APPENDIX D

HYDROLOGY AND HYDRAULICS

- Micromodel Study
- Hydrology and Hydraulics Analysis

Cache River 1135 Meander Restoration

MicroModel Study
Revision 2a 1/4/2011

1. Introduction

The US Army Corps of Engineers, Memphis District, Applied River Engineering Center (AREC), Memphis, Tennessee initiated a sedimentation and environmental study of a reach of the Cache River near Clarendon, Arkansas. The Study was conducted between January 2009 and May 2009 using a physical hydraulic micro model at the Memphis District Applied River Engineering Center.

The micro model is a small physical model that has vertical scale distortion as well as distortion in other critical similarity criteria such as Reynolds Number, Shields Parameter, Webber Number, and Froude Number. The micro model is an empirically based approach where adjustments to the model are made until prototype bathymetry data are reproduced.

The micro model was selected to complement other numerical model techniques utilized for the Cache River 1135 study. The micro model provided a visual demonstration of potential bed development within the canal and restored meander segments of the project area.

2. Study Reach

The lower seven miles of the Cache River in Arkansas were channelized in the 1970's. Channel excavation continued to a point just upstream of the confluence of the main stem Cache River and its principle tributary Bayou DeView. Construction was halted by court injunction in 1973.

Original construction severed meander channels from active flow as closures were made at their upstream end. The meanders were left connected to the canal on their lower end which provided some means to sustain access by aquatic organisms. The diversity within the severed meanders began to decline without active flow. In essence, the remnant meanders behaved more as a lake environment than as a riverine environment. Current project sponsors sought to restore flow through the meanders to return their function to more historic conditions.

Because there is an authorized Federal project associated with the Cache River, potential restoration work must consider benefits achieved by project construction. Restoration could be done, but flood capacity for the authorized Federal project must be preserved.

Because a micromodel is a physical model involving complex physical phenomena and processes, it was not feasible to model the entire reach containing all six meanders for an 1135 project. Only one channel reach, defined by meander number 1 as shown in Figure

1, was selected to evaluate using a micromodel. The upper meander #1 reach was chosen to more fully evaluate the complex flow and sedimentation conditions where the Cache River and Bayou DeView enter the channelized reach and how this may impact restoring flow to the upstream most meander. Results from the micromodel of the meander #1 reach did not reveal significant deviations from expected response. Therefore, it was determined that it was unnecessary to micromodel additional meander reaches

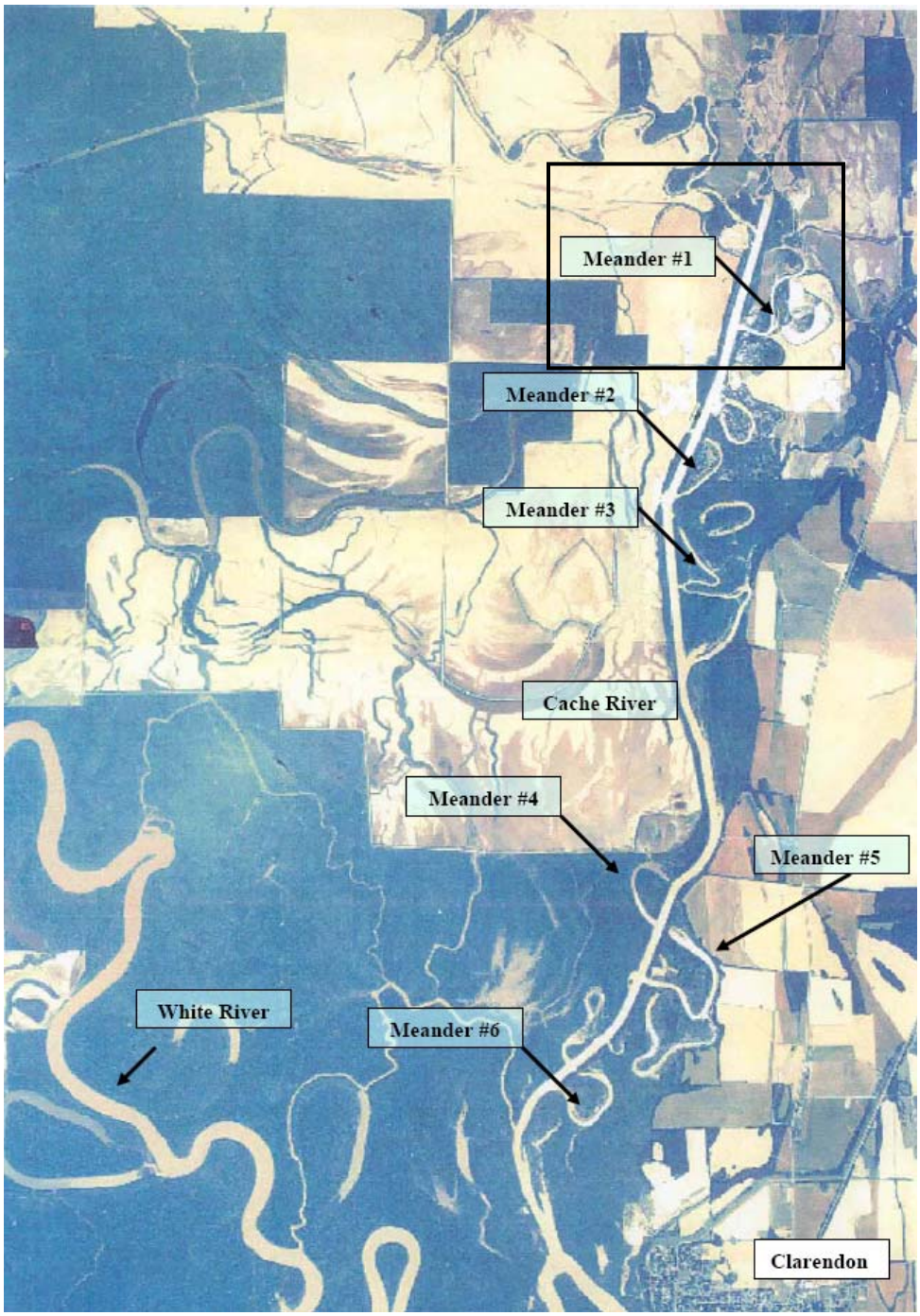

Figure 1. Location of Meanders

The model for this reach included separate flow sources for the Cache River and Bayou DeView. Because measured flow data were not available for either stream in the vicinity of the upper model limit a constant discharge was selected for model simulations. The significant influence from White River backwater further supported the use of a constant flow. Model flow was established to represent the bankfull, effective or channel forming discharge.

The constant flow used in model simulations was divided between the two sources by the ratio of watershed area for each source. Comparisons of synthetic hydrology from a previous HEC-1 model supported use of the basin area ratio to proportion source flows. In general, two-thirds of the total model flow was from the Cache River source and one-third was from the Bayou DeView source.

3. Purpose

The major purpose of the study was to investigate potential sedimentation patterns, scour and deposition, that may be expected to occur in the meander channels following construction of the restoration plan. A secondary purpose was to provide a visual tool to assist in communicating study findings between technical and non-technical study participants and sponsors.

4. Micro Model Description

The model scales used in this study were 1 inch = 75 feet or 1: 900 horizontal, and 1 inch = 10 feet or 1: 120 vertical. This distortion ratio of 7.5 supplied the necessary forces required for the simulation of sediment transport conditions similar to those of the prototype. The media used to simulate sediment load was granular Type I Polyester with a specific gravity of 1.24. The bed material consisted of different sizes of the granular polyester. The grain size ranged from 0.15 mm to 1.19 mm with a D_{50} of 0.91 mm.

5. Appurtenances

The model used an insert fabricated from high density foam board, 18 pounds per cubic foot, and acrylic sheet material. It was constructed according to high-resolution aerial photography of the study reach. The flume configuration, Figure 2, used to support the model was an earlier development of the Applied River Engineering Center (AREC) in St. Louis. Because study focus areas changed slightly during insert fabrication, the model was extended approximately 1.5 feet in both the upstream and downstream directions. The extensions were fabricated at the Memphis District AREC using aerial photography plotted at model scale to establish bank locations and sheet aluminum to form the channel banks. A submersible pump recirculated sediment and water through the model. The longitudinal model slope along the right bank was 0.007 ft/ft while the longitudinal slope along the left bank was 0.004 ft/ft. The upstream transverse slope was 0.004 ft/ft, left bank to right bank, and the downstream transverse slope was -0.005 ft/ft, left bank to right bank. A constant head of 46 inches was maintained during the study utilizing an overflow pipe set in a five-gallon reservoir. A clear PVC pipe sedimentation

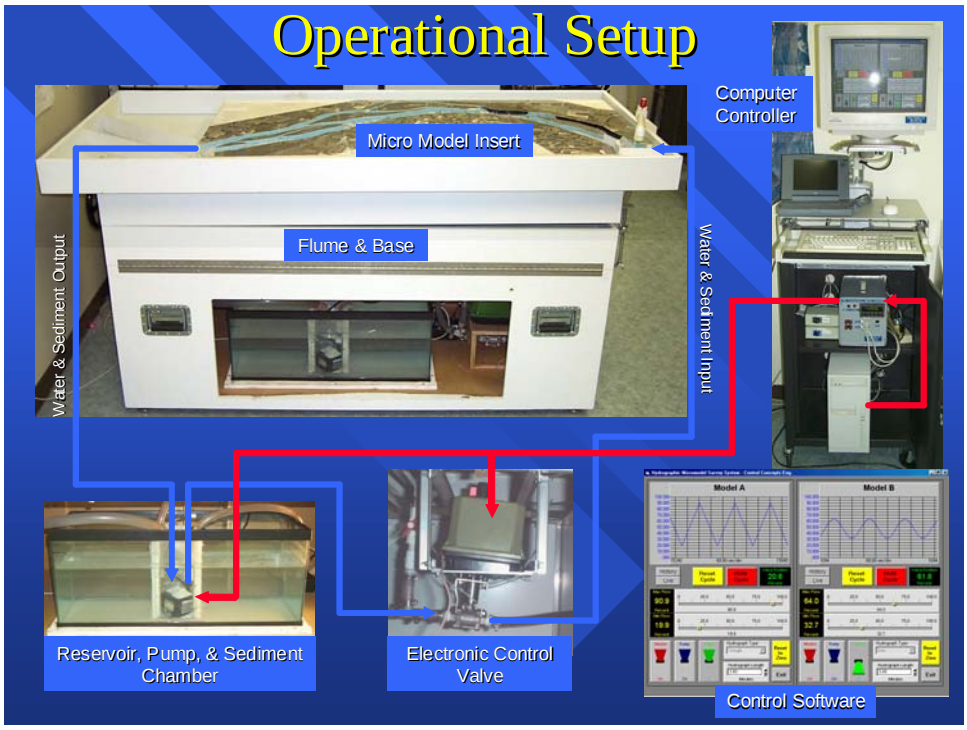

Figure 2, Micromodel Diagram

chamber 4 inches in diameter and 32 inches long prevented sediment from entering the reservoir. Water stages in the model were manually checked using a point. Resultant bed bathymetry was measured and recorded using a 3-dimensional laser scanner.

6. Model calibration

The calibration and verification of the micro model involved the adjustment of water discharge, sediment load, slope, and entrance and exit conditions. These parameters were refined until the measured bed response of the model was similar to that of the prototype.

A. Design Hydrograph

Sediment transport was simulated through the model by introducing a constant discharge of 2.2 gallons per minute to the model. This flow was estimated to approximate the bankfull discharge at model scale. This discharge was split between the Cache River and Bayou DeView sub-basins based on a ratio of drainage area. This resulted in a distribution of approximately 2/3 and 1/3 (1.3 GPM and 0.9 GPM) for the Cache and Bayou DeView, respectively.

B. Prototype Data

Prototype survey data were limited. One survey included a thalweg profile and relatively few cross-sections across the canal and meander channels. This data set was supplemented by additional hydrographic survey data acquired in a random,

zig-zag pattern throughout the canal and meander channels. Survey data collected for both data sets focused on bed topography with few points collected to define top bank and overbank elevations. In addition to channel surveys, detailed surveys were conducted at the seven locations where plugs separate the canal from the upper end of meander channels. The detailed surveys formed the basis for digital terrain models of an area approximately 300 feet by 300 feet in the vicinity of each plug and proposed closure weir. The digital terrain models were developed to facilitate quantity calculations for the project and provide some additional details of the channel and banks in limited areas. Overbank data were obtained from USGS 10 meter DEMs. Figure 3 shows the prototype survey.

Original construction of the canal followed a straight alignment through the reach included in the micro model. The design bottom width was 270 feet. The September 2008 survey shows that shoals have formed along the right descending bank downstream of Bayou DeView and again where the Cache River enters the canal. In each of these locations the flow entered the canal and pushed toward the left descending bank. This flow pattern created conditions that resulted in depositon in the canal along the right bank as the inflow channels attempted to resume a meandering pattern.

The shoal at Bayou DeView has filled the canal to a width of approximately 1/3 of its original width with deposition up to an elevation of 153. The shoal forms a sinuous alignment with a radius of approximately 500 feet. The narrower, confined channel has scoured as Bayou DeView transitions into the canal. Thalweg elevation through the short radius bend was 144. Once Bayou DeView flow entered the straight canal flow migrated toward the right bank and the bed flattened to an elevation of 151. This trend continued until the Cache River channel entered from the right descending bank.

As the Cache River entered the canal, deposition along the right descending bank also created a sinuous alignment. Here deposition filled the canal to a width of approximately 2/3 of its original width with deposition up to an elevation of 153. The thalweg through this reach swept toward the left descending bank with a general radius of about 1000 feet. The depositional zone extended 1500 feet downstream of the Cache River entrance.

At a distance of 1500 feet downstream of the Cache River entrance the channel returned to its full width with a nearly flat bottom. There was no well defined thalweg location from this point downstream until the meander channel reconnected with the canal. The general tendency of bathymentry indicated that a slight shift in thalweg from the left descending bank toward the right bank occurred in this reach. As flow approached the point where the meander channel enters from the left descending bank, there was a slight shift in thalweg back toward the left. Immediately downstream of the meander and along the left bank thalweg depth increased. This was a localized condition that extended only a short distance below the meander outlet.

Figure 3 Prototype Survey from September 2008

C. Model Base Test

Model development began by adding sediment to the insert and setting a flume slope. The initial slope was set at approximately horizontal. Flow was introduced to the flume and the slope was gradually increased to achieve a water surface that paralleled the insert surface. Additional sediment was added to achieve a level of sediment mobility that provided an equilibrium in the model bathymetry. Slope was also adjusted to maintain a parallel relationship between model water surface profile and the insert surface. Additional adjustments in longitudinal and transverse flume slopes, model flow rate, and sediment quantity were made until model bathymetry reproduced observable trends found in the prototype. The model was then surveyed and data converted to prototype units. Conversion of model data to prototype units required a vertical scale which is determined as part of the empirical methodology associated with the micro model technique. The vertical scale was determined by iteration until the conversion produced a good match for both range and relative magnitude of elevations between model and prototype surveys. A vertical scale of 10 was used in this model. A shift of 16.25 was also used in converting model data to prototype coordinates. Shift is also part of the empirical method that relates the position of the water surface to the insert surface, which is also the survey datum. A vertical to horizontal scale distortion of 7.5 was used in this model.

Model base test bathymetry is shown in Figure 4.

7. Alternative

The present study focused on evaluating a single alternative that originated from numerical model studies. The alternative identified from numerical studies included (1) removal of the upstream plug in the meander channel and (2) construction of a closure weir across the existing canal to divert flow to the meander channel. The target flow diversion was the bankfull or channel forming discharge. Basic empirical data indicated that this level of flow was needed to route sediment and water through the meander channels without excessive deposition or scour. Model flow was set to approximate this level of discharge during base test calibration. The same flow was used for model calibration and alternative testing. Flow distribution between the Cache River and Bayou DeView sources was held constant for all model simulations.

Following the establishment of base test calibration, the model was adjusted to replicate the anticipated restoration plan. The plug at the upper end of the meander channel was removed to a width equivalent to the average meander top width. No specific bottom elevation was used in the model for the removed plug. The elevation used was below the anticipated depth of scour so that artificial boundaries would not influence model results.

Because micro model techniques do not follow simitude, model flow and water surface elevation was not scalable. Therefore, setting the weir closure elevation was a trial and error process. The assumed bankfull flow used for model calibration remained constant

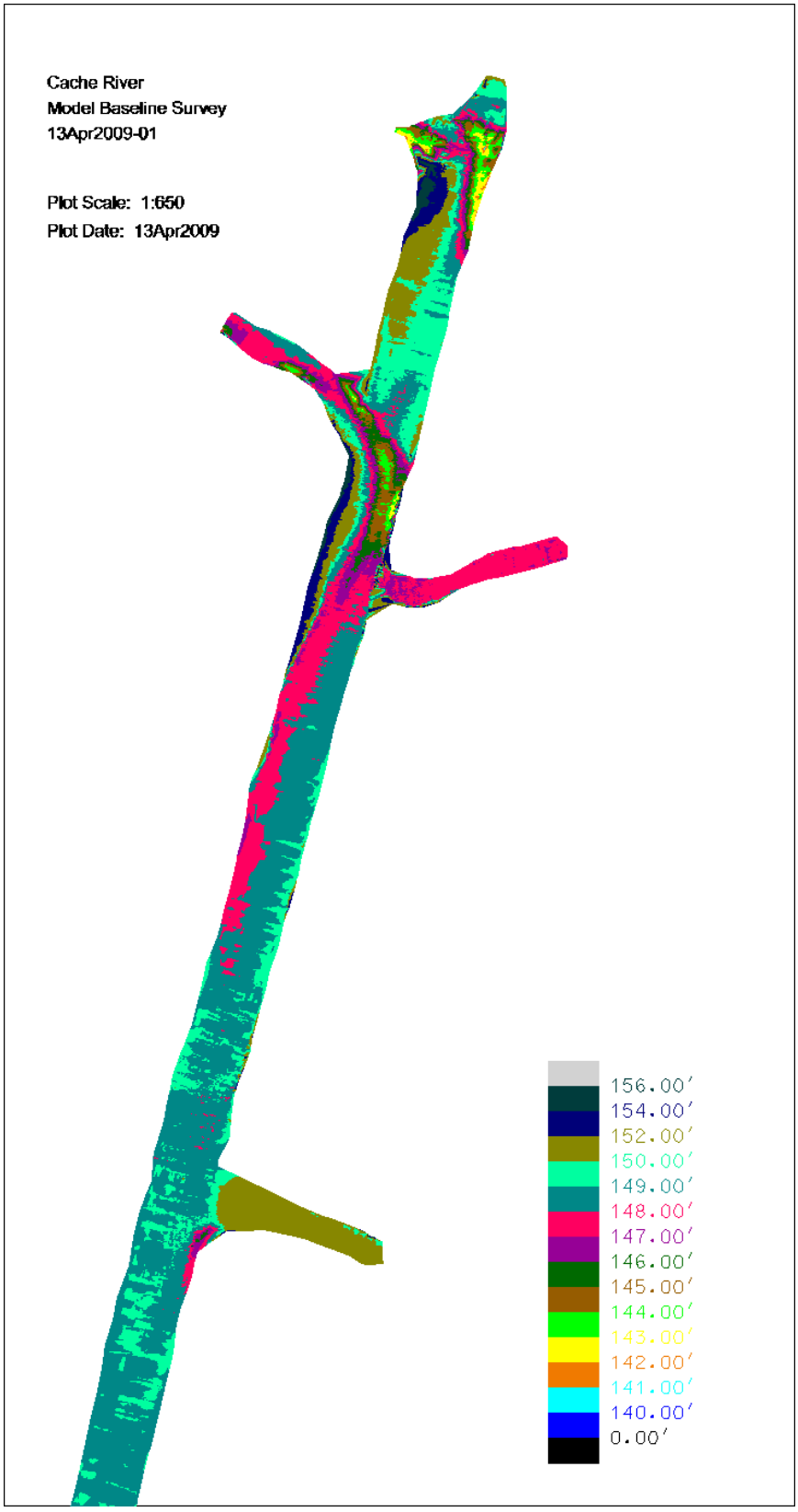

Figure 4 Model Base Test Bathymetry

for alternative simulations. Therefore, the weir installed in the model was adjusted until the majority of flow passed down the meander channel. Some minor flow continued to flow across the weir to prevent dry conditions in the canal reach downstream of the weir. This would be consistent with expected prototype behavior because there will be some seepage through the closure weir, there is some base flow, and the lower Cache River has a flat slope with resulting backwater from the White River. (The model slope is exaggerated which limits any influence from backwater).

