | >3.6 | | | |
| Bank Height Ratio | | | | | 1.0 7.5 | | | 1.0 17.6 | | | | 1.0 18.8 | | | |
| Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | 1.0 | | | 1.0 | | | | | | | |
| · · | 1.3 | | | | 1.0 | | | 1.0 | | | | 1.1 | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | I | | | |
| Width/Depth Ratio | | | | | | | | | | | | I | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | - | | | - | | | | - | | | |
| d50 (mm) | - | Cross se | ection 27 (Pool) | | | | | - | | | | - | | | |
| Dimension and substrate | Base | | MY2 MY3 MY4 | 1 MV5 B | ase MY | 1 MV2 MV2 | MY4 MY5 | Base | MY1 N | MY2 MY3 M | MVA MV5 | Base | MV1 M | V2 MV2 | MY4 MY5 |
| Based on fixed baseline bankfull elevation | Dase | IVIIII | VIIZ IVIIS IVII4 | + IVITS L | ase IVII | 1 10112 10113 | WITH WITS | Dase | IVI I IV | /112 10113 1 | VII4 IVII3 | Dase | IVI I IVI | 12 10113 | IVIT4 IVITS |
| BF Width (ft) | 24.3 | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | 32.5 | | | | | | | | | | | | | | |
| BF Max Depth (ft) | 3.0 | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | 1.2 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature BF Width (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratic BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratic BF Cross-sectional Area (ft²) BF Max Depth (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft ²) BF Max Depth (ft) Width of Floodprone Area (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft?) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | | | | | | | | | | | |
| BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | - | | | | | | | | | | | | | | |

| | | | | | UT1 Re | ach 4 (9 | 96 LF) | | | | | | | | | | | | |
|--|------|-----|--------------|----------|-------------|----------|-------------|--------|-------|-------------|-------|-----------|--------|-----|------|-----|-----------|--------|--------|
| | | | ection 28 (I | | | | s-section 2 | | | | | ection 30 | | | | | section : | | |
| Dimension and substrate | Base | MY1 | MY2 MY3 | 3 MY4 MY | 75 Base | MY1 | MY2 M | Y3 MY4 | MY5 B | Base I | MY1 I | MY2 M | Y3 MY4 | MY5 | Base | MY1 | MY2 N | 1Y3 M` | Y4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | 19.2 | | | | | 16.8 | | | | | 22.6 | | | | |
| BF Mean Depth (ft) | | | | | 2.2 | | | | | 1.5 | | | | | 1.2 | | | | |
| Width/Depth Ratio | | | | | 8.7 | | | | | 11.2 | | | | | 18.4 | | | | |
| BF Cross-sectional Area (ft²) | | | | | 42.0 | | | | | 25.3 | | | | | 27.8 | | | | |
| BF Max Depth (ft) | | | | | 4.6 | _ | | | | 2.3 | | | | | 1.8 | | | | |
| Width of Floodprone Area (ft) | | | | | >61.7 | / | | | | 63.5 | | | | | 51.3 | | | | |
| Entrenchment Ratio | | | | | N/A | | | | | >3.8 | | | | | 2.3 | | | | |
| Bank Height Ratio | | | | | 1.0 23.5 | | | | | 1.0 19.8 | | | | | 1.0 | | | | |
| Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | 1.8 | | | | | 1.3 | | | | | 25.1 | | | | |
| | 1.1 | | | | 1.0 | | | | | 1.3 | | | | | 1.1 | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | l | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | 1 | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) | | | | | - | | | | _ | - | | | | | - | | | | |
| d50 (mm) | | | | | +- | | | | | - | | | | | - | | | | |
| dso (IIIII) | | | | | | | | | | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 MY3 | B MY4 MY | /5 Base | MY1 | MY2 M | Y3 MY4 | MY5 B | Base I | MY1 I | MY2 M | Y3 MY4 | MY5 | Base | MY1 | MY2 N | 1Y3 M' | Y4 MY5 |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft ²) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| | | | | | | UT2 (60 | 9 LF) | | | | | | | | | | | | |
|--|------|--------|-----------|------------|-----|------------|--------|-----------|----------|-----|------|-----|-----|-------|--------|--------|-----|--------|-----------|
| | | Cross- | section 3 | 2 (Riffle) | | Ċ | ross-s | ection 33 | 3 (Pool) | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 N | NY3 MY4 | MY5 | Base M | 1Y1 N | ΛΥ2 MY | /3 MY4 | MY5 | Base | MY1 | MY2 | MY3 I | MY4 MY | 5 Base | MY1 | MY2 MY | /3 MY4 MY |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | 26.8 | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | 1.1 | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | 24.4 | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | 29.4 | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | 2.9 | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | ľ | >69.8 | | | | | | | | | | | | | |
| Entrenchment Ratio Bank Height Ratio | | | | | | N/A 1.0 | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | 29.0 | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | 1.0 | | | | | | | | | | | | | |
| Based on current/developing bankfull feature | | | | | | 1.0 | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | |
| BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Cross Sectional Area between end pins (ft²) d50 (mm) | - | | | | | - | | | | | | | | | | - | | | |
| dou (mm) | - | | | | | - | | | | | | | | | | | | | |
| Dimension and substrate | Base | MY1 | MY2 N | NY3 MY4 | MY5 | Base M | 1Y1 N | ΛΥ2 MY | /3 MY4 | MY5 | Base | MY1 | MY2 | MY3 I | MY4 MY | 5 Base | MY1 | MY2 M | /3 MY4 MY |
| Based on fixed baseline bankfull elevation | | | | | | | | | | | | | | | | | | | |
| BF Width (ft) | | | | | | | | | | | | | | | | | | | |
| BF Mean Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width/Depth Ratio | | | | | | | | | | | | | | | | | | | |
| BF Cross-sectional Area (ft²) BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | |
| Entrenchment Ratio | | | | | | | | | | | | | | | | | | | |
| Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| welled Perimeter (It) | | | | | | | | | | | | | | | | | | | |
| Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) Hydraulic Radius (ft) | | | | | | | | | | | | | | | | | | | |
| Hydraulic Radius (ft) Based on current/developing bankfull feature BF Width (ft) BF Mean Depth (ft) Width/Depth Ratio BF Cross-sectional Area (ft²) BF Max Depth (ft) Width of Floodprone Area (ft) Entrenchment Ratio Bank Height Ratio Wetted Perimeter (ft) | | | | | | | | | | | | | | | | | | | |

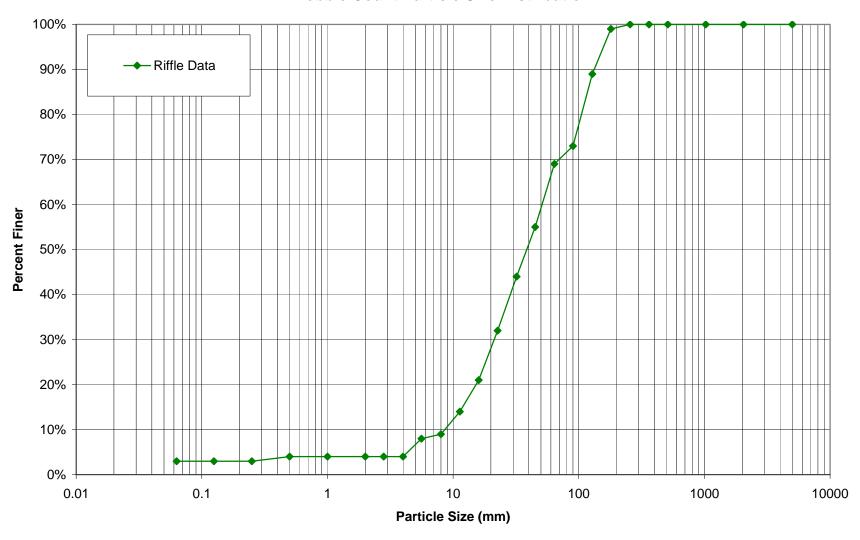
PEBBLE COUNT DATA SHEET: RIFFLE 100-COUNT

| _ | | BUCK PROJECT NO. | 109261 |
|----------------------|-------------|------------------|--------|
| SITE OR PROJECT: | Big Cedar C | reek As-Built | |
| REACH/LOCATION: | UT1 Reach | 1, X18 Riffle | |
| DATE COLLECTED: | 3/17/2009 | | |
| FIELD COLLECTION BY: | CAT/CDM | | |
| DATA ENTRY BY: | IJE | | |

| | | | PARTICLE CLASS COUNT | Sum | mary |
|-----------|------------------|-------------|----------------------|---------|-------|
| MATERIAL | PARTICLE | SIZE (mm) | Riffle | Class % | % Cum |
| SILT/CLAY | Silt / Clay | < .063 | 3 | 3% | 3% |
| | Very Fine | .063125 | | | 3% |
| S | Fine | .12525 | | | 3% |
| A | Medium | .2550 | 1 | 1% | 4% |
| N D | Coarse | .50 - 1.0 | | | 4% |
| | Very Coarse | 1.0 - 2.0 | | | 4% |
| % 355 M | Very Fine | 2.0 - 2.8 | | | 4% |
| 000000 | Very Fine | 2.8 - 4.0 | | | 4% |
| | Fine | 4.0 - 5.6 | 4 | 4% | 8% |
| R | Fine | 5.6 - 8.0 | 1 | 1% | 9% |
| A DO | Medium | 8.0 - 11.0 | 5 | 5% | 14% |
| SOJE POD | Medium | 11.0 - 16.0 | 7 | 7% | 21% |
| 991 P | Coarse | 16.0 - 22.6 | 11 | 11% | 32% |
| 0001100 | Coarse | 22.6 - 32 | 12 | 12% | 44% |
| 000000 | Very Coarse | 32 - 45 | 11 | 11% | 55% |
| | Very Coarse | 45 - 64 | 14 | 14% | 69% |
| 00 99 | Small | 64 - 90 | 4 | 4% | 73% |
| COPPLE I | Small | 90 - 128 | 16 | 16% | 89% |
| COBBLE | Large | 128 - 180 | 10 | 10% | 99% |
| 000 | Large | 180 - 256 | 1 | 1% | 100% |
| 20 | Small | 256 - 362 | | | 100% |
| | Small | 362 - 512 | | | 100% |
| BOULDER | Medium | 512 - 1024 | | | 100% |
| | Large-Very Large | 1024 - 2048 | | | 100% |
| BEDROCK | Bedrock | > 2048 | _ | | 100% |
| | | Total | 100 | 100% | |

Largest particles: 200.00 (riffle)

UT1 to Big Cedar Creek Reach 1 - X18 Riffle Pebble Count Particle Size Distribution



Appendix C

Vegetation Data

Tables 8 & 9

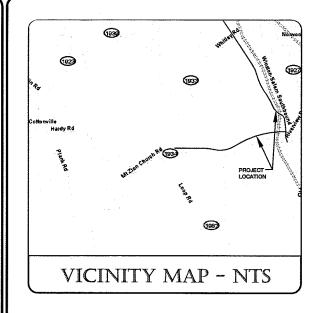
| Table 8. Vegetation Species Planted Across the Restoration Site |
|---|
| Big Cedar Creek Restoration Site: Project No. D06054-D |
| |

| Scientific Name | Common Name | Percent Planted by Species | Total Number of Stems |
|----------------------------|------------------------|----------------------------|-----------------------|
| | Bare Root Trees Spec | cies | _ |
| Acer rubrum | Red Maple | 2% | 200 |
| Betula nigra | River Birch | 22% | 2800 |
| Carya ovata | Shagbark Hickory | 1% | 100 |
| Diospyros virginiana | Persimmon | 1% | 150 |
| Fraxinus pennsylvanica | Green Ash | 9% | 1200 |
| Liriodendron tulipifera | Tulip Poplar | 2% | 225 |
| Platanus occidentalis | Sycamore | 27% | 3500 |
| Quercus alba | White Oak | 1% | 100 |
| Quercus falcata | Southern Red Oak | 2% | 300 |
| Quercus michauxii | Swamp Chestnut Oak | 9% | 1100 |
| Quercus nigra | Water Oak | 20% | 2600 |
| Quercus phellos | Willow Oak | 2% | 200 |
| Quercus rubra | Northern Red Oak | 3% | 350 |
| | Shrub Species | | |
| Calycanthus floridus | Sweet Shrub | 2% | 150 |
| Carpinus carolinanum | Ironwood | 18% | 1800 |
| Cornus amomum | Silky Dogwood | 28% | 2700 |
| Corylus americana | Hazelnut | 2% | 150 |
| Ilex verticillata | Deciduous Holly | 8% | 830 |
| Lindera benzoin | Spicebush | 20% | 2000 |
| Symphorocarpos orbiculatus | Coralberry | 2% | 170 |
| Viburnum dentatum | Arrowwood Viburnum | 20% | 2000 |
| | Native Herbaceous Sp | pecies | |
| Agrostis alba | Redtop | 10% | N/A |
| Andropogon gerardii | Big blue stem | 15% | N/A |
| Binden frondosa | Beggars tick | 10% | N/A |
| Elymus virginicus | Virginia wildrye | 15% | N/A |
| Juncus effusus | Soft rush | 5% | N/A |
| Panicum clandestinum | Deer tongue | 20% | N/A |
| Panicum virgatum | Switch grass | 10% | N/A |
| Polygonum pennsylvanicum | Pennsylvanie smartweed | 5% | N/A |
| Sorgastum nutans | Indian grass | 10% | N/A |

| <u> </u> | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|------------|-----------|-----|-----|------|------|------|------|------|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Table 9 Stem Count for Each S | Species A | Arrangeo | l by Plot | | | | | | | | | | | | | | | | | | | | |
| Big Cedar Creek Restoration Site Contract No. D06054-D | | | | | | | | | | | | | | | | | | | | | | | |
| Dig Cedai Creek Restoration 5 | l Com | ii aci ivo | . D00034 | D | | | | | | | | Plots | | | | | | | | | | | |
| Tree Species | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| Acer rubrum | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Betula nigra | 3 | 5 | 4 | 6 | 4 | | 3 | 1 | 5 | 2 | 2 | 2 | 1 | 2 | 3 | 5 | 2 | 5 | 4 | 3 | | 3 | 7 |
| Capinus caroliniana | 6 | 3 | | 1 | | | 1 | 1 | 2 | | | | 7 | 4 | 1 | 1 | 3 | 1 | 3 | 2 | | | 2 |
| Cornus amomum | 3 | 4 | 1 | 1 | 5 | 5 | 5 | 4 | 2 | 3 | 7 | 3 | 6 | 3 | 1 | 4 | 1 | 3 | 1 | | 4 | 2 | 1 |
| Corylus americana | | | | | | | | 4 | | | 3 | 1 | | | | | | | | | | | |
| Calycanthus floridus | | | | | | | | 1 | | | | 1 | | | | | 1 | | | | | | |
| Fraxinus pennsylvanica | | 1 | 1 | | | 4 | 1 | 2 | 1 | 4 | 1 | 3 | | | | 1 | | | 2 | | 2 | 1 | 1 |
| Ilex verticillata | | | | 1 | | | | | | | 2 | | | 5 | 1 | 1 | 1 | | 1 | | 2 | 4 | 1 |
| Lindera benzoin | 3 | 2 | 4 | | 1 | 2 | 1 | 3 | 1 | 5 | | | | | 3 | 2 | | 3 | 2 | 1 | 2 | 1 | 3 |
| Platanus occidentalis | 8 | 6 | 9 | 7 | 2 | 4 | 6 | 6 | 6 | 10 | 5 | 7 | 5 | 4 | 2 | 4 | 10 | 2 | 7 | 2 | 2 | 2 | |
| Quercus michauxii | | | | 1 | | 3 | 6 | 1 | 2 | 1 | | | | | | | | | | | 1 | 2 | 3 |
| Quercus nigra | | | | | | 1 | 1 | | | | | 1 | | | 2 | 2 | 3 | 1 | | 1 | 3 | 1 | 2 |
| Quercus phellos | | | 2 | 2 | 6 | 3 | 1 | 1 | 4 | | | | | | 3 | | | 5 | 1 | 7 | 2 | 2 | 2 |
| Quercus rubra | | 1 | 1 | | 1 | 1 | | | | | | | | | | | 1 | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |
| Symphoricarpos orbiculatus | | | | | | | | | 1 | 1 | 1 | 1 | | | | | | | | | | 1 | 1 |
| Viburnum dentatum | 2 | 2 | 2 | | 3 | 2 | | 2 | 3 | 1 | | 3 | 2 | 2 | | 1 | | | | 1 | 4 | 2 | 2 |
| Stems/plot | 25 | 24 | 24 | 19 | 22 | 25 | 26 | 26 | 27 | 27 | 21 | 22 | 21 | 20 | 16 | 21 | 22 | 20 | 21 | 17 | 22 | 21 | 24 |
| Stems/acre | 1000 | 960 | 960 | 760 | 880 | 1000 | 1040 | 1040 | 1080 | 1080 | 840 | 880 | 840 | 800 | 640 | 840 | 880 | 800 | 840 | 680 | 880 | 840 | 960 |
| Total Stems/ Acre for Year 0 | | | | | | | | | | | | | | | | | | | | | | 80 | 92 |
| As-Built (Baseline Data) | | | | | | | | | | | | | | | | | | | | | | 0. | 12 |

Appendix D

As-Built Plan Sheets



NC ECOSYSTEM ENHANCEMENT PROGRAM

| | | | _ | | |
|--------------------------|-----------------------------|--------------|-------|--|--|
| STATE | BAKER PROJECT REFERENCE NO. | SHEET NO. | TOTAL | | |
| NC | 109261 | 1 | 67 | | |
| SCO PROJECT NO. D06054-D | | | | | |

STANLY COUNTY

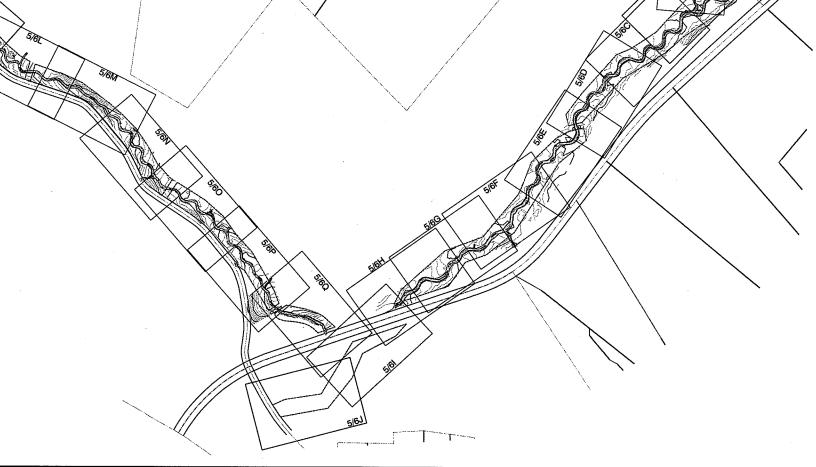
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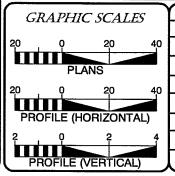
SOUTH APPROX. 12 MILES FROM THE INTERSECTION OF HWY 24/27 & HWY 52 THEN APPROX. 1 MILE FROM INTERSECTION OF HWY 52 & MT. ZION CHURCH RD.

> TYPE OF WORK: STREAM AND WETLAND RESTORATION

INDEX OF SHEETS

1.....TITLE PAGE
2.....CONVENTIONAL SYMBOLS
3-3B.....DESIGN KEY SHEET/AS-BUILT
REFERENCE SHEET/AS-BUILT
OVERLAY SHEET
4A-4AB...PROPOSED DESIGN SHEETS
5A-5Q....AS-BUILT SHEETS
6A-6Q....DESIGN / AS-BUILT OVERLAY SHEETS





| STREAM COORDINATE SUMMARY | | | | | | | | |
|---------------------------|---------|--|--|--|--|--|--|--|
| STREAM NAME | NOITATS | LATITUDE & LONGITUDE | | | | | | |
| BIG CEDAR CREEK | 10+00 | LAT: 35° 12' 31.80° LONG: 80° 07' 43.62° | | | | | | |
| UNNAMED TRIBUTARY 1 | 10+00 | LAT: 35° 11' 29.40" LONG: 80° 05' 19.14" | | | | | | |
| UNNAMED TRIBUTARY 2 | 10+00 | LAT: 35° 12' 29.49" LONG: 80° 07' 47.34" | | | | | | |
| UNNAMED TRIBUTARY 3 | 10+00 | LAT: 35° 12' 04.35" LONG: 80° 07' 27.84" | | | | | | |
| UNNAMED TRIBUTARY 1A | 10+00 | LAT: 35° 11' 44.02° LONG: 80° 07' 36.06° | | | | | | |
| UNNAMED TRIBUTARY 1B | 10+00 | LAT: 35° 11' 41.86° LONG: 80° 07' 45.39° | | | | | | |
| UNNAMED TRIBUTARY 1C | 10+00 | LAT: 35° 11' 33.41" LONG: 80° 08' 08.97" | | | | | | |

PREPARED FOR THE OFFICE OF:



NCDENR-ECOSYSTEM ENHANCEMENT PROGRAM 2728 CAPITAL BLVD, SUITE 1H 103 RALEIGH, NC 27604

| NCEEP CONTACT: _ | GUY PEARCE REVIEW COORDINATOR |
|------------------|---------------------------------|
| NCEEP CONTACT: _ | TIM BAUMGARTNER PROJECT MANAGER |

PREPARED IN THE OFFICE OF:



Michael Baker Engineering, Inc. 1447 South Tryon Street Suite 200 Charlotte, NC 28203 Phone: 704.334.4454 Fax: 704.334.4492

KEVIN TWEEDY, P.E.

CHRISTINE D. MILLER



SYMBOLOGY

| | • | $H_{-}H$ | |
|----------|--------------------------------|-----------------------------|------------------------------|
| E — | RECORDED CONSERVATION EASEMENT | | ROCK CROSS V |
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| x — | EXISTING FENCE | _ | |
| | CENTERLINE RAILROAD | | ROOT WAD |
| | ROW | //°º | |
| | PARCEL BOUNDARY | | LOG J-HOOK V |
| 0+00 | EXISTING ROAD/PAVEMENT | .000000000 | DDUGU MATTOE |
| + | EXISTING STREAM ALIGNMENT | 200000000 | BRUSH MATTRE |
| 0+00 | PROPOSED STREAM ALIGNMENT | 1 | |
| ~~~ | EXISTING EDGE OF WOODS | * | LOG VANE |
| | EXISTING TREE | | LOG STEP-POO |
| | PERMANENT STREAM CROSSING | | CONSTRUCTED (NATIVE MATER |
| \ | FLOW DIRECTION | | |
| | GEOLIFT | | FLOODPLAIN PO |
| | BANK STABILIZATION | | COVER LOG |
| 0 8 | TRANSPLANT | | |

BAKER PROJECT REFERENCE NO.

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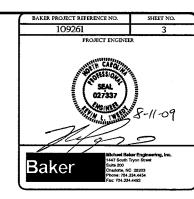
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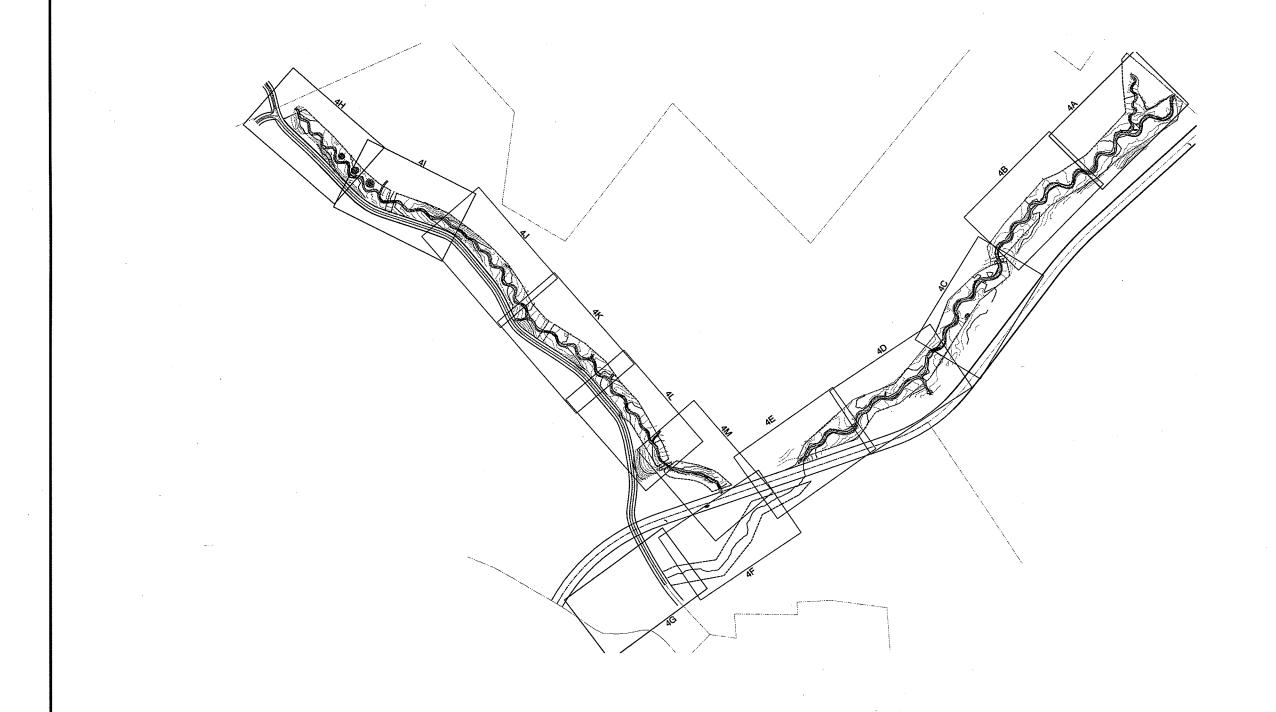
Michael Baker Engineering, Inc.
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BIG CEDAR CREEK