Once adjustments for the alternative configuration were in place, flow was introduced and the model allowed to achieve equilibrium. Multiple simulation runs were made to consider variability in model results. Overall, model bathymetry was consistent across multiple simulations. Model bathymetry for the alternative considered in this study is shown in Figure 5. Upstream of the closure weir bed deposition in the range of 4 feet to as much as 6 feet was noted between model base test and the alternative survey. This depositional trend is consistent with numerical model results but is more that two times greater in magnitude. The greater magnitude is due to two factors: 1) the micro model utilized a much higher non-cohesive bed load than occurs in the prototype and 2) scale distortions in the micro model tend to exaggerate vertical scour and deposition depths for true non-equilibrium situations.

8. Summary of model results

Bed response through the meander reach transformed the reach from a nearly flat bed to a riffle-pool sequence typical of meandering channels. Deeper pool areas developed on the outside of bends with point bar deposits on the inner side of bends. Shallower and narrower sections formed the transition between one bend and the next successive bend.

Upstream of restored connections between the canal and meander channel the canal filled. This was most pronounced between the Cache River and Bayou DeView inlets. This increase in base level was necessary to achieve the higher energy state needed to convey flow through the meander channel which was considerably longer than the existing canal reach. There was significant scour in the vicinity of the closure weir, both upstream and downstream of the weir crest. Scour upstream of the weir was induced by strong circulating currents as the flow redirected to the meander channel. The alignment of the three channels in this area (Cache River inlet, existing canal, and restored meander channel) creates an adverse alignment under alternative conditions. There is limited opportunity to improve the flow path as flow exits the present Cache River and enters the historic Cache meander. The short distance between the two does not provide sufficient room to construct a channel with appropriate bend radius.

Scour downstream of the closure weir as observed in the model will create a relatively large plunge pool. This model behavior is highly exaggerated due to scale effects and the lack of backwater in the canal section. The presence of backwater will create tailwater on

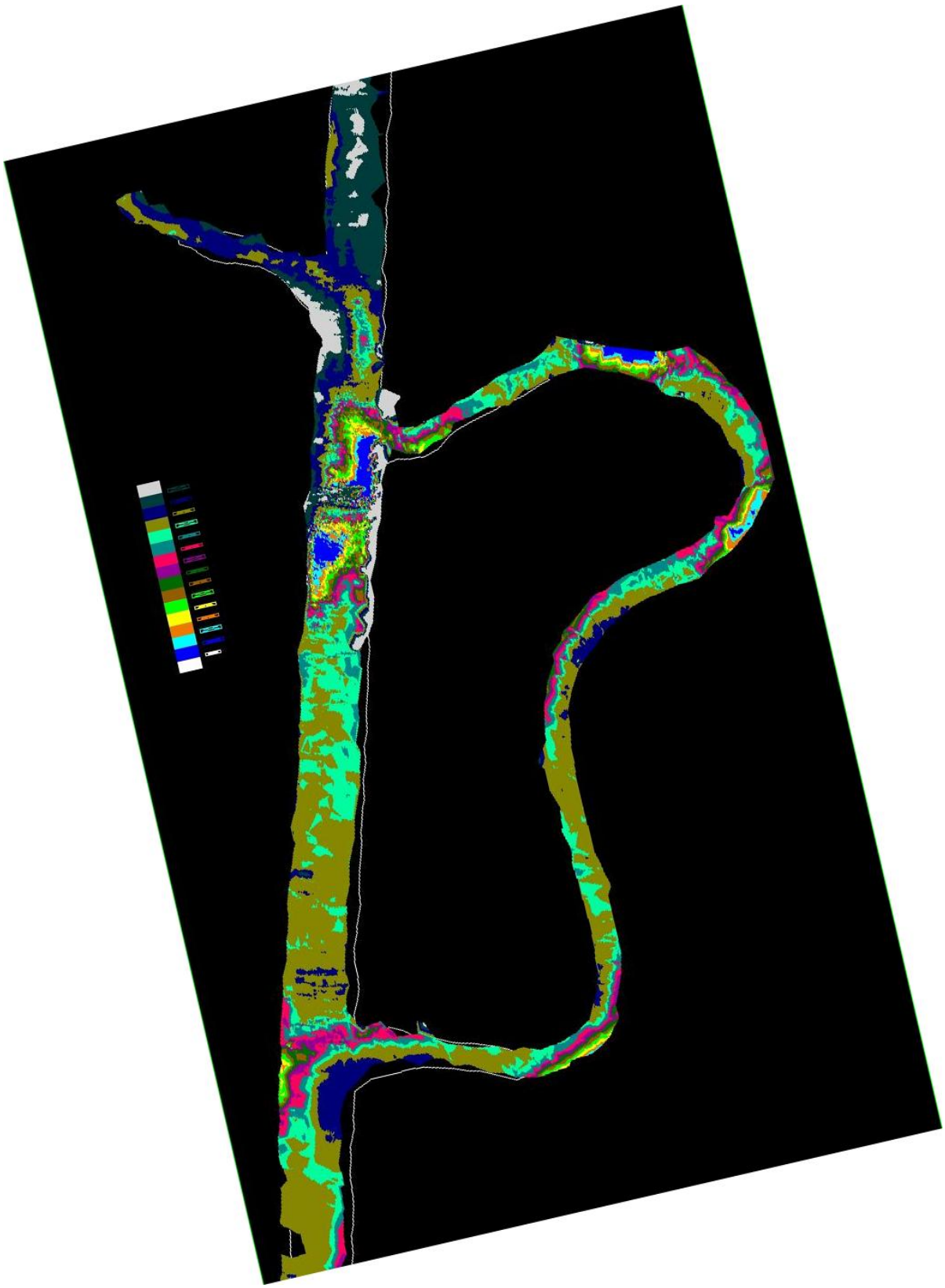

Figure 5. Model Alternative Bathymetry (Meander #1 reach).

the weir and limit scour downstream of a closure weir. Prototype response under project conditions should not result in the depth or extent of scour observed in the model.

Flow exiting the lower end of the restored meander channel and re-entering the canal caused scour on the opposite canal bank. Model bathymetry indicates that scour depths of 4-6 feet may occur along the canal bank directly opposite the meander channel exits. This scour extended downstream approximately 1 meander channel width downstream of a line projected from the downstream most meander bank—a total distance of approximately 2 meander channel widths.

9. Interpretation of Model Test Results

In the interpretation and evaluation of the results of the tests conducted, it should be noted that the results of these model tests were qualitative in nature. Any hydraulic model, whether physical or numerical, is subject to biases introduced as a result of the inherent complexities that exist in the prototype. Anomalies in actual hydrographic events, such as prolonged periods of high or low flows, are not reflected in these results, nor are any unknown, complex physical phenomena, such as the existence of underlying non-erosive variables.

This model study is intended only to serve as a tool for the engineer to guide in accessing the general trends that could be expected to occur in the actual river from imposed alternative features. Measures for final design may be modified based on engineering knowledge and experience, real estate and construction considerations, economic and environmental impacts, and any other special requirements.

10. Conclusions

The model response for the project alternative agreed with anticipated trends expected within the meander channel. Observed scour in the vicinity of the closure weir, while exaggerated in the model, reinforced the requirement for adequate structure design to the design team and to the local sponsors.

The model also highlighted the potential for scour on the canal bank opposite the meander exits. Because of distortions in the model, prototype scour depths are expected to be less and the extent of scour along the bank would be more than observed in the model. Previously, the alternative plans did not have any provision for bank protection. Model trends in the meander exit area strongly suggest that a minimum level of bank or at least toe protection should be included in restoration plans. It is recommended that a minimum riprap toe protection at 4 tons/linear foot be included at all locations immediately across from the meander outlets. The toe protection should extend from opposite the upstream bank (in reference to canal flow direction) of the meander channel and downstream for approximately three times the meander width. The rate of riprap placement and its extent will depend on the angle between the canal and the restored

meander exit. The reach considered in this investigation had a 90 degree angle between canal and meander exit. The ultimate need for riprap toe protection at meander outlets also depends on adjacent landowner requirements. If channel migration is determined to be acceptable then no protection will be necessary. Additional right-of-way may be acquired to accommodate natural bank adjustment in lieu of adding additional riprap features.

FOR MORE INFORMATION

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APPENDIX D-2

HYDRAULICS, HYDROLOGY, and SEDIMENTATION

Meander Restoration At Six Meanders on Lower Seven Miles of Cache River
Cache River 1135 Study

11Sep2009 DRAFT
13Oct2009 Revision
04March2010 Revision #2
15December2010 Revision #3
04January2011 Revision #3b

1. Background.

The lower portion of the Cache River was channelized in the early 1970's. The excavated channel extends from the mouth upstream to the confluence of the historic Cache and Bayou DeView channels. The excavated channel utilized part of the historic Cache River channel and cut-off several meanders. Project construction reduced the natural channel length from approximately 10 miles to seven miles. Closure plugs were constructed at the upstream end of the cut-off meander channels. The severed meander channels remain connected to the excavated channel on their lower ends. Some limited deposition has occurred in the channelized reach since construction. Some areas within the historic meanders have experienced significant deposition over this same period.

The Authorized Project design conditions were determined from the 1973 Cache River Basin Project Report EIS and related appendices. The Authorized Project design included a channel to provide a 0.10 probability of occurrence level of protection during the crop season. This plan included use of a number of cut-offs to provide efficient evacuation of flood waters.

The 0.10 probability of occurrence crop season flow used for design of the Authorized Project channel was based on the Drainage equation,

$$Q = C\, m^{5/6}$$

Where Q is the discharge in cubic feet per second, m is the drainage area in square miles, and C is a coefficient that depends on the desired level of protection. The Authorized Project used a value of 55 for C to compute the 0.10 probability of occurrence during the crop season flow.

The drainage area at the outlet of the Cache River is approximately 2025 square miles. The drainage area at the confluence of Bayou DeView, the beginning of the current 1135 project reach, is 2000 square miles. Using a value of 55 for C and this area results in a $Q_{10\text{-yrCS}}$ = 30,990 cfs.

The Authorized Project water surface profile and design bottom grade from the Cache River Basin Project report are shown in Table 1.

The Authorized Project channel had a 270 ft. bottom width with 2H:1V side slopes.

Table 1. Authorized Project Data

River Mile (Along Design Channel)	Design Grade	Water Surface Elevation
0.5	144.0	172.0
13.9	150.5	172.4

2. HEC-RAS Models.

A. Basic Methodology. Steady flow boundary conditions were used in all HEC-RAS models. The Authorized Project flow computed from the drainage equation was the focus of modeling. This discharge provided the baseline condition used in comparing alternatives. Additional steady flow discharges used in the HEC-RAS models included the 99.0, 50.0, 20.0, 10.0, 4.0, 2.0, 1.0, and 0.2 percent chance exceedence annual frequency flows. The annual frequency flow values were taken from a calibrated HEC-1 model developed for the Cache River and Bayou DeView basins in 1988. Starting water surface elevations for backwater runs were specified for each discharge based on corresponding frequency elevations for the White River at Clarendon, AR. A table of flows and starting water surface elevations are included in the Appendix. Specifically, the Authorized Project analysis included an evaluation of both backwater and headwater conditions. Headwater simulations for the Authorized Project flow assumed a normal depth water surface at the lowest cross-section near Clarendon. Backwater simulations for the Authorized Project flow assumed a starting water surface equal to the 10 percent chance flood elevation at Clarendon which was the same elevation used in the 1973 study. Other low flows were used in evaluating channel behavior when designing weir elevations. Normal depth was assumed for the low flow analysis. Potential impacts from project implementation were evaluated against an array of flows with the Authorized Project condition serving as the benchmark. In other words, the project was analyzed so that there was no permissible increase in water surface elevations for the Authorized Project. Other, lower water surface profiles were permitted to have minor increases, principally local in nature, with project features.

Channel roughness for the canal was represented by a Manning's value of 0.03, the same value used in the 1973 study. This value was used for all models and was consistent with data for a wide channel. A Manning's value of 0.035 was used in the meanders where channels were much narrower and had greater roughness effects due to the presence of trees at the banks. Alternative 3 used Manning's n of 0.045 in the filled canal to simulate the development of vegetation on the fill over time.

New channel surveys obtained in 2007 defined the channel geometry. Overbank extensions were developed from USGS 10-meter Digital Elevation Models (DEM). A previous HEC-2 model provided insight in determining flow paths and basin extents. The existing conditions model started at the confluence of the White and Cache Rivers and extended to approximate river mile 6.93, above the improved reach. Low elevations in the overbanks, particularly the remnant meander channels, were treated as ineffective

flow areas because they would not actively convey flow. Many such areas are backwater storage areas separated from the main flow on their upstream boundary. The existing conditions model did not consider conveyance in the remnant meanders because earthen closures separated the improved channel from the historic meanders. Where meander and dug channels shared a single cross-section's overbank, each primary flow path was separated by truncating the section on the common or shared side. The truncation generally occurred near the dug channel's bank with the remainder of the shared floodplain being included with the meander channel's conveyance. Where the truncation was made, the RAS model automatically extended the cross-section vertically. Where two primary flow paths existed in a reach, the flow optimization option in RAS was utilized to balance flow based on energy computations. For comparison, the optimization option using momentum for computing flow balances was considered separately.

The need for closures in the existing canal was evaluated based on the principle that a certain amount of flow would be required in the restored meanders to maintain their planform and hydraulic geometry given sediment loads that enter the reach. Geomorphology texts report that the 67.0 to 50.0 percent flood (1.5 to 2 year frequency) flow defines the channel forming discharge which is required to maintain natural channels. The bankfull capacity in each of the six meanders considered for this study was less than the 99.0 percent flood discharge. Therefore, bankfull capacity for each meander reach was approximated using HEC-RAS and an array of discharges to estimate the amount of flow required to maintain those channels. Flows up to the bankfull capacity are required to maintain adequate sediment movement through the meanders. Closure elevations were set using a trial procedure in HEC-RAS to divert all flow up to the estimated bankfull capacity to the meanders.

B. <u>Scenarios Considered.</u>

1. Existing Conditions
2. Authorized Project Conditions
3. Alternative 1—restoration of meanders 1, 2, 3, 4, 5, 6 with no closures
4. Alternative 2a—restoration of meanders 1, 2, 3, 4, 5, 6 with closures
5. Alternative 2b—restoration of meanders 1, 3, 5, 6 with closures
6. Alternative 2c—restoration of meanders 1 2, 3 with closures
7. Alternative 3—restoration of meanders 1, 2, 3, 4, 5, 6 with canal filled
8. Alternative 4—restoration of meanders 1, 2, 3, 4, 5, 6 with culvert through plugs with closures

i. <u>Existing Conditions (2007).</u> The Existing Conditions model was developed using the 2007 channel surveys to define the geometry. Downstream boundary conditions were defined by normal depth for low-flow simulations and by backwater elevations for higher, frequency flow simulations. For frequency flow runs, the starting water surface was taken as the corresponding frequency elevation for the White River (10.0 percent chance flood flow on lower Cache River used a starting water surface taken from the 10.0 percent chance flood profile on the White River). Plate 1 shows the channel alignment

for Existing Conditions. Plate 2 shows the water surface profile for the Authorized Project discharge, Q = 30,990 cfs.

ii. Authorized Project Conditions. The Authorized Channel was superimposed over the existing conditions geometry by use of the channel improvement template in HEC-RAS. The centerline of the 270 ft. bottom width trapezoidal channel was centered between the surveyed top bank stations. The bottom grade of the Authorized Channel was set according to the design profile. Plate 1 shows the channel alignment for the Authorized Project Conditions model. The water surface profile for the Authorized Project Conditions is shown on Plate 3.

iii. Alternative 1. Alternative 1 involved meander restoration at six locations in the lower 7 miles of the improved channel. This alternative consisted of removing the earthen closures at the upstream ends of the remnant channels. This alternative did not include any structures within the canal to divert flow to the meanders. Plate 4 shows the channel alignment for Alternative 1. The water surface profiles for the Authorized Project discharge of 30,990 cfs; Q = 7,000; and Q = 3,000 cfs with alternative geometry are shown in Plate 5 for the canal and Plate 6 for the meander channel. This alternative did not achieve a sufficient level of flow in the restored meanders to maintain the channel. Geomorphology relationships indicate that the channel forming discharge is required to maintain proper sediment movement through a channel. This alternative failed to provide the level of flow needed to meet this requirement.

iv. Alternative 2a. Alternative 2a involved meander restoration at the same six locations from Alternative 1 and included constructing closure weirs across the canal just downstream of them to divert flow back to the historic planform. The weir crest elevations were designed to divert the maximum amount of flow up to the bankfull capacity in the historic channels without increasing water surface elevations above the Authorized Project water surface profile. Individual weir elevations were set based on the elevation of adjacent ground and the general topography across the floodplain. Weir crest elevations were established by a trial procedure to achieve bankfull flow in each restored meander. Table 2 shows estimated weir elevations for each of the seven closure weirs. Plate 7 shows the channel alignment and closure weir locations for Alternative 2a. Water surface profiles for the Authorized Project discharge of 30,990 cfs; Q = 7,000 cfs, and Q = 3,000 cfs for Alternative 2a are shown in Plate 8 (canal), and Plate 9 (meander).

vii. Alternative 2b. Alternative 2b, the plan selected by the PDT, was developed after analyzing other alternatives to aid in achieving the best-value alternative. This alternative considered restoring flow to 4 of the six original meanders described in the Project Study Plan (PSP). Meanders 1, 3, 5 and 6 were included in this analysis. The results from other alternative analyses supported use of closure weirs to divert flow to the restored channels. Therefore, Alternative 2b only considered use of weirs; there was no analysis using fill in the canal. The HEC-RAS model developed for analyzing Alternative 2 (Plate 15) was modified to remove meanders 2 and 4 with related closure weirs for this alternative. No changes were made in closure weir elevations from those shown in Table 2. Restoration features for this alternative included five closure weirs.

Table 2. Estimated Closure Elevations Required to Achieve Bankfull Flow in Restored Meander Channels.

Closure Weir ID	Meander	Target Weir Elevation to Obtain Bankfull Flow in Meander Channel
1	M1	160.5
2	M2	159.75
3*	M3	160.0
4*	M3	160.0
5	M4	158.5
6	M5	158.0
7	M6	158.0
*** M3 requires two closure weirs across the canal to maintain desired flow in meander channel. There is a connecting channel between M3 and the canal about mid-way of the reach. The close proximity of the meander to the canal precludes use of bank protection to ensure long-term separation of the two channels.**		

There was no appreciable change in projected water surface elevations from Alternative 2. Water surface profiles are shown in Plate 16 (canal), and Plate 17 (meander).

vii. Alternative 2c. Alternative 2c was developed after considering sponsor input and funding availability. This alternative considered restoring flow to 3 of the six original meanders described in the Project Study Plan (PSP). Meanders 1, 2, and 3 were included in this analysis because of constructability issues—Construction of the upper 3 meander restoration features would allow future access up the Cache River canal for additional restoration work should sponsors obtain funding beyond the present 1135 project. The results from other alternative analyses supported use of closure weirs to divert flow to the restored channels. Therefore, Alternative 2c only considered use of weirs; there was no analysis using fill in the canal. The HEC-RAS model developed for analyzing Alternative 2a was modified to remove meanders 4, 5 and 6 with related closure weirs for this alternative. No changes were made in closure weir elevations from those shown in Table 2. Restoration features for this alternative included four closure weirs. There was no appreciable change in projected water surface elevations from Alternative 2 in the reach between Meanders 1 to 3.

v. Alternative 3. Alternative 3 involved meander restoration at the six locations by removing the earthen closures at the upstream ends of the remnant channels and filling the canal adjacent to the restored meanders. The fill elevations used for this alternative were the same as the weir crest elevations developed for Alternative 2. Because vegetation would begin to develop across the filled canal section during summer low-flow months, the Manning's roughness coefficient was increased to consider the long-term effects on water surface profiles. Plate 10 shows the channel alignment and fill locations for Alternative 3. Water surface profiles for the period immediately following project construction in the canal are shown on Plate 11; profiles for the meander channel is shown on Plates 12. Water surface profiles that include the effects of vegetation

growth on the fill over the project life are shown on Plates 13 and 14 for the canal and meander, respectively. The Manning's n value used following construction was 0.03 for the canal with 0.035 for the restored meanders. A higher Manning's n of 0.045 was used in the canal to account for increased vegetation growth on the fill expected over the project life. The projected vegetation growth on the fill had minimal effect on computed water surface profiles at the Authorized Project discharge.

vi. Alternative 4. Alternative 4 evaluated restoring flow to meander channels by placing a culvert through the earthen closures at the upstream ends of the remnant channels and weirs across the canal to divert the flow. Because the construction of culverts through the embankment will require a large amount of disturbance of the area, there was no foreseeable advantage of this option over removing the embankment. An additional consideration was the fact that culvert structures would require continual maintenance to remove debris. No HEC-RAS run was made for this alternative.