SYMBOLOGY

PROPOSED DESIGN KEY SHEET



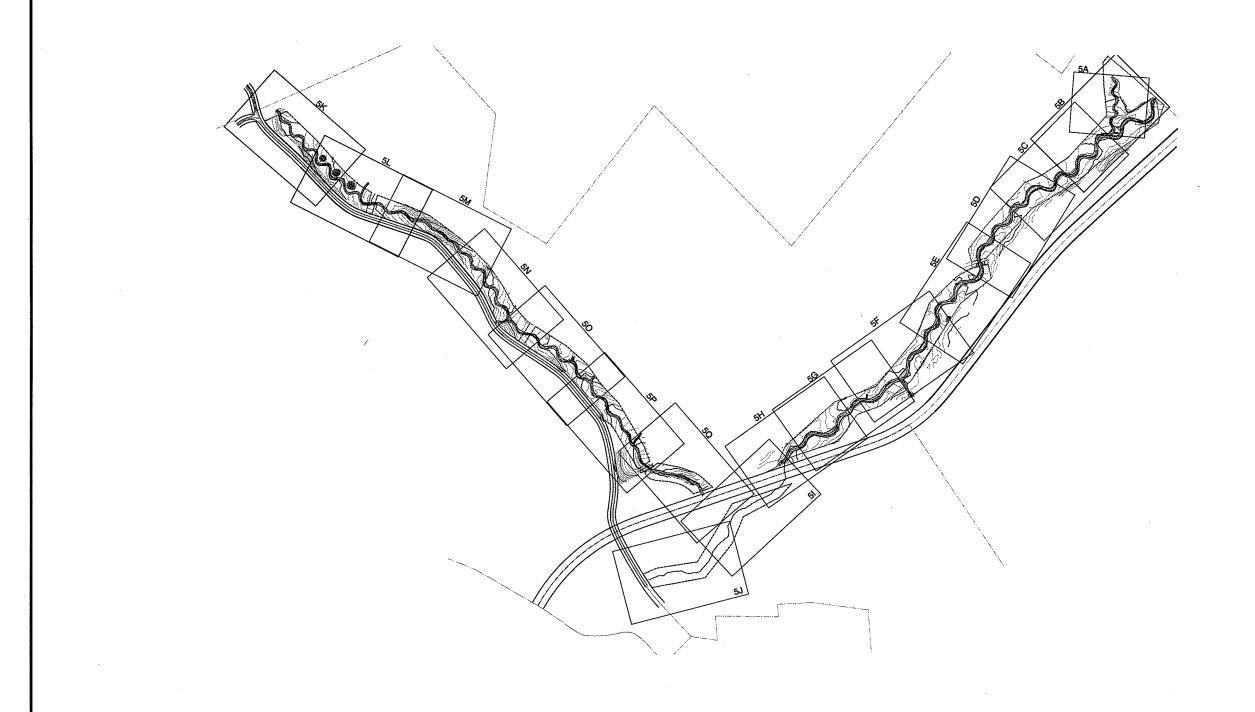


BIG CEDAR CREEK

PROPOSED DESIGN

AS-BUILT KEY SHEET

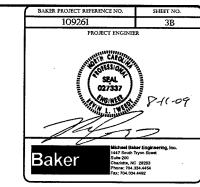


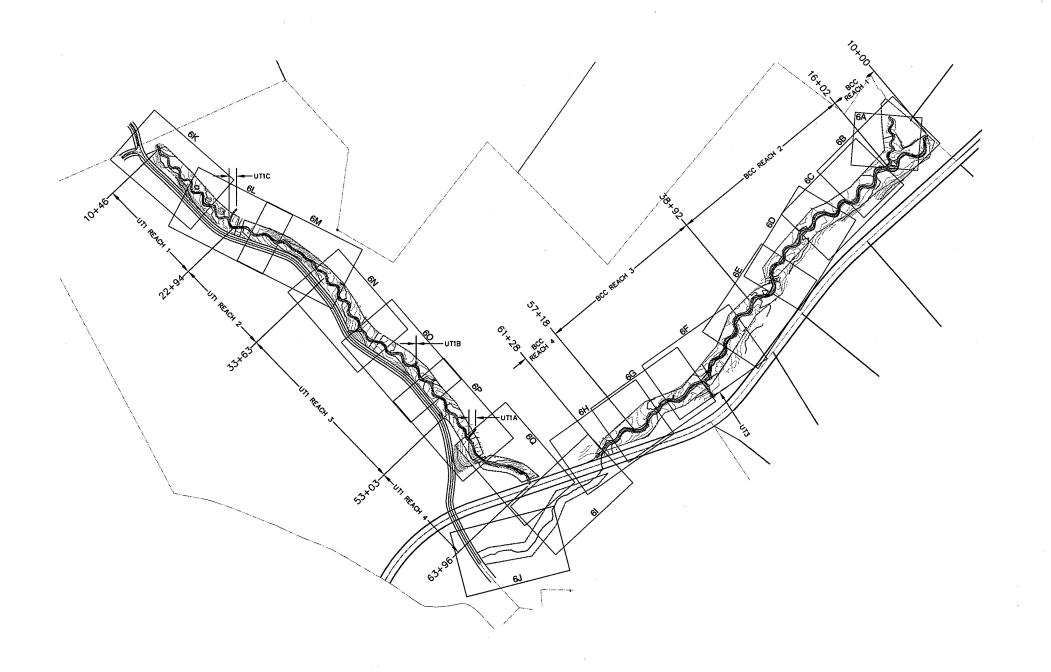


BIG CEDAR CREEK

AS-BUILT KEY SHEET

AS-BUILT OVERLAY KEY SHEET

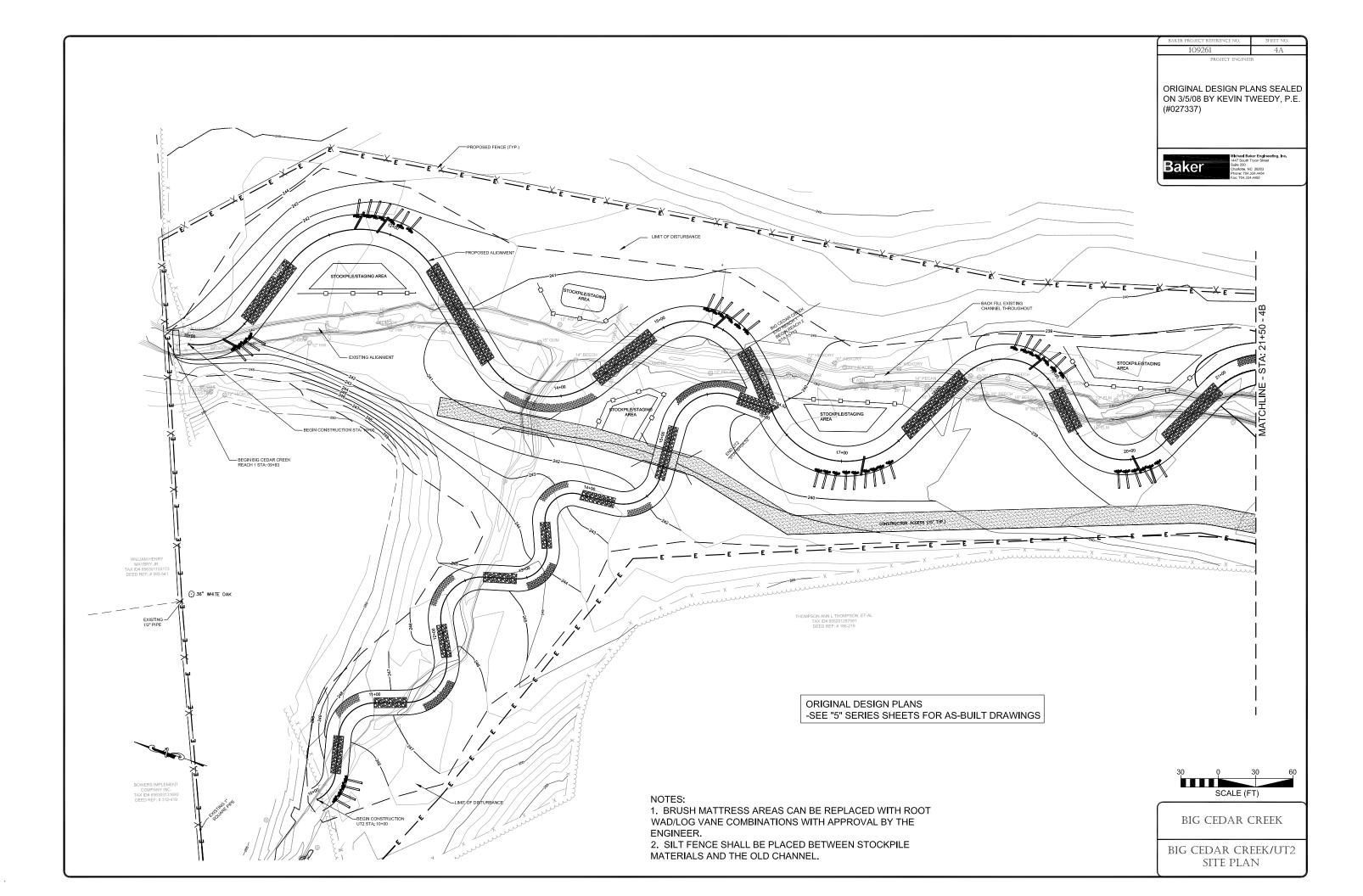


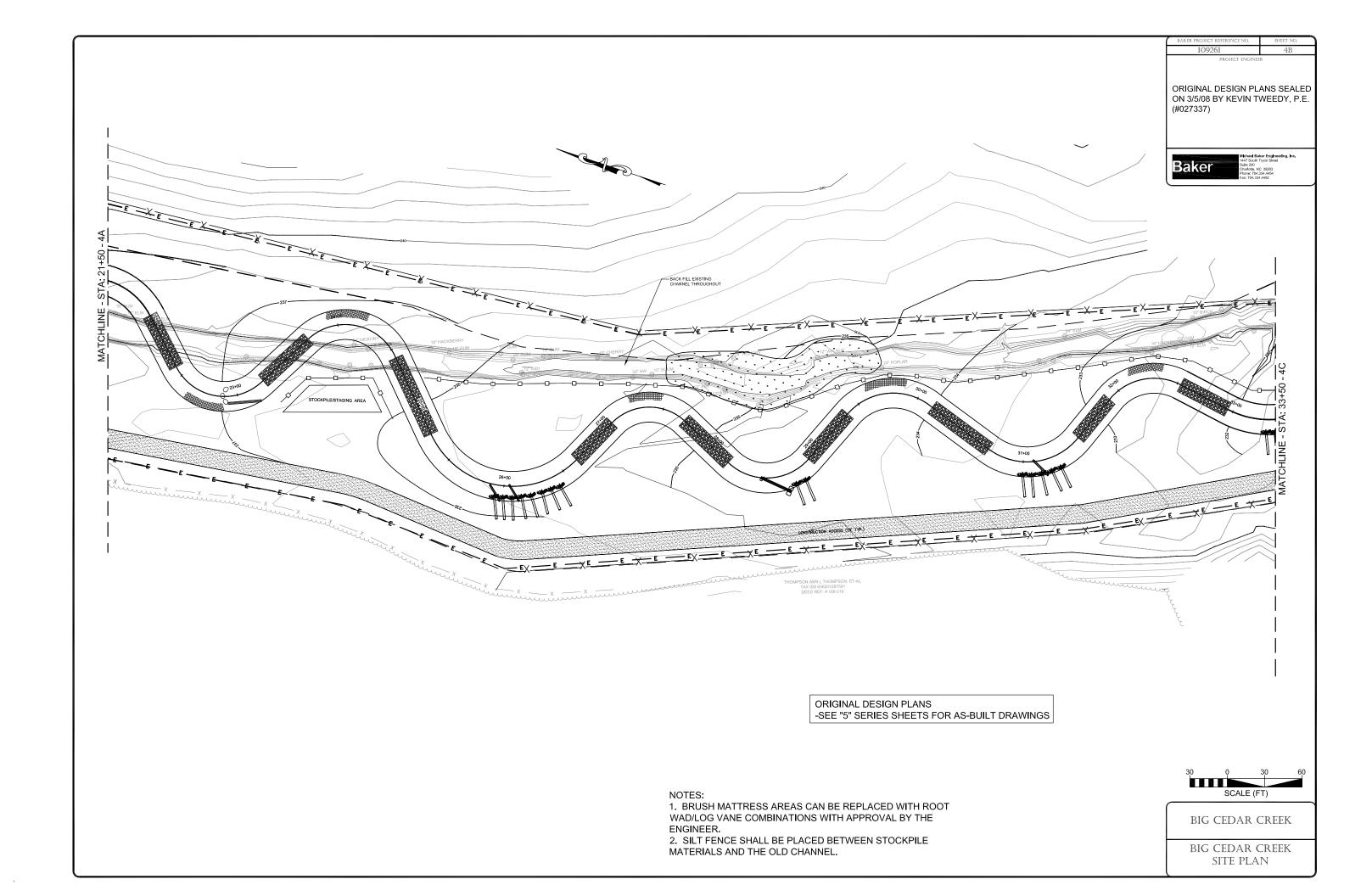


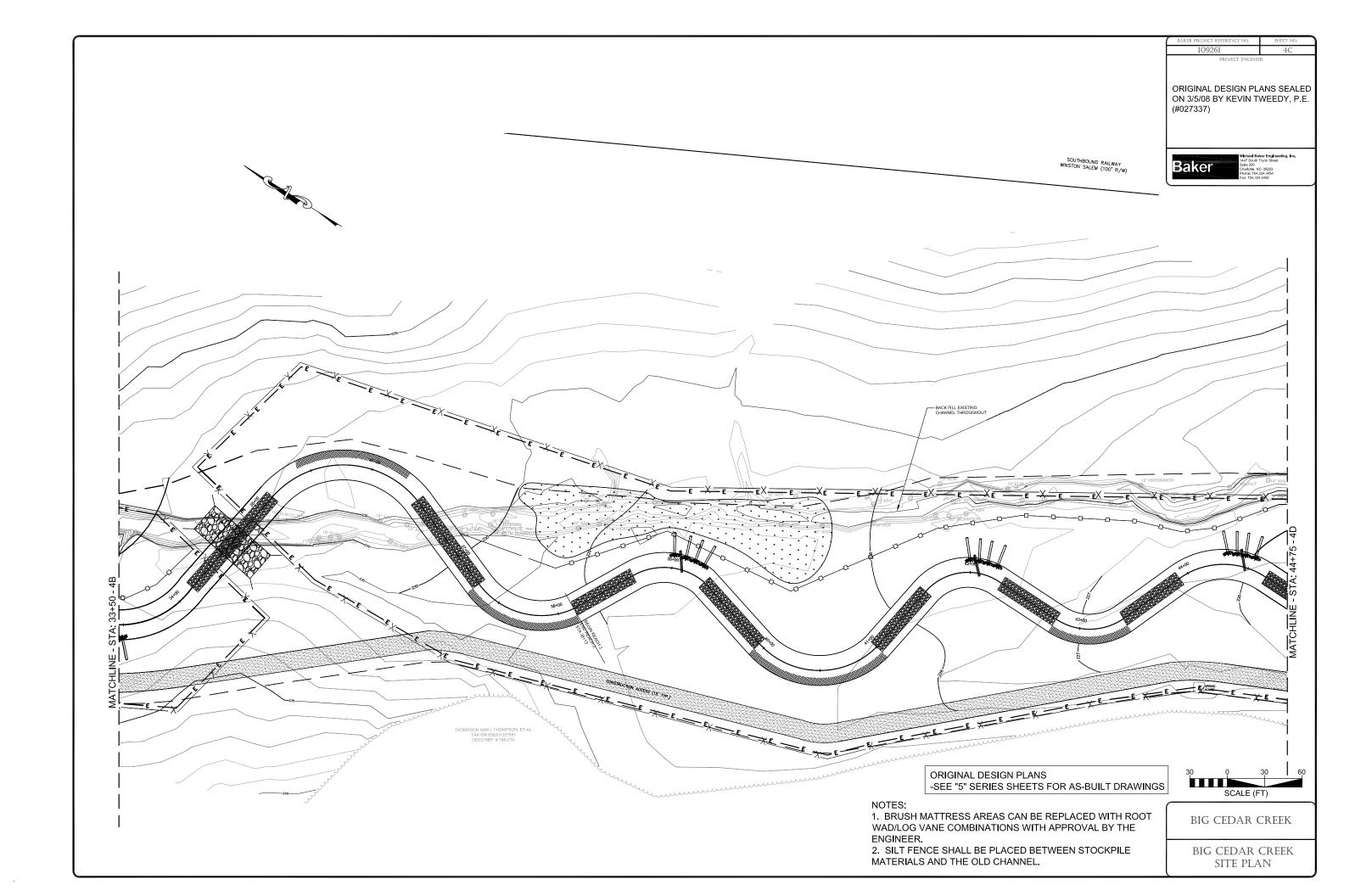


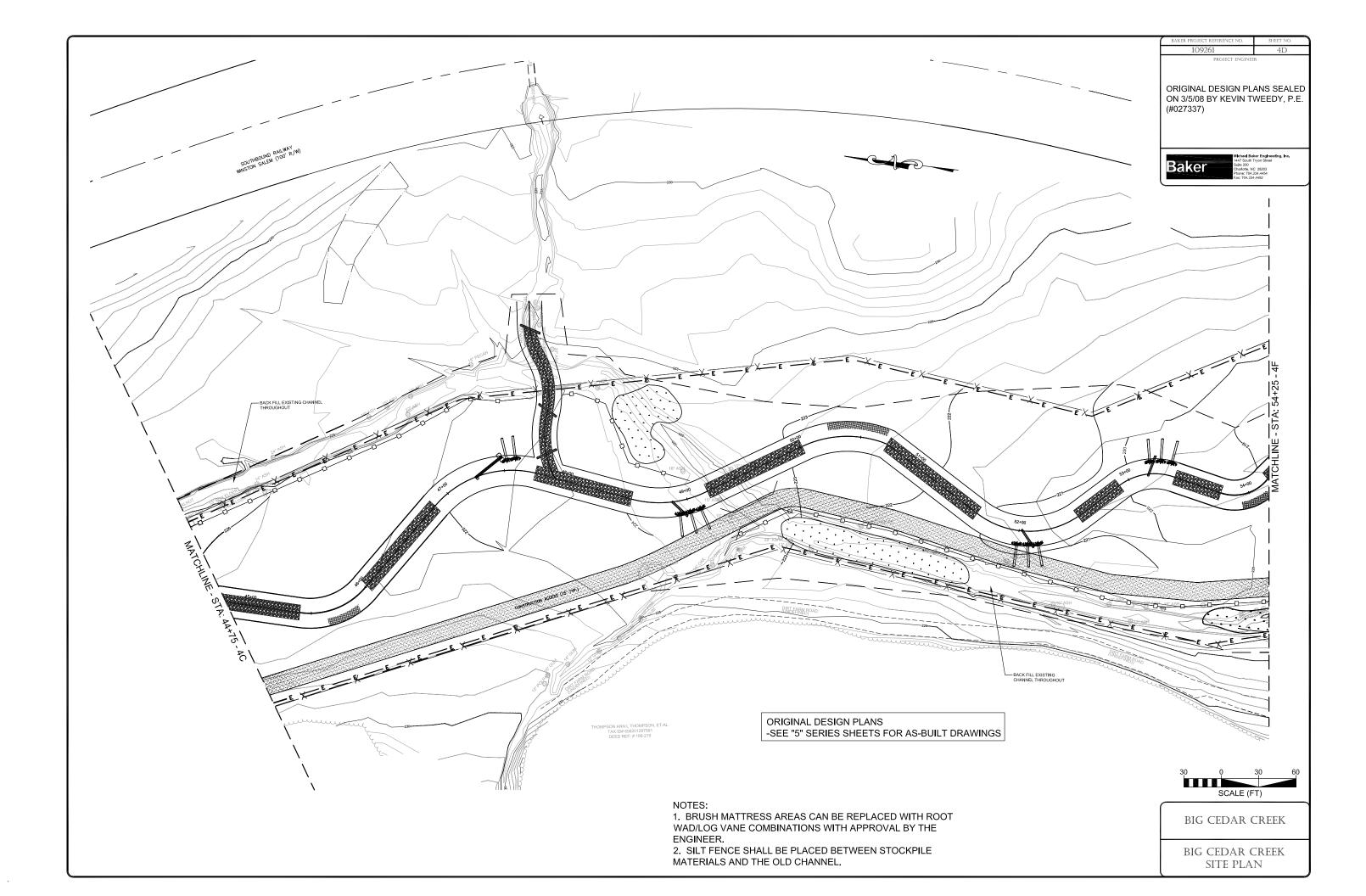
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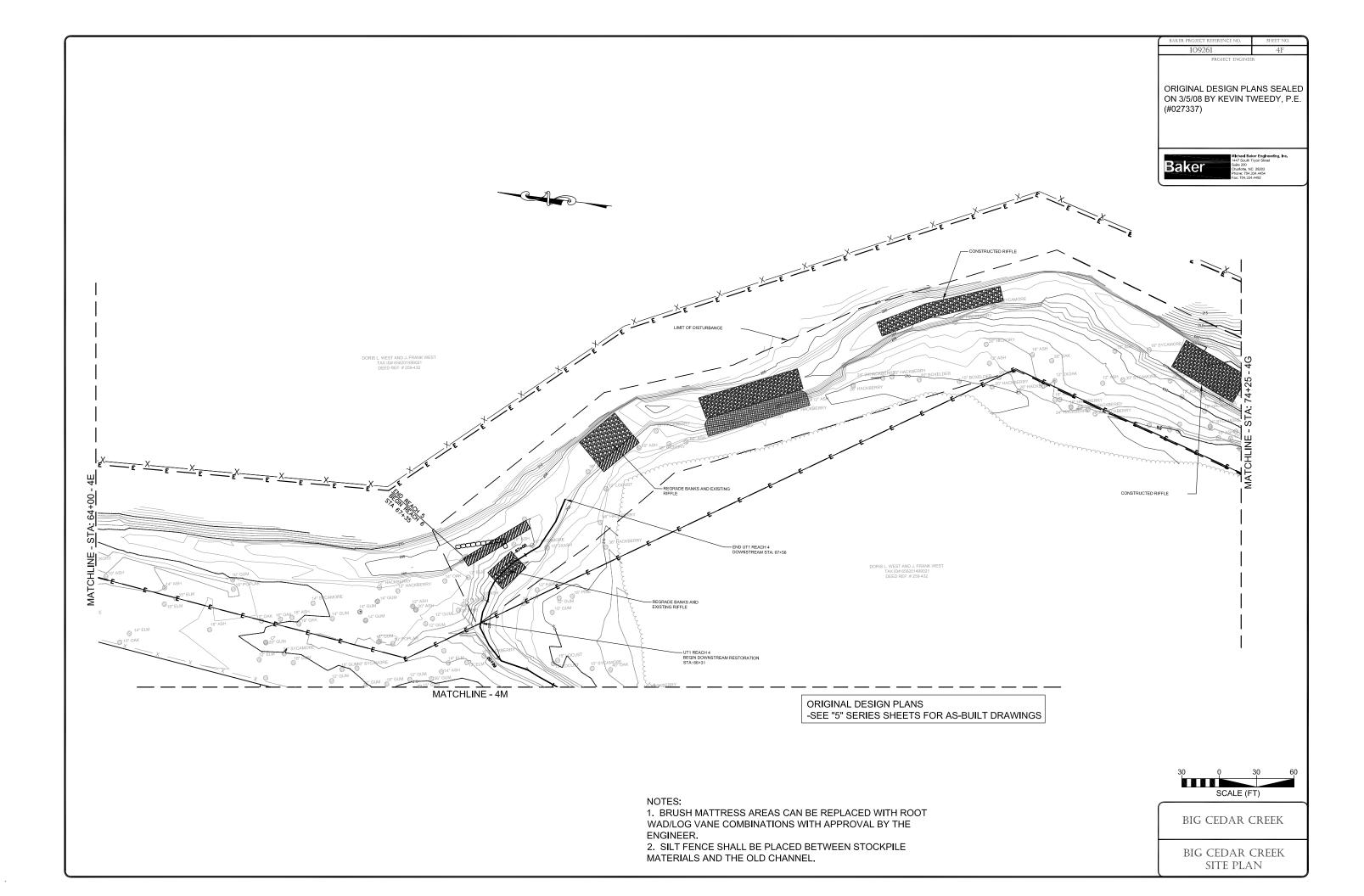








ORIGINAL DESIGN PLANS SEALED ON 3/5/08 BY KEVIN TWEEDY, P.E. (#027337) Baker MATCHLINE -STOCKPILE/STAGING AREA ORIGINAL DESIGN PLANS -SEE "5" SERIES SHEETS FOR AS-BUILT DRAWINGS SCALE (FT) 1. BRUSH MATTRESS AREAS CAN BE REPLACED WITH ROOT BIG CEDAR CREEK WAD/LOG VANE COMBINATIONS WITH APPROVAL BY THE ENGINEER. 2. SILT FENCE SHALL BE PLACED BETWEEN STOCKPILE BIG CEDAR CREEK MATERIALS AND THE OLD CHANNEL. SITE PLAN



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Baker

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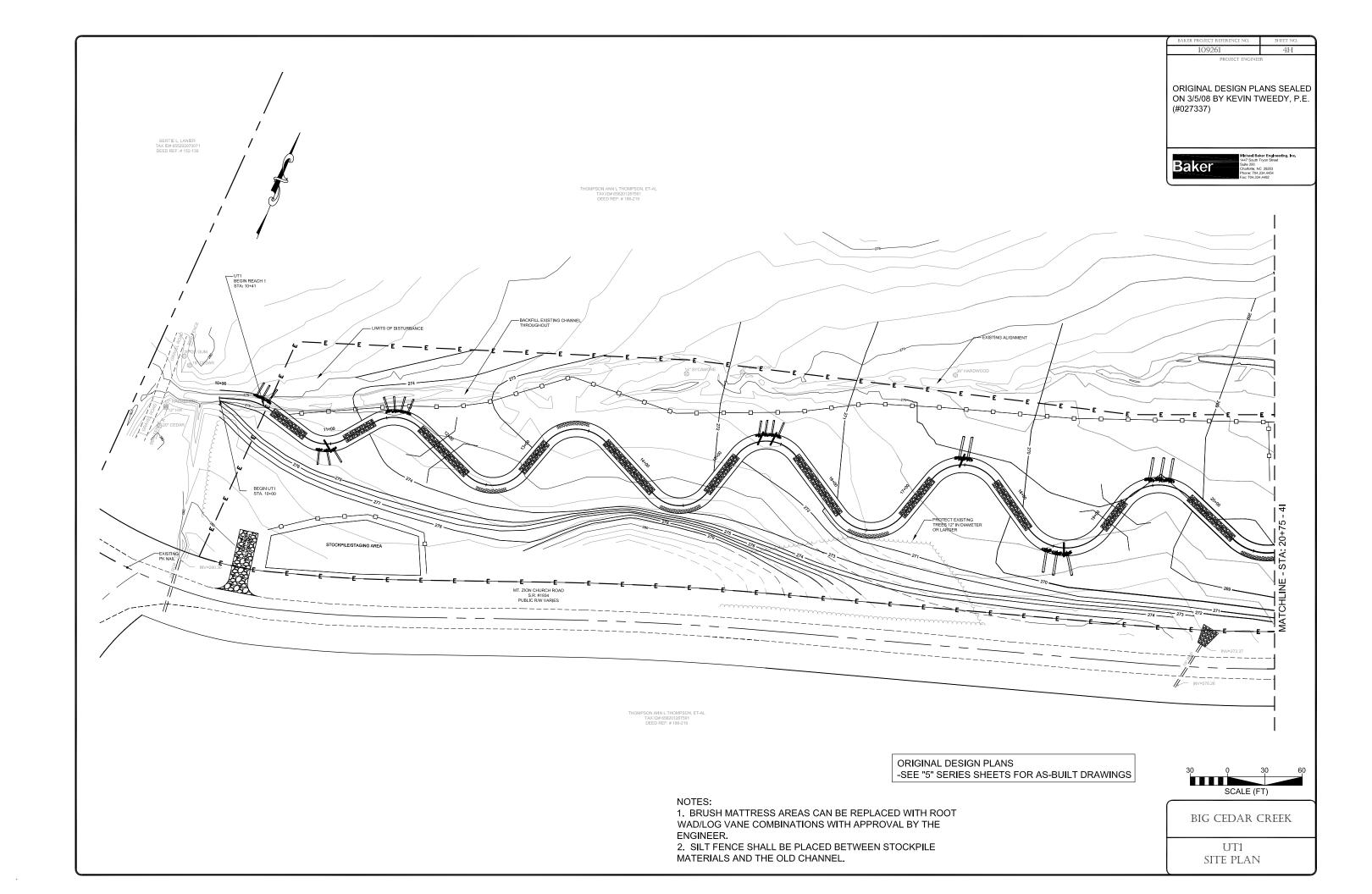
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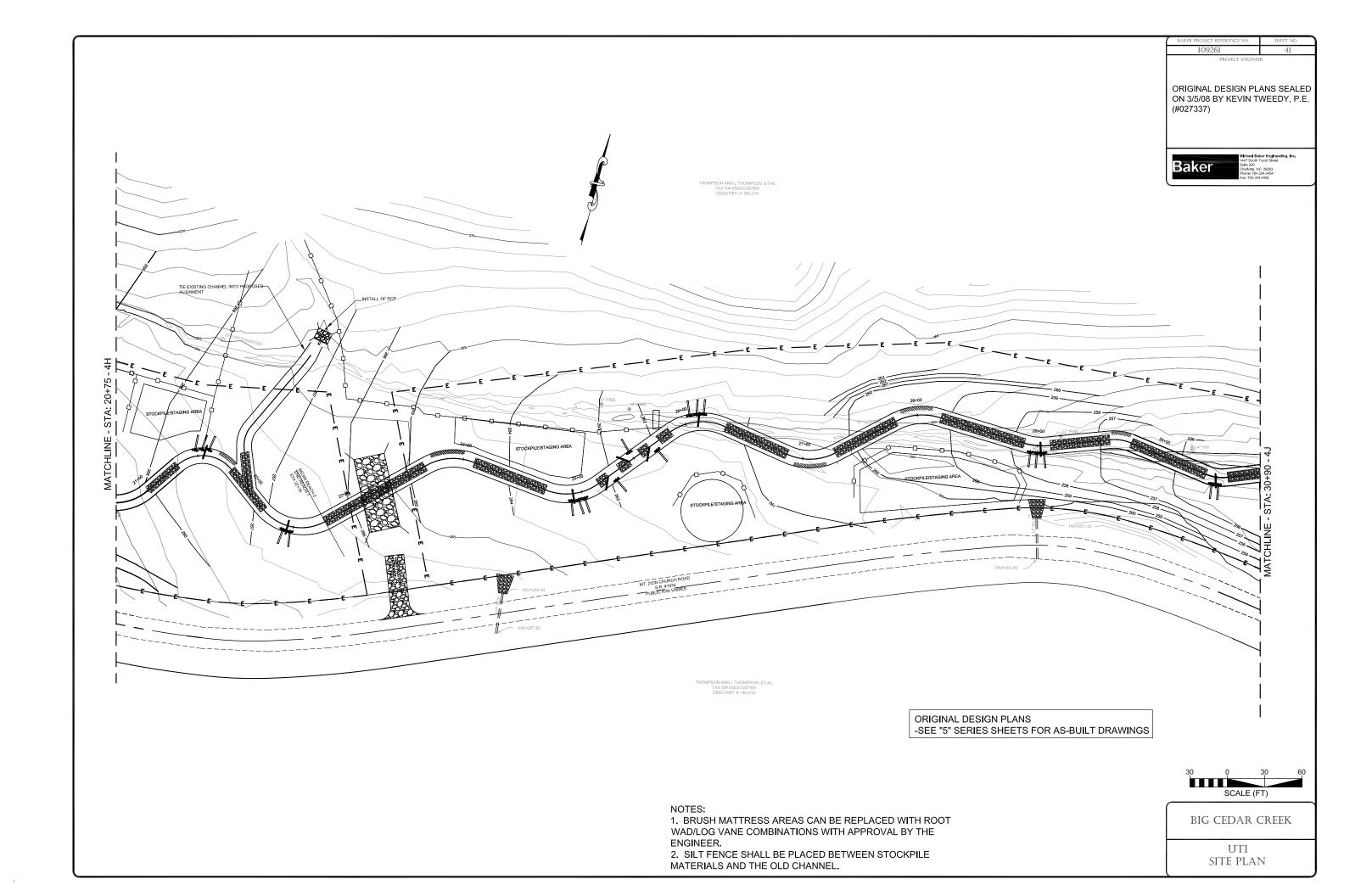
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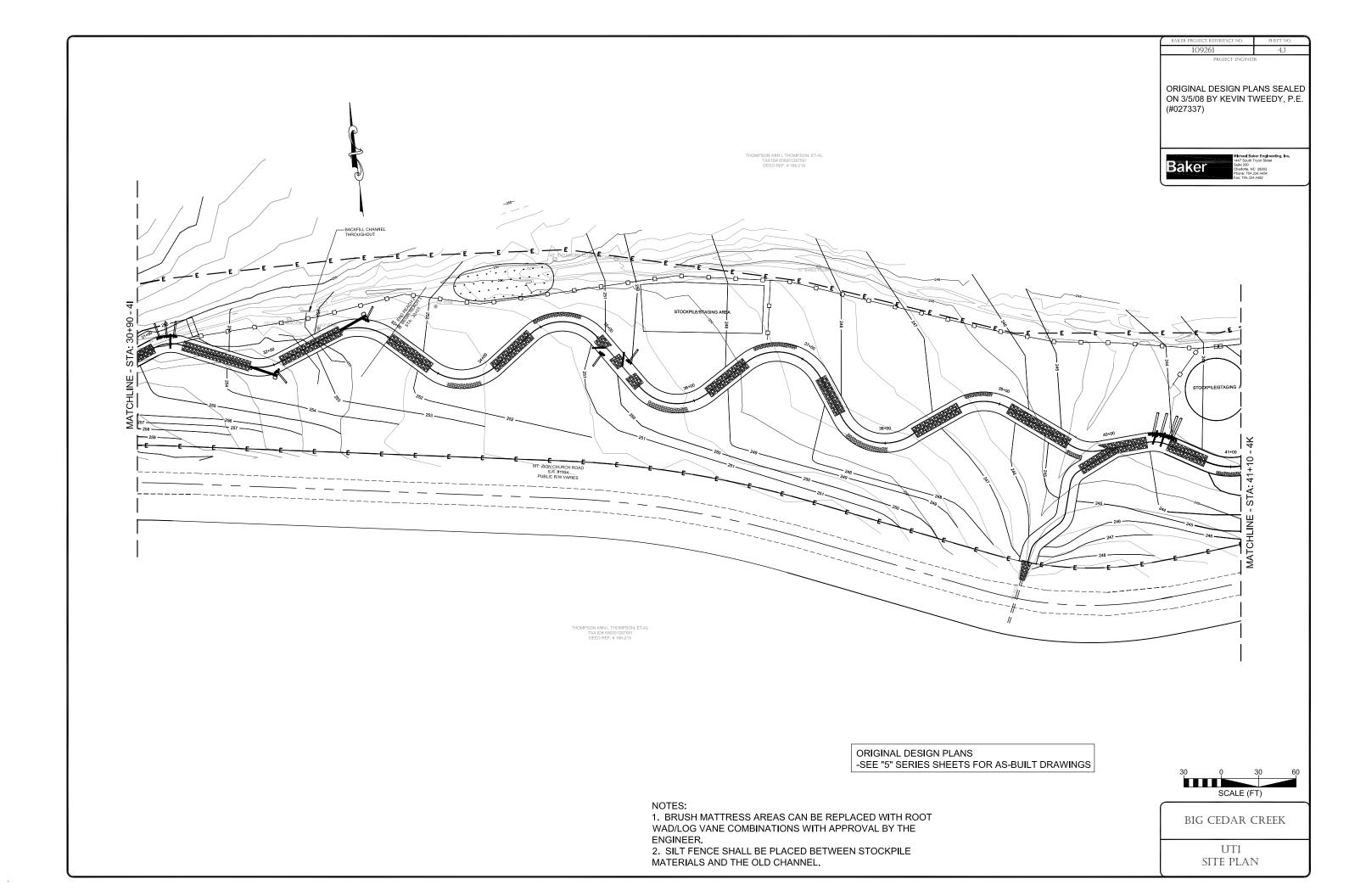


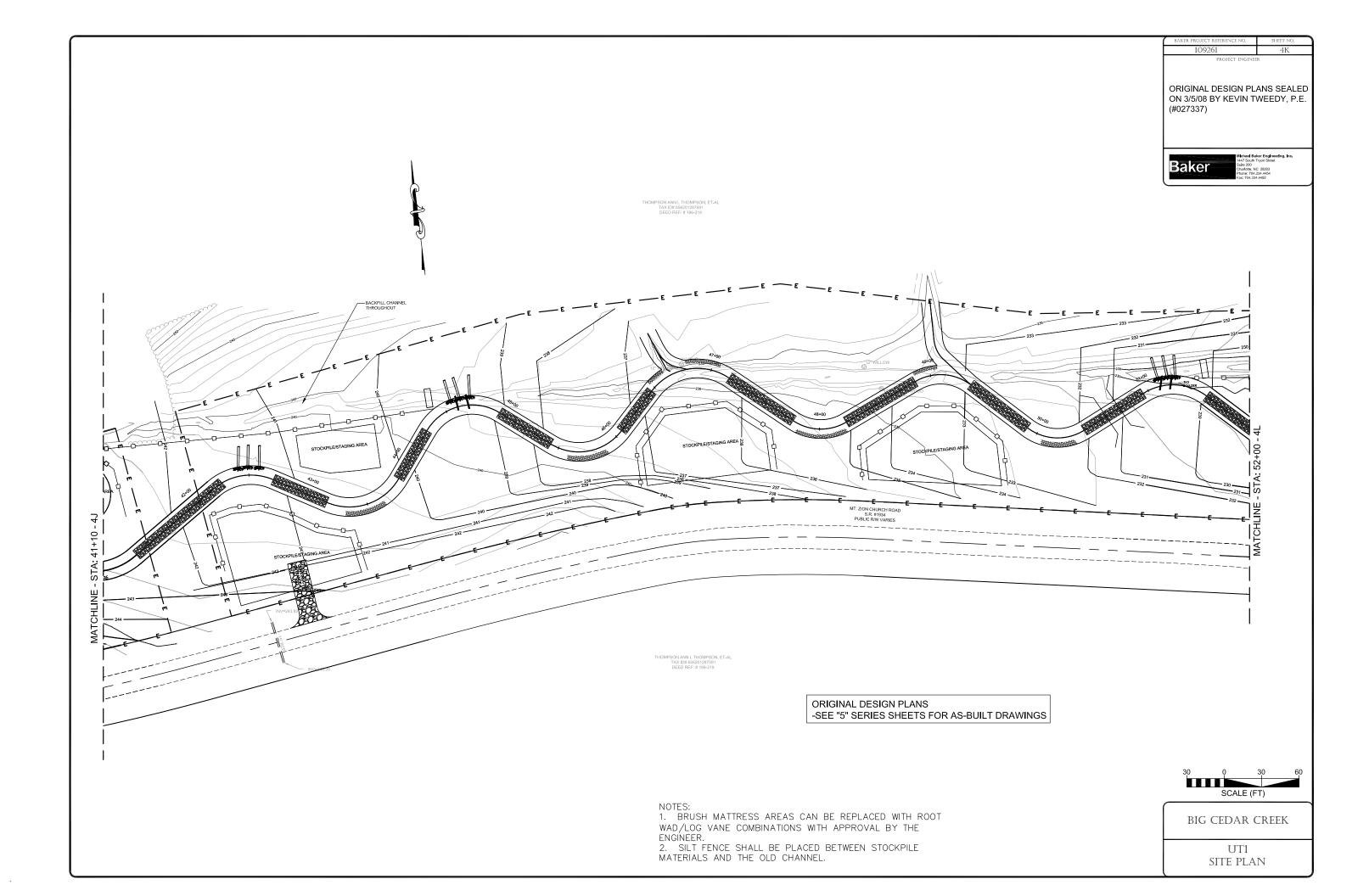
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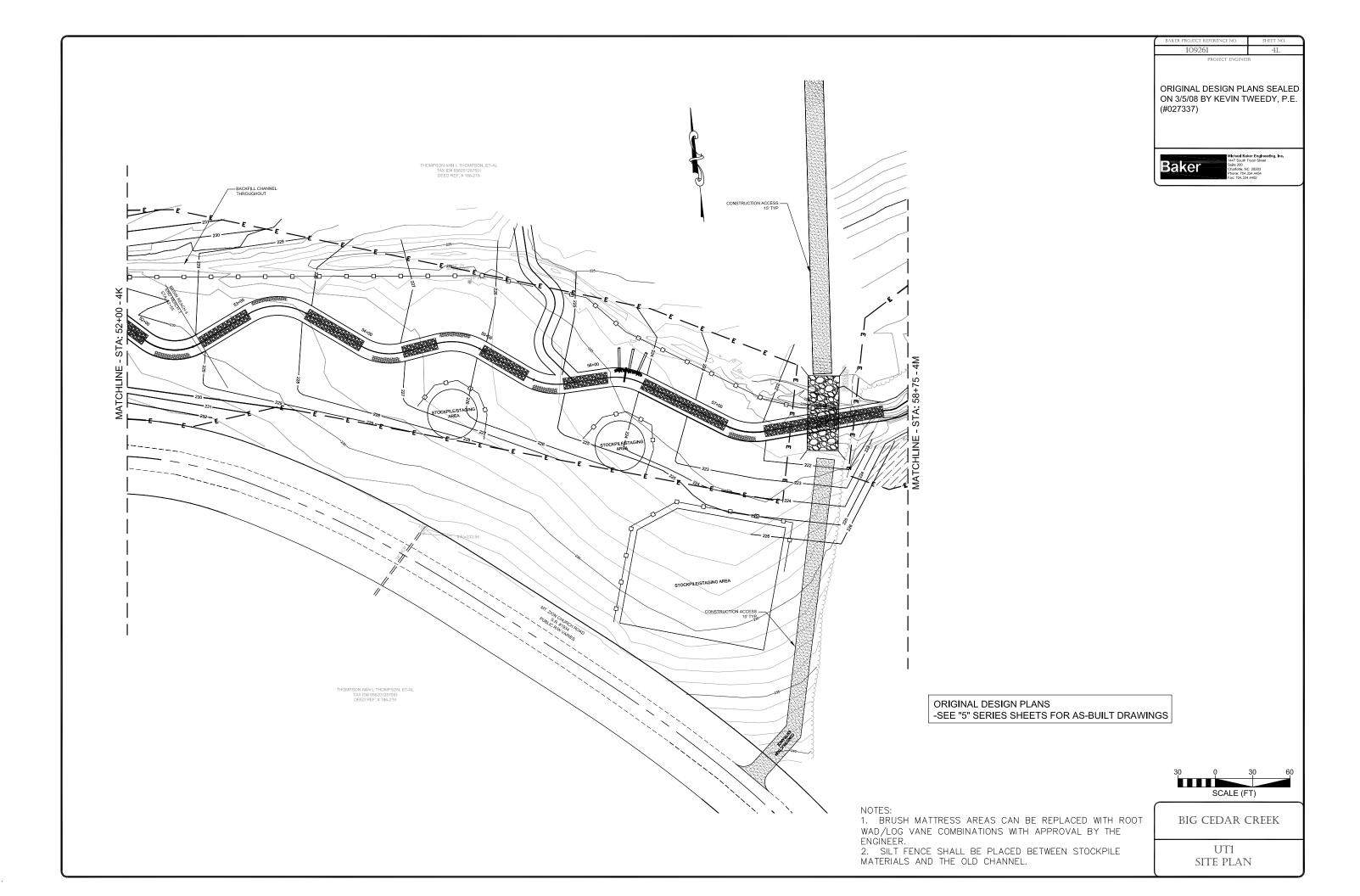
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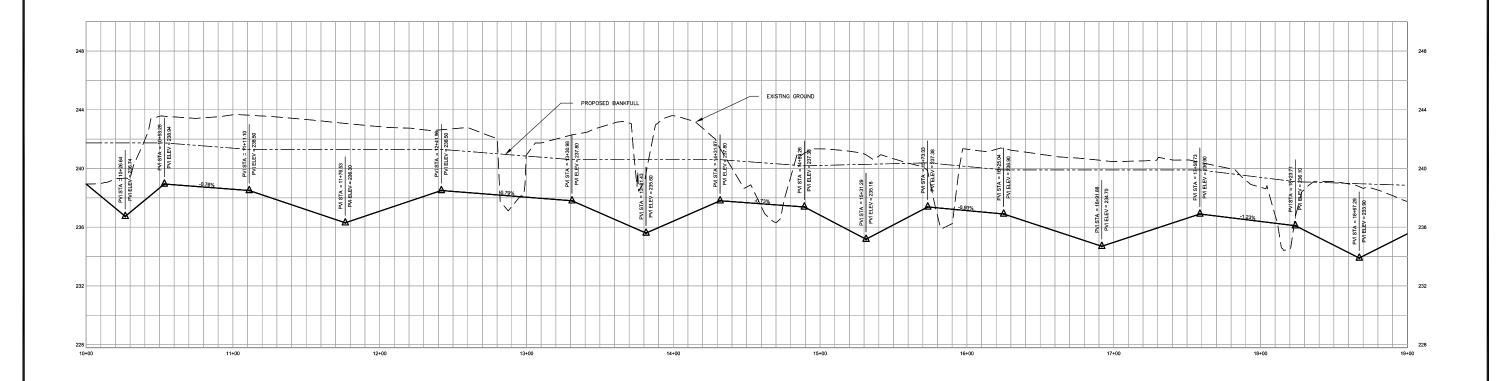
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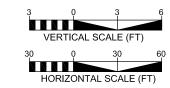
PROJECT ENGINEER

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ORIGINAL DESIGN PLANS -SEE "5" SERIES SHEETS FOR AS-BUILT DRAWINGS



BIG CEDAR CREEK

BIG CEDAR CREEK PROFILE

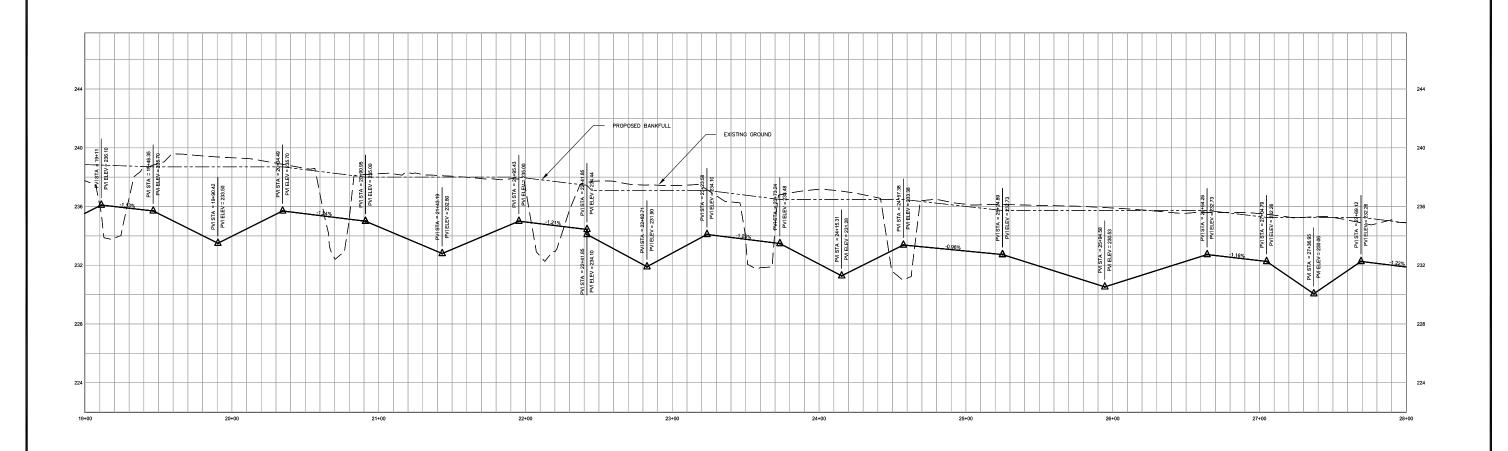
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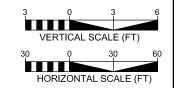
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BIG CEDAR CREEK

BIG CEDAR CREEK PROFILE

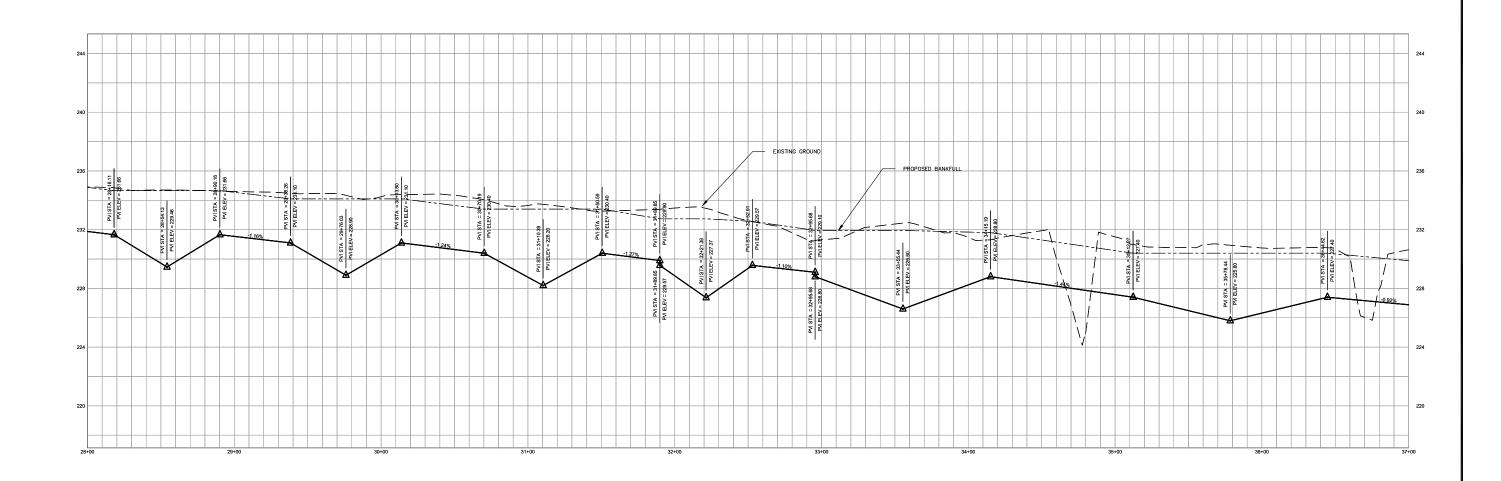
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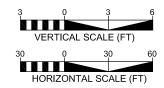
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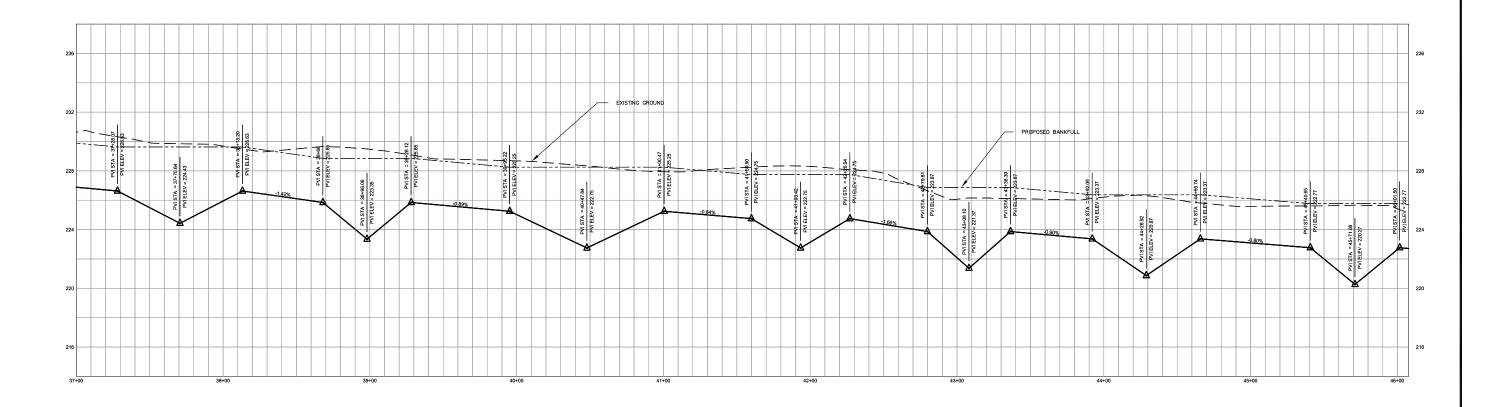
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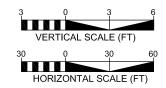
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Baker Suite 2006 Charlotte Phone: 7



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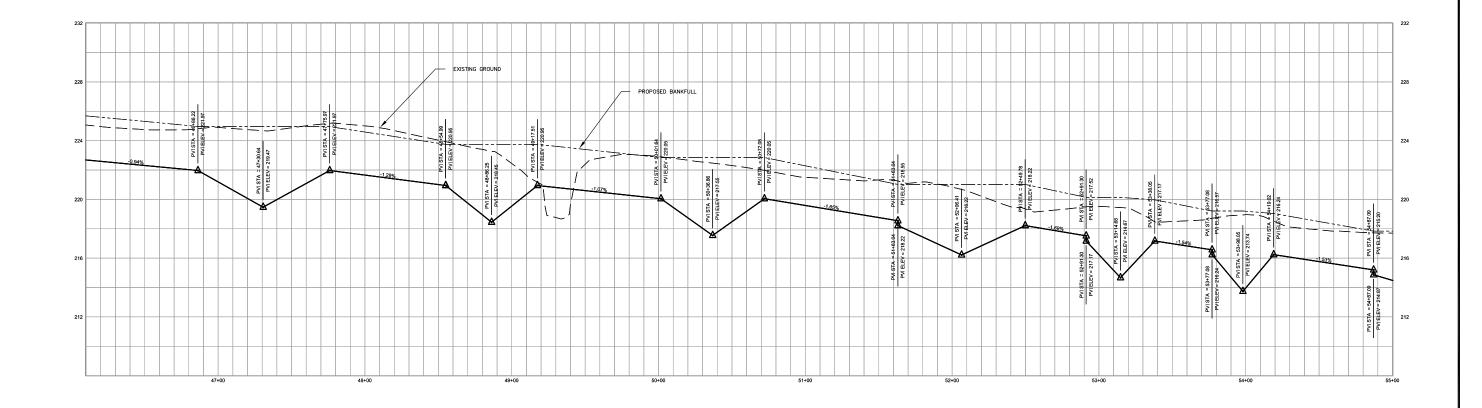


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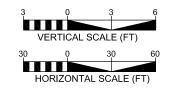
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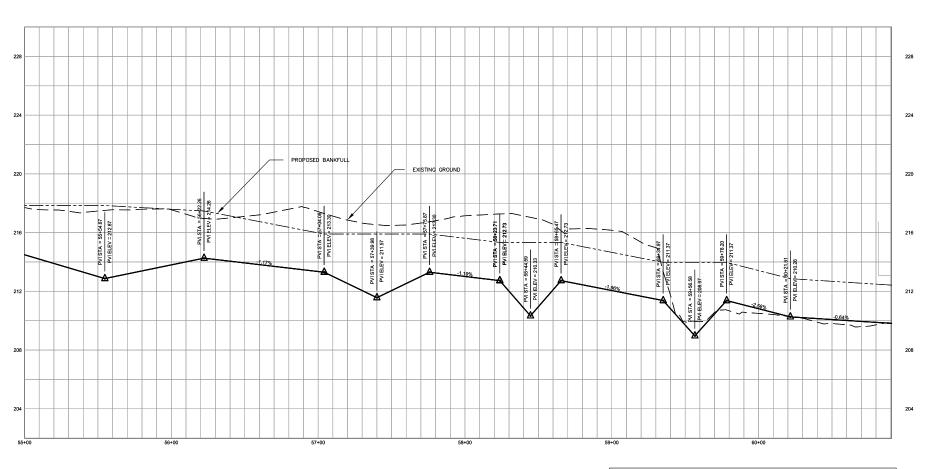


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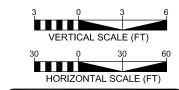
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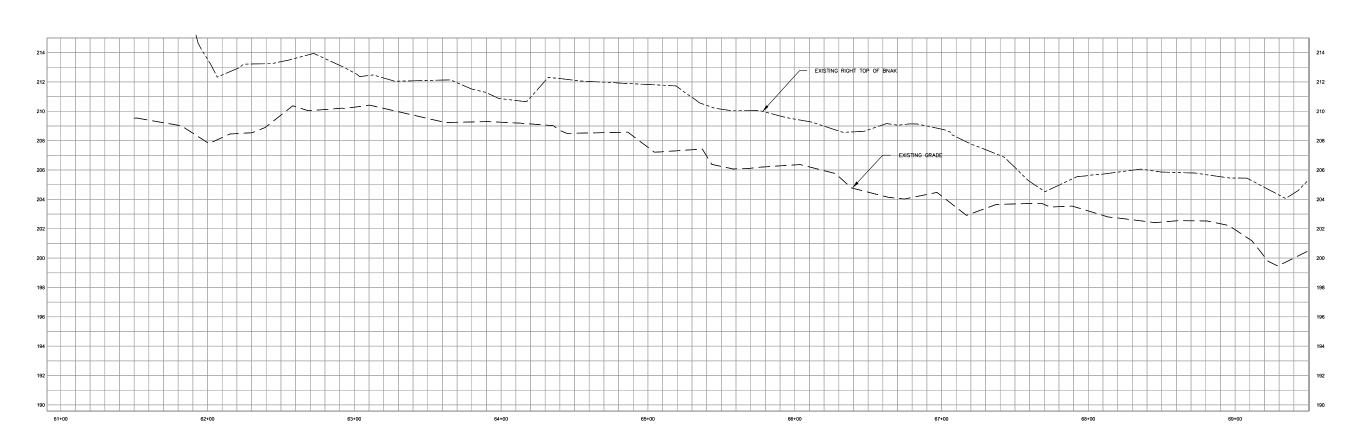
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Baker

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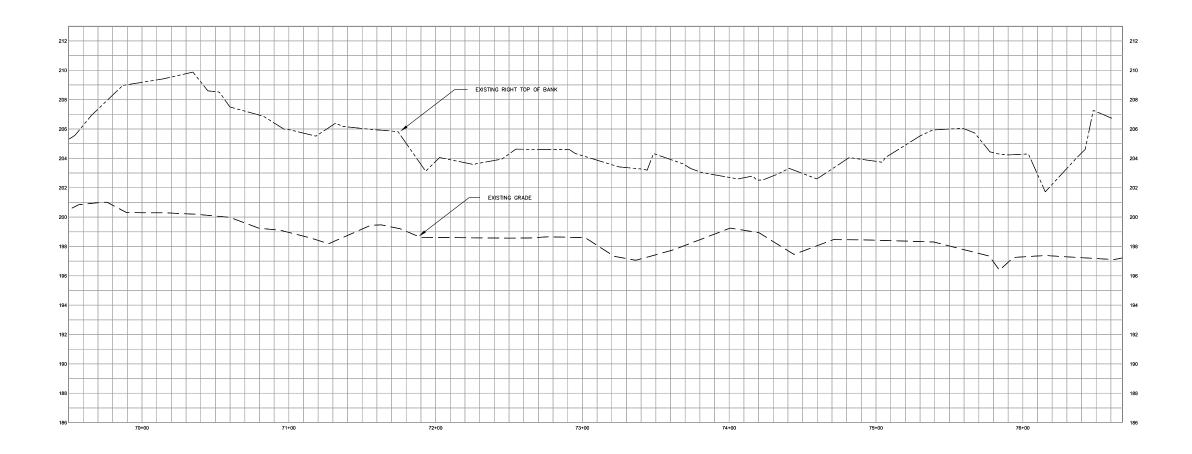
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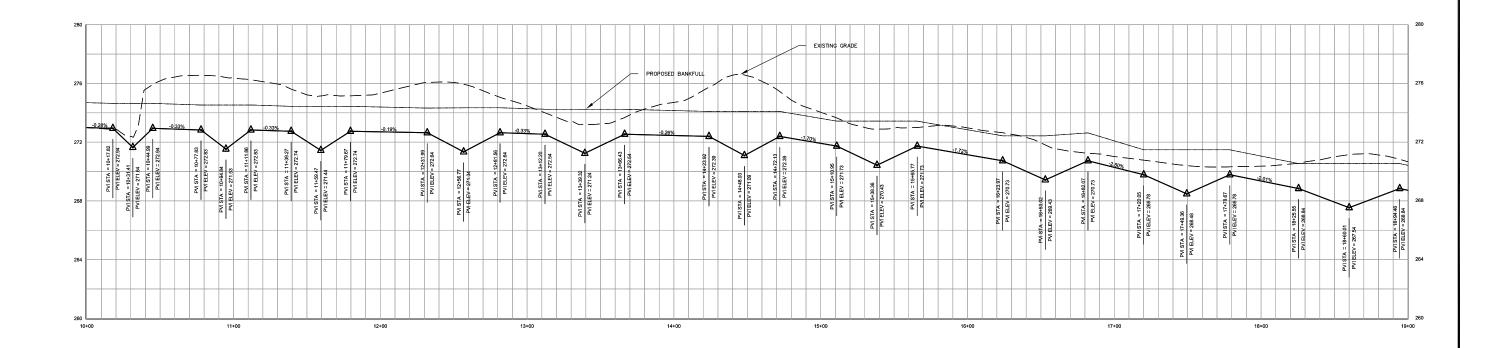
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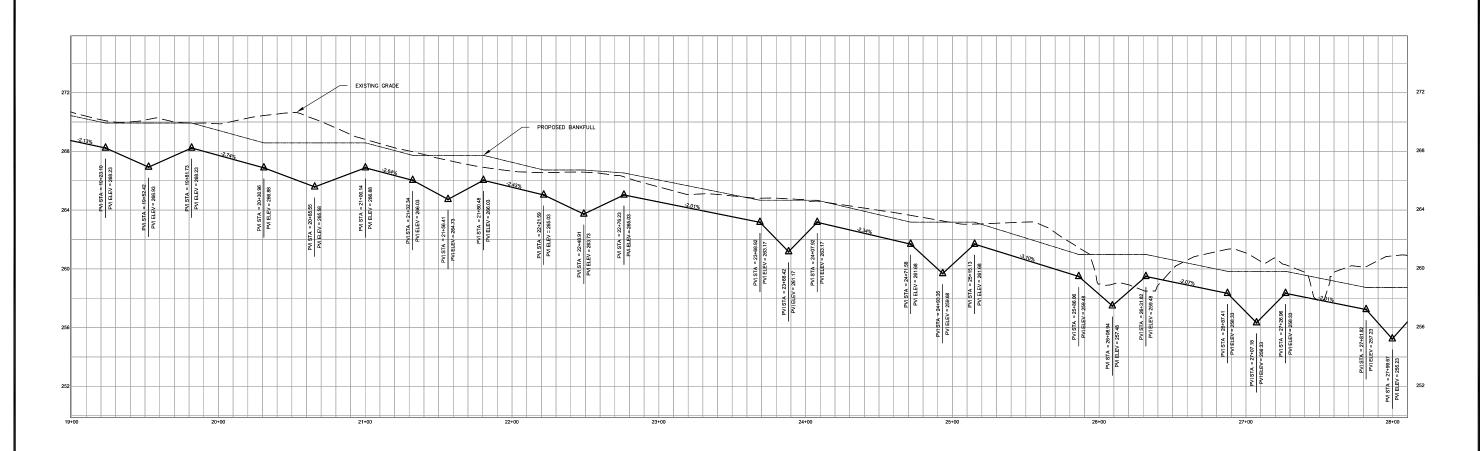
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Baker