C. Estimated Velocity in Restored Meander Channels. Estimates of aquatic and other environmental benefits for with project conditions required estimates of velocity expected in the restored meander channels. Hydrologic data were not available to permit calculation of flow durations in the study reach, and the study reach is heavily influenced by backwater from the White River for long periods of time. Additional consideration must be given for periods when there is zero net outflow from the Cache River: typically, there is no outflow from the Cache River or Bayou DeView during the late summer months. For these reasons, steady flows were used to provide an estimate of velocities that would be probable in the meander channels following restoration. Probablity of occurrence for each steady flow analyzed was not determined due to the lack of hydrologic data and the coincidental effects from the White River.

Velocities (Table 2) were estimated for steady flow simulations in HEC-RAS using a series of discharges. Discharges ranged between 200 cfs and the authorized project flow of 30,990 cfs. The Profiles evaluated included I0200, I0500, I1000, I2000, I2250, I3000, I-4000, I-5000, I-6000, I-8000, and I-APbw which is the Authorized Project condition with backwater effects from the White River. Each profile name contains the discharge used for computations (I0200 is a steady flow of 200 cfs, etc). Bankfull flow in the meander channels was estimated to be approximately 2,000 to 3,000 cfs depending on location. Estimated bankfull flow was less than the 99 percent chance flood level (less that the 1.05 year frequency event). Some of the discharges evaluated were below target closure weir elevations associated with each meander reach. For these lower discharges the majority of flow would remain in the meander with flow in the existing channel limited to the amount of seepage through the closures. For this case, the existing canal segments would be characterized as a slack-water environment with no perceptible velocity. Closure weir elevations were set to divert flows up to the bankfull level to the restored meanders.

The meanders would experience velocities between 0.1 ft/sec to 1.9 ft/sec for the discharges analyzed.

Table 2 Estimated Velocity in Restored Meander Channels

RAS Plan	River	Reach	Profile[1]	Average Velocity (fps) for Meander # 6
05	Meander # 6	Reach	I0200	**1.0**
05	Meander # 6	Reach	I0500	**1.3**
05	Meander # 6	Reach	I1000	**1.3**
05	Meander # 6	Reach	I2000	**1.0**
08	Meander # 6	Reach	I2250	**1.3**
08	Meander # 6	Reach	I3000	**0.4**
08	Meander # 6	Reach	I-4000	**0.4**
08	Meander # 6	Reach	I-5000	**0.4**
08	Meander # 6	Reach	I-6000	**0.5**
08	Meander # 6	Reach	I-8000	**0.5**
08	Meander # 6	Reach	I-APbw	**0.8**

RAS Plan	River	Reach	Profile	Average Velocity (fps) for Meander # 5
05	Meander # 5	Reach	I0200	**0.1**
05	Meander # 5	Reach	I0500	**0.3**
05	Meander # 5	Reach	I1000	**0.6**
05	Meander # 5	Reach	I2000	**0.9**
08	Meander # 5	Reach	I2250	**0.8**
08	Meander # 5	Reach	I3000	**0.7**
08	Meander # 5	Reach	I-4000	**0.6**
08	Meander # 5	Reach	I-5000	**0.6**
08	Meander # 5	Reach	I-6000	**0.6**
08	Meander # 5	Reach	I-8000	**0.7**
08	Meander # 5	Reach	I-APbw	**0.7**

RAS Plan	River	Reach	Profile	Average Velocity (fps) for Meander # 4
05	Meander # 4	Reach	I0200	**0.2**
05	Meander # 4	Reach	I0500	**0.6**
05	Meander # 4	Reach	I1000	**1.1**
05	Meander # 4	Reach	I2000	**1.9**
08	Meander # 4	Reach	I2250	**1.6**
08	Meander # 4	Reach	I3000	**1.3**
08	Meander # 4	Reach	I-4000	**1.0**
08	Meander # 4	Reach	I-5000	**0.9**
08	Meander # 4	Reach	I-6000	**0.7**
08	Meander # 4	Reach	I-8000	**0.9**
08	Meander # 4	Reach	I-APbw	**1.3**

[1] Profile name includes the Discharge: Profile I0200 has Q=200 cfs; I3000 has Q=3,000cfs, etc. The Authorized Project Profile, I-APbw had Q=30,990cfs with a specific starting water surface.

Table 2 Estimated Velocity in Restored Meander Channels (Continued)

RAS Plan	River	Reach	Profile	Average Velocity (fps) for Meander # 3
05	Meander # 3	Main	I0200	**0.2**
05	Meander # 3	Main	I0500	**0.6**
05	Meander # 3	Main	I1000	**1.1**
05	Meander # 3	Main	I2000	**1.9**
08	Meander # 3	Main	I2250	**1.8**
08	Meander # 3	Main	I3000	**1.5**
08	Meander # 3	Main	I-4000	**0.7**
08	Meander # 3	Main	I-5000	**0.7**
08	Meander # 3	Main	I-6000	**0.7**
08	Meander # 3	Main	I-8000	**0.7**
08	Meander # 3	Main	I-APbw	**0.8**

RAS Plan	River	Reach	Profile	Average Velocity (fps) for Meander # 2
05	Meander # 2	Reach	I0200	**0.2**
05	Meander # 2	Reach	I0500	**0.3**
05	Meander # 2	Reach	I1000	**0.5**
05	Meander # 2	Reach	I2000	**1.0**
08	Meander # 2	Reach	I2250	**1.1**
08	Meander # 2	Reach	I3000	**1.2**
08	Meander # 2	Reach	I-4000	**1.1**
08	Meander # 2	Reach	I-5000	**1.1**
08	Meander # 2	Reach	I-6000	**1.0**
08	Meander # 2	Reach	I-8000	**1.0**
08	Meander # 2	Reach	I-APbw	**1.1**

RAS Plan	River	Reach	Profile	Average Velocity (fps) for Meander # 1
05	Meander # 1	Reach	I0200	**0.2**
05	Meander # 1	Reach	I0500	**0.4**
05	Meander # 1	Reach	I1000	**0.7**
05	Meander # 1	Reach	I2000	**1.2**
08	Meander # 1	Reach	I2250	**1.5**
08	Meander # 1	Reach	I3000	**1.6**
08	Meander # 1	Reach	I-4000	**1.5**
08	Meander # 1	Reach	I-5000	**1.2**
08	Meander # 1	Reach	I-6000	**1.2**
08	Meander # 1	Reach	I-8000	**1.2**
08	Meander # 1	Reach	I-APbw	**1.4**

3. Closure Structures. Based on HEC-RAS analysis, a means to divert water from the canal to the restored channel was necessary. Several methods for constructing diversion features were considered. The US Fish and Wildlife Service and Arkansas Game and Fish had asked if geo-tubes of other "soft" structures could be utilized. These were evaluated on a cursory basis using the following criteria:

A. Constructability
B. Ability to provide degree of flow control necessary, and
C. Stability—both short-term and long-term

It was determined that geo-tube construction would not be feasible due to a lack of nearby material that would be suitable to fill them. There would also be an issue of access for future maintenance.

Use of wood/timber structures would not achieve the level of flow control necessary because of their porous structure. The width of the existing canal also raised questions about long-term stability of wood structures. Use of local materials such as snags and standing trees was not considered viable because of the wide channel. Additionally, construction of timber pile structures would require a longer construction period than riprap placement. Initial plans included site access by water which provided limited times when draft depths were sufficient to move equipment and materials by barge.

The only methods deemed suitable for constructing closures were use of riprap weirs or placement of fill within the canal.

Placement of fill would require filling the entire canal between the upstream end of the meander and its downstream return to the elevations shown in Table 2. Selection of the fill alternative required no additional hydraulic analysis.

Selection of the riprap closure weir alternative involved additional hydraulic computations to size the riprap and to develop the best weir configuration to fit project requirements. The elevations shown in Table 2 were also used in analyzing riprap closure weir configurations.

Weirs were evaluated on standard criteria for rock weirs and using dike design information taken from the Mississippi River Channel Improvement Program. Basic riprap requirements were determined from HEC-RAS velocity data and MVD standard riprap gradations. The focus of this project was environmental restoration and there were no public features that would be jeopardized in the event of structure failure. Experience with riprap training structures on the Mississippi River indicated that should failure occur, it would not be catastrophic with complete, and immediate failure of the structure over its entire length. For this reason it was recommended that this study consider a matrix of possible solutions. Selection of the final weir configuration was to use a risk-based approach where the risk of failure, initial construction costs, and operation and maintenance costs were considered.

Riprap weir closure configurations included the following primary options.

Table 3. Closure Weir Configurations

Primary Option	Crown Width, ft.	Upstream Slope	Downstream Slope	Downstream Apron Length, ft
Option 1	20	1V:6H	1V:20H	50
Option 2	10	1V:6H	1V:20H	50
Option 3	20	1V:6H	1V:6H	50
Option 4	10	1V:6H	1V:6H	50
Option 5	20	1V:1.5H	1V:1.5H	50

Each of the options shown in Table 3 had additional consideration for riprap thicknesses of 4 feet, 6 feet, and 8 feet. Each option could be constructed with or without key trenches. In total, a matrix of possible combinations included 30 options. The Project Delivery Team developed parametric costs for each possible configuration including initial construction cost and O&M costs. Each option utilized R2200 riprap and a standard overbank key and bank tie (Plate 18). Riprap placement also included a two part filter, 9-inches of crushed limestone and 18-inches of R90 Riprap. The bank tie utilized vegetative features to stabilize areas disturbed during construction and to minimize the risk for structure flanking. The bank tie includes a riprap bank key that extends from the bottom of the channel rock placement to top bank and extends landward at least 10 feet beyond top bank. There is also provision for a vegetative dike that consists of multiple rows of willow and cottonwood whips planted closely together in parallel trenches; the trenches are angled slightly toward the upstream as they depart from the channel to deflect currents away from the channel.

Estimates for long-term O&M for the closure weirs were developed from a similar structure on the Mississippi River. Table 5 shows historical data for the Mississippi closure dike at River Mile 824. The Mississippi River structure at RM 824 was the only structure found with cost and quantity data that could be used to estimate O&M. Because the Mississippi River structure matched the Option 5 configuration, the calculated annual O&M of 2.5% /per year of original was reduced for Options 1 through 4. The reduced annual O&M considered the larger quantity of stone and flatter slopes provided by Options 1 through 4. The key referenced in Table 4 is the standard Type “E” end protection shown on Plate 19.

Table 4. Risk Assessments with O&M Estimates for Parametric Cost Matrix

	OPTION 1		OPTION 2		OPTION 3		OPTION 4		OPTION 5	
	w/key	w/o key	w/key	w/o key	w/key	w/o key	w/key	w/o key	w/key	w/o key
Annual Maintenance % original/year	0.05	0.1	0.15	0.2	1	1.5	1.25	1.75	2	2.5
Risk Assessment	Lowest Maintenance Least risk of failure	Low Maintenance Low Risk of failure	Minimal maintenance Minor Risk of failure	Minor Maintenaince Minor Risk of failure	Moderate Maintenance Minor Risk of Failure	Moderate Maintenance Moderate Risk of Failure	Moderate Maintenance Moderate Risk of Failure	Moderate Maintenance Moderate Risk of Failure	Relatively High Maintenance High Risk of failure	Greatest Maintenance Highest Risk of failure

Table 5. Operation and Maintenance Cost Estimate for Closure Weirs

Location: RM 824 L Mississippi River

	Year	Riprap Quantity, Tons		% of Original	Years from Construction	% per Year
		Dike	Bank Head			
Construction	1968	220482	10253			
Repairs	1970	46494	3091	21.49	2	10.75
Repairs	1979	12584		5.45	10	0.55
Repairs	1982	5214		2.26	4	0.56
Last recorded repair	1992	8663		3.75	11	0.34
	2008	0		0.00	17	0.00
Average rate of stone replacement (percentage per year based on original quantity and repair history)						2.44

This structure had a 20 ft. crown width except the riverward 300 feet had a 14 ft. crown. The dike tied into an island and effected flow control for the chute channel. The height of the dike was close to the island's elevation.

The structure at RM 824L serves to restrict flow down the side channel up to an elevation where the island submerges. This is similar to conditions for the Cache River 1135 closure weirs. Therefore, maintenance associated with this structure will be used to define maintenance requirements for the "dike" weir configuration which is Option 5.

4. <u>Bank Protection.</u> Results from the micro model indicated that flow exiting from the meander outlet would impinge on the opposite canal bank. This would cause erosion along the opposite bank for some distance downstream of the point of confluence. Two

options were considered for addressing the potential bank erosion; add riprap bank and/or toe protection in the affected areas or purchase additional right-of-way to accommodate natural bank migration. Either approach required an estimate of impacted area.

Unfortunately, there are no guidelines for estimating bank migration rates for similar situations. Intuitively, flow that impinges on a bank at 90 degrees has greater potential (severity) for eroding the bank while lower degrees of impingement would have lower potential. The actual distance along the bank where attack occurs is also unknown. Observations from the micro model and past experience suggest that using a multiplier of channel width would be appropriate. Values estimated in this way were also compared to available bank migration data for the area.

There were two areas within the present study reach that showed bank adjustment since canal construction. These locations were within the M2 and M5 reaches of the canal. Assuming that construction was in 1973, the amount of recession occurred over 37 years. The rate of migration for the M2 location was estimated by 125' divided by 37 years = 3.4'/year. The rate of migration for the M5 location was estimated by 185' divided by 37 years = 5.0'/year. These two values were used to calculate a minimum (50 years x 3.4'/year = 169') and a maximum (50 years x 5.0'/year = 250') bank adjustment at each area over a 50 year project life. Another estimate for expected bank migration was 3 times the meander channel width. The length of area impacted was estimated as 4 times the meander channel width (Table 6).

Using this methodology the extra right-of-way estimates for each of the 4 impacted areas (Meander 4 exits directly into the restored Meander 5) ranged from a low of 4 up to 7 acres. Because meander channel widths were estimated from remnant channels, there is potential that values are underestimated. Measurements at multiple locations along the meander channels were made to alleviate atypical measurements (Table 7). Nonetheless, the upper two meanders were expected to have a greater amount of sedimentation and thereby lower remnant channel widths. This study recommends using a meander channel width of 150 feet, and minimum extra right-of-way areas of 7 acres for each site.

Riprap toe protection at the rate of 4 tons per linear foot is the recommended structural method for controlling bank migration across from the meander channel outlets. An option to placing riprap would involve acquiring additional right-of-way to accommodate the expected bank migration. The additional right-of-way option would provide aesthetics and function more in keeping with the restoration goal of the study. The additional right-of-way required for the recommended Alternative 5 would equal to approximately 28 acres (7 acres per site times 4 sites); this alternative includes only Meanders 1, 3, 5, and 6. The quantity of riprap required for toe protection with Alternative 5 is 2,180 feet times 4 T/LF = 8,720 tons. Using a unit cost of $39.70/ton for riprap, the cost for providing riprap toe protection is $346,184.

Table 6. Bank Migration Estimates and Extra Right-of-Way at Meander Outlets

Meander No	Consequence	Severity	Project Time Frame: 50 years Projected Bank Movement from above Bank Recession Data		Average Meander width	3 X Average Meander Width	Composite Estimate for MINIMUM real estate (ROW = Length along channel x Width from channel bank)	
							Length, ft	Width, ft
	0 to 1, 1 max	0 to 1, 1 max	Min	Max				
1	1	1	169	250	110	330	440	330
2	1	0.3	169	250	115	345	460	345
3	1	0.5	169	250	135	405	540	405
4	**0**	**0**	169	250	150	450	**NA**	**NA**
5	0.5	1	169	250	150	450	600	450
6	0.5	0.5	169	250	150	450	600	450

Consequence Definitions

1 = private owner

.5 = Fed owner

0 = no impact (subject to restoring meander 5)

Severity Definitions

1 = at or near 90 deg

0.5 = approximately 45 deg

0.3 = approximately 60 deg

0 = no impact (subject to restoring meander 5)

Table 7. Average Meander Width Calculations

FID	Id	Meander_No	Length	X_From_PT	Y_From_PT	X_To_PT	Y_To_PT
0	0	1	113.4522937	2150420.523	12632527.01	2150467.47	12632630.29
1	0	1	108.3853193	2151087.167	12632996.47	2150979.19	12632987.09
2	0	1	107.9778543	2151063.694	12633517.58	2150955.716	12633517.58
3	0	1	99.4786831	2151115.336	12634001.14	2151021.442	12634034
4	0	1	108.3853193	2151429.879	12634282.82	2151397.016	12634386.1
5	0	1	112.8679861	2151866.484	12634400.18	2151833.622	12634508.16
6	0	1	132.5366587	2152110.608	12634972.93	2151988.546	12634921.29
7	0	1	92.23601034	2151213.924	12635348.51	2151237.397	12635259.31
			109.4150156				
8	0	2	130.9473324	2148106.046	12627170.38	2148073.183	12627297.13
9	0	2	104.2390193	2148519.178	12627419.19	2148458.147	12627503.7
10	0	2	109.5986256	2148829.026	12627682.1	2148753.912	12627761.91
11	0	2	119.6915622	2149157.654	12627987.25	2149077.844	12628076.45
12	0	2	109.1956881	2149397.083	12628297.1	2149298.494	12628344.05
13	0	2	123.9433545	2149406.472	12628691.45	2149293.8	12628639.81
14	0	2	102.962575	2149134.181	12628996.61	2149063.76	12628921.49
			114.3683081				
15	0	3	139.5831483	2148908.836	12621935.81	2148861.889	12622067.26
16	0	3	166.1150653	2149284.41	12622194.02	2149171.738	12622316.08
17	0	3	123.9433545	2149589.565	12622442.83	2149514.45	12622541.42
18	0	3	163.9784482	2149800.825	12622705.74	2149650.595	12622771.46
19	0	3	152.9200914	2149927.582	12623020.28	2149782.046	12623067.23
20	0	3	160.4457724	2150059.033	12623438.11	2149908.803	12623494.44
21	0	3	103.3898074	2149566.091	12623973.3	2149561.397	12623870.02
22	0	3	98.70019068	2149115.402	12624039.03	2149110.707	12623940.44
23	0	3	92.23601034	2148650.629	12624114.14	2148627.155	12624024.94
24	0	3	75.69959063	2148279.749	12624179.87	2148242.191	12624114.14
25	0	3	215.9891554	2148472.231	12624362.96	2149195.211	12624419.29
26	0	3	136.4693778	2148993.34	12624855.9	2148904.141	12624752.62
27	0	3	113.6463953	2148702.27	12625161.05	2148613.071	12625090.63
28	0	3	125.9717333	2148397.116	12625630.52	2148284.444	12625574.19
29	0	3	130.9473324	2148232.802	12625940.37	2148106.046	12625907.51
			133.3356982				

Table 7. Average Meander Width Calculations (Continued)

38	0	4	180.3640737	2146796.23	12613433.74	2146908.902	12613574.58
39	0	4	161.6773572	2146505.16	12613809.32	2146650.695	12613879.74
40	0	4	152.9200914	2146359.625	12614189.59	2146505.16	12614236.53
41	0	4	127.1038906	2146251.647	12614682.53	2146378.404	12614691.92
42	0	4	136.4693778	2146303.289	12615025.24	2146425.35	12614964.21
43	0	4	130.4414168	2146495.771	12615264.67	2146561.496	12615152
44	0	4	133.6132003	2146303.289	12614386.76	2146430.045	12614429.02
			146.0842011				
30	0	5	132.7858661	2147345.508	12611297.66	2147364.286	12611429.12
31	0	5	150.0098331	2147674.135	12611058.24	2147814.976	12611109.88
32	0	5	132.2869819	2147890.09	12610494.87	2148007.457	12610555.9
33	0	5	149.1995605	2148566.124	12610546.52	2148429.979	12610607.55
34	0	5	136.8725378	2148763.301	12611006.59	2148636.545	12611058.24
35	0	5	155.2090133	2148913.531	12611424.42	2148758.606	12611433.81
36	0	5	182.308756	2148758.606	12612100.45	2148608.376	12611997.17
37	0	5	216.0067318	2148491.009	12612429.08	2148345.474	12612269.46
			148.3817927				
45	0	6	126.3211702	2144157.82	12607124.09	2144251.714	12607208.6
46	0	6	138.0749551	2144448.89	12606908.14	2144491.142	12607039.59
47	0	6	164.3141261	2144880.801	12607020.81	2144782.212	12607152.26
48	0	6	157.7443555	2145120.229	12607269.63	2144993.473	12607363.52
49	0	6	156.058704	2145275.154	12607424.55	2145162.481	12607532.53
50	0	6	153.4955218	2145444.162	12607673.37	2145303.322	12607734.4
51	0	6	139.5831483	2145481.72	12608063.03	2145350.269	12608016.08
52	0	6	121.8812235	2144786.907	12608617	2144754.044	12608499.63
53	0	6	167.1731338	2143824.498	12608058.33	2143927.781	12608189.79
			147.1829265				

6. <u>Stage Durations for Constructability.</u> Stage duration at Clarendon was considered to represent conditions along the lower seven miles of the Cache River because of backwater effects in this reach. Land access to the meander channels is limited and would require extensive work to build haul roads. The close proximity of the proposed project features to the White River points to use of floating plant to mobilize equipment and for material delivery. Based on the 2007 channel surveys, a controlling bed elevation of 152 was noted as critical for access to the upstream most project features (M1 and Closure weir 1). Allowances for barge drafts of 10 and 15 feet covered the range of depths required. As a result, stage durations by month were developed for the Corps of Engineers gage at Clarendon, AR using target elevations of 162 (152 + 10 feet) and 167 (152 + 15 feet). These are shown in Figure 1.