Michael Baker Engineering, Inc 1447 South Tryon Street Suite 200 Charlotte, NC 28203 Phone: 704.334.4454



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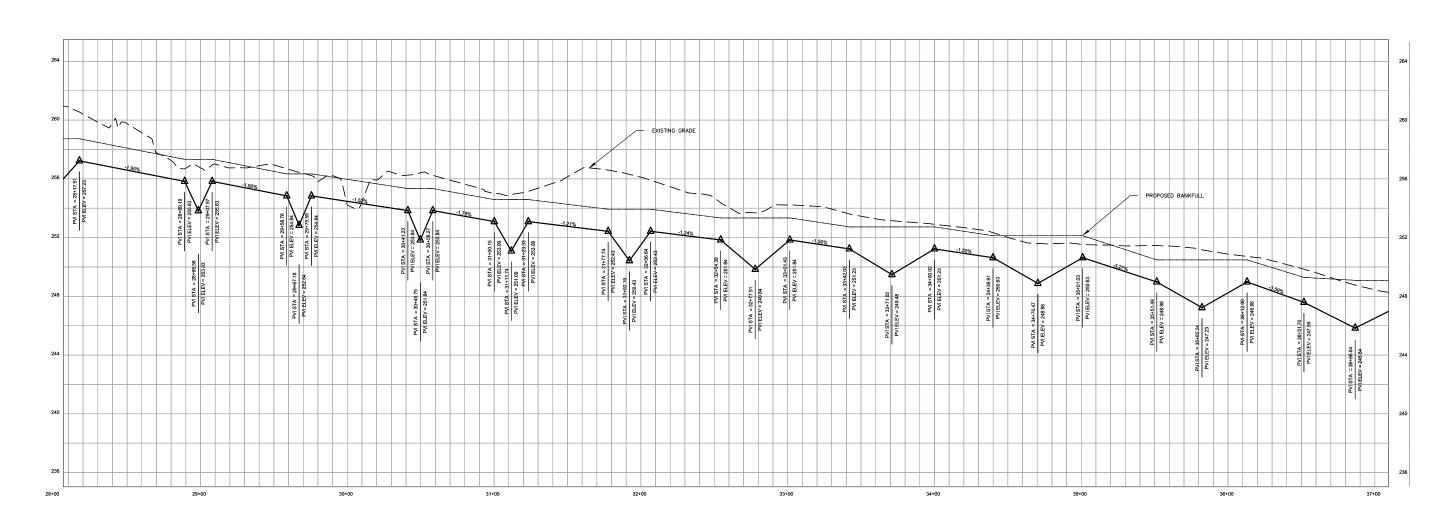
BIG CEDAR CREEK

BAKER PROJECT REFERENCE NO. SHEET NO. 109261 4X

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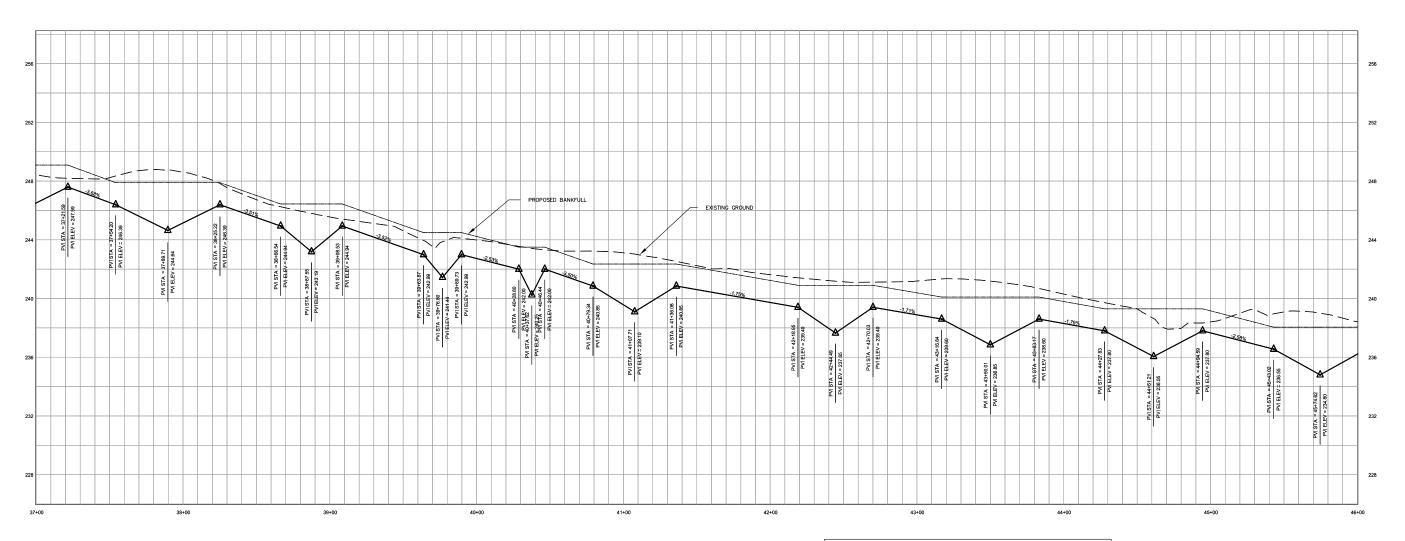
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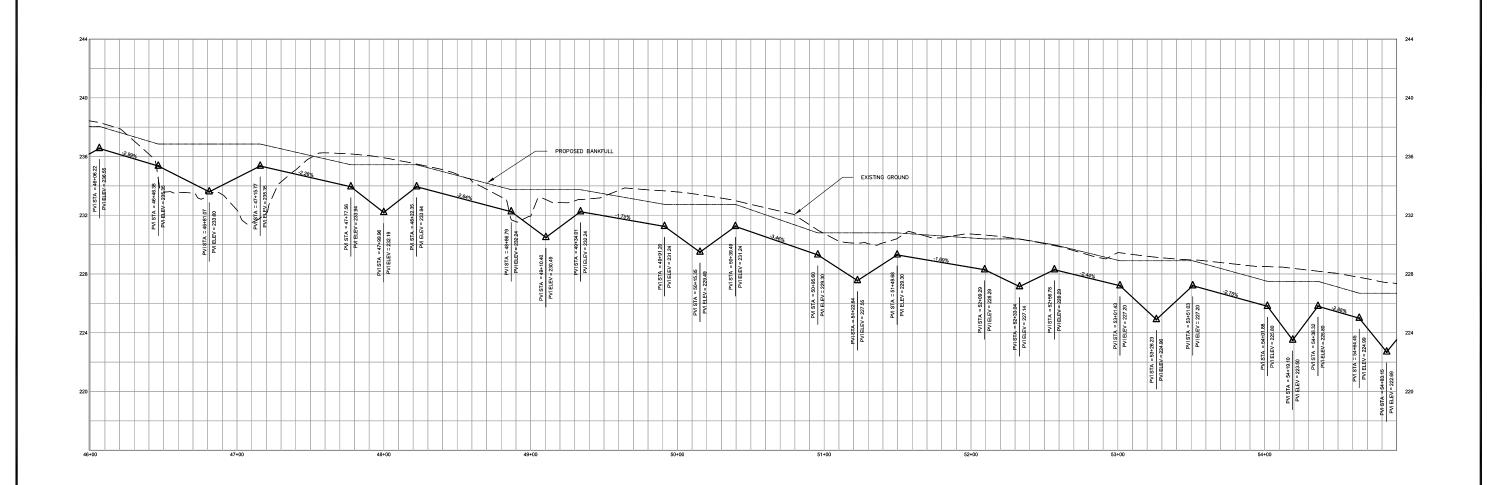
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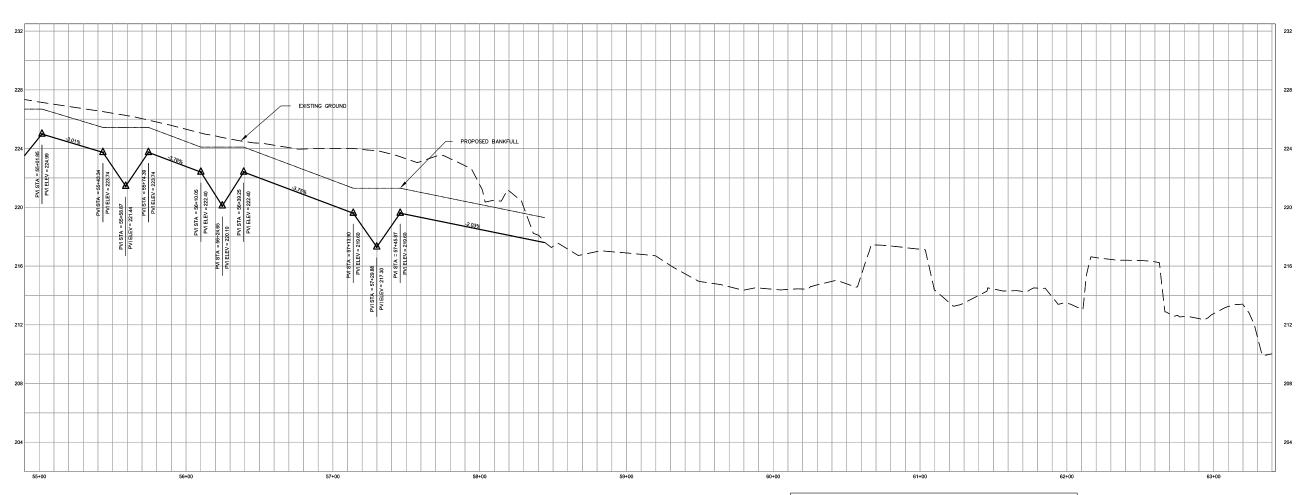
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Michael Baker Engineering, 1447 South Tryon Street Suite 200 Charlotte, NC 28203 Phone: 704.334.4454



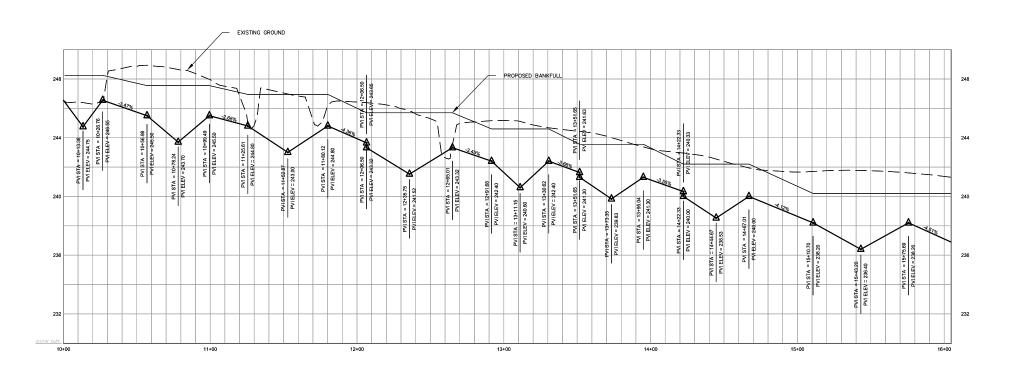
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-SEE "5" SERIES SHEETS FOR AS-BUILT DRAWINGS

BIG CEDAR CREEK

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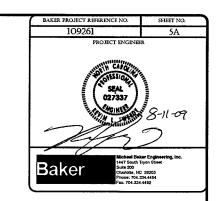
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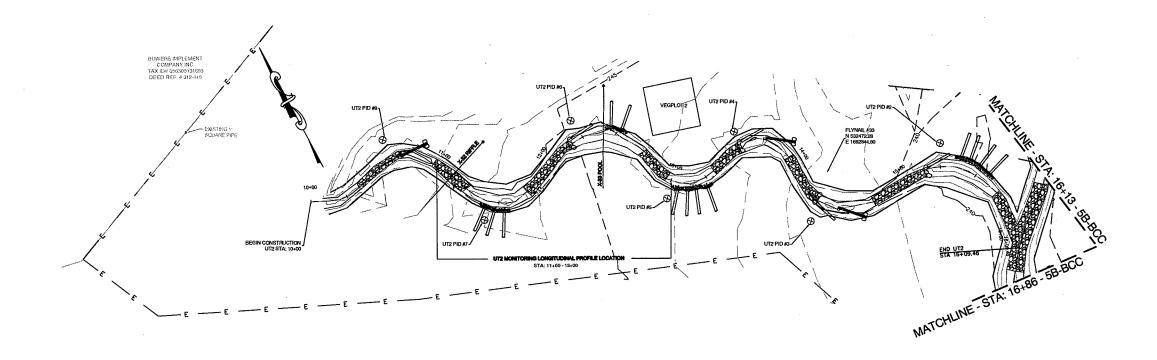
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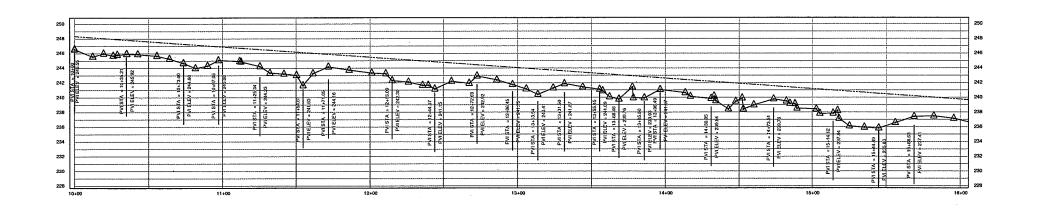


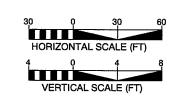
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-SEE "5" SERIES SHEETS FOR AS-BUILT DRAWINGS

BIG CEDAR CREEK

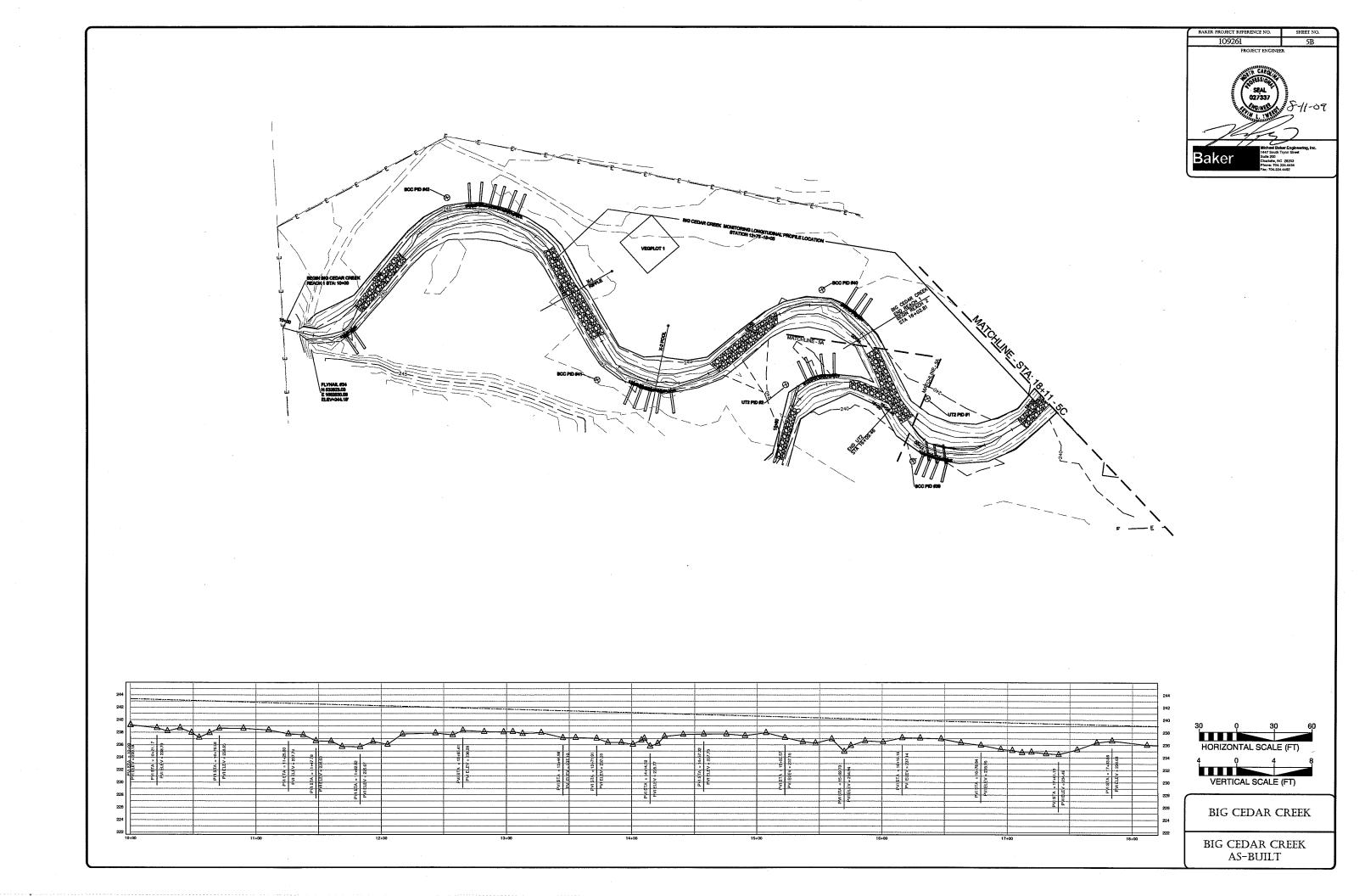


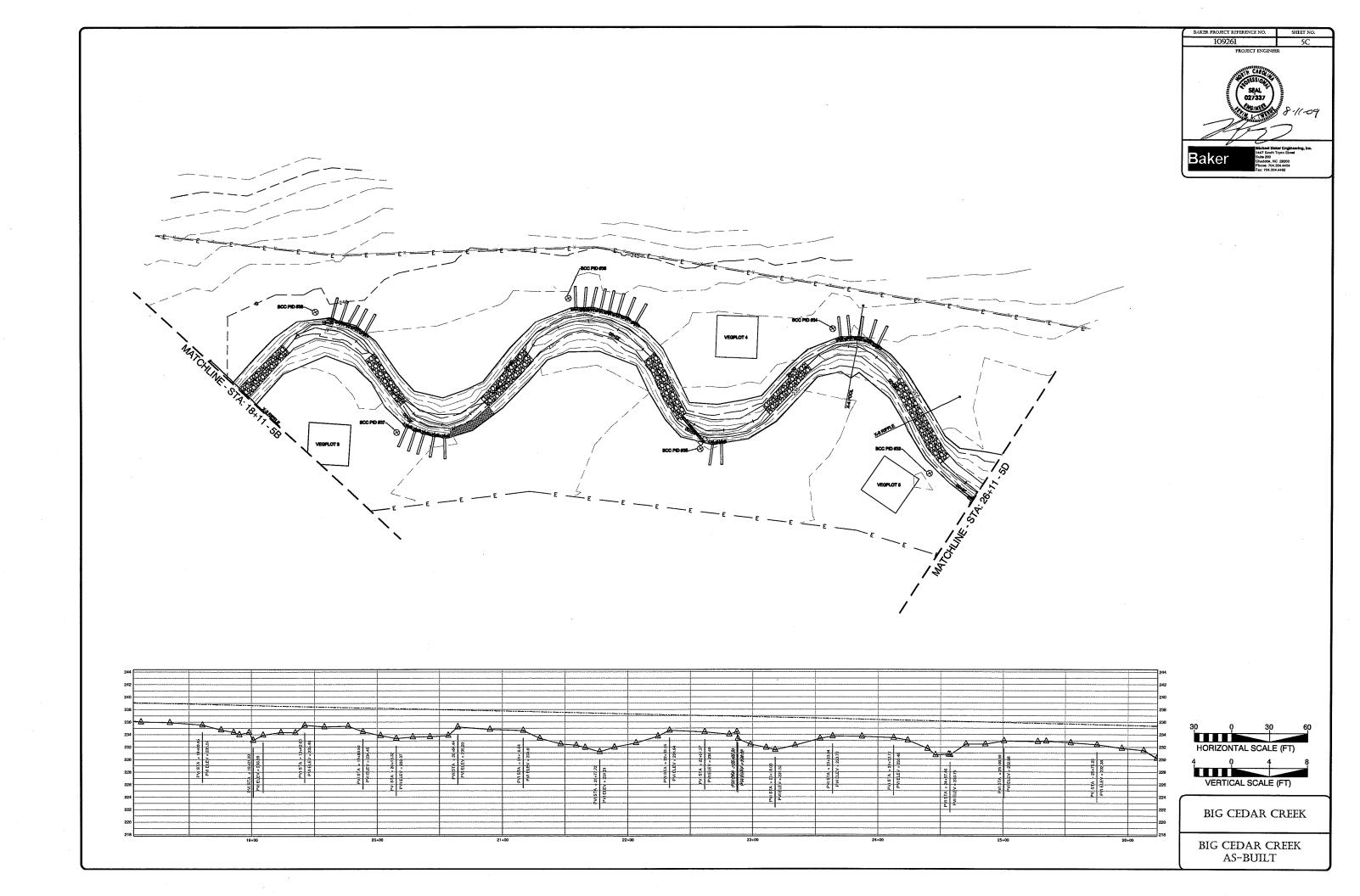


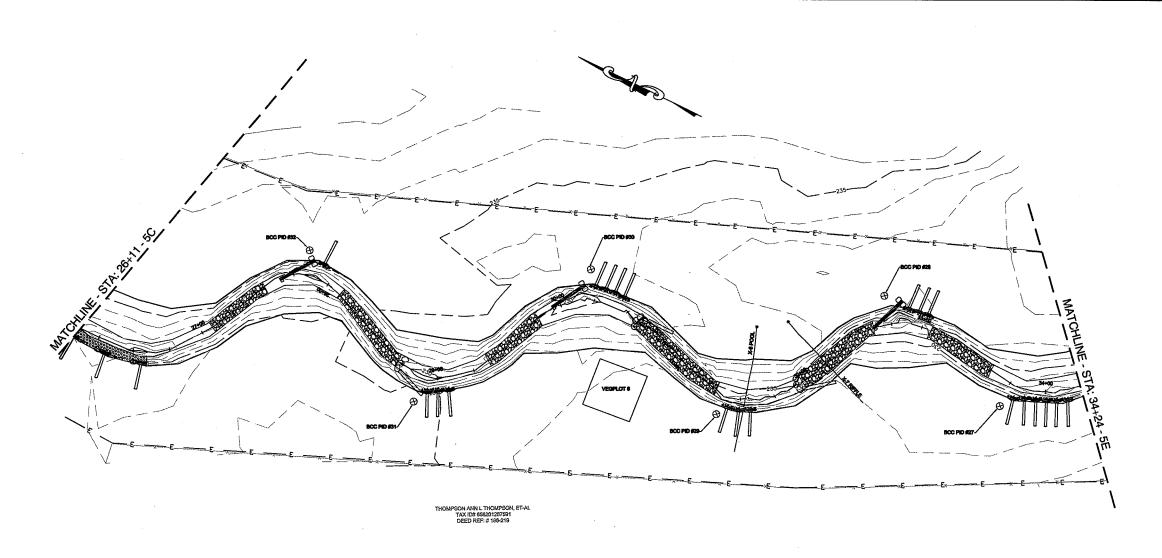


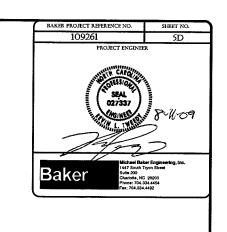


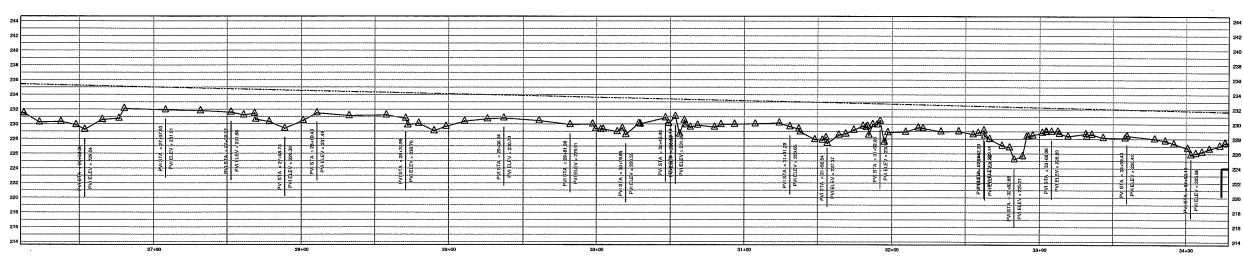
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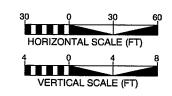