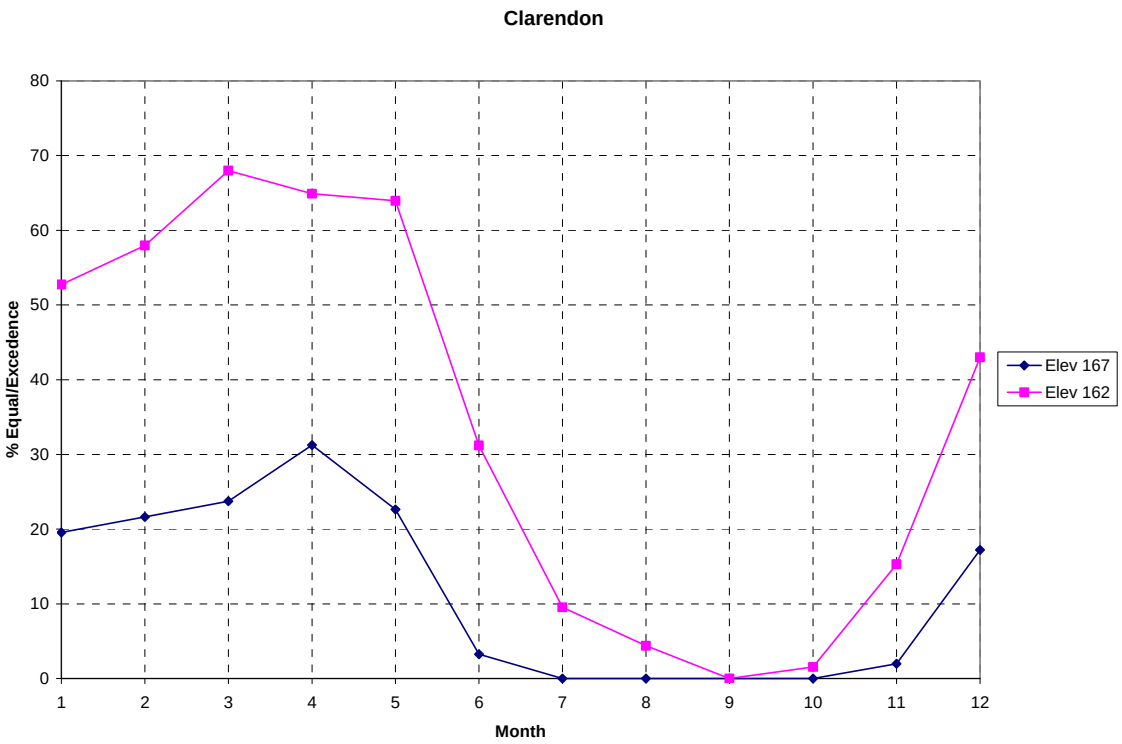

Figure 1. Stage Duration for Clarendon, AR Gage on White River

7. <u>Sediment Assessment.</u> This study included an assessment of sediment transport in the lower Cache River system. The assessment consisted of the following:

A. Adapt the 1992 Cache River HEC-6 model to reflect the reach between mile 0 and 7 where meander restoration is proposed. This was done by extracting geometry, sedimentary, and hydrologic data for the lower 25 miles of the Cache River model and the lower 36 miles of the Bayou DeView model. To facilitate development of inflowing boundary conditions, the upper limit selected for these models included the most downstream gage on each stream. These sections of HEC-6 model were combined into a single HEC-6T model with 3 segments.

B. The HEC-6T model built from 1992 geometry was run through a short simulation period to assess sediment transport through the existing canal. Evaluation of model outputs indicated some computational instabilities and the model was further shortened because of limited information to define the new upstream boundary conditions. The upstream boundary was transferred downstream closer to the point of interest while preserving enough approach distance to allow the model to stabilize boundary irregularities outside the interest reach.

C. Hydrologic data at the final HEC-6T upstream boundary were not available to conduct continuous long-term simulation. To facilitate a qualitative analysis, hydrologic input used the 99.0 and 50.0 percent chance annual flood flows for a specific duration to emulate sediment behavior for an “average” year.

Geomorphologists claim that the 50.0 percent chance, or bankfull, flow is the channel forming discharge, the flow that shapes and maintains the geometry and planform of a stream. According to sediment studies in the St. Francis Basin of Arkansas, a continuous 10 percent chance flood flow for a period of 12.5 days reproduces the sediment transport that could be expected to occur on average. The HEC-6T model will utilize both constant flows equal to the 99.0 and 50.0 percent chance discharges to evaluate system response. The 50.0 percent chance flood discharge will be simulated for two periods of 365 days and 3650 consecutive days (approximately 10 years) to represent average annual sediment response. For comparative purposes the 99 percent chance flood discharge will be simulated for 365 consecutive days to represent the average annual sediment response.

D. No sediment inflow information existed for the HEC-6T model at the upstream boundaries considered for this study. The initial assumption to use the inflowing load from the original HEC-6 model (located at RM 140) was determined to be incorrect. Therefore, an equilibrium sediment inflow condition was assumed for this study. This assumption is supported by the facts that no significant changes in deposition or scour existed within the study reach (evidenced by comparing old surveys to 2007 surveys) and that there was little change in landuse near this reach (much of the area along the channels was within state or federal ownership). HEC-6T was used with the recirculation option to calculate equilibrium sediment inflows for the Cache and Bayou DeVew boundaries. The recirculation option was performed for the upper Cache at RM 15.97 and for Bayou DeView at RM 36.7. Once the load was estimated and tested in the multi-reach model, a composite load was developed just below the confluence of the upper Cache and Bayou DeVew channels. The sediment inflow load is shown in Figure 1. The final HEC-6T models utilized only a single reach of the lower 7 miles. The first model simulated the existing condition, channelized alignment with the 2007 surveys. The second model simulated the restored condition as if all flow were to follow the meander channels.

    a. The HEC-6T model was updated to reflect existing conditions—flow in the existing canal with no restoration. Sedimentary data were updated with gradations from bed material samples taken in 2007. Because long-term hydrologic information was not available, constant flows were used to mimic average water and sediment routing through the reach. The HEC-6T model was then used to evaluate the existing, baseline condition. Simulation results over a ten year test period indicated that the channel is relatively stable with some areas experiencing deposition and others degradation. Although scour and deposition trends varied slightly between historical data and model results, the general trends were consistent (Figure 2). Because actual hydrology was different than represented by a constant 50.0 percent chance flood flow, the minor differences between historical and model trends were considered

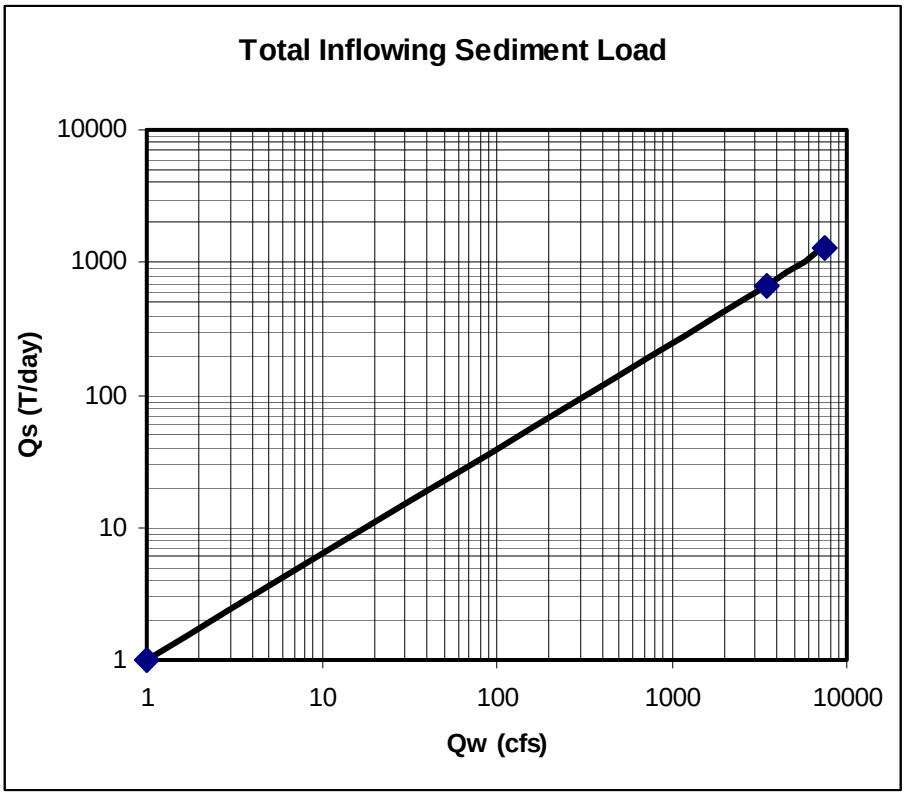

FIGURE 1 Total Sediment Load for Cache River, AR Study

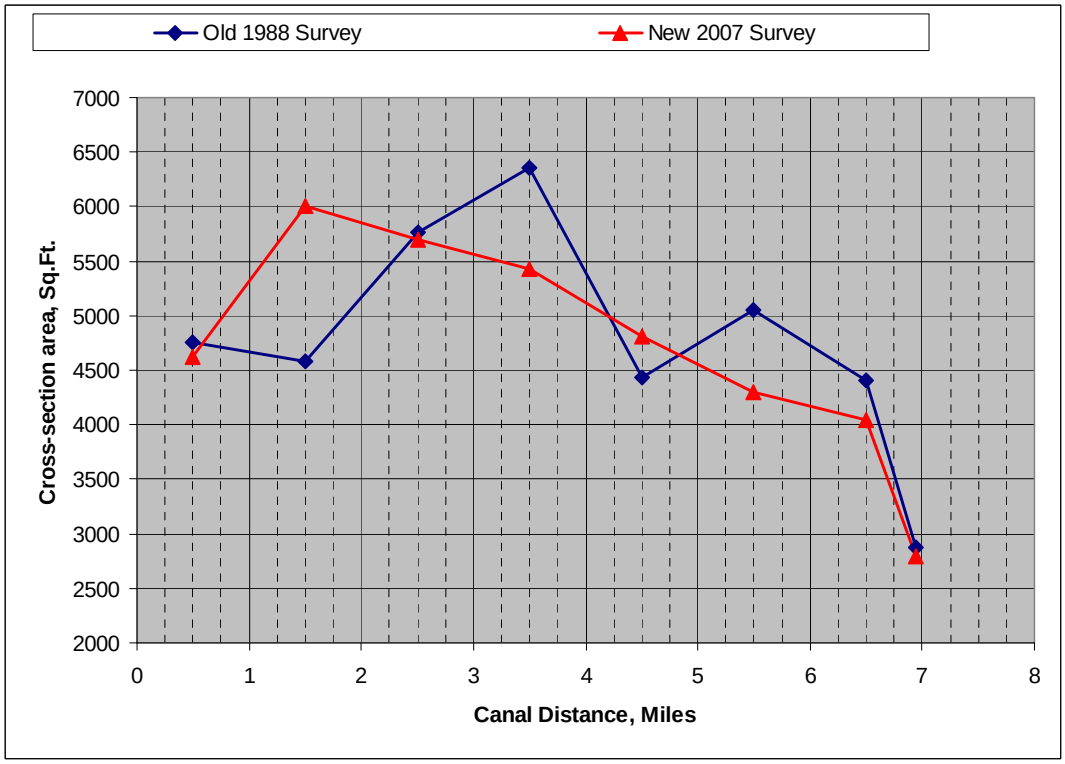

FIGURE 2 Comparison of 1988 and 2007 cross-section areas in lower 7 miles of Cache River, AR.

acceptable in assessing future project channel response. The existing conditions model was determined to be adequate for base line comparisons with the selected project alternative.

b. The model geometry was then modified to reflect restoration of the meander channels. The existing canal was not included as a main conveyance in this model to simulate a theoretical scenario where all flow and sediment would be routed through the meander channels. This scenario provided insight into the competency of the meanders to maintain their shape if flow and sediment were reintroduced to them. The inflowing sediment load from the existing conditions model was used as input to the meander only model. Simulated hydrology consisted of the same constant flows used for assessing the existing conditions sediment response.

c. Model projected bed change was minor with the exception that deposition will occur upstream of Closure Weir #1. Upstream of this weir, approximately 2-3 feet of deposition was calculated using the constant flows over the 5 year simulation. This amount of deposition provided an extreme estimate because actual hydrographs will experience considerable variability above and below the bankfull flows used in the HEC-6T model. Even with the 2-3 feet of deposition shown in model simulations, projected increases in water surface elevations were negligible[2] (> 0.01 ft) upstream of the project features.

E. Results from the sediment assessment indicate that sedimentation will not create maintenance concerns for the selected alternative. Historical changes in channel geometry within the excavated canal have been relatively minor which indicates that sediment loads to the reach are not excessive. The assessment shows that channel competence for the meander restoration alternative will be sufficient to convey sediments without significant deposition or scour. While no multi-dimensional modeling was conducted, channel behavior of the meandering channel will tend to scour in bends and to form natural point bar deposits. This behavior is consistent with observed conditions in the Cache River channel upstream of the dug canal.

F. Results from this sediment assessment are qualitative only. Data were insufficient to perform a quantitative analysis of this reach. The analysis identifies that minor deposition may occur in some areas. These depositional trends are consistent with observed historical response within the canal. Deposition upstream of the project features is anticipated. Increases in water surface elevation due to this deposition were evaluated and found to be negligible.

[2] Based on the 95% chance discharge and a discharge approximately 1/3 of the 95% chance discharge which represents a moderately low flow.

PLATES

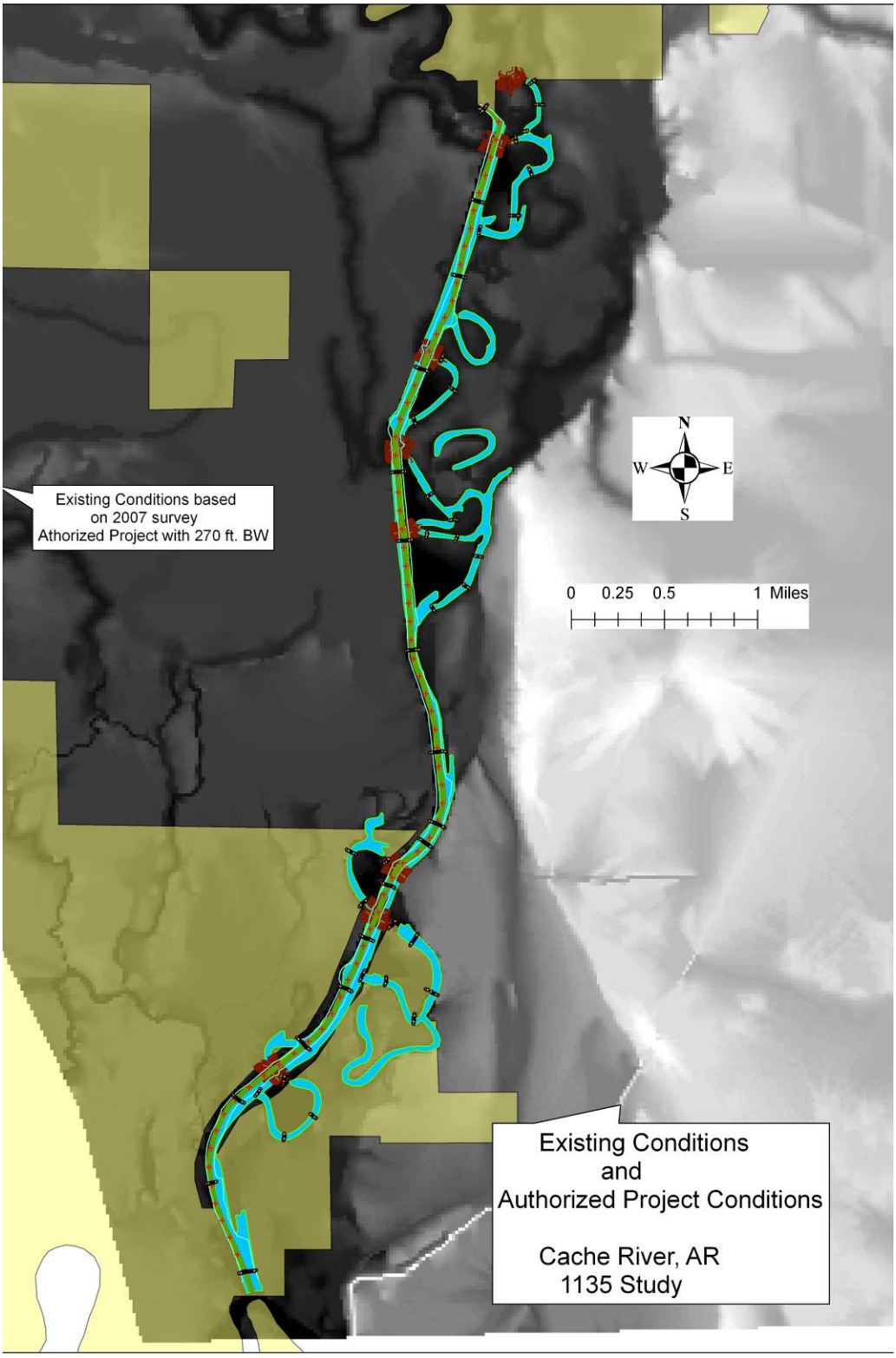

Plate 1. Existing and Authorized Project Alignments

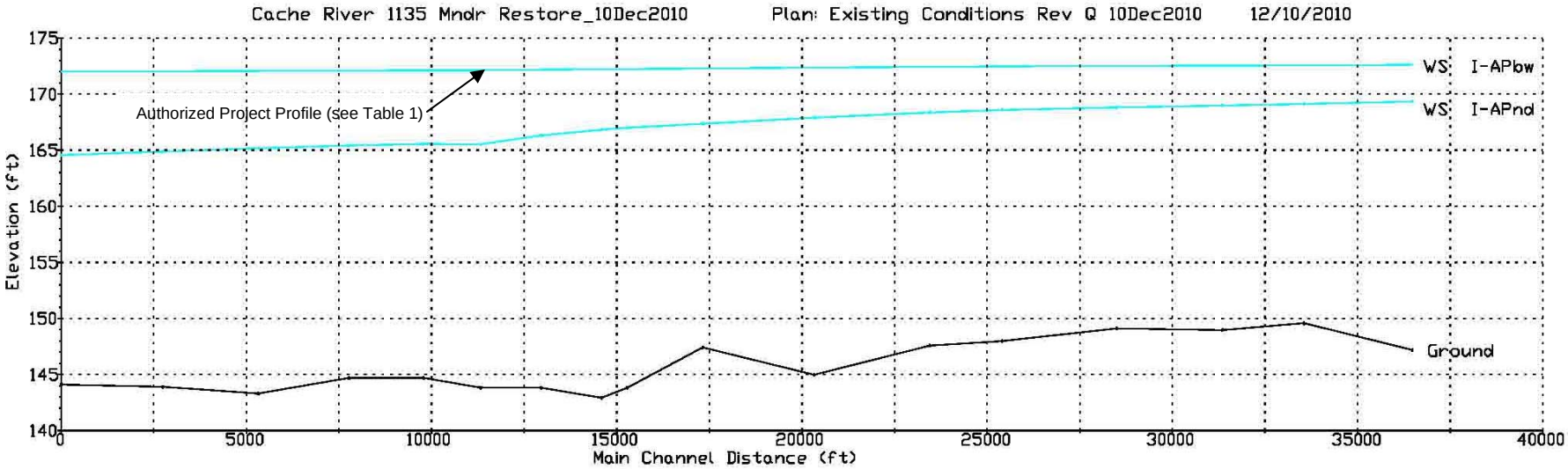

Plate 2. Water Surface Profile for Existing Conditions and Authorized Project Discharge. [I-APbw profile for backwater downstream boundary. I-APnd profile for normal depth downstream boundary.]