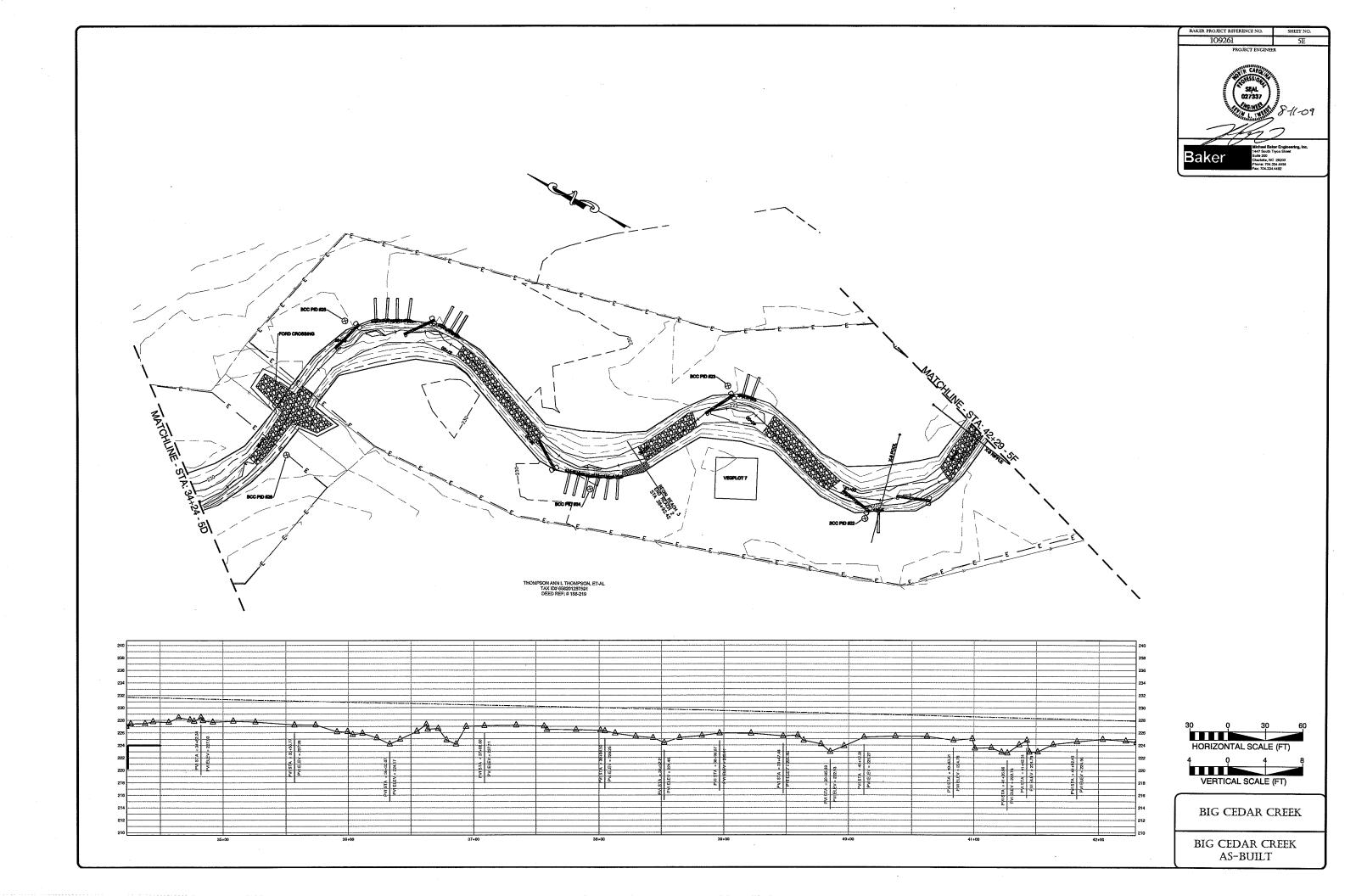


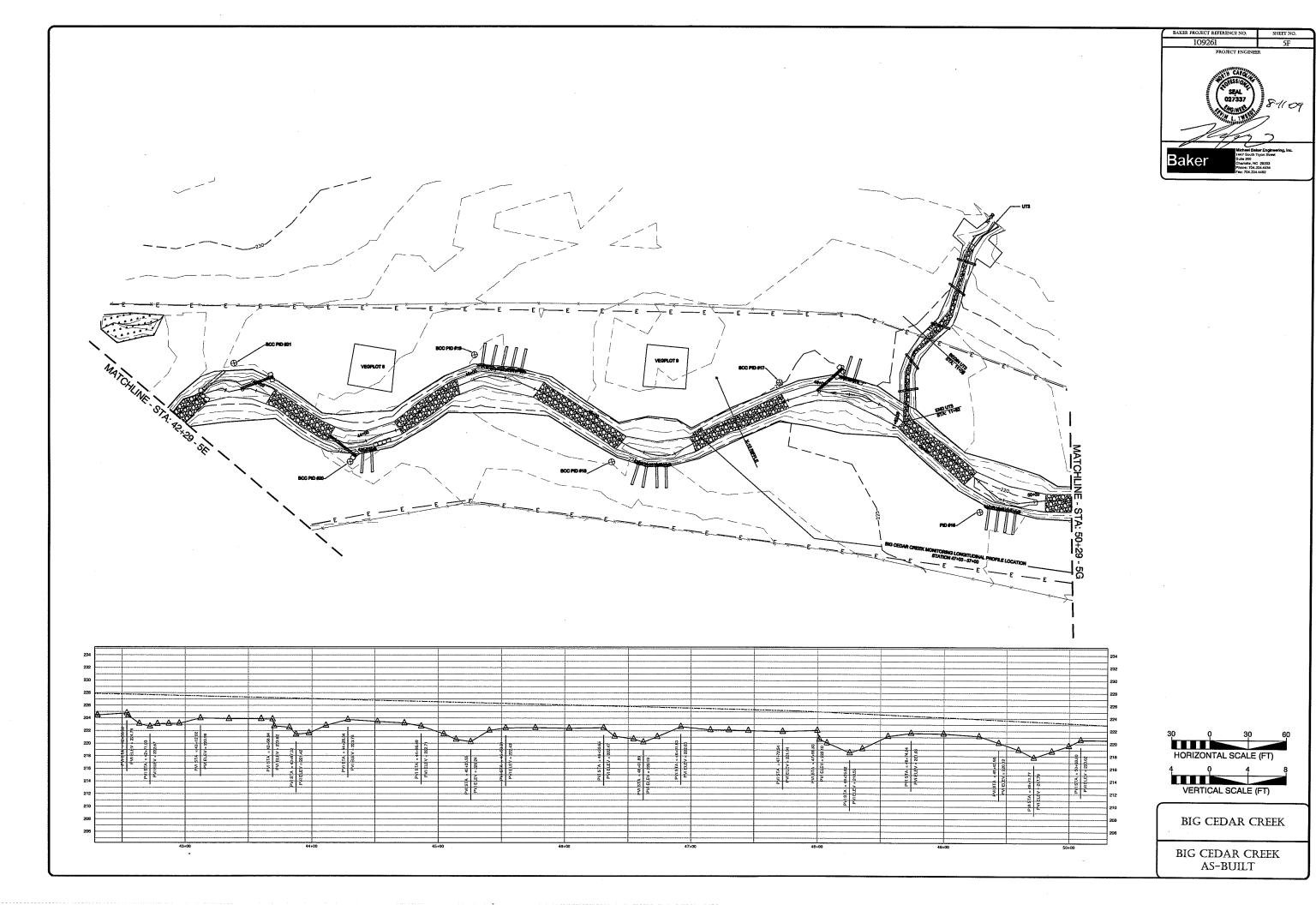


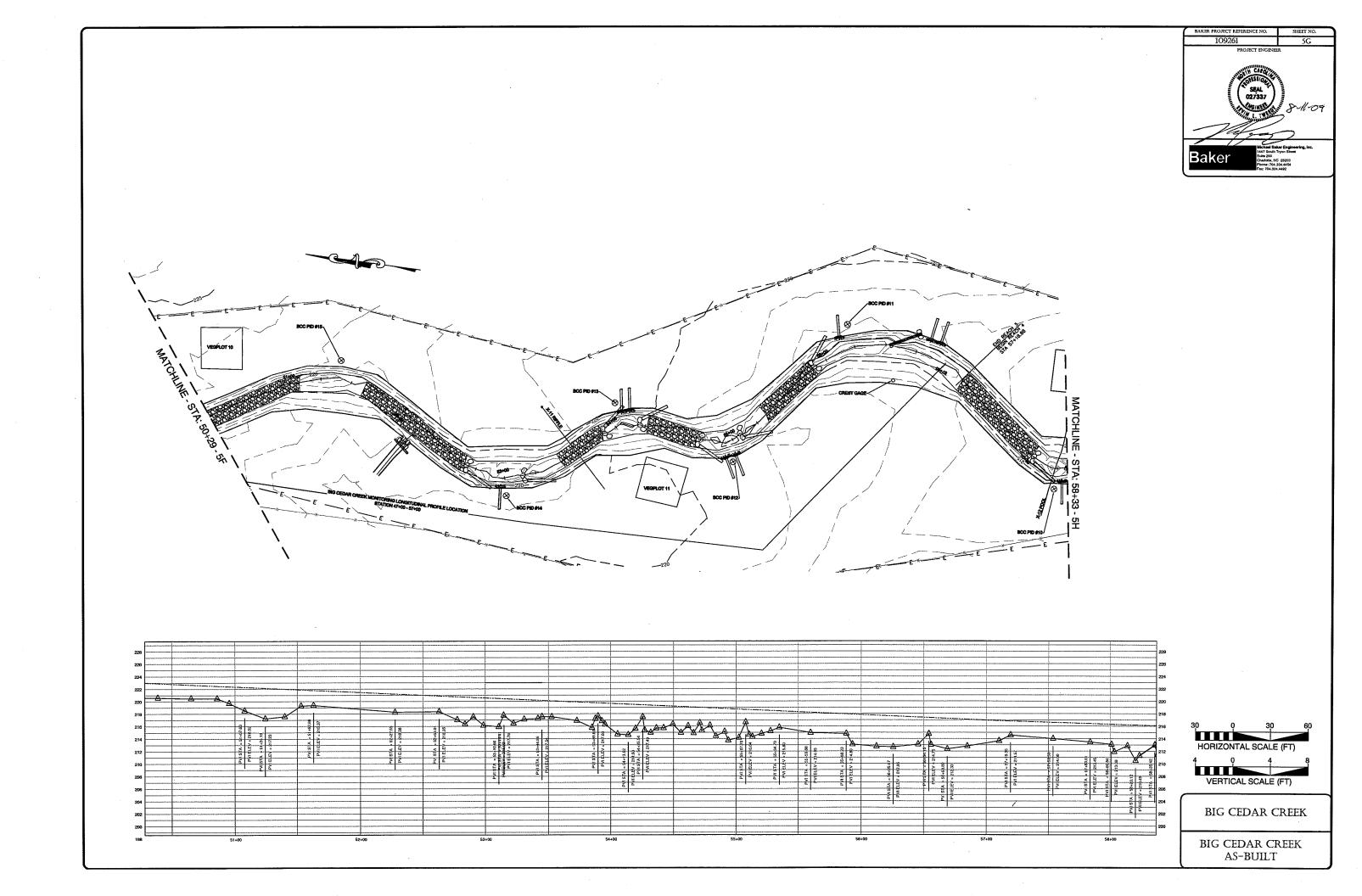


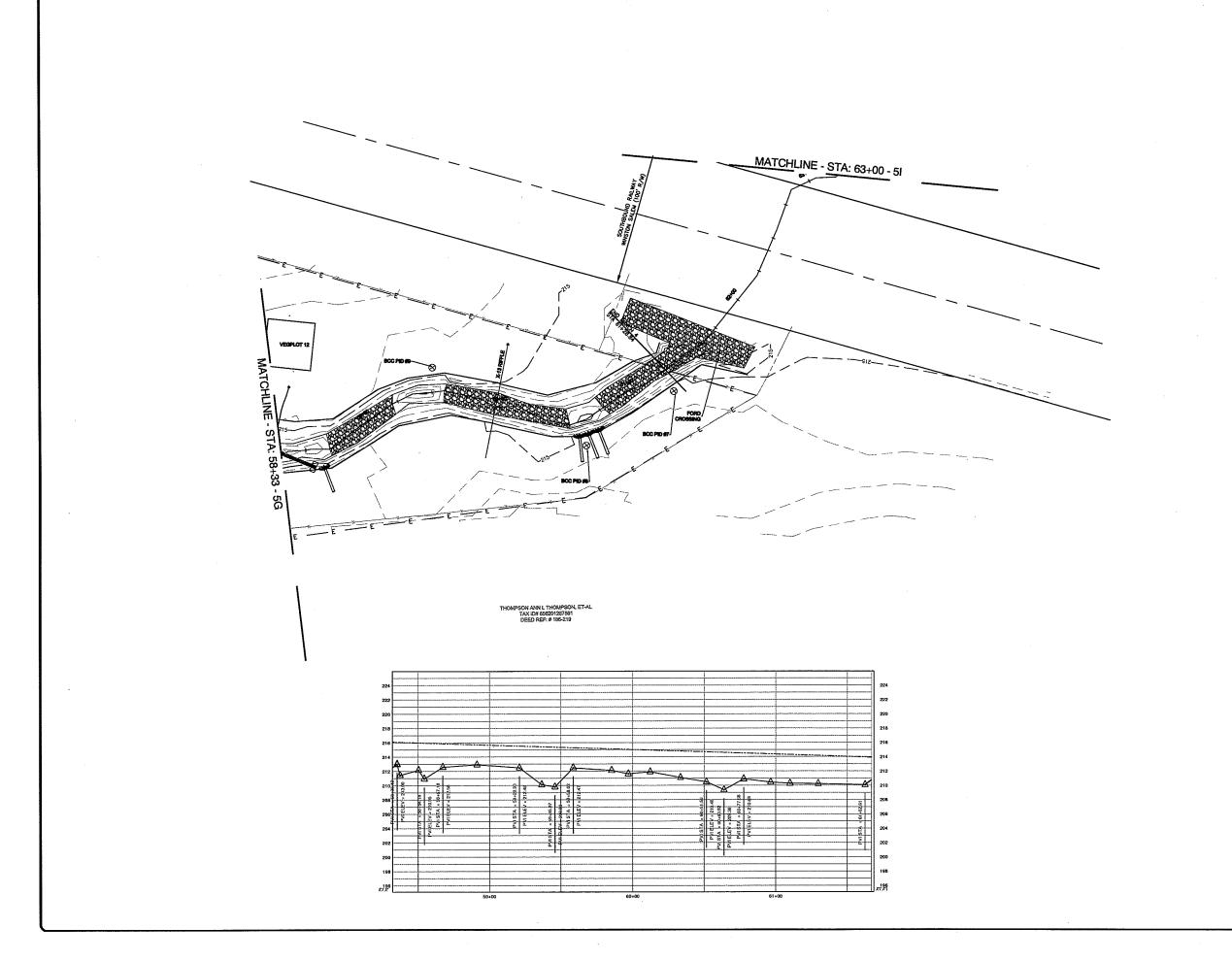


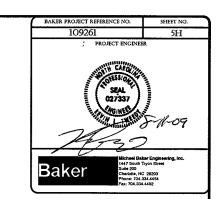
BIG CEDAR CREEK AS-BUILT

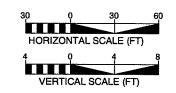




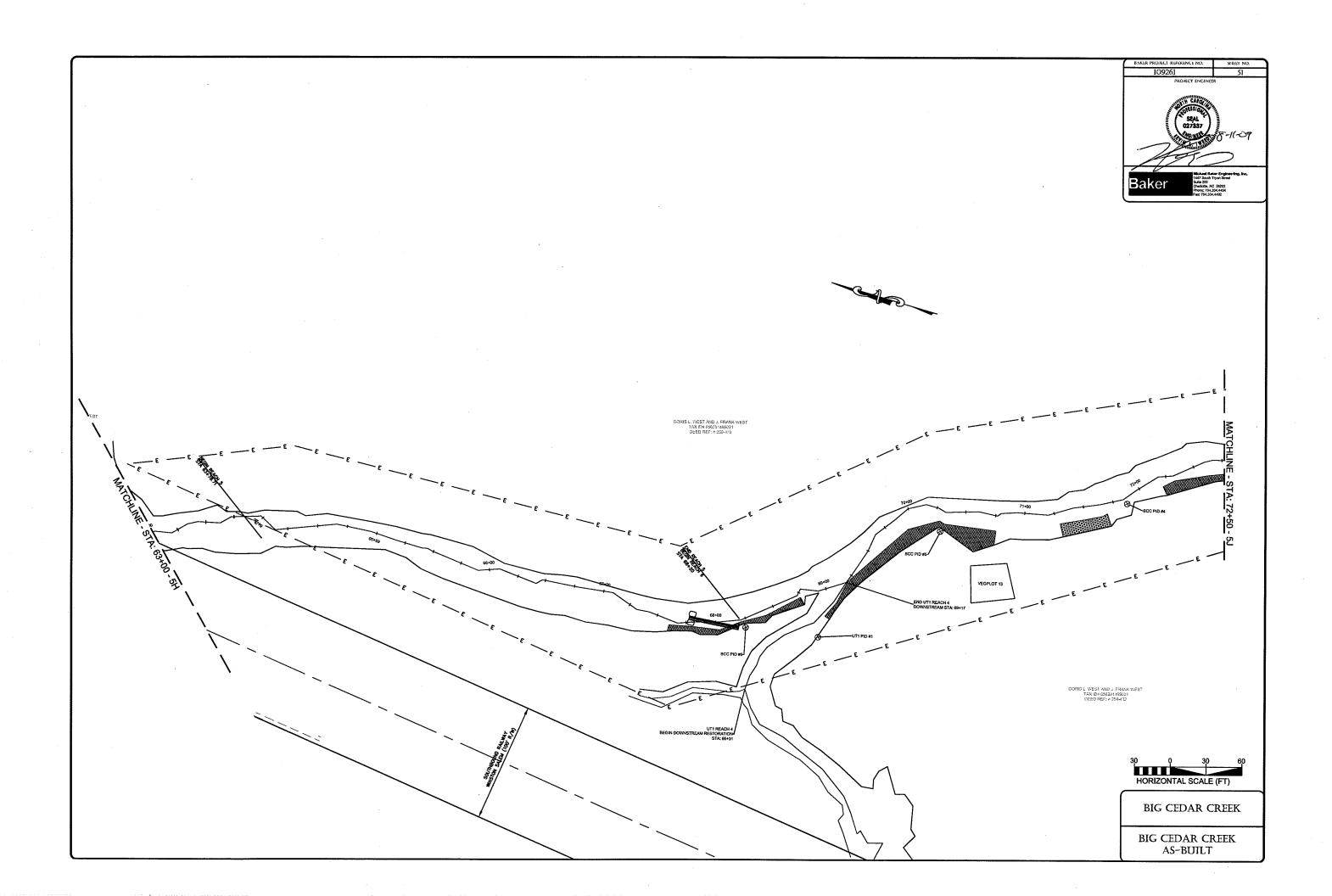


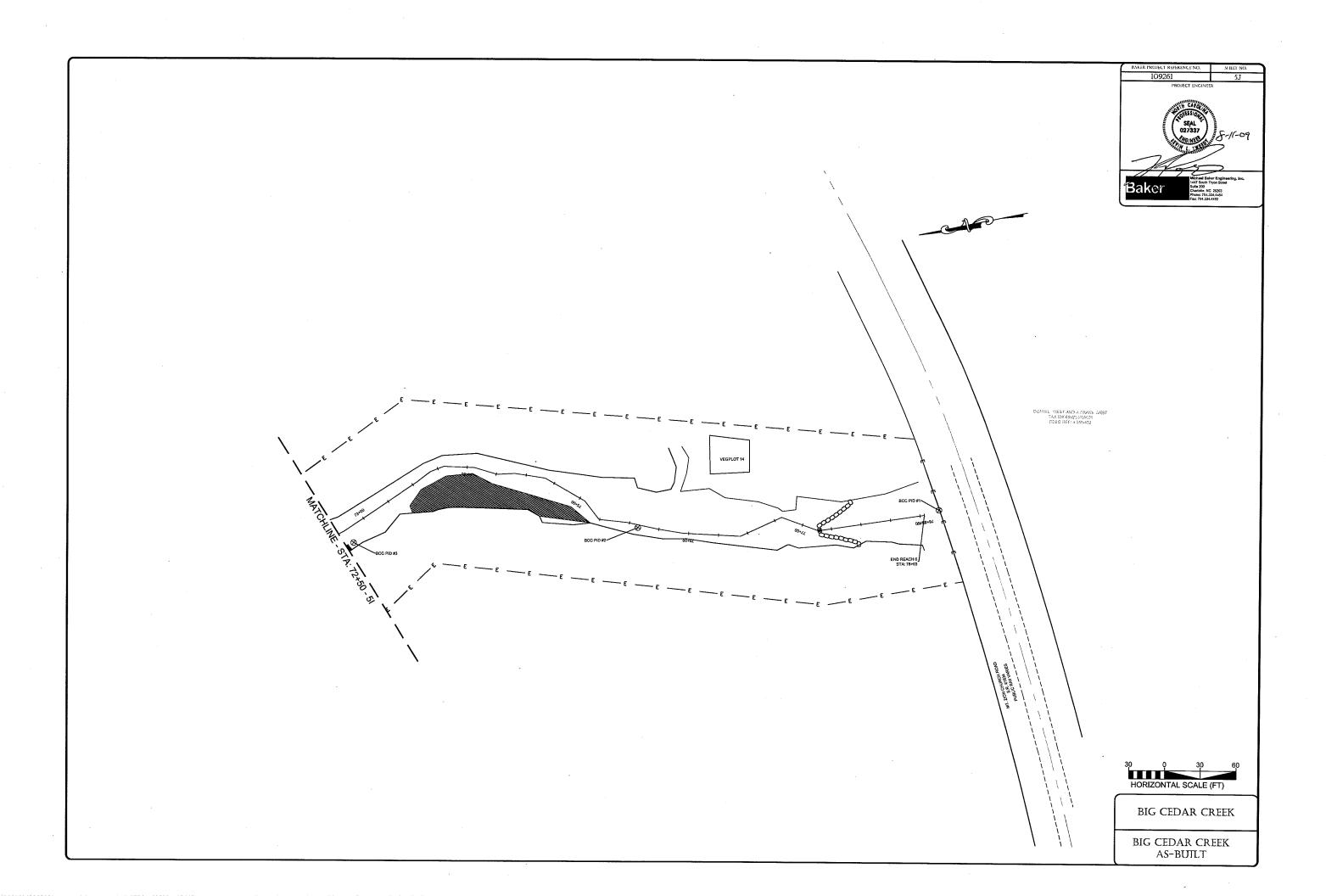


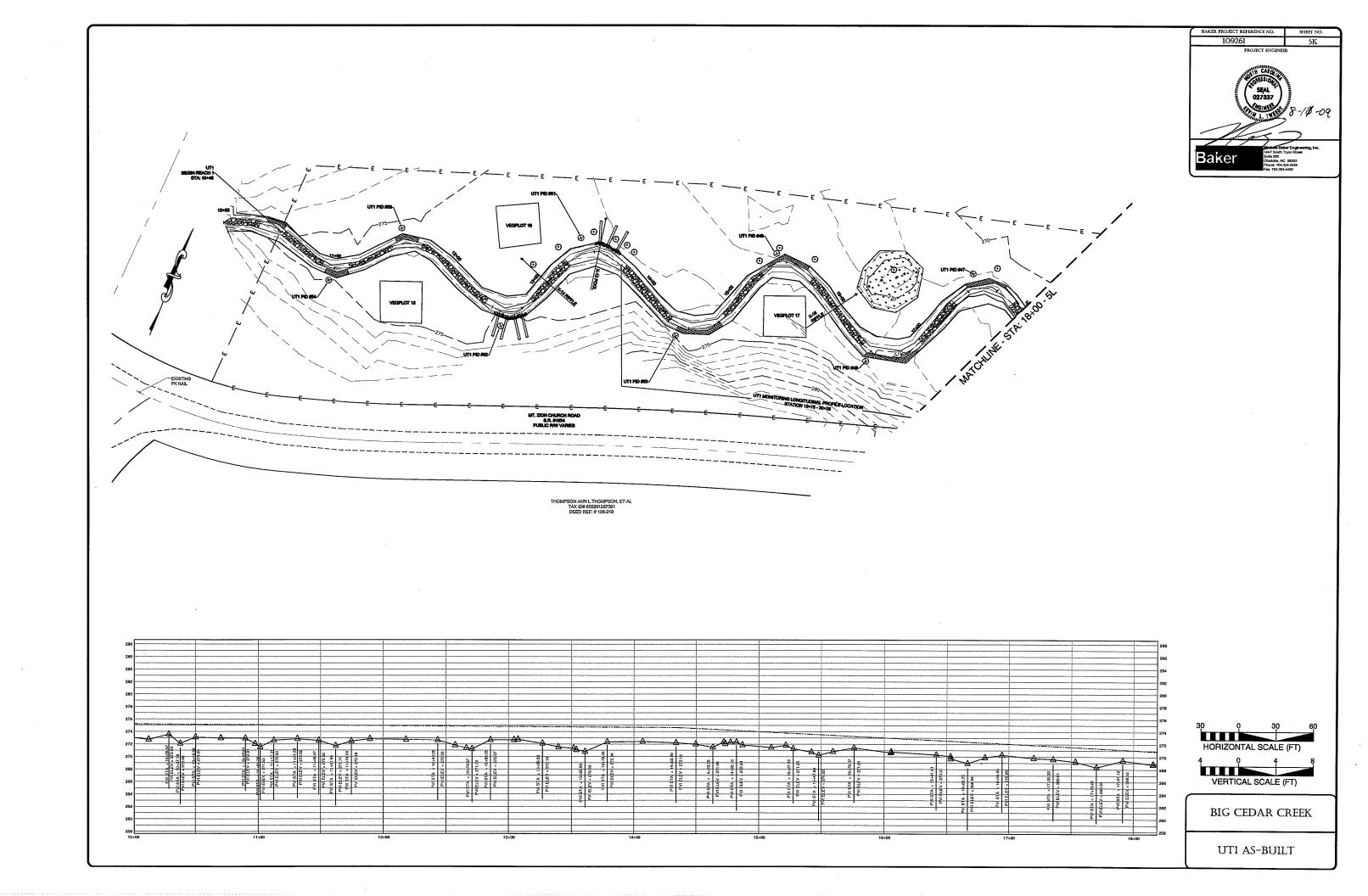


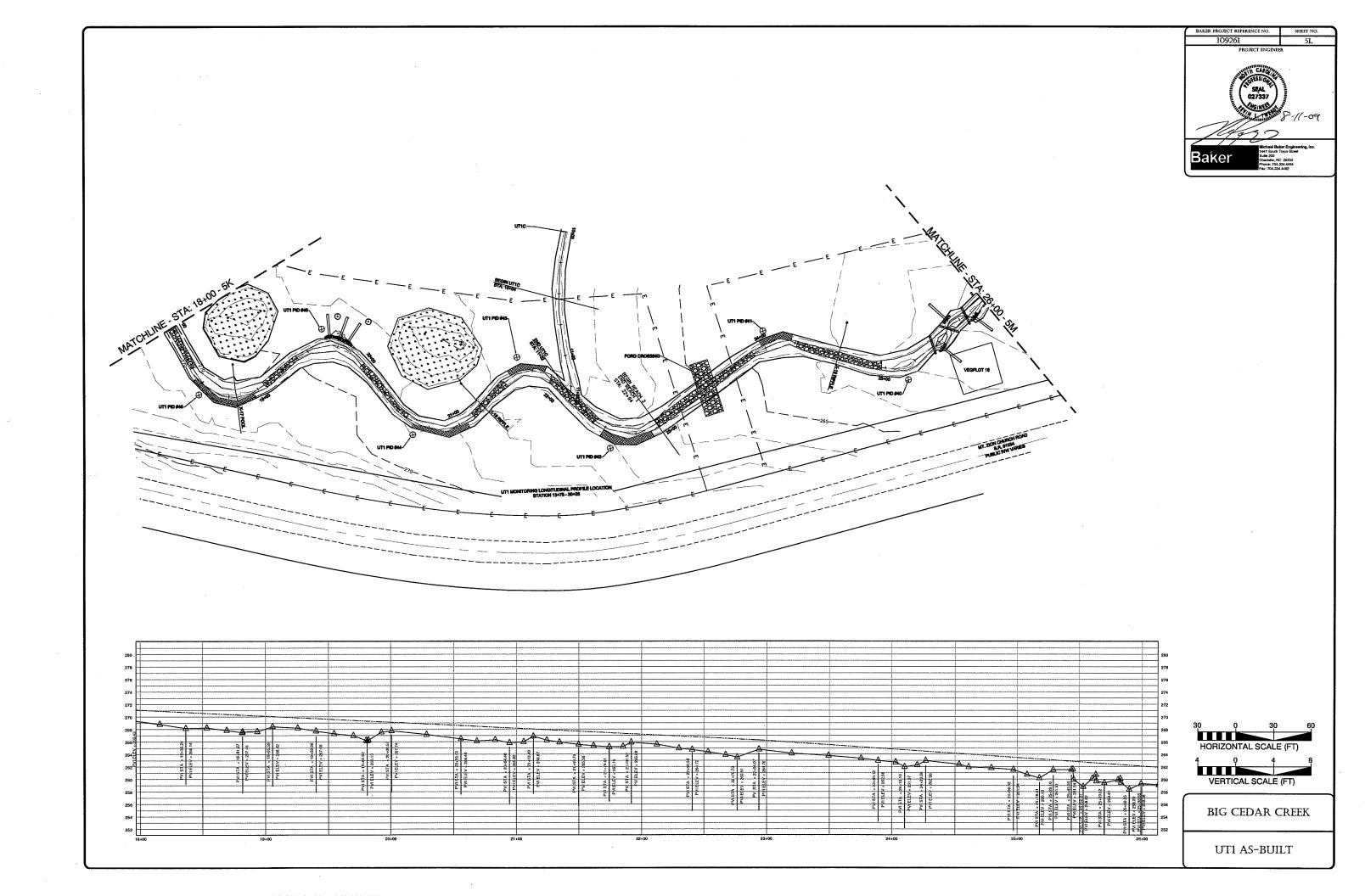


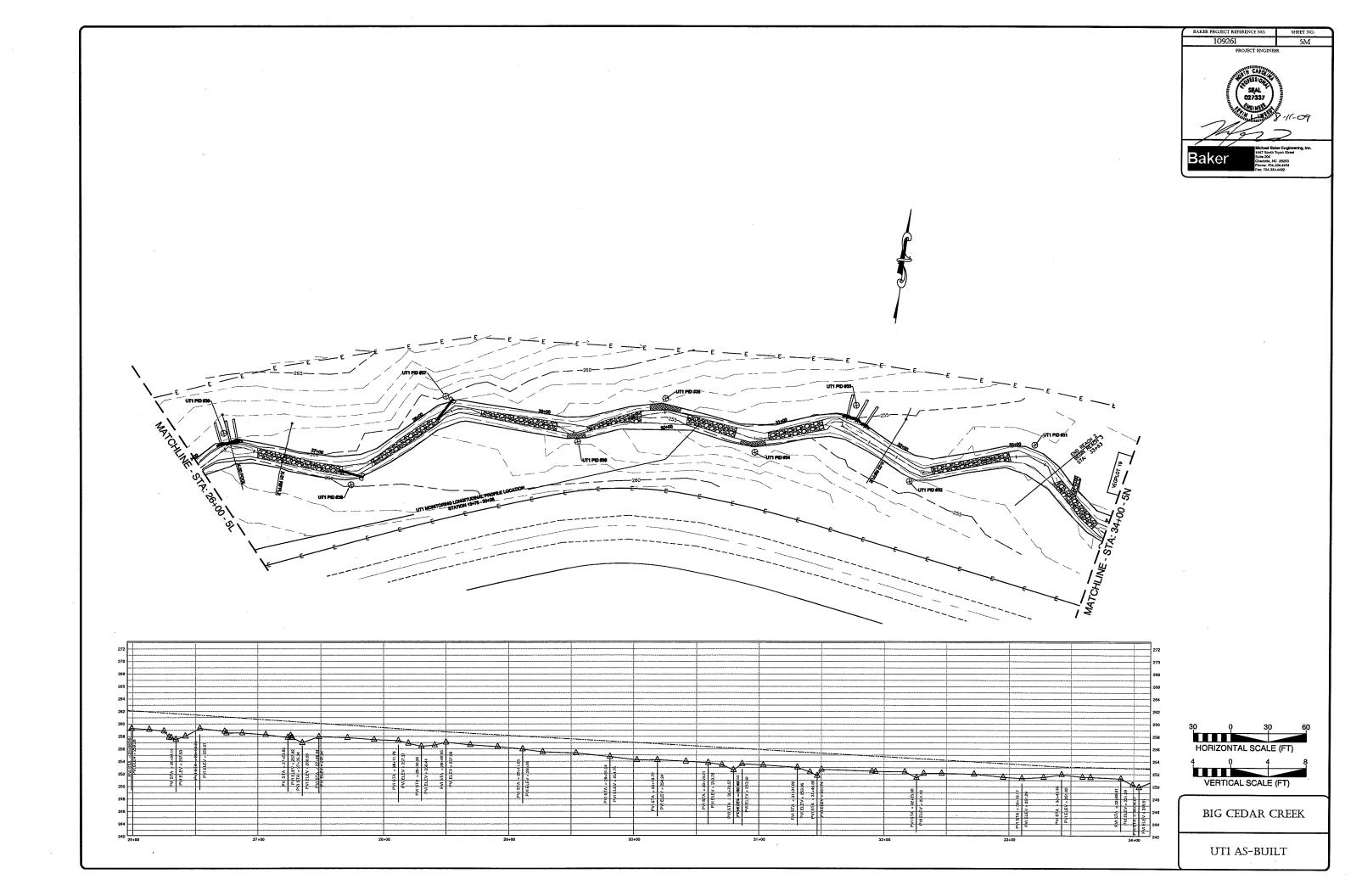
BIG CEDAR CREEK AS-BUILT

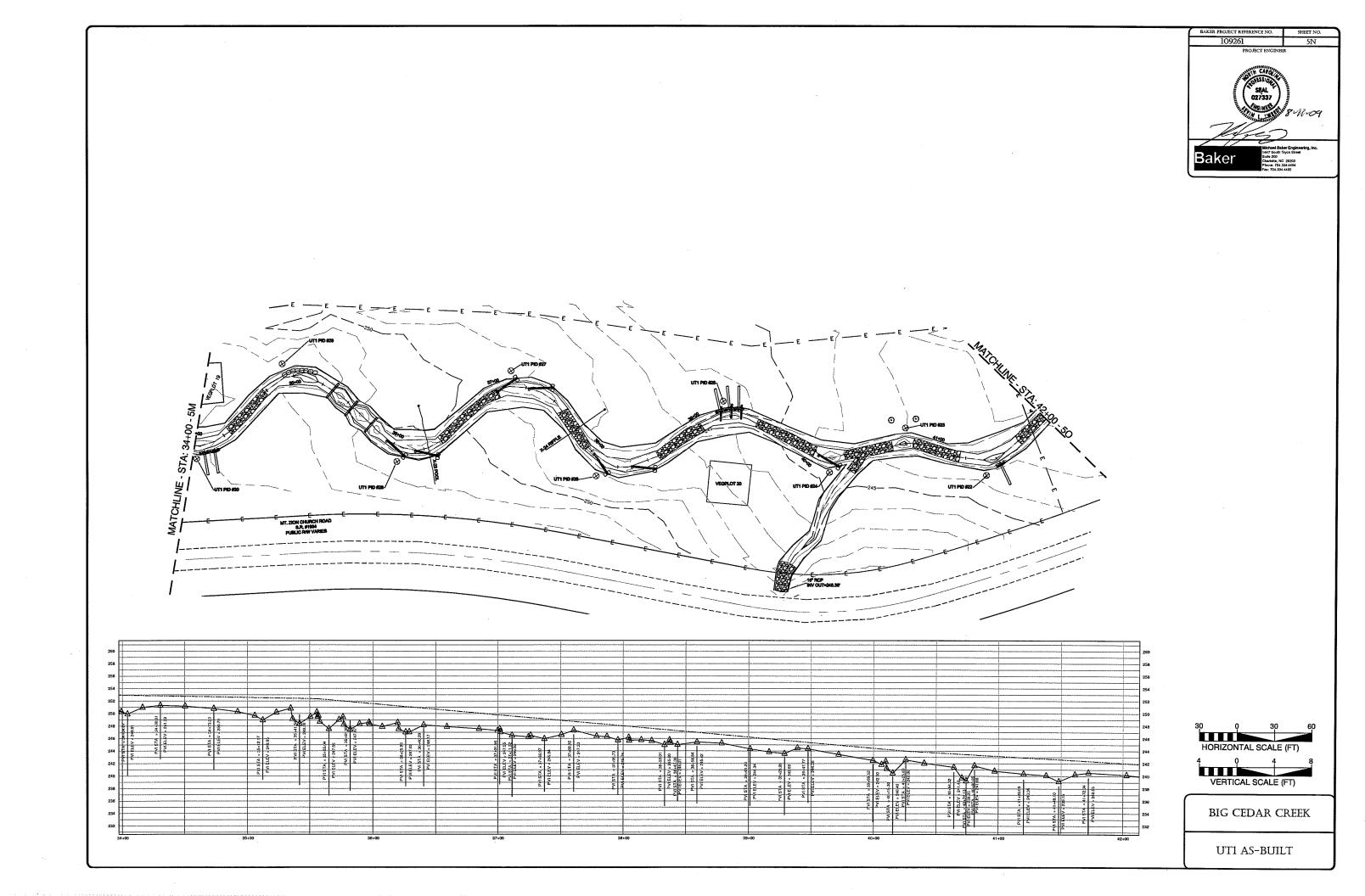


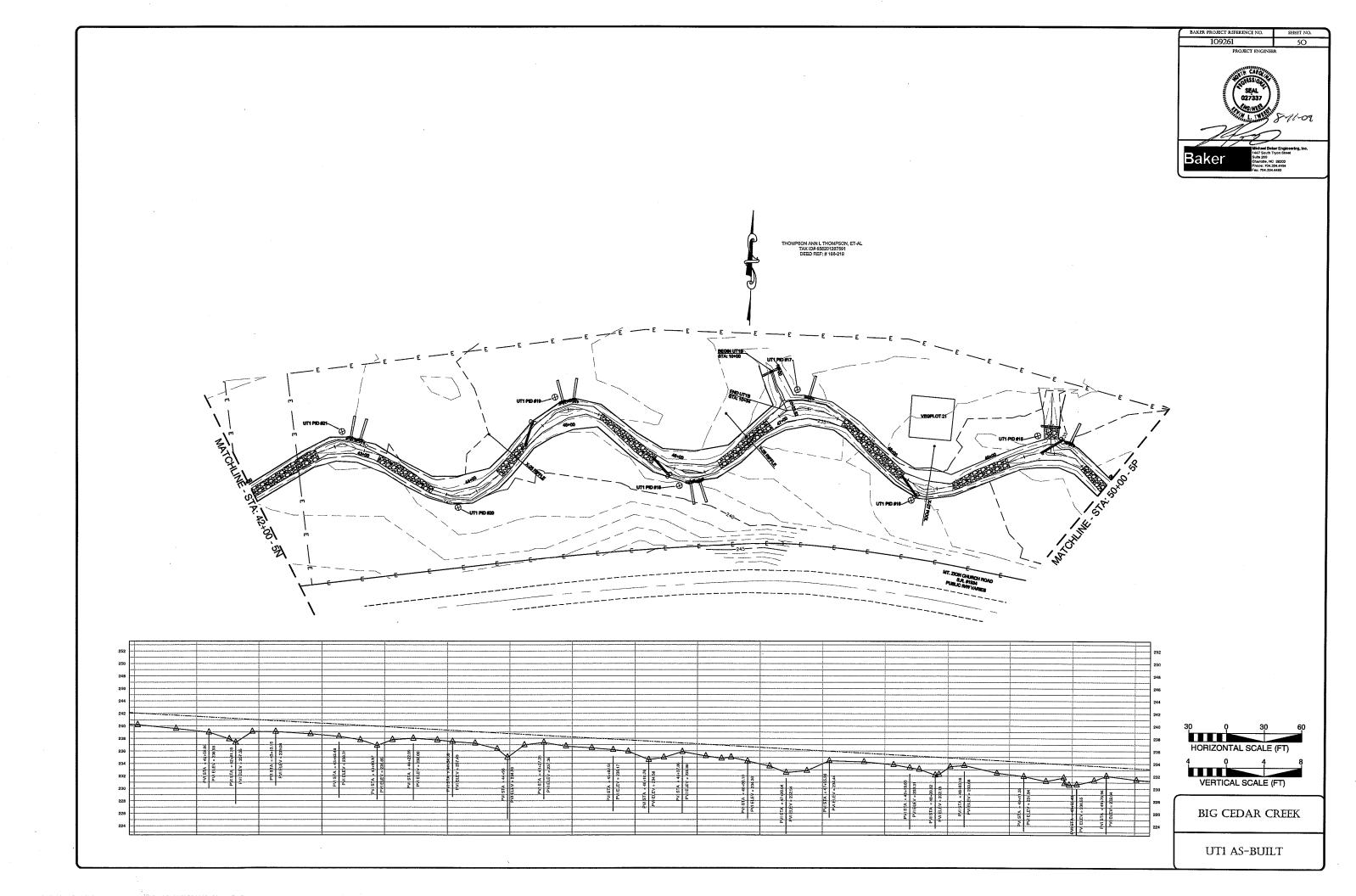


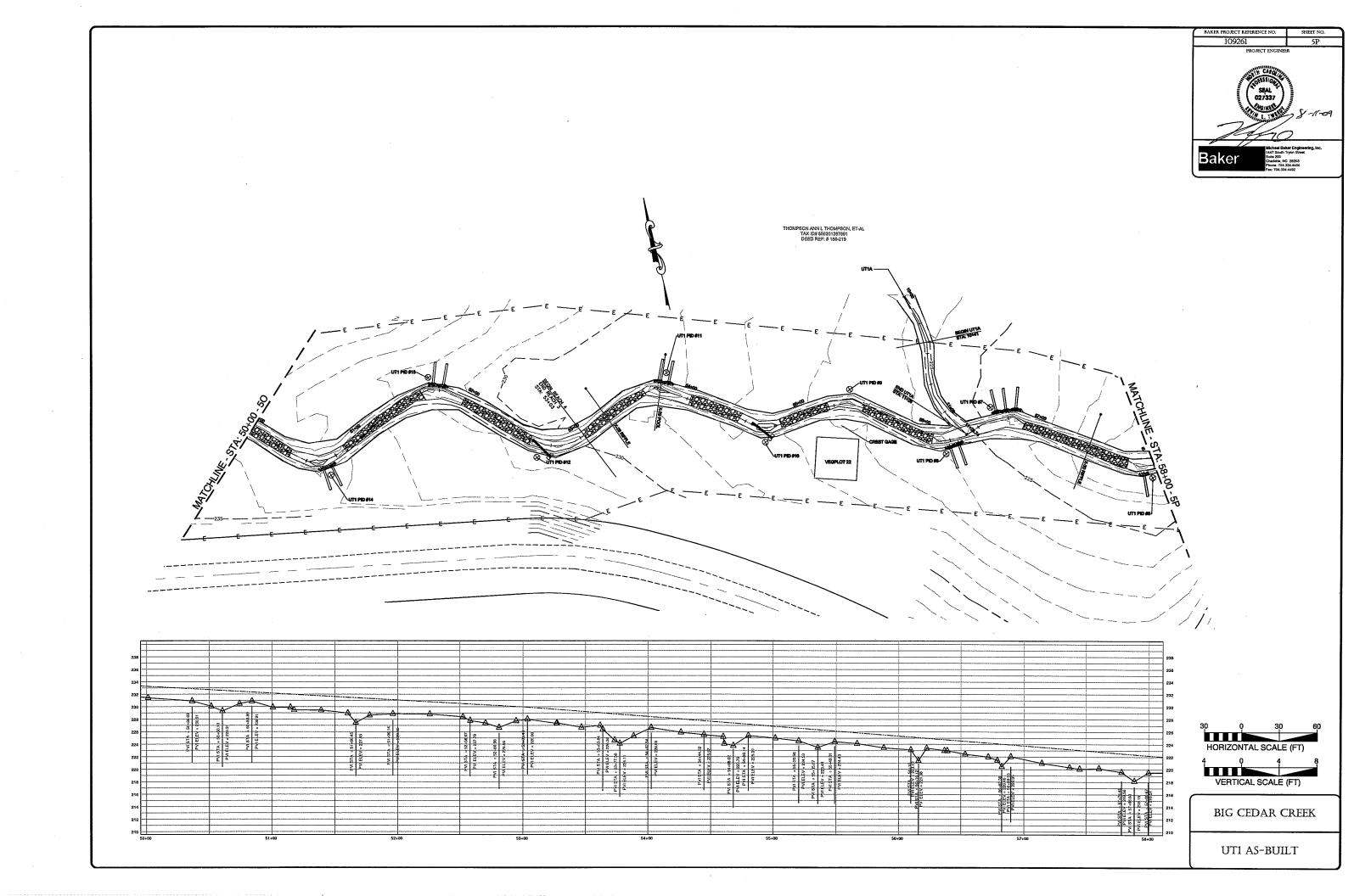


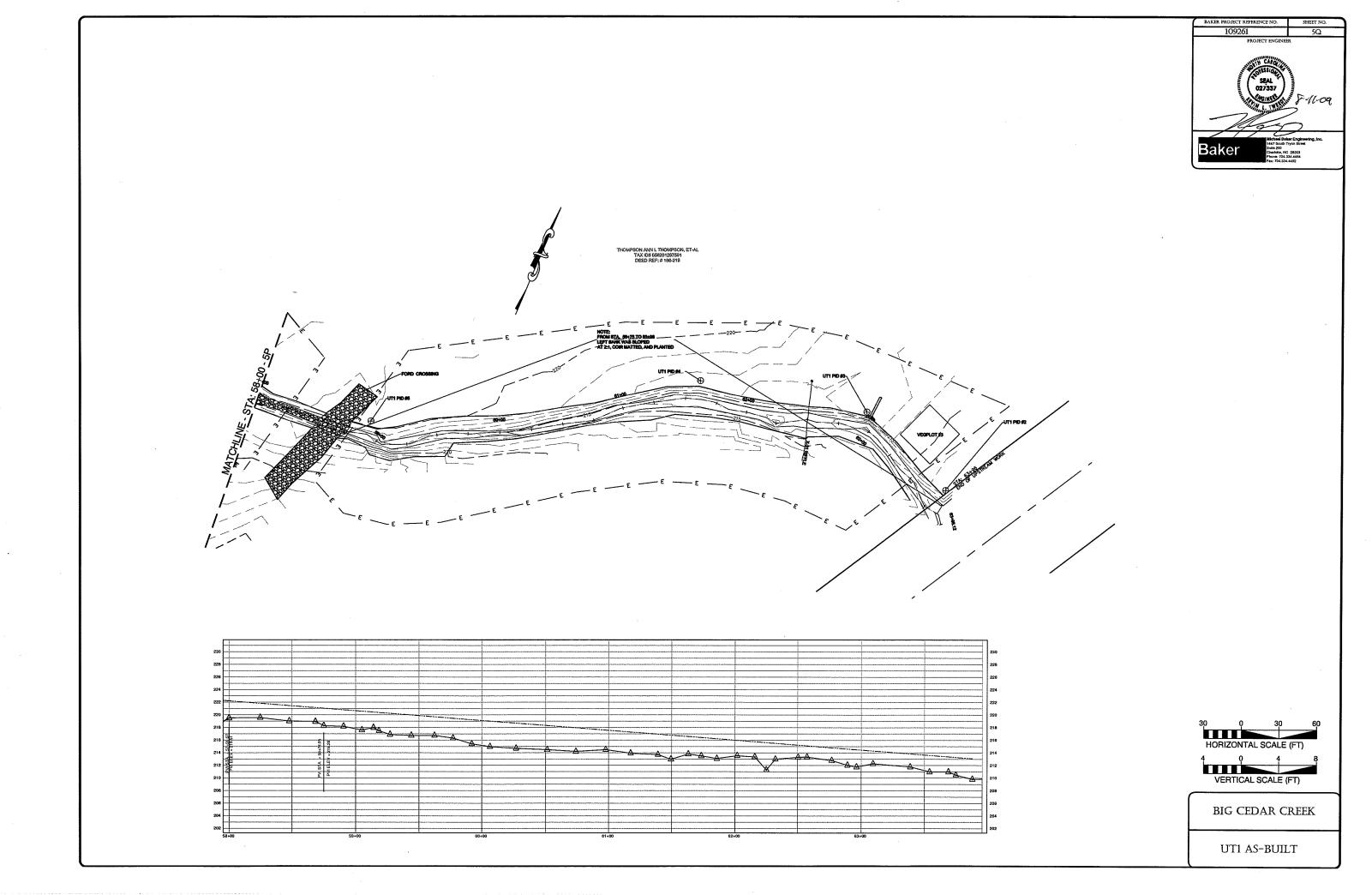


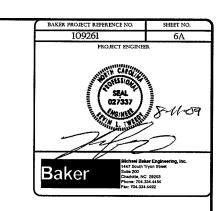


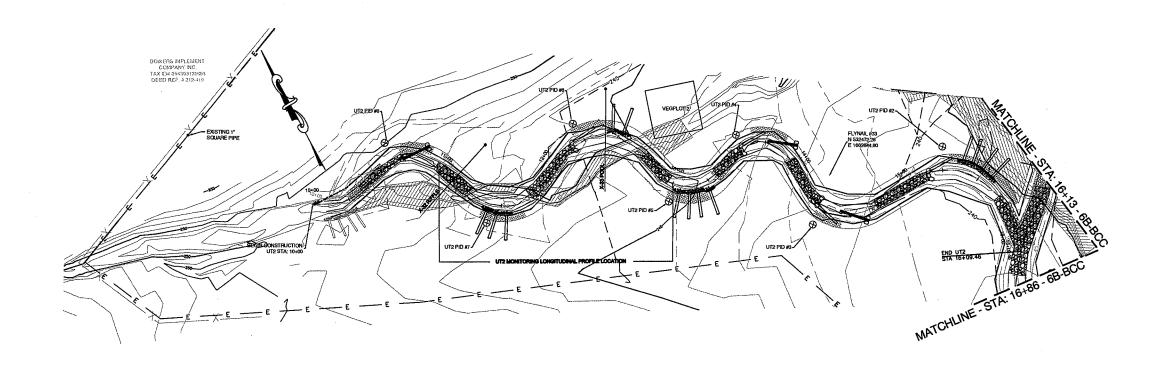


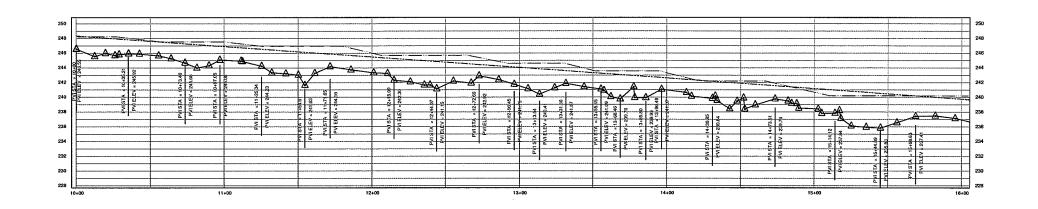


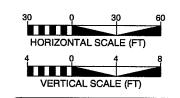




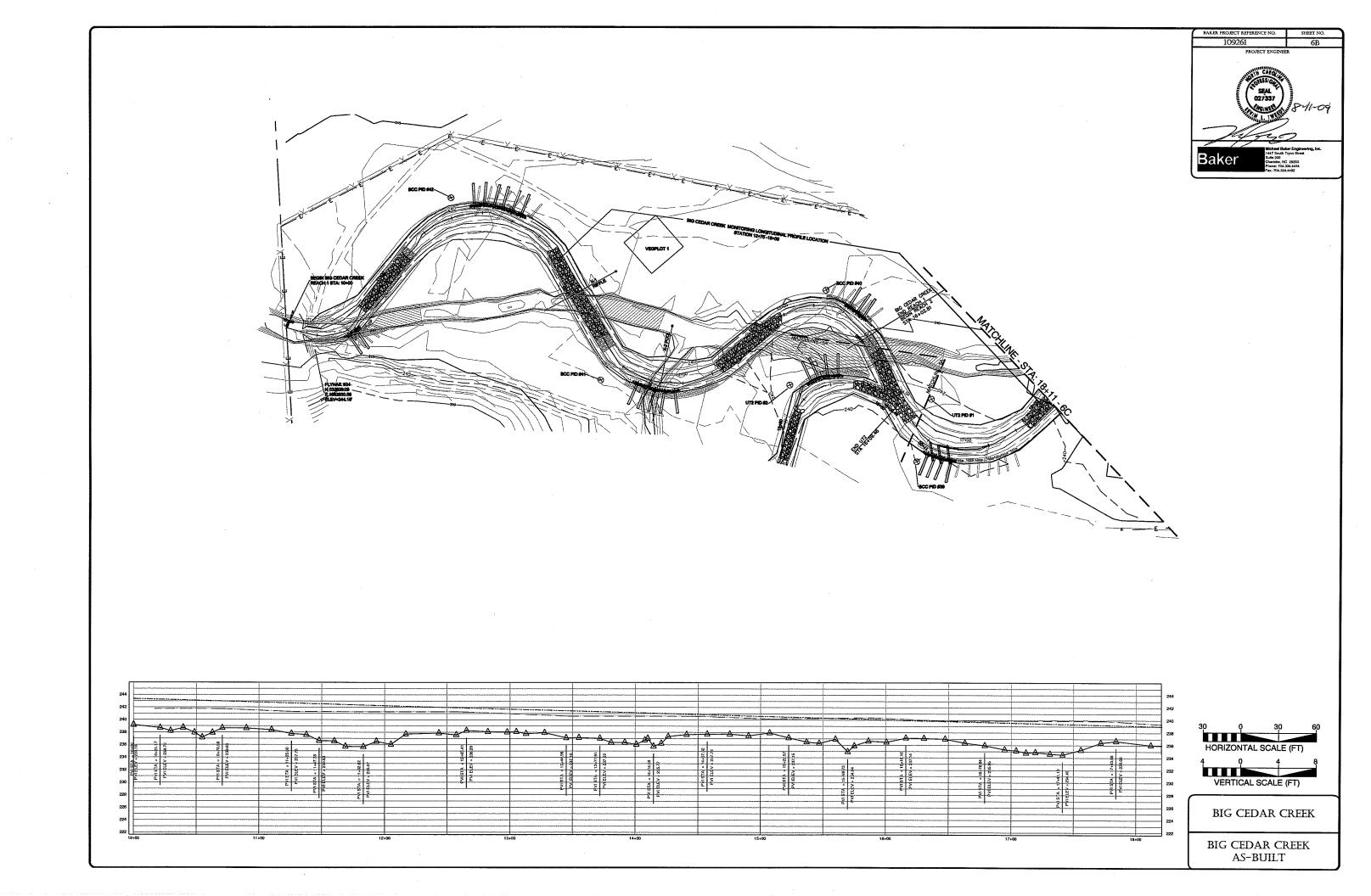


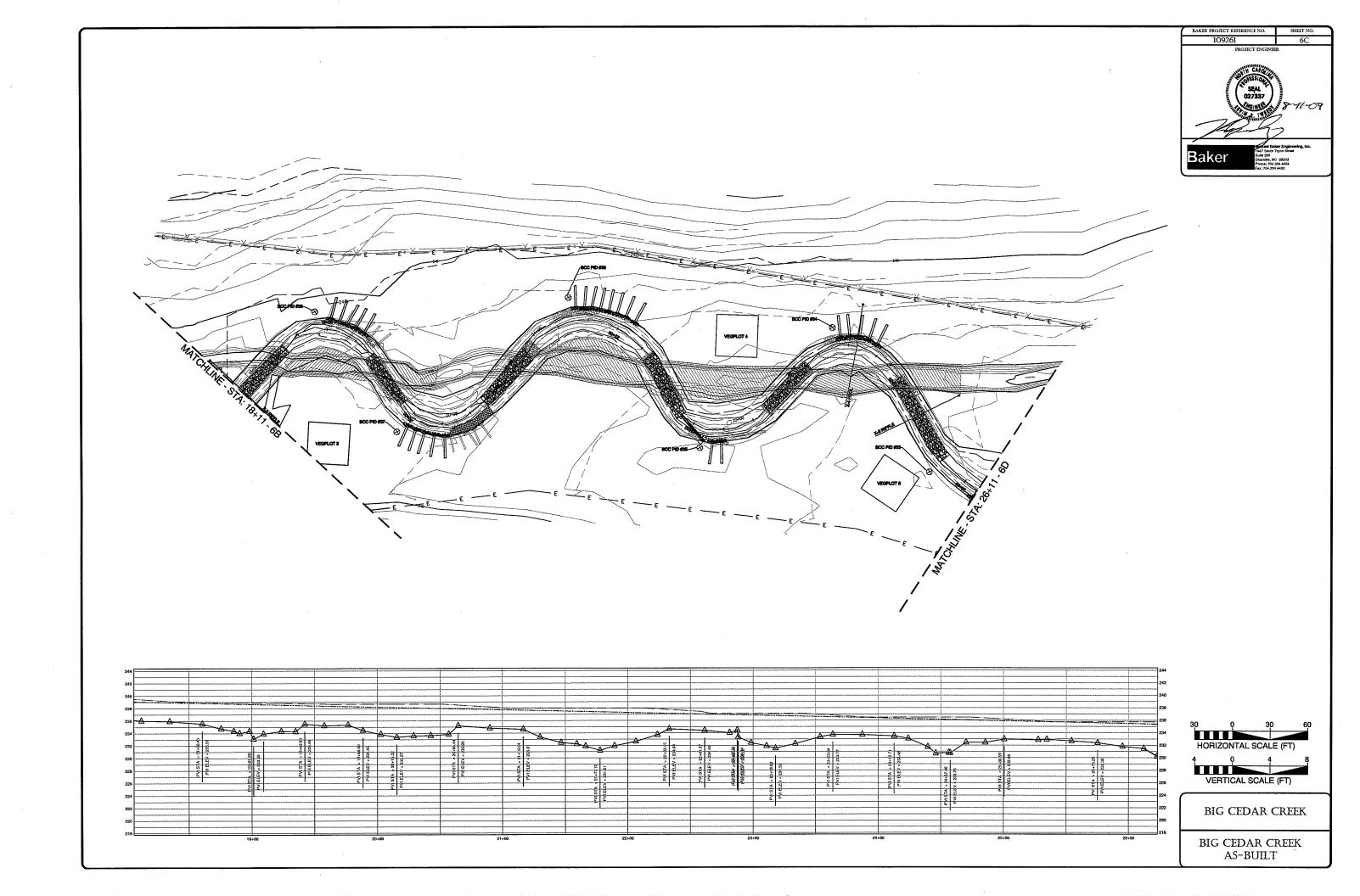


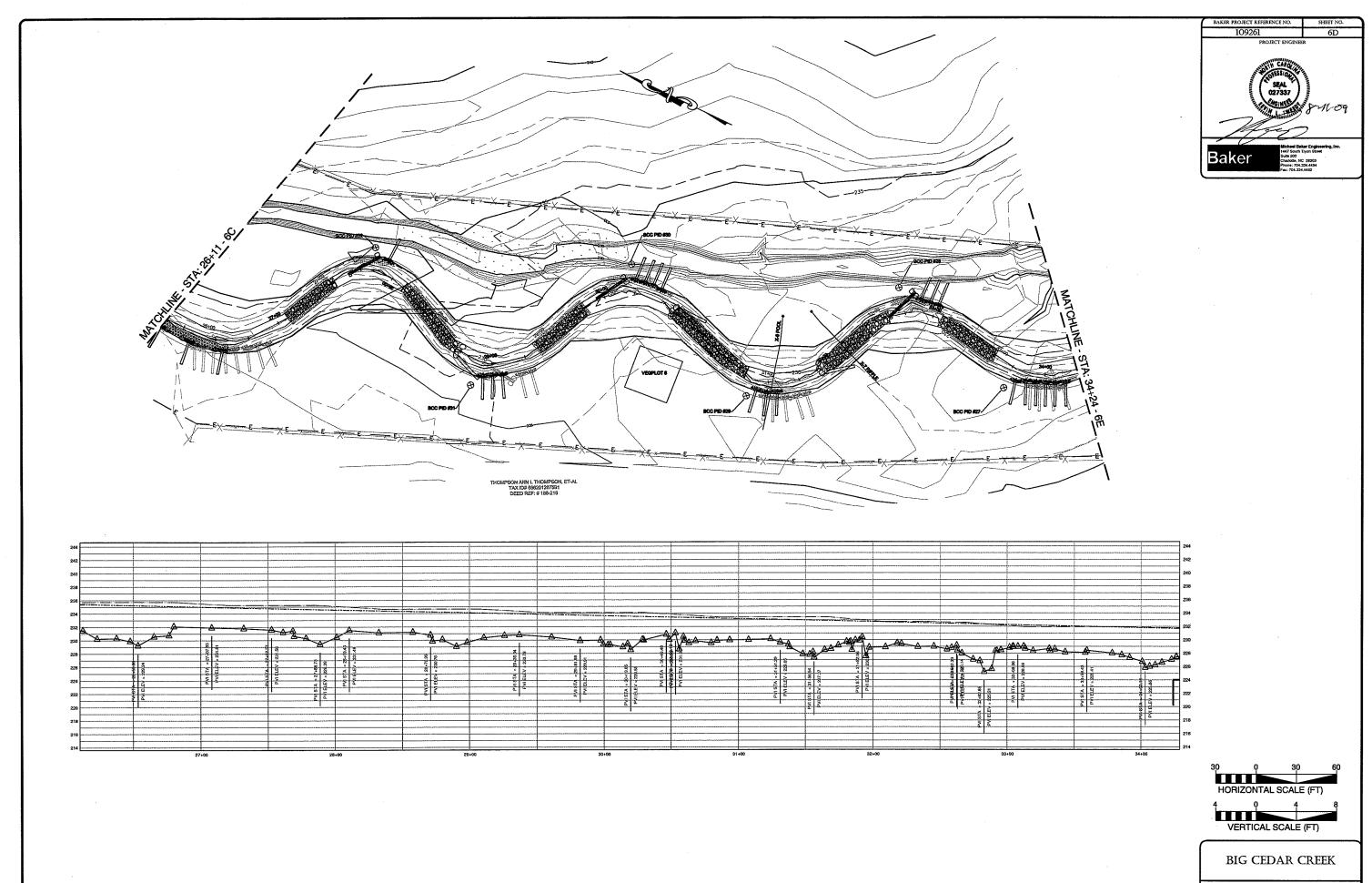




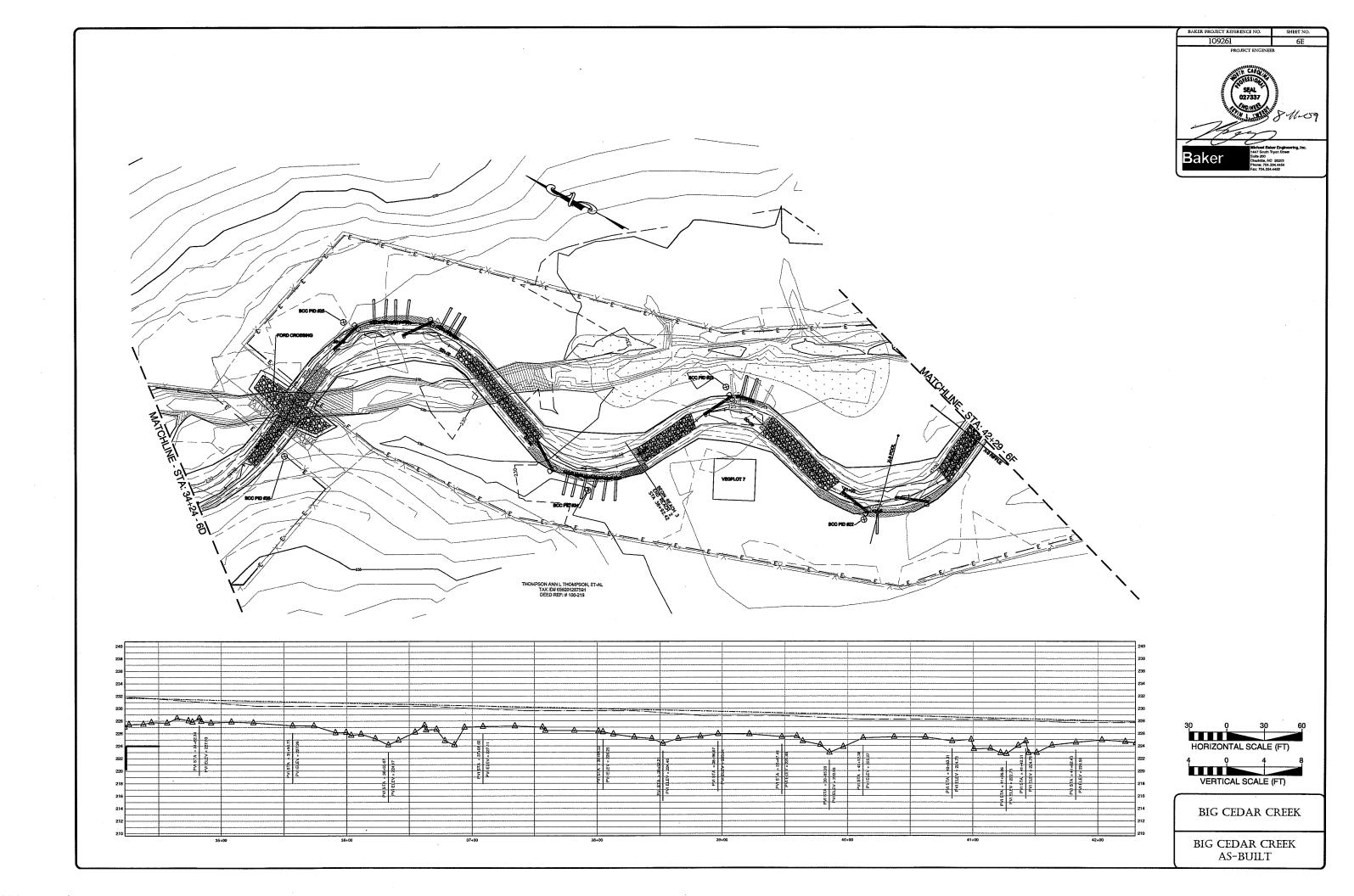
UT2 AS-BUILT

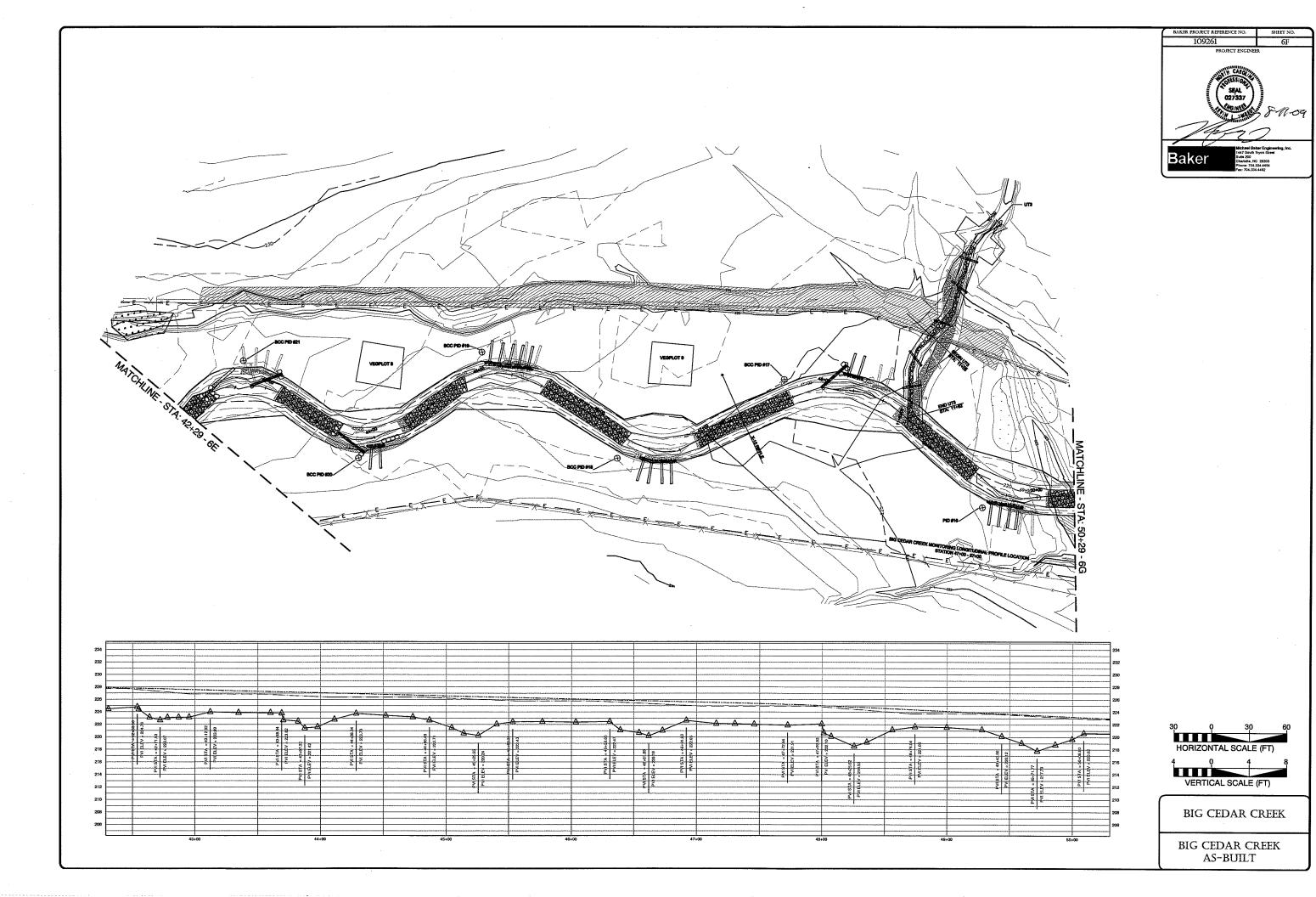


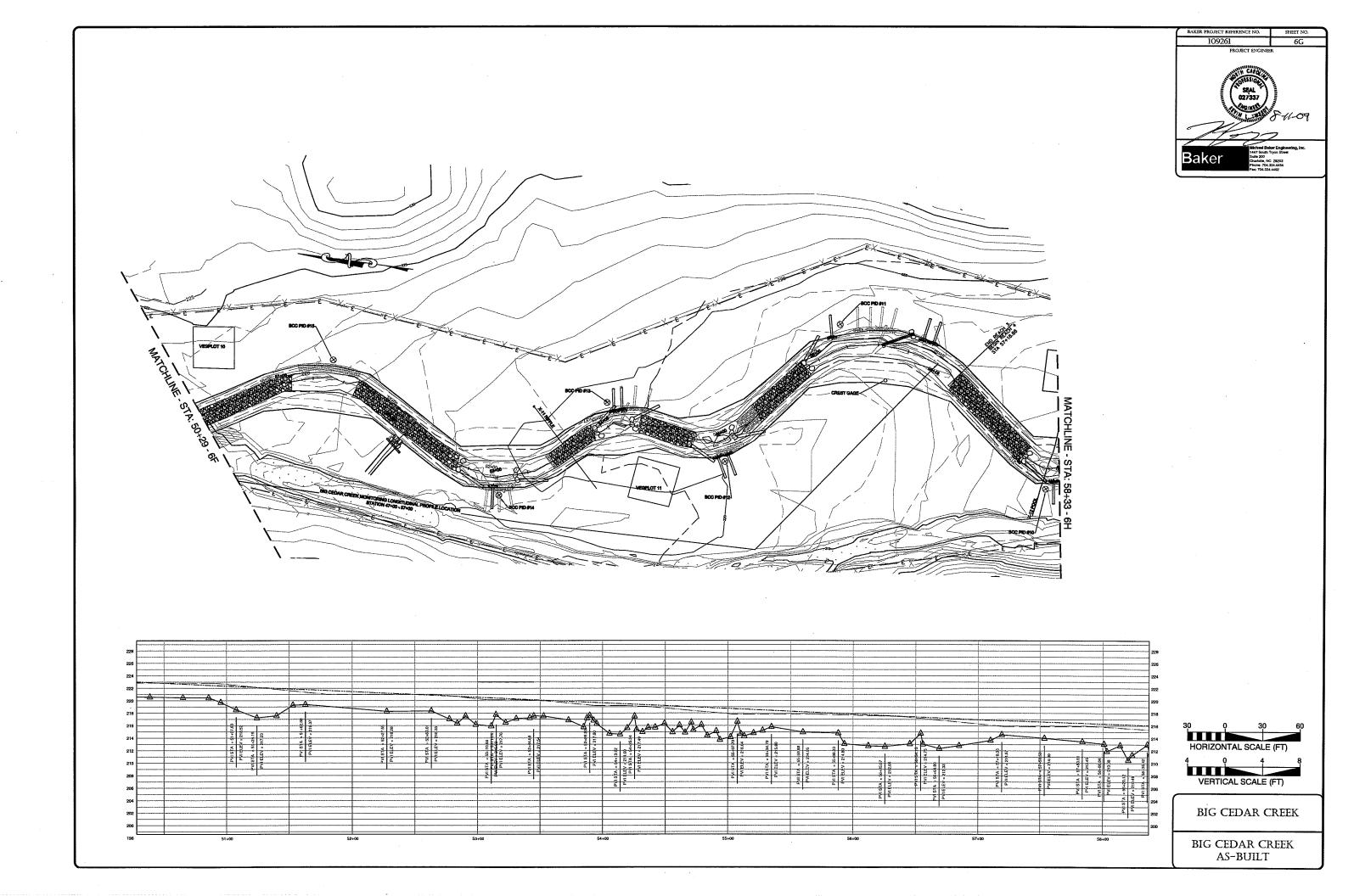


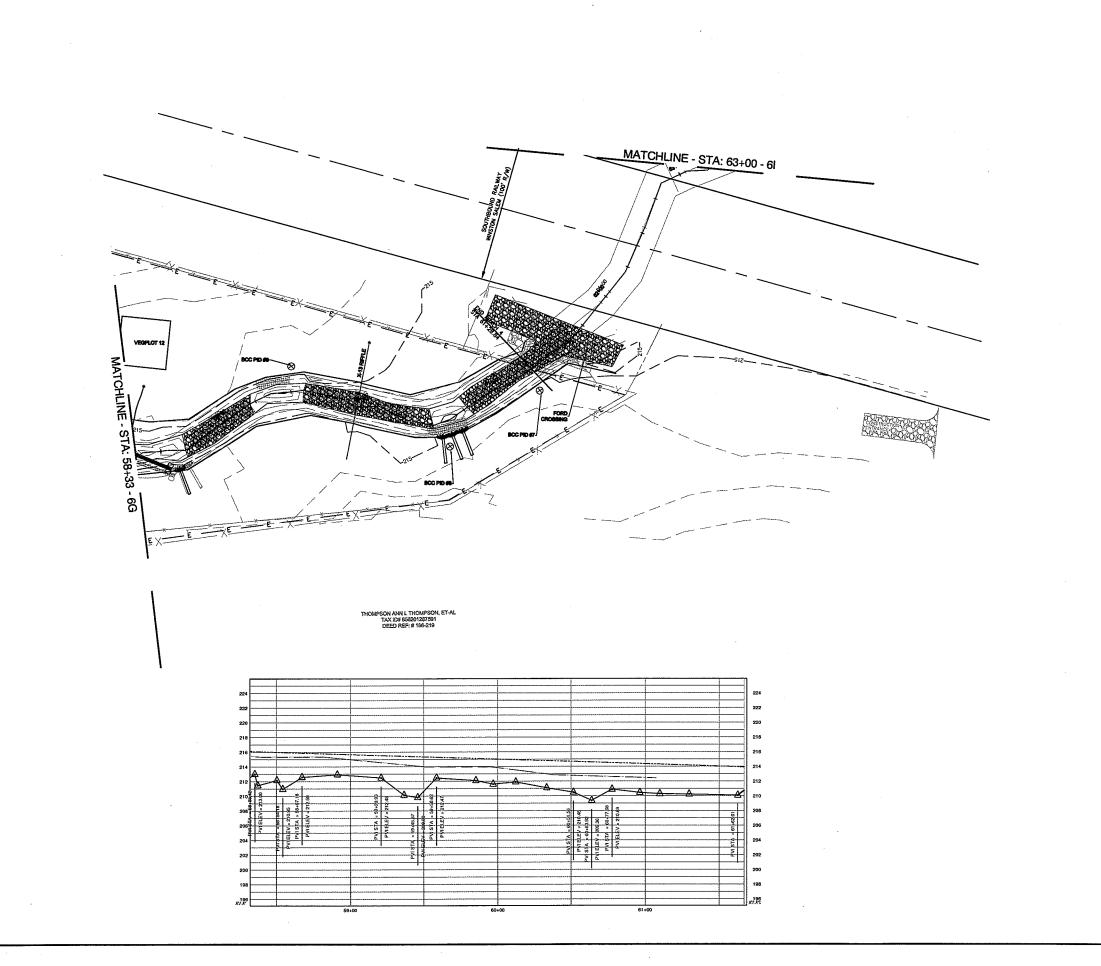


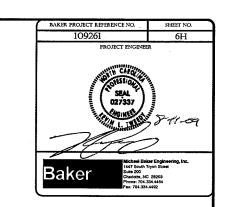
BIG CEDAR CREEK AS-BUILT

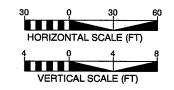






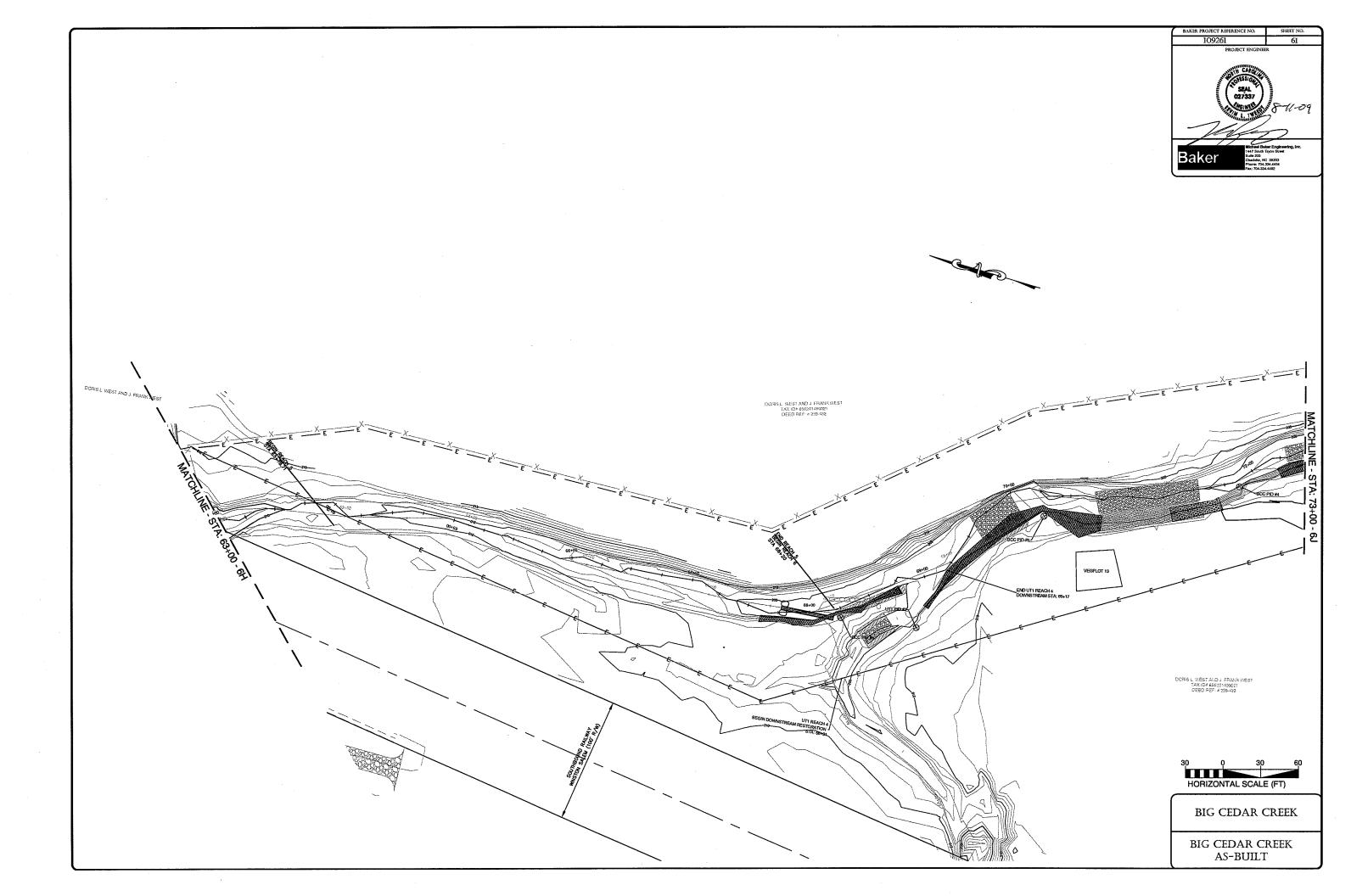


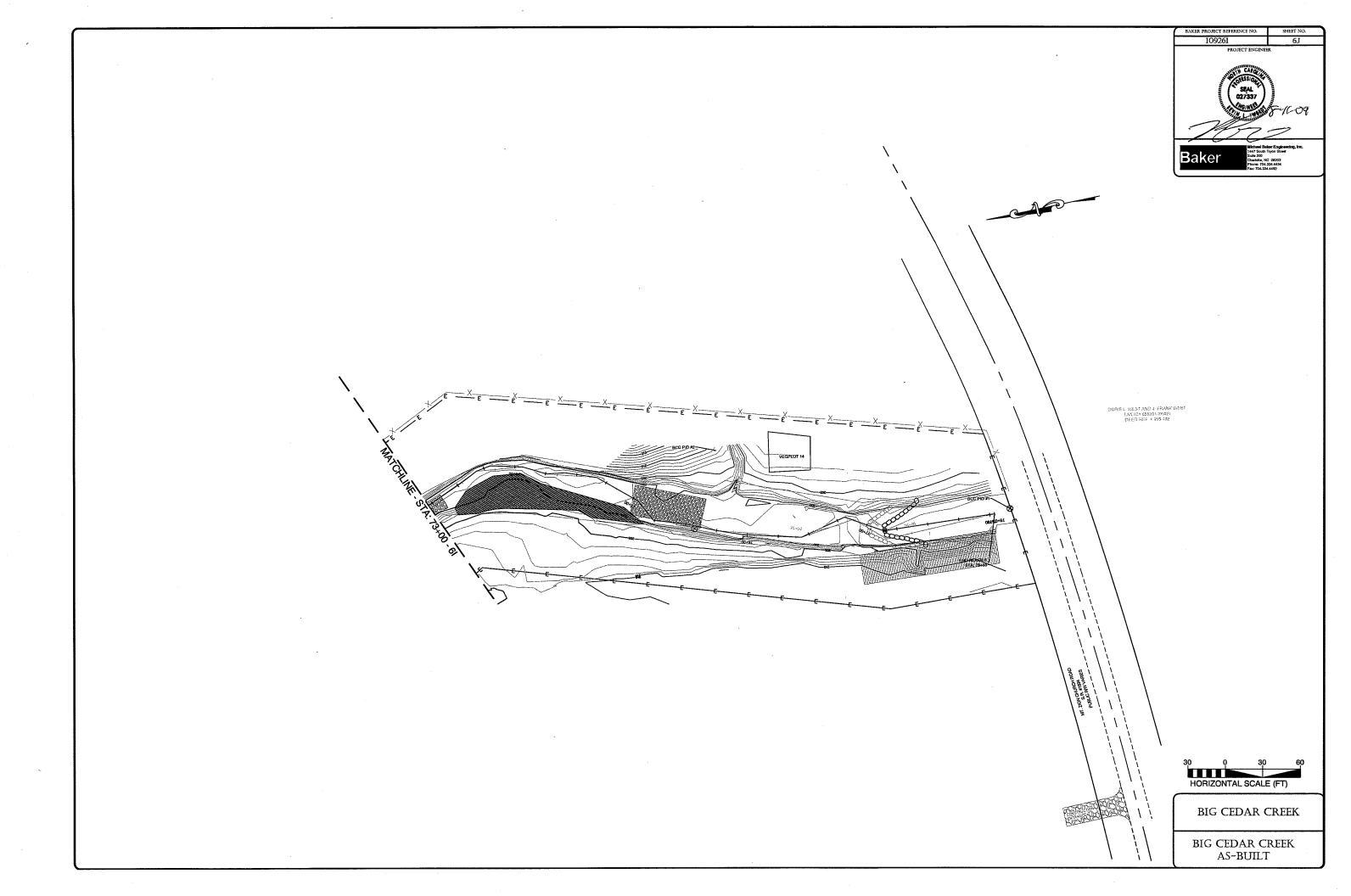


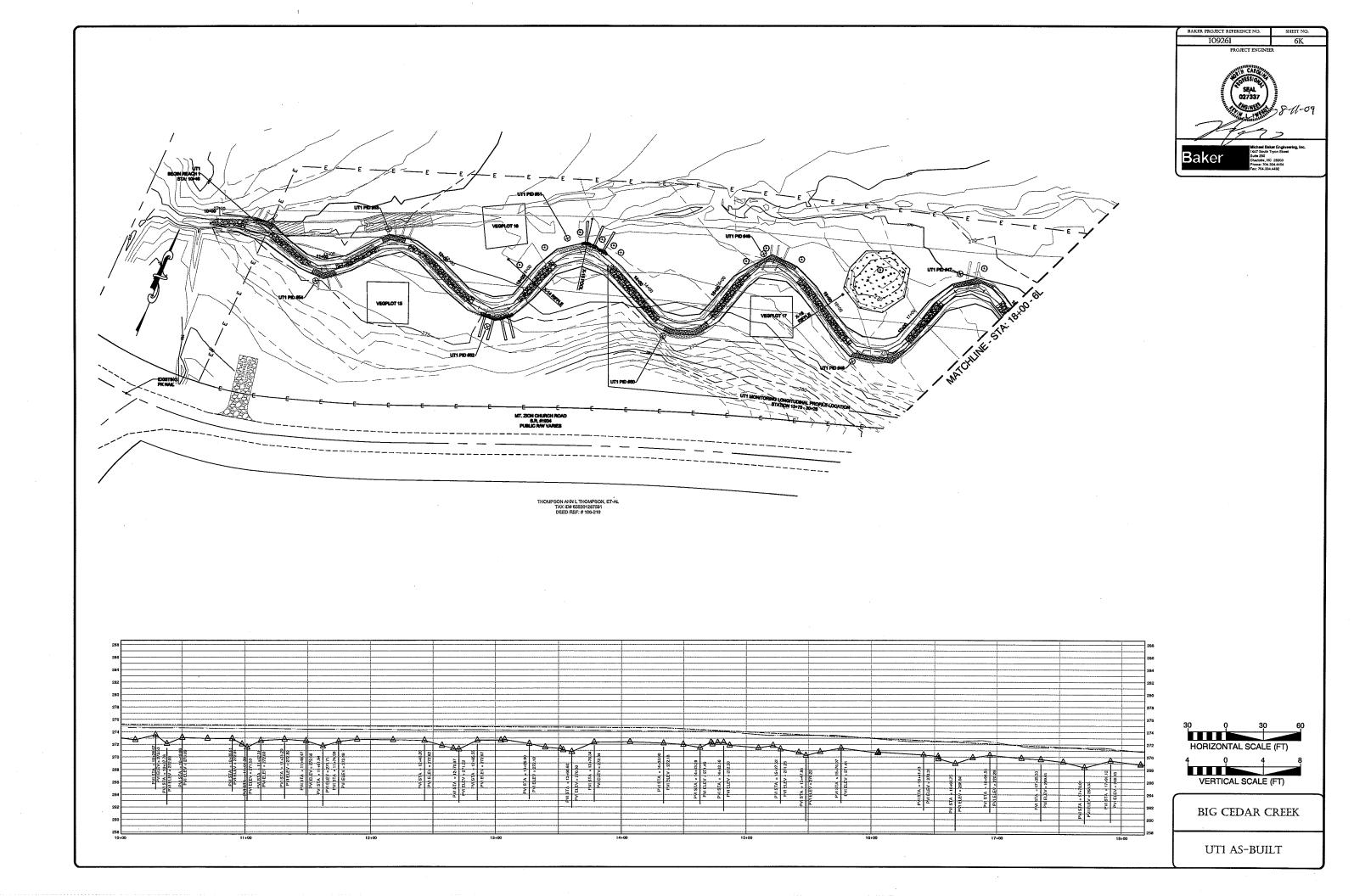


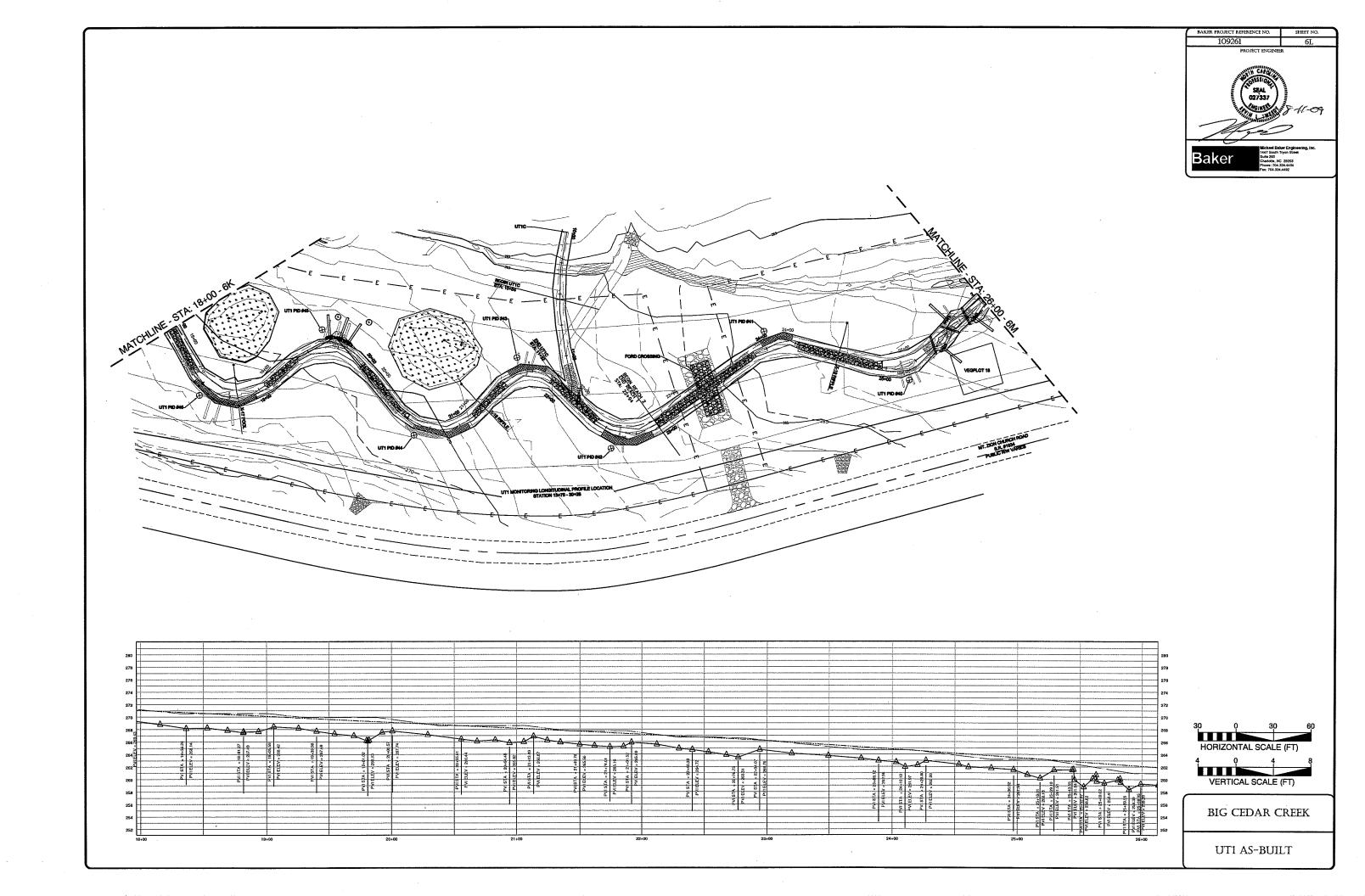
BIG CEDAR CREEK

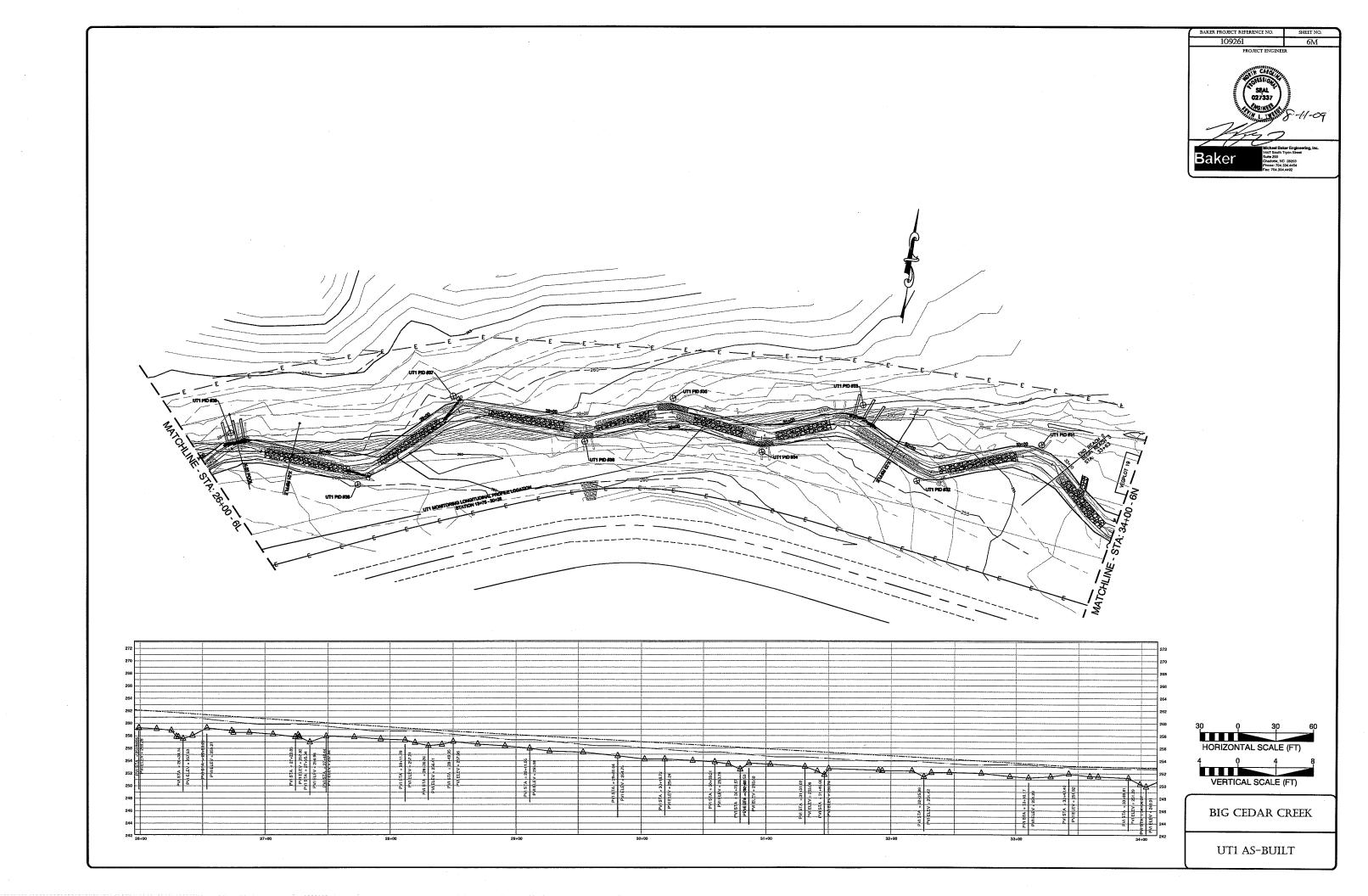
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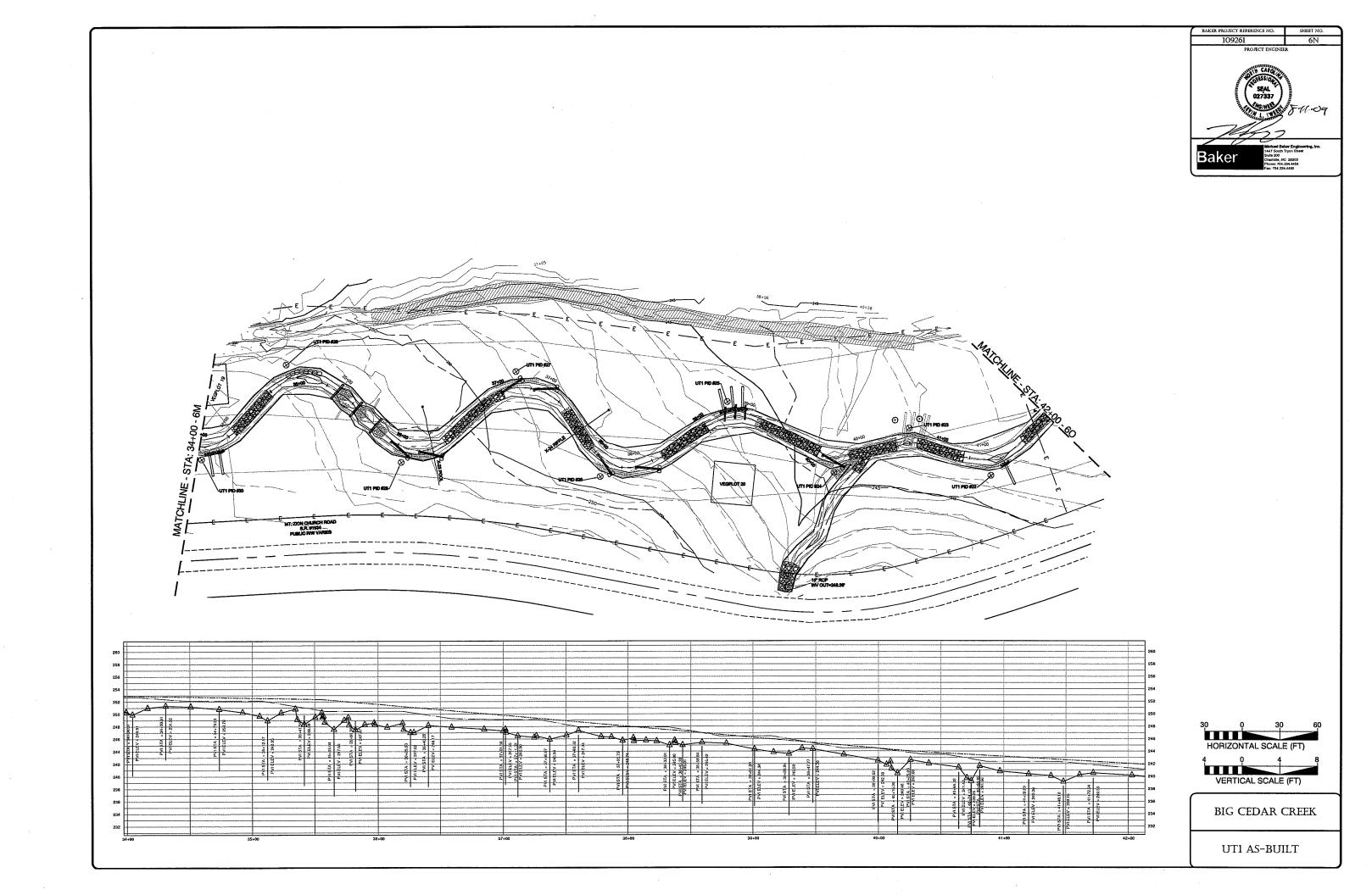


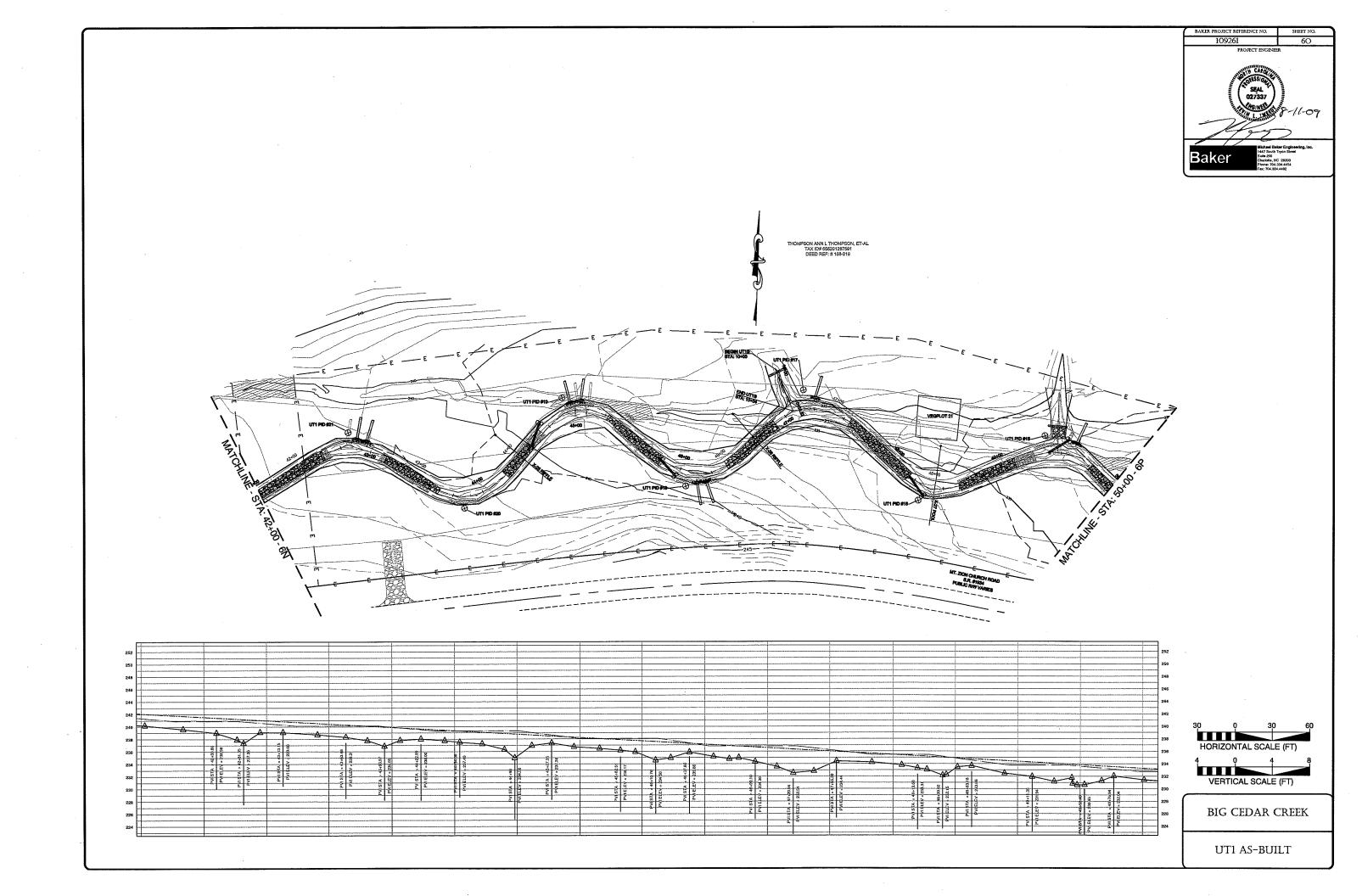


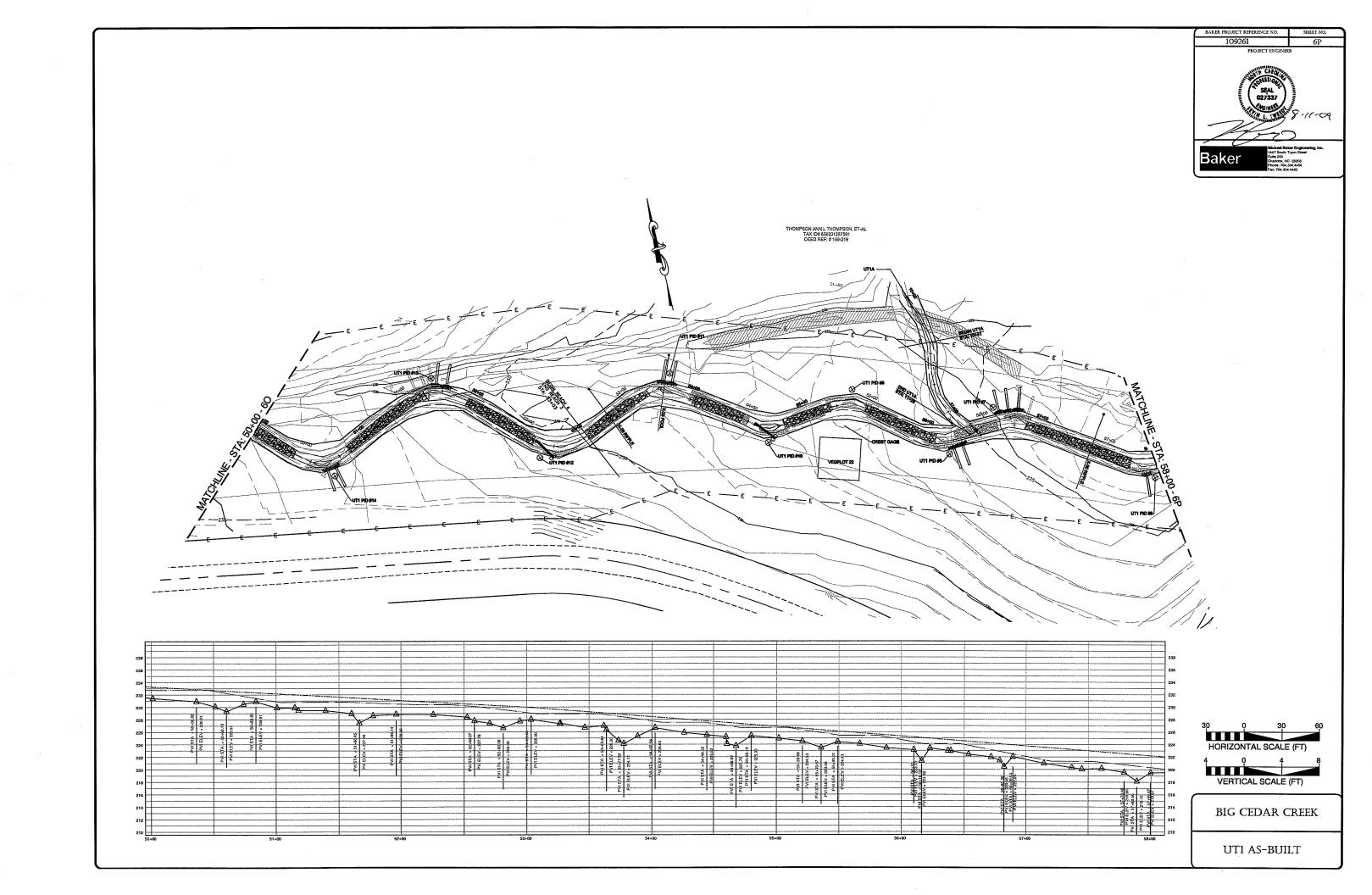


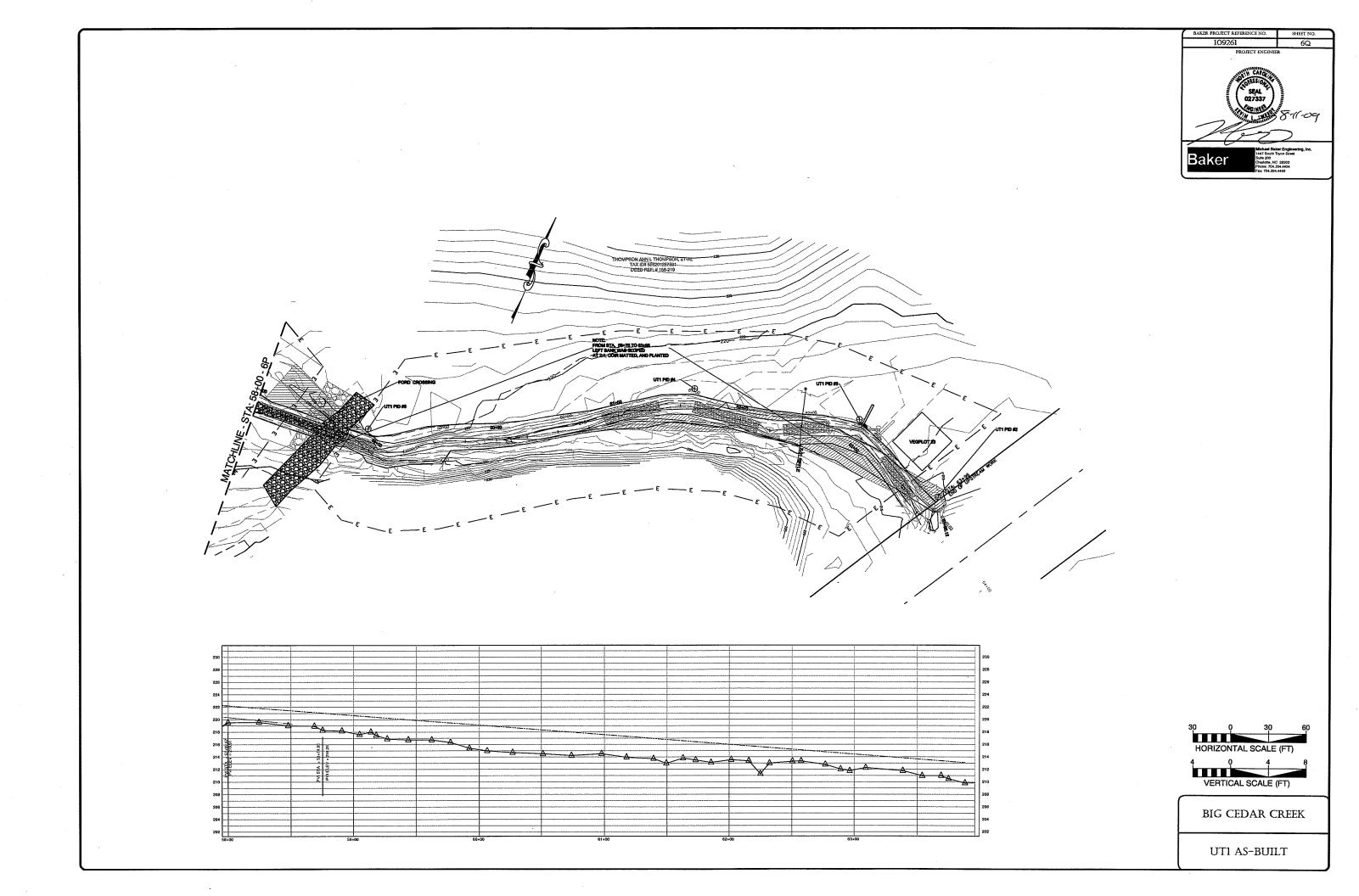












APPENDIX E PHOTO ID LOG





BCC P1D 1– Cross Vane, BCC Reach 6 End



BCC PID 2 – Re-graded Riffle, BCC Reach 6



BCC PID 3 –Existing Riffle, BCC Reach 6



BCC PID 4 – Re-graded Riffle, BCC Reach 6



BCC PID 5 – Re-graded Riffle, BCC Reach 6



BCC PID 6 – Log Vane in distance, BCC Reach 6 Start



BCC PID 7 – Constructed Riffle, BCC Reach 4 End



BCC PID 8 – Constructed Riffle, BCC Reach 4



BCC PID 9 – Constructed Riffle, BCC Reach 4



BCC PID 10 – Constructed Riffle, BCC Reach 4 Start



BCC PID 11 - Log J-Hook & Constructed Riffle, BCC Reach 3 End



BCC PID 12 – Log J-Hook Step Pool, BCC Reach 3



BCC PID 13 – Log J-Hook & Constructed Riffle, BCC Reach 3



BCC PID 14 – Constructed Riffle, BCC Reach 3



BCC PID 15 - Constructed Riffle, BCC Reach 3



BCC PID 16 – Constructed Riffle, BCC Reach 3



BCC PID 17 – Constructed Riffle, UT1 Reach 3



BCC PID 18 – Constructed Riffle, BCC Reach 3



BCC PID 19 – Constructed Riffle, BCC Reach 3



BCC PID 20 – Constructed Riffle, BCC Reach 3



BCC PID 21 – Constructed Riffle, BCC Reach 3



BCC PID 22 – Constructed Riffle, BCC Reach 3



BCC PID 23 – Constructed Riffle, BCC Reach 3 Start



BCC PID 24 – Constructed Riffle, BCC Reach 2 End



BCC PID 25 – Riffle Crossing, BCC Reach 2

BCC PID 26 – Constructed Riffle, BCC Reach 2



BCC PID 27 – Constructed Riffle, BCC Reach 2 BCC PID 28 – Log J-Hook & Constructed Riffle, BCC Reach 2



BCC PID 29 – Log J-Hook & Constructed Riffle, BCC PID 30 – Constructed Riffle, BCC Reach 2

BCC Reach 2



BCC PID 31 – Constructed Riffle, BCC Reach 2 BCC PID 32 – Constructed Riffle, BCC Reach 2



BCC PID 33 – Constructed Riffle, BCC Reach 2 BCC PID 34 – Constructed Riffle, BCC Reach 2