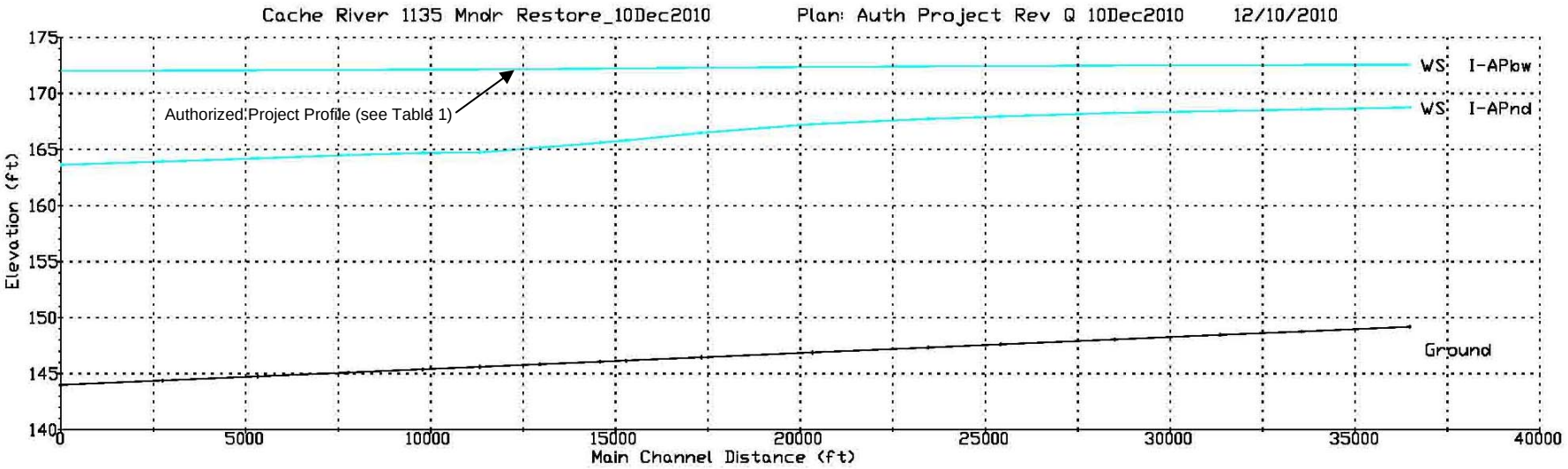

Plate 3. Water Surface Profile for Authorized Project Conditions. [I-APbw profile for backwater downstream boundary. I-APnd profile for normal depth downstream boundary.]

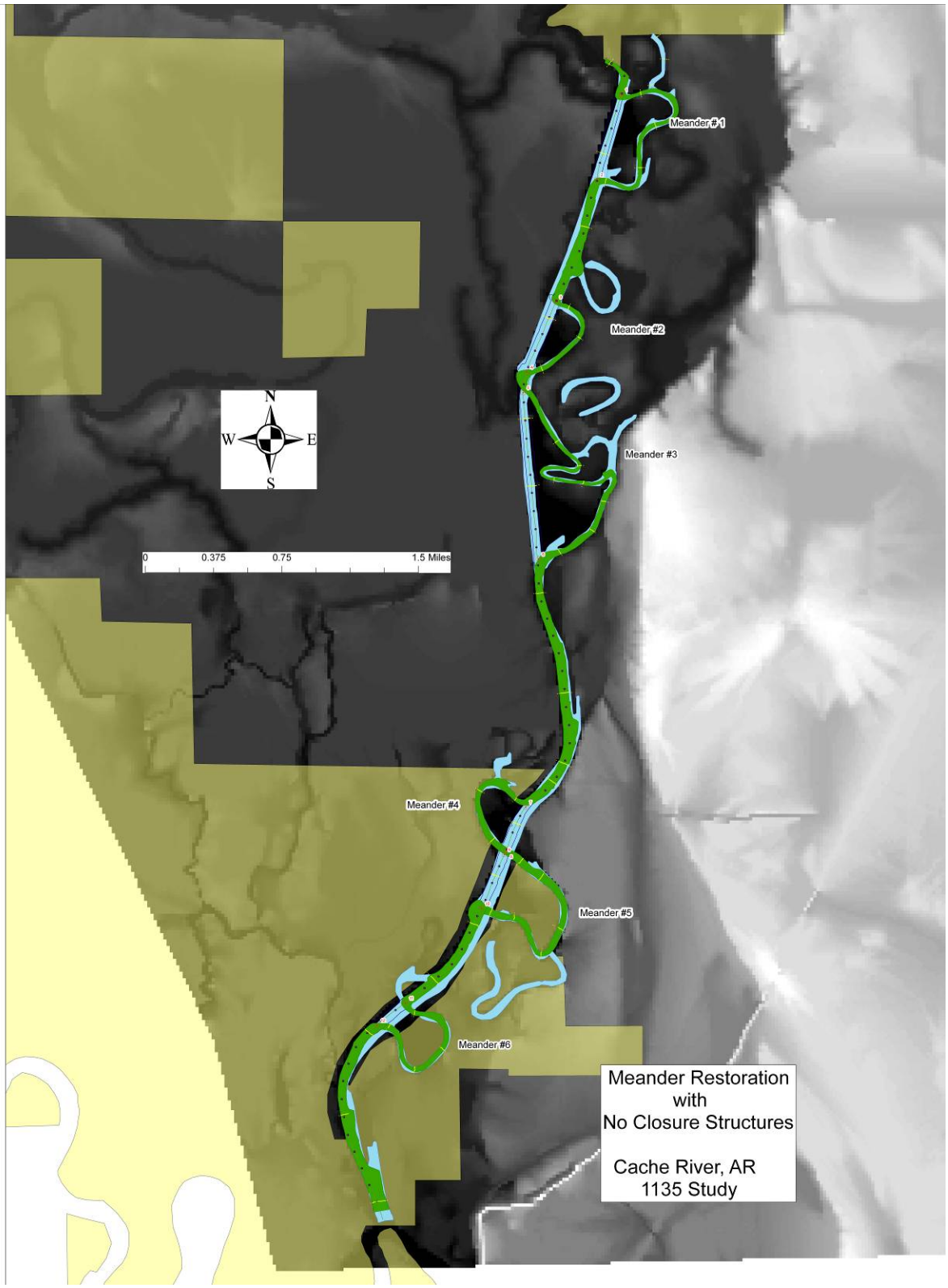

Plate 4. Alternative 1--Meander Restoration Alignment, no Closure Weirs

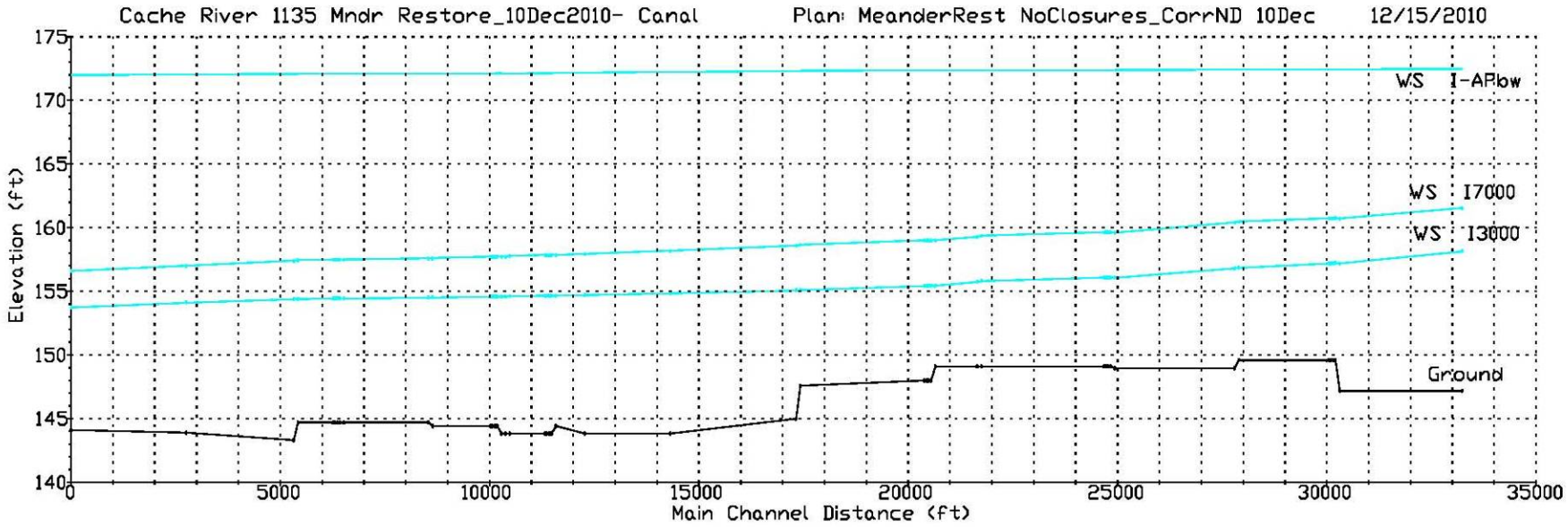

Plate 5. Alternative 1--Water Surface Profiles for Meander Restoration, no closure weirs (Canal).

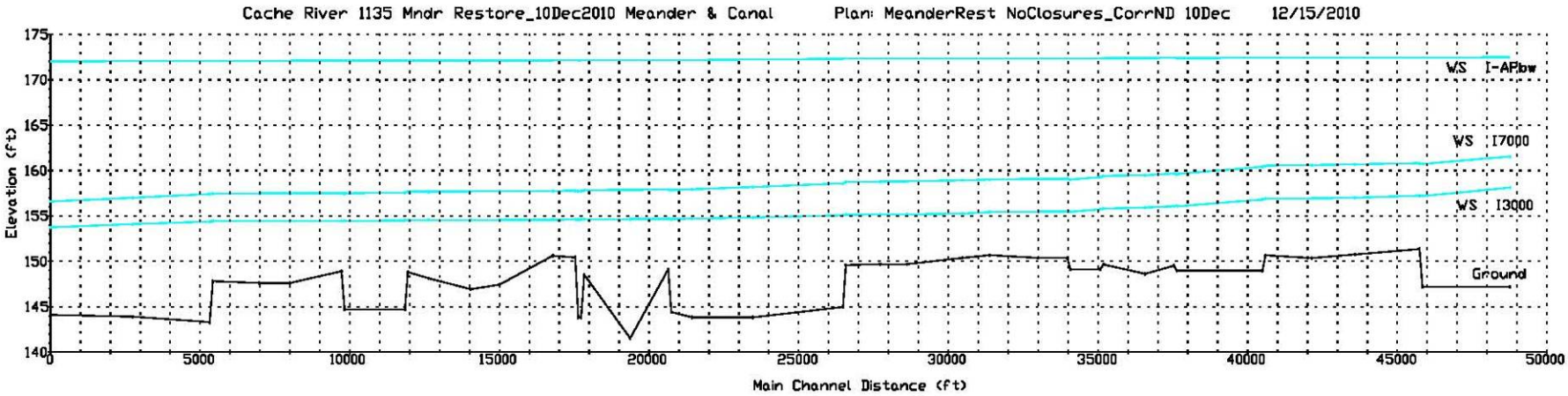

Plate 6. Alternative 1--Water Surface Profiles for Meander Restoration, no closure weirs (Meander).

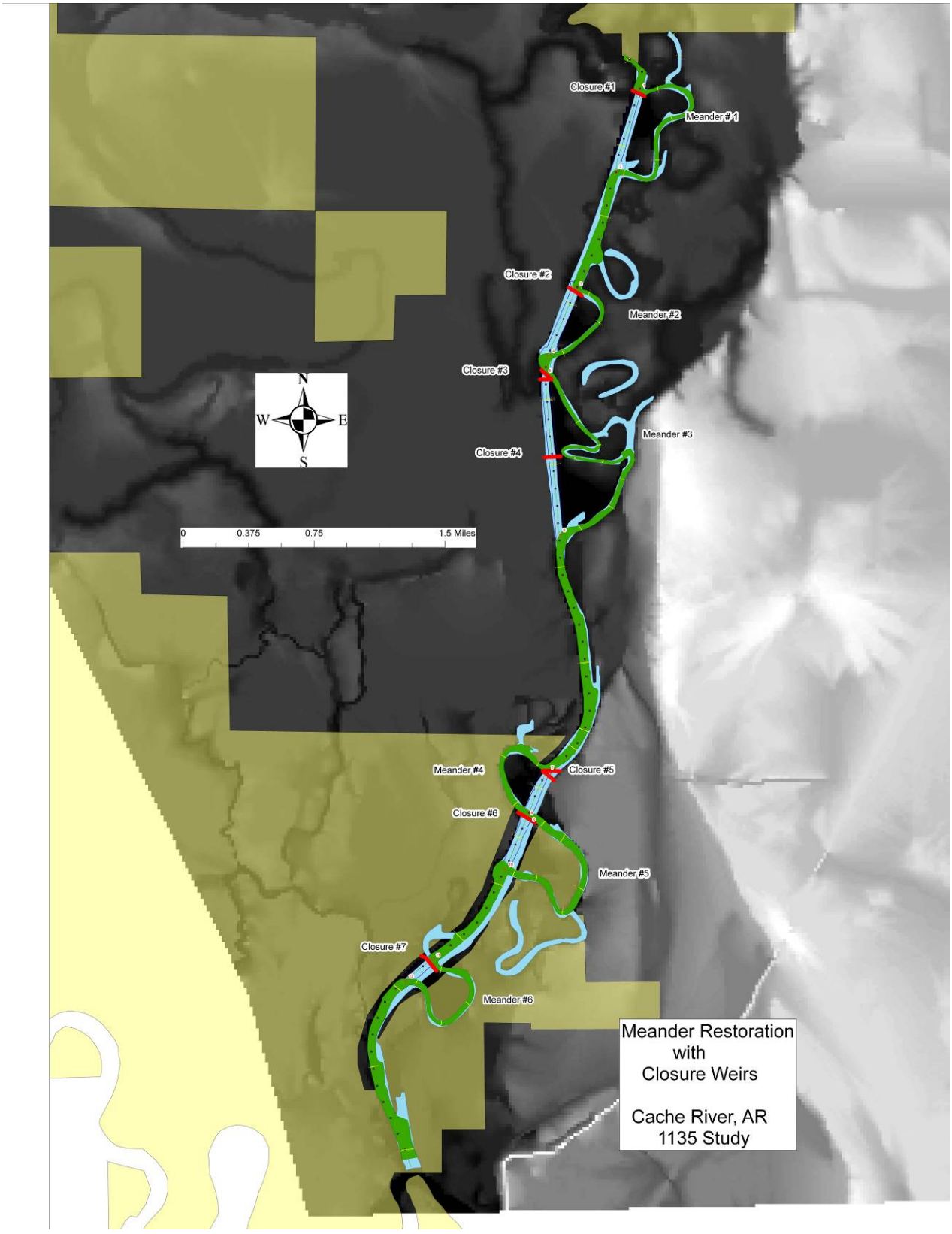

Plate 7. Alternative 2a. Meander Restoration Alignments with Closure Weir Locations

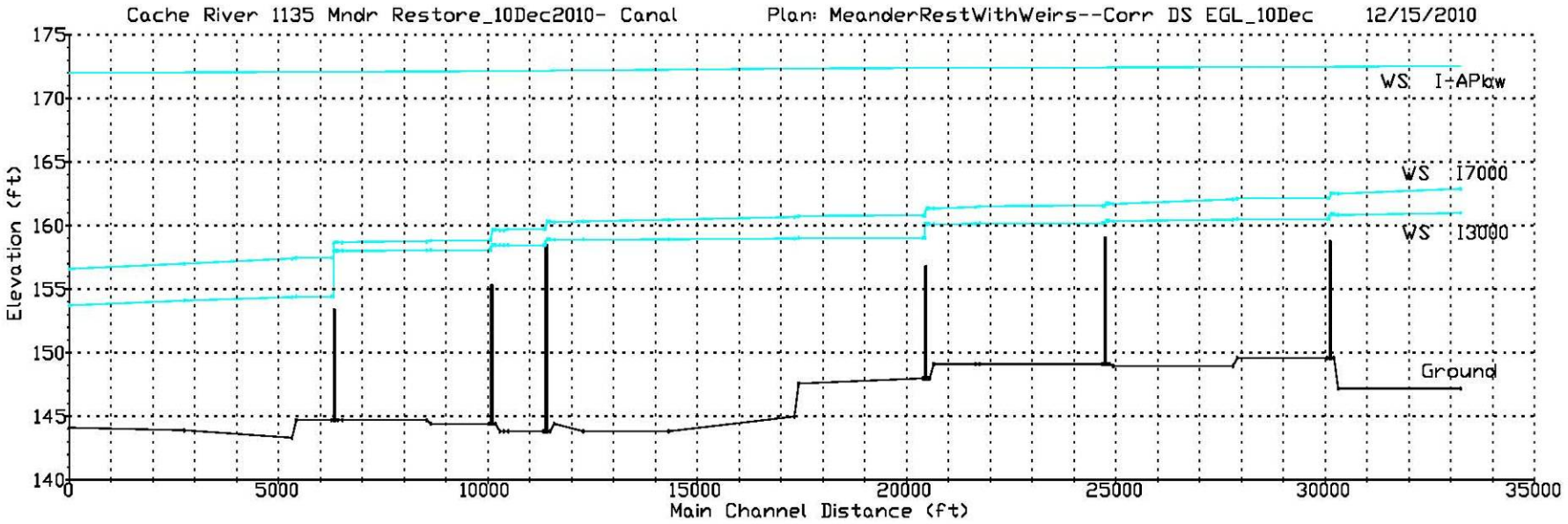

Plate 8. Alternative 2a--Water Surface Profiles for Meander Restoration with Closure Weirs (Canal)

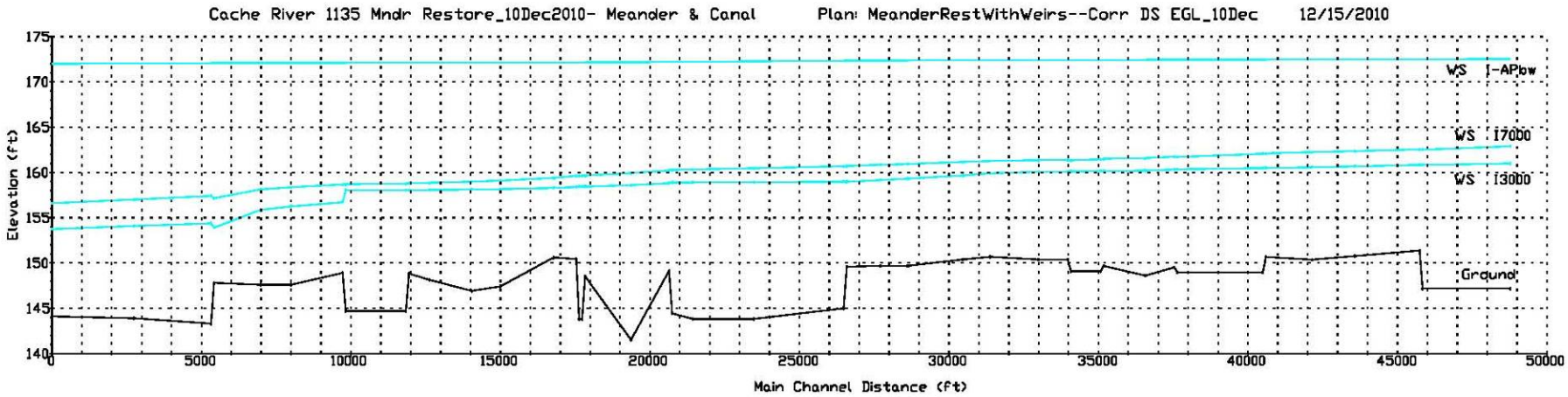

Plate 9. Alternative 2a--Water Surface Profiles for Meander Restoration with Closure Weirs (Meander)

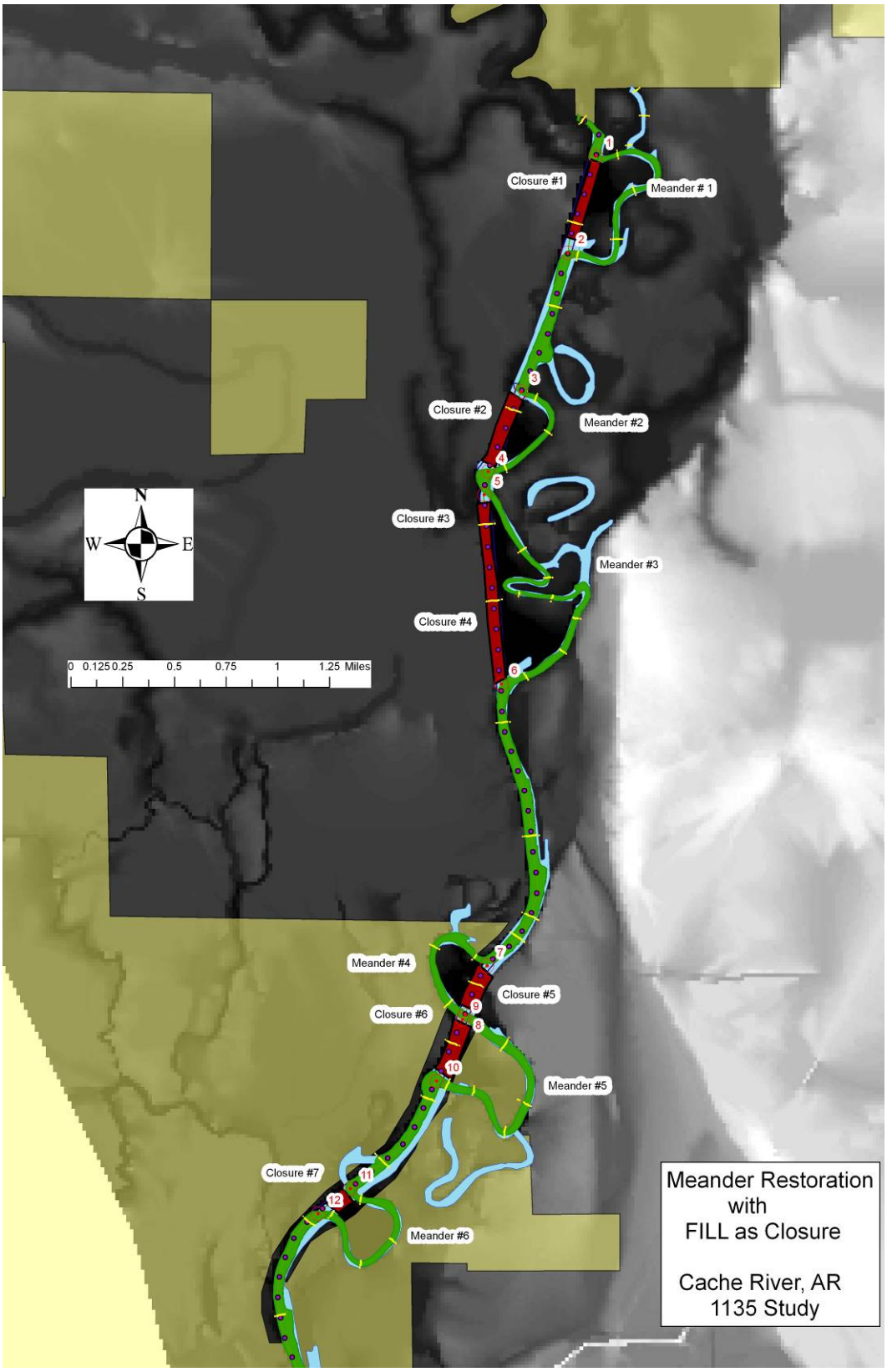

Plate 10. Alternative 3--Meander Restoration Alignments with Fill as Closure.