BCC PID 35 – Constructed Riffle, BCC Reach 2 BCC PID 36 – Constructed Riffle, BCC Reach 2



BCC PID 37 – Constructed Riffle, BCC Reach 2



BCC PID 38 – Constructed Riffle, BCC Reach 2



BCC PID 39 – Constructed Riffle, BCC Reach 2 Start



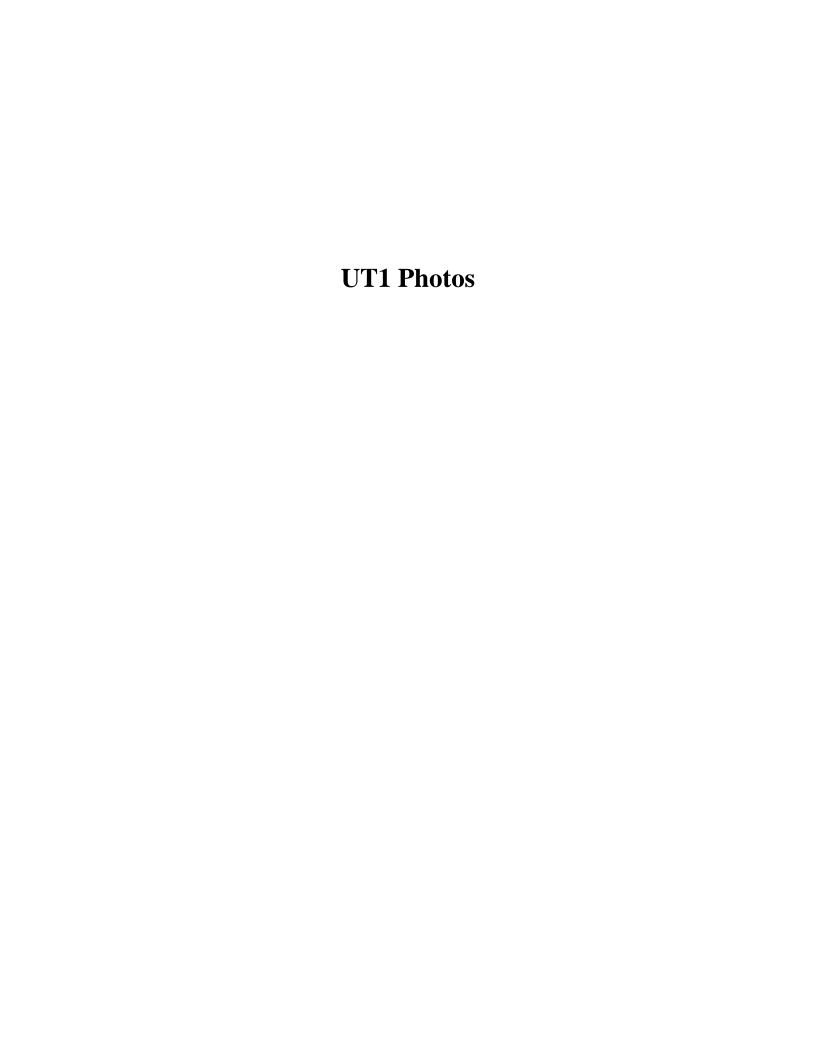
BCC PID 40 – Constructed Riffle, BCC Reach 1 End



BCC PID 41 – Constructed Riffle, BCC Reach 1



BCC PID 42 – Constructed Riffle, BCC Reach 1 Start





UT1 PID 1 – Constructed Riffle, UT1 Reach 4 End



UT1 PID 2 – Constructed Riffle, UT1 Reach 4



UT1 PID 3 – Constructed Riffle, UT1 Reach 4



UT1 PID 4 – Constructed Riffle, UT1 Reach 4



UT1 PID 5 – Riffle Crossing, UT1 Reach 4



UT1 PID 6 – Constructed Riffle, UT1 Reach 4



UT1 PID 7 – Constructed Riffle, UT1 Reach 4



UT1 PID 8 – Constructed Riffle, UT1 Reach 4



UT1 PID 9 – Constructed Riffle, UT1 Reach 4



UT1 PID 10 – Constructed Riffle, UT1 Reach 4



UT1 PID 11 – Constructed Riffle, UT1
Reach 4 Start



UT1 PID 12 – Constructed Riffle, UT1 Reach 3 End



UT1 PID 13 – Constructed Riffle, UT1 Reach 3



UT1 PID 14 – Constructed Riffle, UT1 Reach 3



UT1 PID 15 – Constructed Riffle, UT1 Reach 3



UT1 PID 16 – Constructed Riffle, UT1 Reach 3



UT1 PID 17 – Constructed Riffle, UT1 Reach 3



UT1 PID 18 – Constructed Riffle, UT1 Reach 3



UT1 PID 19 – Constructed Riffle, UT1 Reach 3



UT1 PID 20 – Constructed Riffle, UT1 Reach 3



UT1 PID 21 – Constructed Riffle, UT1 Reach 3



UT1 PID 22 – Constructed Riffle, UT1 Reach 3



UT1 PID 23 – Constructed Riffle, UT1 Reach 3



UT1 PID 24 – Constructed Riffle, UT1 Reach 3



UT1 PID 25 – Constructed Riffle, UT1 Reach 3



UT1 PID 26 – Constructed Riffle, UT1 Reach 3