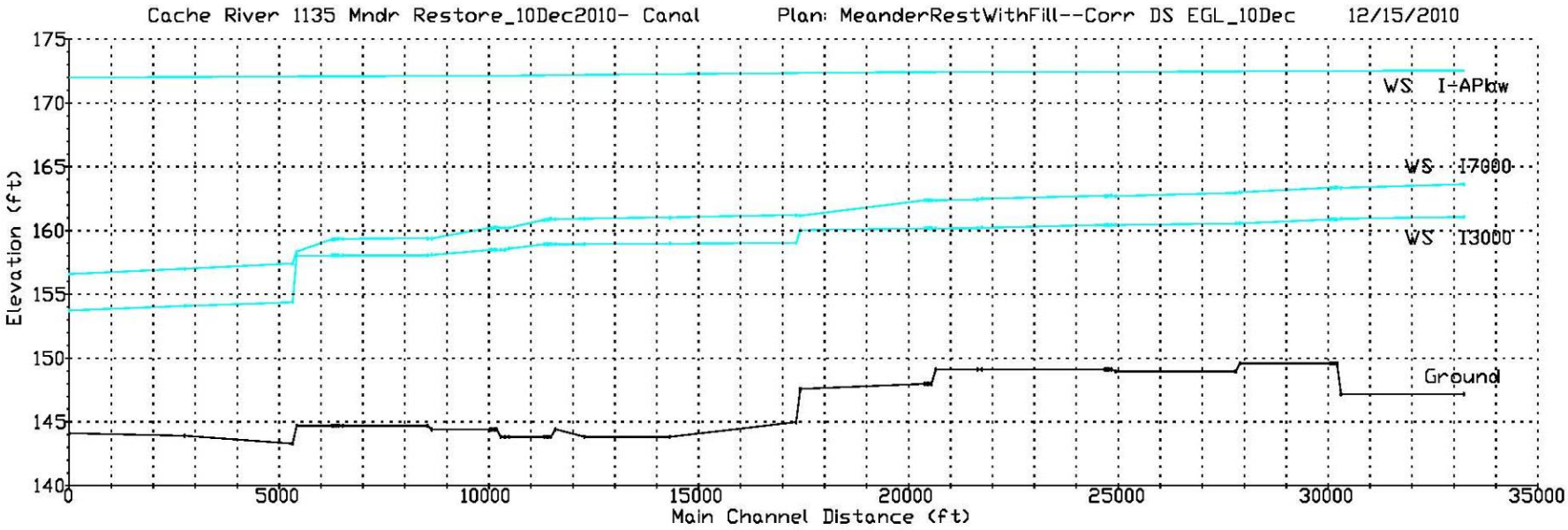

Plate 11. Alternative 3--Water Surface Profiles, Meander Restoration with Fill Closure (Canal)

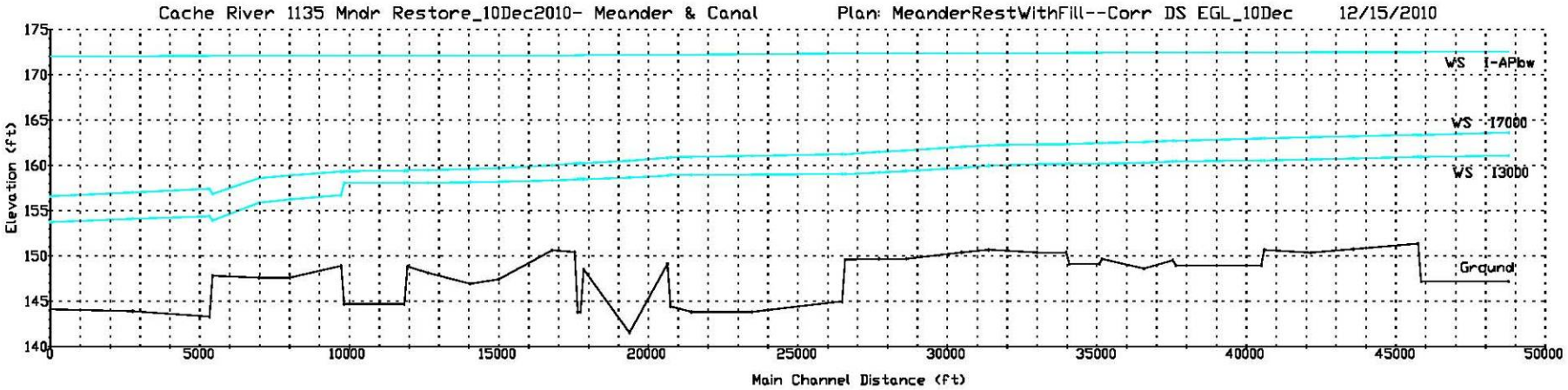

Plate 12. Alternative 3--Water Surface Profiles, Meander Restoration with Fill Closure (Meander)

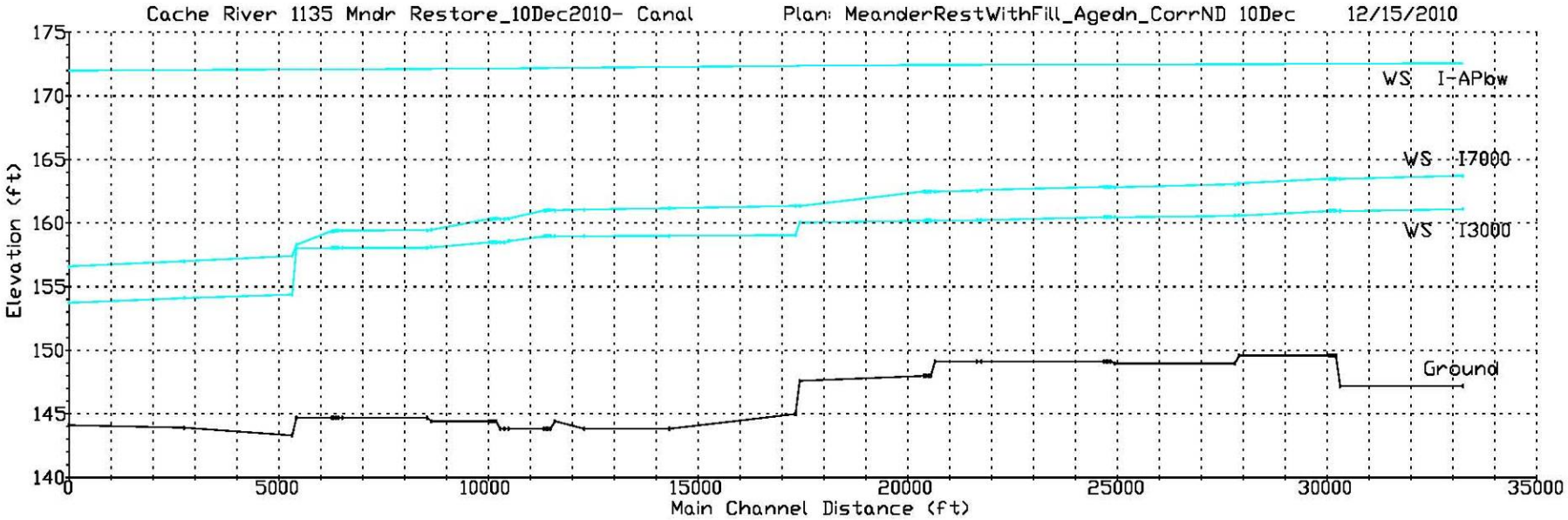

Plate 13. Alternative 3--Water Surface Profiles, Meander Restoration with Fill Closure and Aged Vegetation Effects (Canal)

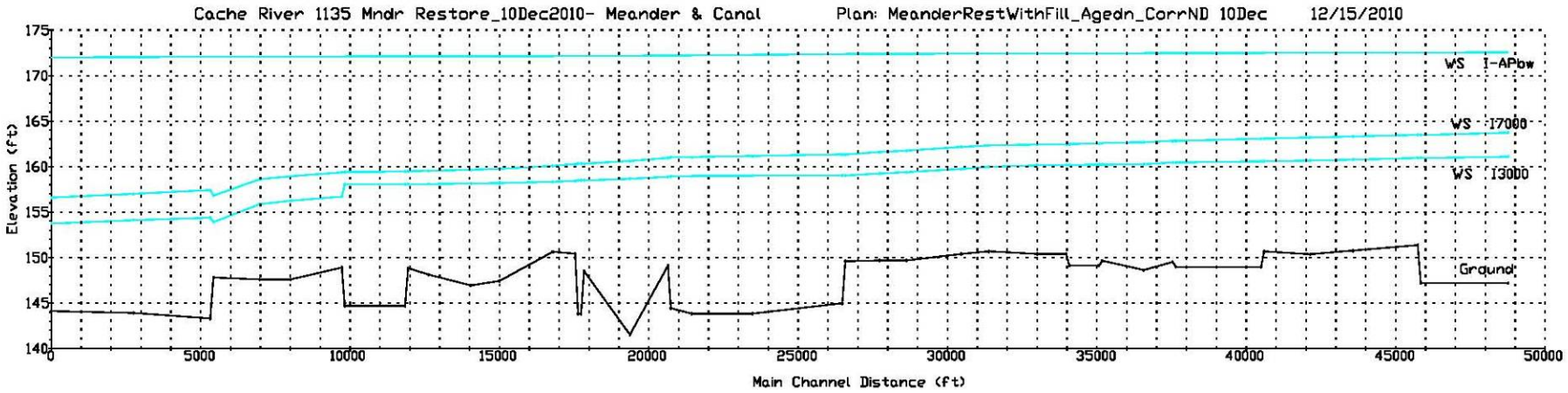

Plate 14. Alternative 3--Water Surface Profiles, Meander Restoration with Fill Closure and Aged Vegetation Effects (Meander)

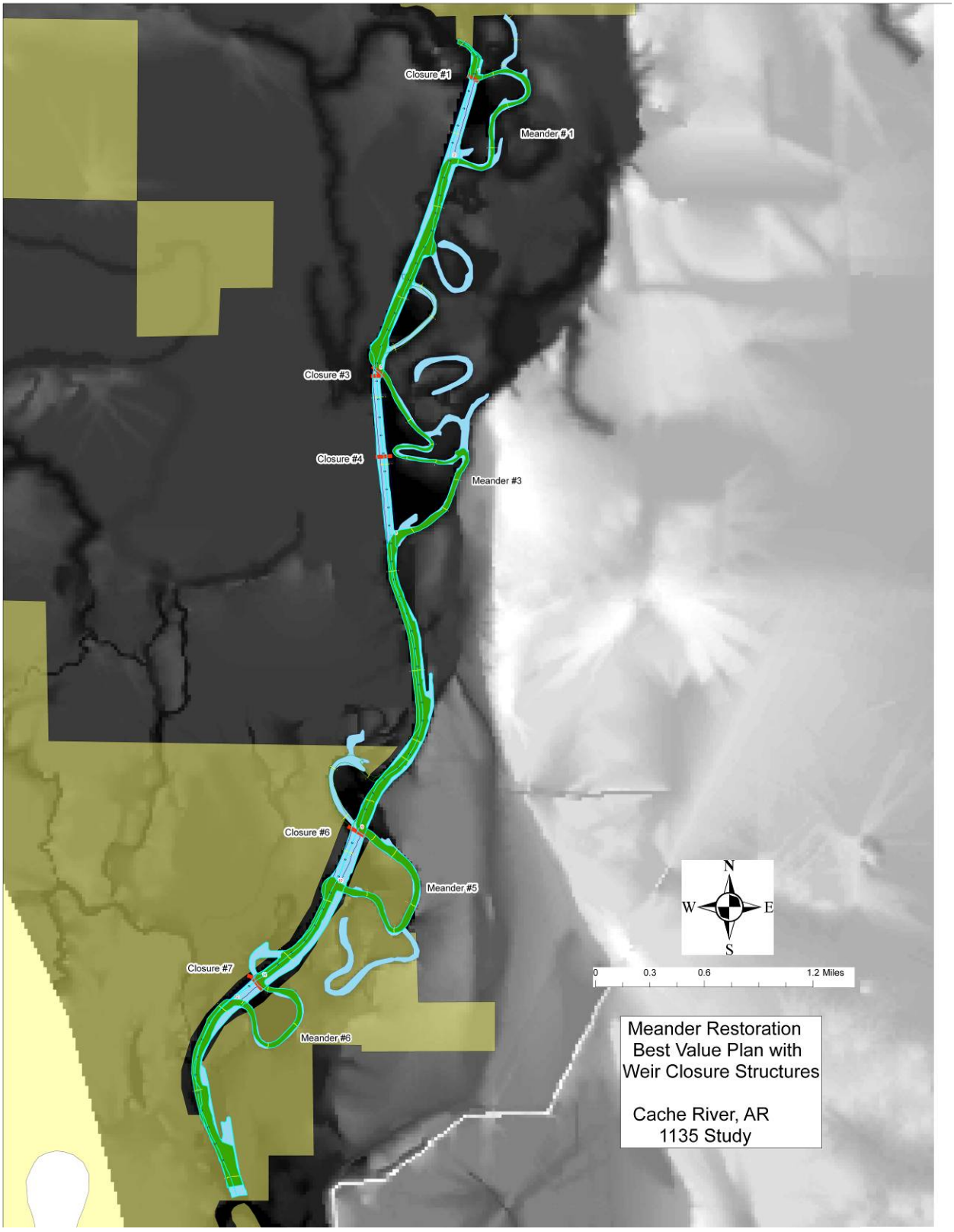

Plate 15. Alternative 2b. Meander Restoration Alignments with Weir Closures: Meanders 1, 3, 5 and 6 Only.

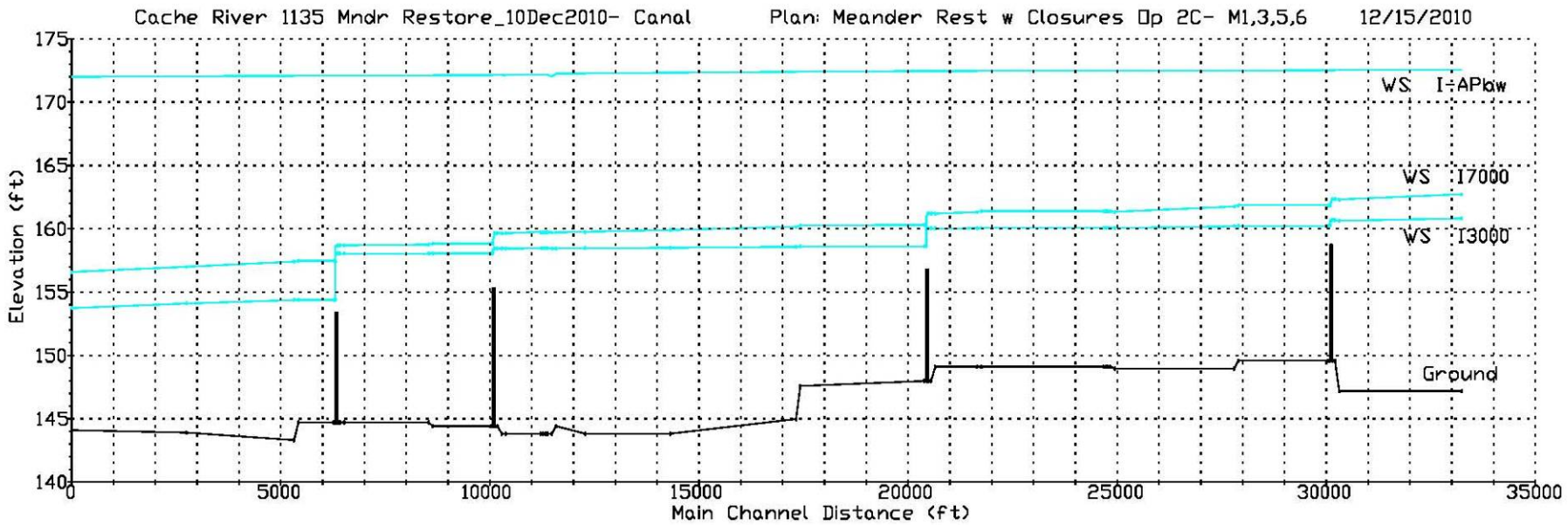

Plate 16. Alternative 2b--Water Surface Profiles. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only (Canal)

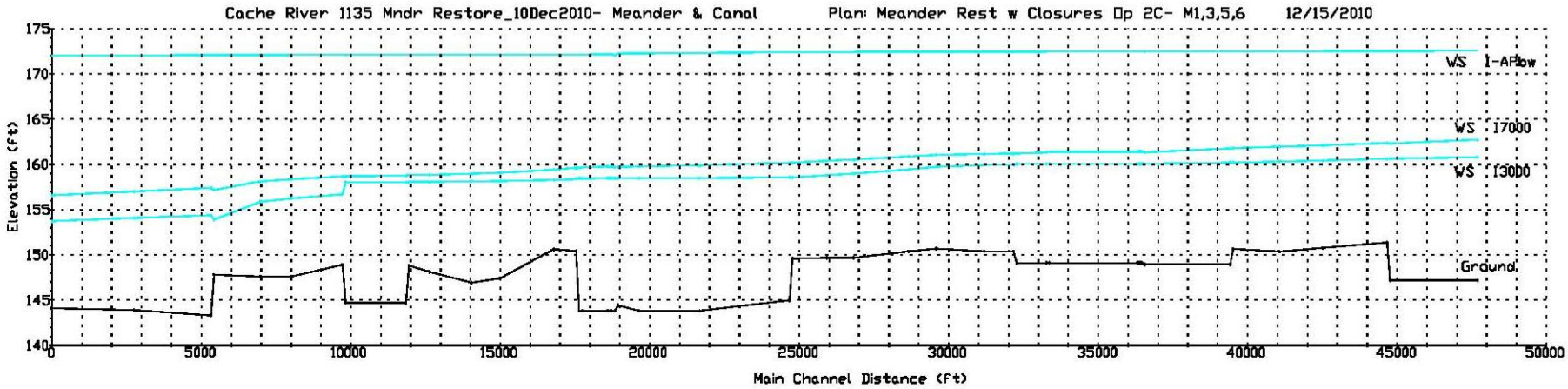

Plate 17. Alternative 2b--Water Surface Profiles. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only (Meander)

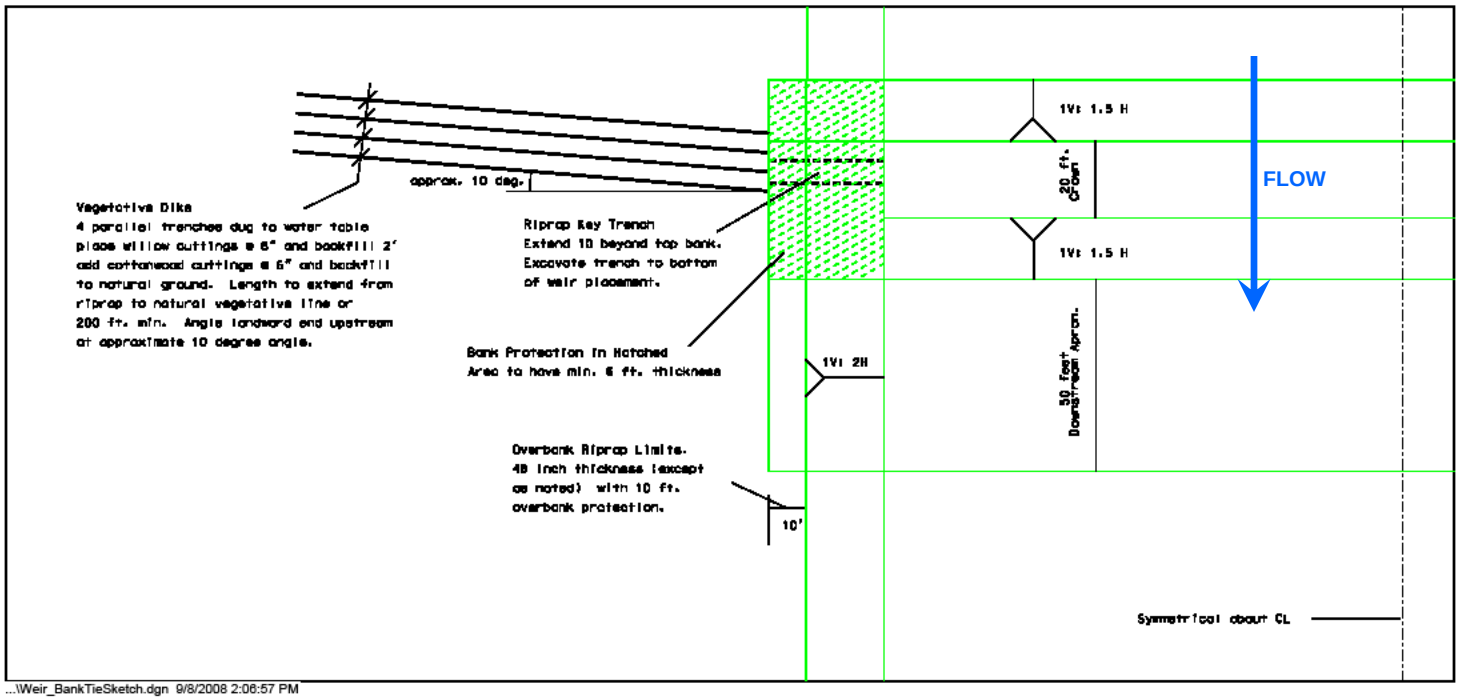

Plate 18. Typical Bank Tie for Riprap Closure Weirs. (Weir configuration dimensions and slopes for reference only).

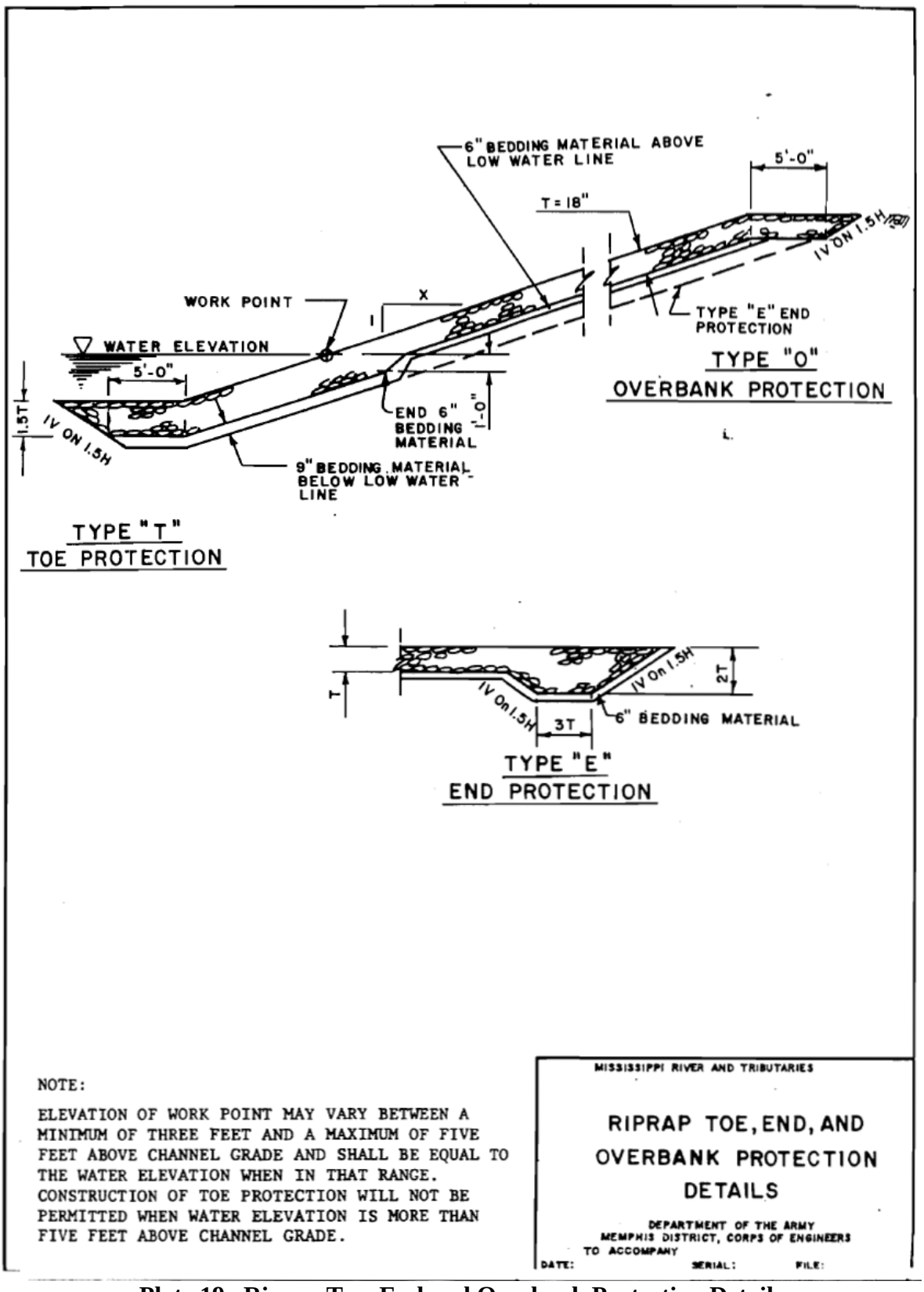

Plate 19. Riprap Toe, End and Overbank Protection Details

HEC-RAS Data and Outputs

HEC-RAS Steady Flow Table and Boundary Conditions

HEC-1 (1988) Percent Chance Exceedence Event	HEC-RAS Profile Label	Discharge, cfs	Starting WSEL, ft.
99%	1 YR	3528	160.85
50%	2 YR	7538	167.68
20%	5 YR	10528	170.76
10%	10 YR	13889	171.99
4%	25 YR	17654	173.55
2%	50 YR	21009	174.94
1%	100 YR	26858	176.8
0.2%	500 YR	42853	179.32
10% Crop Season	I-APbw	30,982	171.99

HEC-RAS Output for Existing Conditions Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	6.91	1 Yr	3528	147.2	161.6
Lower	6.91	2 Yr	7538	147.2	167.9
Lower	6.91	5 Yr	10528	147.2	170.9
Lower	6.91	10 Yr	13899	147.2	172.1
Lower	6.91	25 Yr	17654	147.2	173.7
Lower	6.91	50 Yr	21009	147.2	175.1
Lower	6.91	100 Yr	26858	147.2	176.9
Lower	6.91	I-APbw	30982	147.2	172.6
Lower	6.91	I-AP	30982	147.2	169.3
Lower	6.35	1 Yr	3528	149.6	161.5
Lower	6.35	2 Yr	7538	149.6	167.9
Lower	6.35	5 Yr	10528	149.6	170.9
Lower	6.35	10 Yr	13899	149.6	172.1
Lower	6.35	25 Yr	17654	149.6	173.7
Lower	6.35	50 Yr	21009	149.6	175.1
Lower	6.35	100 Yr	26858	149.6	176.9
Lower	6.35	I-APbw	30982	149.6	172.6
Lower	6.35	I-AP	30982	149.6	169.1
Lower	5.94	1 Yr	3528	149.0	161.4
Lower	5.94	2 Yr	7538	149.0	167.9
Lower	5.94	5 Yr	10528	149.0	170.9
Lower	5.94	10 Yr	13899	149.0	172.1
Lower	5.94	25 Yr	17654	149.0	173.7
Lower	5.94	50 Yr	21009	149.0	175.1
Lower	5.94	100 Yr	26858	149.0	176.9
Lower	5.94	I-APbw	30982	149.0	172.5
Lower	5.94	I-AP	30982	149.0	169.0
Lower	5.4	1 Yr	3528	149.1	161.3
Lower	5.4	2 Yr	7538	149.1	167.9
Lower	5.4	5 Yr	10528	149.1	170.9
Lower	5.4	10 Yr	13899	149.1	172.1
Lower	5.4	25 Yr	17654	149.1	173.7
Lower	5.4	50 Yr	21009	149.1	175.1
Lower	5.4	100 Yr	26858	149.1	176.9
Lower	5.4	I-APbw	30982	149.1	172.5
Lower	5.4	I-AP	30982	149.1	168.8

HEC-RAS Output for Existing Conditions Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	4.81	1 Yr	3528	148.0	161.2
Lower	4.81	2 Yr	7538	148.0	167.8
Lower	4.81	5 Yr	10528	148.0	170.9
Lower	4.81	10 Yr	13899	148.0	172.1
Lower	4.81	25 Yr	17654	148.0	173.7
Lower	4.81	50 Yr	21009	148.0	175.0
Lower	4.81	100 Yr	26858	148.0	176.9
Lower	4.81	I-APbw	30982	148.0	172.5
Lower	4.81	I-AP	30982	148.0	168.6
Lower	4.44	1 Yr	3528	147.6	161.1
Lower	4.44	2 Yr	7538	147.6	167.8
Lower	4.44	5 Yr	10528	147.6	170.8
Lower	4.44	10 Yr	13899	147.6	172.1
Lower	4.44	25 Yr	17654	147.6	173.7
Lower	4.44	50 Yr	21009	147.6	175.0
Lower	4.44	100 Yr	26858	147.6	176.9
Lower	4.44	I-APbw	30982	147.6	172.4
Lower	4.44	I-AP	30982	147.6	168.4
Lower	3.85	1 Yr	3528	145.0	161.1
Lower	3.85	2 Yr	7538	145.0	167.8
Lower	3.85	5 Yr	10528	145.0	170.8
Lower	3.85	10 Yr	13899	145.0	172.1
Lower	3.85	25 Yr	17654	145.0	173.6
Lower	3.85	50 Yr	21009	145.0	175.0
Lower	3.85	100 Yr	26858	145.0	176.9
Lower	3.85	I-APbw	30982	145.0	172.4
Lower	3.85	I-AP	30982	145.0	167.9
Lower	3.28	1 Yr	3528	147.4	161.0
Lower	3.28	2 Yr	7538	147.4	167.8
Lower	3.28	5 Yr	10528	147.4	170.8
Lower	3.28	10 Yr	13899	147.4	172.1
Lower	3.28	25 Yr	17654	147.4	173.6
Lower	3.28	50 Yr	21009	147.4	175.0
Lower	3.28	100 Yr	26858	147.4	176.9
Lower	3.28	I-APbw	30982	147.4	172.3
Lower	3.28	I-AP	30982	147.4	167.4

HEC-RAS Output for Existing Conditions Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	2.89	1 Yr	3528	143.8	161.0
Lower	2.89	2 Yr	7538	143.8	167.7
Lower	2.89	5 Yr	10528	143.8	170.8
Lower	2.89	10 Yr	13899	143.8	172.0
Lower	2.89	25 Yr	17654	143.8	173.6
Lower	2.89	50 Yr	21009	143.8	175.0
Lower	2.89	100 Yr	26858	143.8	176.9
Lower	2.89	I-APbw	30982	143.8	172.2
Lower	2.89	I-AP	30982	143.8	167.0
Lower	2.76	1 Yr	3528	142.9	161.0
Lower	2.76	2 Yr	7538	142.9	167.7
Lower	2.76	5 Yr	10528	142.9	170.8
Lower	2.76	10 Yr	13899	142.9	172.0
Lower	2.76	25 Yr	17654	142.9	173.6
Lower	2.76	50 Yr	21009	142.9	175.0
Lower	2.76	100 Yr	26858	142.9	176.9
Lower	2.76	I-APbw	30982	142.9	172.2
Lower	2.76	I-AP	30982	142.9	166.8
Lower	2.45	1 Yr	3528	143.8	161.0
Lower	2.45	2 Yr	7538	143.8	167.7
Lower	2.45	5 Yr	10528	143.8	170.8
Lower	2.45	10 Yr	13899	143.8	172.0
Lower	2.45	25 Yr	17654	143.8	173.6
Lower	2.45	50 Yr	21009	143.8	175.0
Lower	2.45	100 Yr	26858	143.8	176.9
Lower	2.45	I-APbw	30982	143.8	172.2
Lower	2.45	I-AP	30982	143.8	166.3
Lower	2.15	1 Yr	3528	143.8	160.9
Lower	2.15	2 Yr	7538	143.8	167.7
Lower	2.15	5 Yr	10528	143.8	170.8
Lower	2.15	10 Yr	13899	143.8	172.0
Lower	2.15	25 Yr	17654	143.8	173.6
Lower	2.15	50 Yr	21009	143.8	175.0
Lower	2.15	100 Yr	26858	143.8	176.8
Lower	2.15	I-APbw	30982	143.8	172.1
Lower	2.15	I-AP	30982	143.8	165.5

HEC-RAS Output for Existing Conditions Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	1.85	1 Yr	3528	144.7	160.9
Lower	1.85	2 Yr	7538	144.7	167.7
Lower	1.85	5 Yr	10528	144.7	170.8
Lower	1.85	10 Yr	13899	144.7	172.0
Lower	1.85	25 Yr	17654	144.7	173.6
Lower	1.85	50 Yr	21009	144.7	175.0
Lower	1.85	100 Yr	26858	144.7	176.8
Lower	1.85	I-APbw	30982	144.7	172.1
Lower	1.85	I-AP	30982	144.7	165.6
Lower	1.47	1 Yr	3528	144.7	160.9
Lower	1.47	2 Yr	7538	144.7	167.7
Lower	1.47	5 Yr	10528	144.7	170.8
Lower	1.47	10 Yr	13899	144.7	172.0
Lower	1.47	25 Yr	17654	144.7	173.6
Lower	1.47	50 Yr	21009	144.7	175.0
Lower	1.47	100 Yr	26858	144.7	176.8
Lower	1.47	I-APbw	30982	144.7	172.1
Lower	1.47	I-AP	30982	144.7	165.4
Lower	1.01	1 Yr	3528	143.3	160.9
Lower	1.01	2 Yr	7538	143.3	167.7
Lower	1.01	5 Yr	10528	143.3	170.8
Lower	1.01	10 Yr	13899	143.3	172.0
Lower	1.01	25 Yr	17654	143.3	173.6
Lower	1.01	50 Yr	21009	143.3	175.0
Lower	1.01	100 Yr	26858	143.3	176.8
Lower	1.01	I-APbw	30982	143.3	172.1
Lower	1.01	I-AP	30982	143.3	165.2
Lower	0.52	1 Yr	3528	143.9	160.9
Lower	0.52	2 Yr	7538	143.9	167.7
Lower	0.52	5 Yr	10528	143.9	170.8
Lower	0.52	10 Yr	13899	143.9	172.0
Lower	0.52	25 Yr	17654	143.9	173.6
Lower	0.52	50 Yr	21009	143.9	175.0
Lower	0.52	100 Yr	26858	143.9	176.8
Lower	0.52	I-APbw	30982	143.9	172.0
Lower	0.52	I-AP	30982	143.9	164.9

HEC-RAS Output for Existing Conditions Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	0	1 Yr	3528	144.1	160.9
Lower	0	2 Yr	7538	144.1	167.7
Lower	0	5 Yr	10528	144.1	170.8
Lower	0	10 Yr	13899	144.1	172.0
Lower	0	25 Yr	17654	144.1	173.6
Lower	0	50 Yr	21009	144.1	174.9
Lower	0	100 Yr	26858	144.1	176.8
Lower	0	I-APbw	30982	144.1	172.0
Lower	0	I-AP	30982	144.1	164.6

HEC-RAS Output for Authorized Project Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	6.91	1 Yr	3528	149.2	161.3
Lower	6.91	2 Yr	7538	149.2	167.9
Lower	6.91	5 Yr	10528	149.2	170.9
Lower	6.91	10 Yr	13899	149.2	172.1
Lower	6.91	25 Yr	17654	149.2	173.7
Lower	6.91	50 Yr	21009	149.2	175.1
Lower	6.91	100 Yr	26858	149.2	176.9
Lower	6.91	I-APbw	30982	149.2	172.6
Lower	6.91	I-AP	30982	149.2	168.7
Lower	6.35	1 Yr	3528	148.8	161.2
Lower	6.35	2 Yr	7538	148.8	167.9
Lower	6.35	5 Yr	10528	148.8	170.9
Lower	6.35	10 Yr	13899	148.8	172.1
Lower	6.35	25 Yr	17654	148.8	173.7
Lower	6.35	50 Yr	21009	148.8	175.1
Lower	6.35	100 Yr	26858	148.8	176.9
Lower	6.35	I-APbw	30982	148.8	172.5
Lower	6.35	I-AP	30982	148.8	168.5
Lower	5.94	1 Yr	3528	148.5	161.2
Lower	5.94	2 Yr	7538	148.5	167.8
Lower	5.94	5 Yr	10528	148.5	170.9
Lower	5.94	10 Yr	13899	148.5	172.1
Lower	5.94	25 Yr	17654	148.5	173.7
Lower	5.94	50 Yr	21009	148.5	175.1
Lower	5.94	100 Yr	26858	148.5	176.9
Lower	5.94	I-APbw	30982	148.5	172.5
Lower	5.94	I-AP	30982	148.5	168.4
Lower	5.4	1 Yr	3528	148.1	161.1
Lower	5.4	2 Yr	7538	148.1	167.8
Lower	5.4	5 Yr	10528	148.1	170.9
Lower	5.4	10 Yr	13899	148.1	172.1
Lower	5.4	25 Yr	17654	148.1	173.7
Lower	5.4	50 Yr	21009	148.1	175.1
Lower	5.4	100 Yr	26858	148.1	176.9
Lower	5.4	I-APbw	30982	148.1	172.5
Lower	5.4	I-AP	30982	148.1	168.2