UT1 PID 27 – Constructed Riffle, UT1 Reach 3



UT1 PID 28 – Log sill step pools (3), UT1 Reach 3



UT1 PID 29 – Constructed Riffle, UT1 Reach 3



UT1 PID 30– Constructed Riffle, UT1 Reach 3 Start



UT1 PID 31 – Constructed Riffle, UT1 Reach 2 End



UT1 PID 32 – Constructed Riffle, UT1 Reach 2



UT1 PID 33 – Constructed Riffle, UT1 Reach 2



UT1 PID 34 – Constructed Riffle, UT1 Reach 2



UT1 PID 35 – Constructed Riffle, UT1 Reach 2



UT1 PID 36 – Constructed Riffle, UT1 Reach 2



UT1 PID 37 – Constructed Riffle, UT1 Reach 2



UT1 PID 38 – Constructed Riffle, UT1 Reach 2



UT1 PID 39 – Rock and roll structures (3), UT1 Reach 3



 $UT1\ PID\ 40-Constructed\ Riffle,\ UT1\ Reach\ 2$



UT1 PID 41 – Riffle crossing, UT1 Reach 2 Start



UT1 PID 42 – Constructed Riffle, UT1 Reach 1 End



UT1 PID 43 – Constructed Riffle, UT1 Reach 1



UT1 PID 44 – Constructed Riffle, UT1 Reach 1



UT1 PID 45 – Constructed Riffle, UT1 Reach 1



UT1 PID 46 – Constructed Riffle, UT1 Reach 1



UT1 PID 47 – Constructed Riffle, UT1 Reach 1



UT1 PID 48 – Constructed Riffle, UT1 Reach 1



UT1 PID 49 – Constructed Riffle, UT1 Reach 1



UT1 PID 50 – Constructed Riffle, UT1 Reach 1



UT1 PID 51 – Constructed Riffle, UT1 Reach 1



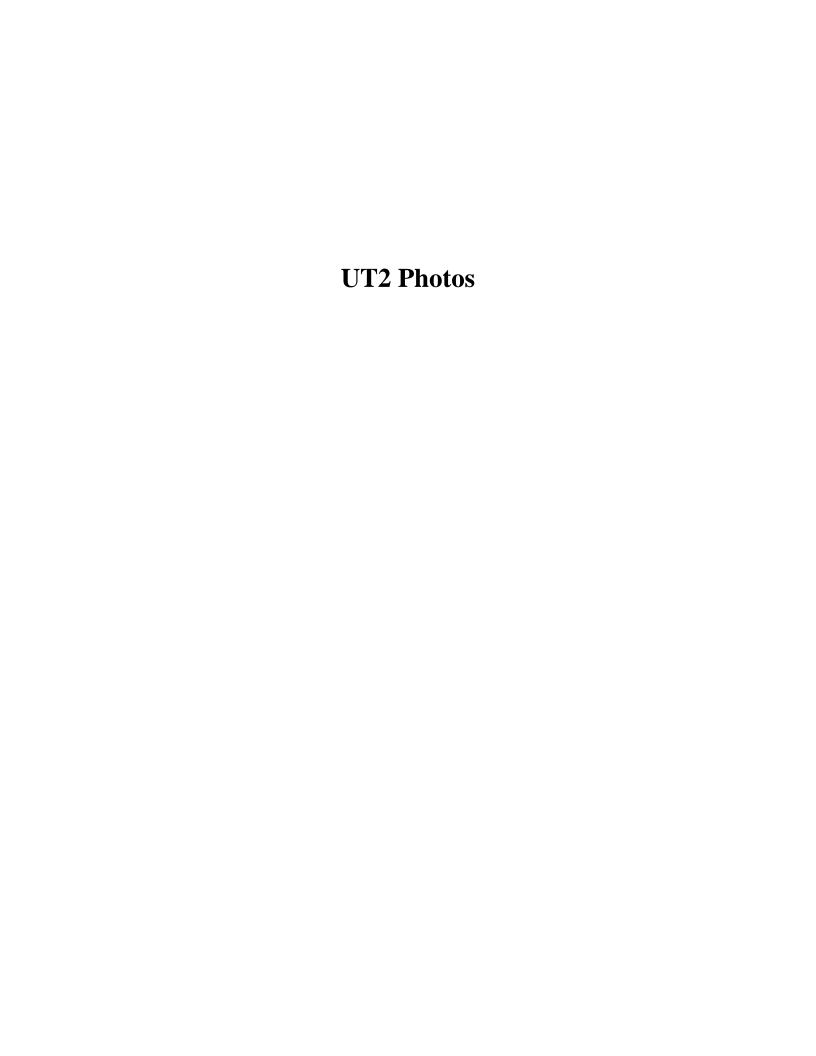
UT1 PID 52 – Constructed Riffle, UT1 Reach 1



UT1 PID 53 – Constructed Riffle, UT1 Reach 1



UT1 PID 54 – Constructed Riffle, UT1 Reach 1 Start





UT2 PID 1 – Constructed Riffle, UT2 End



UT2 PID 2 – Constructed Riffle



UT2 PID 3 – Constructed Riffle



UT2 PID 4 – Constructed Riffle



UT2 PID 5 – Constructed Riffle



UT2 PID 6 – Constructed Riffle







UT2 PID 8 – Constructed Riffle, UT2 Start