HEC-RAS Output for Authorized Project Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	4.81	1 Yr	3528	147.6	161.1
Lower	4.81	2 Yr	7538	147.6	167.8
Lower	4.81	5 Yr	10528	147.6	170.8
Lower	4.81	10 Yr	13899	147.6	172.1
Lower	4.81	25 Yr	17654	147.6	173.7
Lower	4.81	50 Yr	21009	147.6	175.0
Lower	4.81	100 Yr	26858	147.6	176.9
Lower	4.81	I-APbw	30982	147.6	172.4
Lower	4.81	I-AP	30982	147.6	167.9
Lower	4.44	1 Yr	3528	147.3	161.1
Lower	4.44	2 Yr	7538	147.3	167.8
Lower	4.44	5 Yr	10528	147.3	170.8
Lower	4.44	10 Yr	13899	147.3	172.1
Lower	4.44	25 Yr	17654	147.3	173.6
Lower	4.44	50 Yr	21009	147.3	175.0
Lower	4.44	100 Yr	26858	147.3	176.9
Lower	4.44	I-APbw	30982	147.3	172.4
Lower	4.44	I-AP	30982	147.3	167.7
Lower	3.85	1 Yr	3528	146.9	161.0
Lower	3.85	2 Yr	7538	146.9	167.8
Lower	3.85	5 Yr	10528	146.9	170.8
Lower	3.85	10 Yr	13899	146.9	172.1
Lower	3.85	25 Yr	17654	146.9	173.6
Lower	3.85	50 Yr	21009	146.9	175.0
Lower	3.85	100 Yr	26858	146.9	176.9
Lower	3.85	I-APbw	30982	146.9	172.4
Lower	3.85	I-AP	30982	146.9	167.3
Lower	3.28	1 Yr	3528	146.5	161.0
Lower	3.28	2 Yr	7538	146.5	167.8
Lower	3.28	5 Yr	10528	146.5	170.8
Lower	3.28	10 Yr	13899	146.5	172.1
Lower	3.28	25 Yr	17654	146.5	173.6
Lower	3.28	50 Yr	21009	146.5	175.0
Lower	3.28	100 Yr	26858	146.5	176.9
Lower	3.28	I-APbw	30982	146.5	172.3
Lower	3.28	I-AP	30982	146.5	166.5

HEC-RAS Output for Authorized Project Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	2.89	1 Yr	3528	146.2	160.9
Lower	2.89	2 Yr	7538	146.2	167.7
Lower	2.89	5 Yr	10528	146.2	170.8
Lower	2.89	10 Yr	13899	146.2	172.0
Lower	2.89	25 Yr	17654	146.2	173.6
Lower	2.89	50 Yr	21009	146.2	175.0
Lower	2.89	100 Yr	26858	146.2	176.9
Lower	2.89	I-APbw	30982	146.2	172.2
Lower	2.89	I-AP	30982	146.2	165.8
Lower	2.76	1 Yr	3528	146.1	160.9
Lower	2.76	2 Yr	7538	146.1	167.7
Lower	2.76	5 Yr	10528	146.1	170.8
Lower	2.76	10 Yr	13899	146.1	172.0
Lower	2.76	25 Yr	17654	146.1	173.6
Lower	2.76	50 Yr	21009	146.1	175.0
Lower	2.76	100 Yr	26858	146.1	176.9
Lower	2.76	I-APbw	30982	146.1	172.2
Lower	2.76	I-AP	30982	146.1	165.6
Lower	2.45	1 Yr	3528	145.8	160.9
Lower	2.45	2 Yr	7538	145.8	167.7
Lower	2.45	5 Yr	10528	145.8	170.8
Lower	2.45	10 Yr	13899	145.8	172.0
Lower	2.45	25 Yr	17654	145.8	173.6
Lower	2.45	50 Yr	21009	145.8	175.0
Lower	2.45	100 Yr	26858	145.8	176.9
Lower	2.45	I-APbw	30982	145.8	172.2
Lower	2.45	I-AP	30982	145.8	165.2
Lower	2.15	1 Yr	3528	145.6	160.9
Lower	2.15	2 Yr	7538	145.6	167.7
Lower	2.15	5 Yr	10528	145.6	170.8
Lower	2.15	10 Yr	13899	145.6	172.0
Lower	2.15	25 Yr	17654	145.6	173.6
Lower	2.15	50 Yr	21009	145.6	175.0
Lower	2.15	100 Yr	26858	145.6	176.8
Lower	2.15	I-APbw	30982	145.6	172.1
Lower	2.15	I-AP	30982	145.6	164.7

HEC-RAS Output for Authorized Project Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	1.85	1 Yr	3528	145.4	160.9
Lower	1.85	2 Yr	7538	145.4	167.7
Lower	1.85	5 Yr	10528	145.4	170.8
Lower	1.85	10 Yr	13899	145.4	172.0
Lower	1.85	25 Yr	17654	145.4	173.6
Lower	1.85	50 Yr	21009	145.4	175.0
Lower	1.85	100 Yr	26858	145.4	176.8
Lower	1.85	I-APbw	30982	145.4	172.1
Lower	1.85	I-AP	30982	145.4	164.7
Lower	1.47	1 Yr	3528	145.1	160.9
Lower	1.47	2 Yr	7538	145.1	167.7
Lower	1.47	5 Yr	10528	145.1	170.8
Lower	1.47	10 Yr	13899	145.1	172.0
Lower	1.47	25 Yr	17654	145.1	173.6
Lower	1.47	50 Yr	21009	145.1	175.0
Lower	1.47	100 Yr	26858	145.1	176.8
Lower	1.47	I-APbw	30982	145.1	172.1
Lower	1.47	I-AP	30982	145.1	164.5
Lower	1.01	1 Yr	3528	144.8	160.9
Lower	1.01	2 Yr	7538	144.8	167.7
Lower	1.01	5 Yr	10528	144.8	170.8
Lower	1.01	10 Yr	13899	144.8	172.0
Lower	1.01	25 Yr	17654	144.8	173.6
Lower	1.01	50 Yr	21009	144.8	175.0
Lower	1.01	100 Yr	26858	144.8	176.8
Lower	1.01	I-APbw	30982	144.8	172.1
Lower	1.01	I-AP	30982	144.8	164.2
Lower	0.52	1 Yr	3528	144.4	160.9
Lower	0.52	2 Yr	7538	144.4	167.7
Lower	0.52	5 Yr	10528	144.4	170.8
Lower	0.52	10 Yr	13899	144.4	172.0
Lower	0.52	25 Yr	17654	144.4	173.6
Lower	0.52	50 Yr	21009	144.4	175.0
Lower	0.52	100 Yr	26858	144.4	176.8
Lower	0.52	I-APbw	30982	144.4	172.0
Lower	0.52	I-AP	30982	144.4	163.9

HEC-RAS Output for Authorized Project Model

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Lower	0	1 Yr	3528	144.0	160.9
Lower	0	2 Yr	7538	144.0	167.7
Lower	0	5 Yr	10528	144.0	170.8
Lower	0	10 Yr	13899	144.0	172.0
Lower	0	25 Yr	17654	144.0	173.6
Lower	0	50 Yr	21009	144.0	174.9
Lower	0	100 Yr	26858	144.0	176.8
Lower	0	I-APbw	30982	144.0	172.0
Lower	0	I-AP	30982	144.0	163.6

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #6	Reach	104	I1000	58	148.9	151.4
Meander #6	Reach	104	I-AP	6120	148.9	165.3
Meander #6	Reach	104	I0500	10	148.9	149.4
Meander #6	Reach	104	I2000	148	148.9	153.9
Meander #6	Reach	104	I2500	191	148.9	154.6
Meander #6	Reach	104	I0200	0	148.9	149.0
Meander #6	Reach	104	I-APbw	10647	148.9	172.1
Meander #6	Reach	104	I3000	230	148.9	154.4
Meander #6	Reach	104	I7000	682	148.9	157.5
Meander #6	Reach	103	I1000	58	147.6	151.4
Meander #6	Reach	103	I-AP	6120	147.6	165.3
Meander #6	Reach	103	I0500	10	147.6	149.4
Meander #6	Reach	103	I2000	148	147.6	153.9
Meander #6	Reach	103	I2500	191	147.6	154.6
Meander #6	Reach	103	I0200	0	147.6	147.9
Meander #6	Reach	103	I-APbw	10647	147.6	172.1
Meander #6	Reach	103	I3000	230	147.6	154.4
Meander #6	Reach	103	I7000	682	147.6	157.5
Meander #6	Reach	102	I1000	58	147.6	151.4
Meander #6	Reach	102	I-AP	6120	147.6	165.3
Meander #6	Reach	102	I0500	10	147.6	149.4
Meander #6	Reach	102	I2000	148	147.6	153.9
Meander #6	Reach	102	I2500	191	147.6	154.6
Meander #6	Reach	102	I0200	0	147.6	147.9
Meander #6	Reach	102	I-APbw	10647	147.6	172.1
Meander #6	Reach	102	I3000	230	147.6	154.4
Meander #6	Reach	102	I7000	682	147.6	157.5
Meander #6	Reach	101	I1000	58	147.8	151.3
Meander #6	Reach	101	I-AP	6120	147.8	165.3
Meander #6	Reach	101	I0500	10	147.8	149.4
Meander #6	Reach	101	I2000	148	147.8	153.9
Meander #6	Reach	101	I2500	191	147.8	154.6
Meander #6	Reach	101	I0200	0	147.8	147.9
Meander #6	Reach	101	I-APbw	10647	147.8	172.1
Meander #6	Reach	101	I3000	230	147.8	154.4
Meander #6	Reach	101	I7000	682	147.8	157.5

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	110	I1000	16	150.4	151.5
Meander #5	Reach	110	I-AP	12576	150.4	165.8
Meander #5	Reach	110	I0500	0	150.4	150.8
Meander #5	Reach	110	I2000	229	150.4	154.0
Meander #5	Reach	110	I2500	324	150.4	154.7
Meander #5	Reach	110	I0200	0	150.4	150.7
Meander #5	Reach	110	I-APbw	10274	150.4	172.1
Meander #5	Reach	110	I3000	377	150.4	154.6
Meander #5	Reach	110	I7000	1390	150.4	157.8
Meander #5	Reach	109	I1000	16	150.6	151.4
Meander #5	Reach	109	I-AP	12576	150.6	165.7
Meander #5	Reach	109	I0500	0	150.6	150.7
Meander #5	Reach	109	I2000	229	150.6	154.0
Meander #5	Reach	109	I2500	324	150.6	154.7
Meander #5	Reach	109	I0200	0	150.6	150.7
Meander #5	Reach	109	I-APbw	10274	150.6	172.1
Meander #5	Reach	109	I3000	377	150.6	154.6
Meander #5	Reach	109	I7000	1390	150.6	157.8
Meander #5	Reach	108	I1000	16	147.4	151.4
Meander #5	Reach	108	I-AP	12576	147.4	165.6
Meander #5	Reach	108	I0500	0	147.4	149.5
Meander #5	Reach	108	I2000	229	147.4	154.0
Meander #5	Reach	108	I2500	324	147.4	154.7
Meander #5	Reach	108	I0200	0	147.4	148.9
Meander #5	Reach	108	I-APbw	10274	147.4	172.1
Meander #5	Reach	108	I3000	377	147.4	154.6
Meander #5	Reach	108	I7000	1390	147.4	157.7
Meander #5	Reach	107	I1000	16	146.9	151.4
Meander #5	Reach	107	I-AP	12576	146.9	165.5
Meander #5	Reach	107	I0500	0	146.9	149.5
Meander #5	Reach	107	I2000	229	146.9	154.0
Meander #5	Reach	107	I2500	324	146.9	154.7
Meander #5	Reach	107	I0200	0	146.9	148.9
Meander #5	Reach	107	I-APbw	10274	146.9	172.1
Meander #5	Reach	107	I3000	377	146.9	154.5
Meander #5	Reach	107	I7000	1390	146.9	157.7

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	106	I1000	16	148.1	151.4
Meander #5	Reach	106	I-AP	12576	148.1	165.5
Meander #5	Reach	106	I0500	0	148.1	149.5
Meander #5	Reach	106	I2000	229	148.1	154.0
Meander #5	Reach	106	I2500	324	148.1	154.7
Meander #5	Reach	106	I0200	0	148.1	148.9
Meander #5	Reach	106	I-APbw	10274	148.1	172.1
Meander #5	Reach	106	I3000	377	148.1	154.5
Meander #5	Reach	106	I7000	1390	148.1	157.7
Meander #5	Reach	105	I1000	16	148.8	151.4
Meander #5	Reach	105	I-AP	12576	148.8	165.5
Meander #5	Reach	105	I0500	0	148.8	149.5
Meander #5	Reach	105	I2000	229	148.8	154.0
Meander #5	Reach	105	I2500	324	148.8	154.7
Meander #5	Reach	105	I0200	0	148.8	148.9
Meander #5	Reach	105	I-APbw	10274	148.8	172.1
Meander #5	Reach	105	I3000	377	148.8	154.5
Meander #5	Reach	105	I7000	1390	148.8	157.7
Meander #4	Reach	113	I1000	93	149.1	151.5
Meander #4	Reach	113	I-AP	11083	149.1	166.2
Meander #4	Reach	113	I0500	17	149.1	149.5
Meander #4	Reach	113	I2000	260	149.1	154.1
Meander #4	Reach	113	I2500	332	149.1	154.8
Meander #4	Reach	113	I0200	0	149.1	149.2
Meander #4	Reach	113	I-APbw	16148	149.1	172.2
Meander #4	Reach	113	I3000	415	149.1	154.7
Meander #4	Reach	113	I7000	1220	149.1	157.9
Meander #4	Reach	112	I1000	93	141.5	151.5
Meander #4	Reach	112	I-AP	11083	141.5	166.1
Meander #4	Reach	112	I0500	17	141.5	149.5
Meander #4	Reach	112	I2000	260	141.5	154.1
Meander #4	Reach	112	I2500	332	141.5	154.7
Meander #4	Reach	112	I0200	0	141.5	148.6
Meander #4	Reach	112	I-APbw	16148	141.5	172.2
Meander #4	Reach	112	I3000	415	141.5	154.6
Meander #4	Reach	112	I7000	1220	141.5	157.9

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #4	Reach	111	I1000	93	148.5	151.5
Meander #4	Reach	111	I-AP	11083	148.5	166.0
Meander #4	Reach	111	I0500	17	148.5	149.5
Meander #4	Reach	111	I2000	260	148.5	154.0
Meander #4	Reach	111	I2500	332	148.5	154.7
Meander #4	Reach	111	I0200	0	148.5	148.6
Meander #4	Reach	111	I-APbw	16148	148.5	172.1
Meander #4	Reach	111	I3000	415	148.5	154.6
Meander #4	Reach	111	I7000	1220	148.5	157.9
Meander #3	Main	120	I1000	34	150.4	152.3
Meander #3	Main	120	I-AP	9091	150.4	167.9
Meander #3	Main	120	I0500	2	150.4	151.1
Meander #3	Main	120	I2000	206	150.4	154.6
Meander #3	Main	120	I2500	284	150.4	155.3
Meander #3	Main	120	I0200	0	150.4	150.8
Meander #3	Main	120	I-APbw	7425	150.4	172.4
Meander #3	Main	120	I3000	342	150.4	155.5
Meander #3	Main	120	I7000	1287	150.4	159.1
Meander #3	Main	119	I1000	34	150.4	152.2
Meander #3	Main	119	I-AP	9091	150.4	167.9
Meander #3	Main	119	I0500	2	150.4	151.1
Meander #3	Main	119	I2000	206	150.4	154.6
Meander #3	Main	119	I2500	284	150.4	155.3
Meander #3	Main	119	I0200	0	150.4	150.8
Meander #3	Main	119	I-APbw	7425	150.4	172.4
Meander #3	Main	119	I3000	342	150.4	155.5
Meander #3	Main	119	I7000	1287	150.4	159.1
Meander #3	Main	118	I1000	34	150.7	152.2
Meander #3	Main	118	I-AP	9091	150.7	167.9
Meander #3	Main	118	I0500	2	150.7	151.1
Meander #3	Main	118	I2000	206	150.7	154.5
Meander #3	Main	118	I2500	284	150.7	155.3
Meander #3	Main	118	I0200	0	150.7	150.8
Meander #3	Main	118	I-APbw	7425	150.7	172.4
Meander #3	Main	118	I3000	342	150.7	155.4
Meander #3	Main	118	I7000	1287	150.7	159.0

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	117	I1000	34	150.4	151.9
Meander #3	Main	117	I-AP	9091	150.4	167.9
Meander #3	Main	117	I0500	2	150.4	150.6
Meander #3	Main	117	I2000	206	150.4	154.4
Meander #3	Main	117	I2500	284	150.4	155.2
Meander #3	Main	117	I0200	0	150.4	150.4
Meander #3	Main	117	I-APbw	7425	150.4	172.4
Meander #3	Main	117	I3000	342	150.4	155.3
Meander #3	Main	117	I7000	1287	150.4	158.9
Meander #3	Main	116	I1000	34	149.7	151.8
Meander #3	Main	116	I-AP	9091	149.7	167.8
Meander #3	Main	116	I0500	2	149.7	150.2
Meander #3	Main	116	I2000	206	149.7	154.4
Meander #3	Main	116	I2500	284	149.7	155.1
Meander #3	Main	116	I0200	0	149.7	149.9
Meander #3	Main	116	I-APbw	7425	149.7	172.3
Meander #3	Main	116	I3000	342	149.7	155.2
Meander #3	Main	116	I7000	1287	149.7	158.8
Meander #3	Main	115	I1000	34	149.7	151.8
Meander #3	Main	115	I-AP	9091	149.7	167.8
Meander #3	Main	115	I0500	2	149.7	150.1
Meander #3	Main	115	I2000	206	149.7	154.3
Meander #3	Main	115	I2500	284	149.7	155.1
Meander #3	Main	115	I0200	0	149.7	149.9
Meander #3	Main	115	I-APbw	7425	149.7	172.3
Meander #3	Main	115	I3000	342	149.7	155.1
Meander #3	Main	115	I7000	1287	149.7	158.8
Meander #3	Main	114	I1000	34	149.6	151.8
Meander #3	Main	114	I-AP	9091	149.6	167.7
Meander #3	Main	114	I0500	2	149.6	149.8
Meander #3	Main	114	I2000	206	149.6	154.3
Meander #3	Main	114	I2500	284	149.6	155.1
Meander #3	Main	114	I0200	0	149.6	149.6
Meander #3	Main	114	I-APbw	7425	149.6	172.3
Meander #3	Main	114	I3000	342	149.6	155.1
Meander #3	Main	114	I7000	1287	149.6	158.7

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #2	Reach	123	I1000	364	149.5	153.1
Meander #2	Reach	123	I-AP	14142	149.5	168.2
Meander #2	Reach	123	I0500	188	149.5	152.2
Meander #2	Reach	123	I2000	719	149.5	155.1
Meander #2	Reach	123	I2500	883	149.5	155.8
Meander #2	Reach	123	I0200	82	149.5	151.4
Meander #2	Reach	123	I-APbw	15284	149.5	172.4
Meander #2	Reach	123	I3000	1072	149.5	156.1
Meander #2	Reach	123	I7000	2511	149.5	159.7
Meander #2	Reach	122	I1000	364	148.6	153.0
Meander #2	Reach	122	I-AP	14142	148.6	168.1
Meander #2	Reach	122	I0500	188	148.6	152.1
Meander #2	Reach	122	I2000	719	148.6	154.9
Meander #2	Reach	122	I2500	883	148.6	155.7
Meander #2	Reach	122	I0200	82	148.6	151.4
Meander #2	Reach	122	I-APbw	15284	148.6	172.4
Meander #2	Reach	122	I3000	1072	148.6	155.9
Meander #2	Reach	122	I7000	2511	148.6	159.5
Meander #2	Reach	121	I1000	364	149.7	152.8
Meander #2	Reach	121	I-AP	14142	149.7	168.0
Meander #2	Reach	121	I0500	188	149.7	151.9
Meander #2	Reach	121	I2000	719	149.7	154.9
Meander #2	Reach	121	I2500	883	149.7	155.6
Meander #2	Reach	121	I0200	82	149.7	151.2
Meander #2	Reach	121	I-APbw	15284	149.7	172.4
Meander #2	Reach	121	I3000	1072	149.7	155.8
Meander #2	Reach	121	I7000	2511	149.7	159.4
Meander #1	Reach	127	I1000	238	151.4	154.5
Meander #1	Reach	127	I-AP	13777	151.4	168.6
Meander #1	Reach	127	I0500	102	151.4	153.5
Meander #1	Reach	127	I2000	496	151.4	156.1
Meander #1	Reach	127	I2500	638	151.4	156.8
Meander #1	Reach	127	I0200	19	151.4	152.3
Meander #1	Reach	127	I-APbw	10299	151.4	172.4
Meander #1	Reach	127	I3000	720	151.4	157.2
Meander #1	Reach	127	I7000	2518	151.4	160.8

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #1	Reach	126	I1000	238	150.8	154.2
Meander #1	Reach	126	I-AP	13777	150.8	168.5
Meander #1	Reach	126	I0500	102	150.8	153.2
Meander #1	Reach	126	I2000	496	150.8	155.9
Meander #1	Reach	126	I2500	638	150.8	156.6
Meander #1	Reach	126	I0200	19	150.8	152.1
Meander #1	Reach	126	I-APbw	10299	150.8	172.4
Meander #1	Reach	126	I3000	720	150.8	157.0
Meander #1	Reach	126	I7000	2518	150.8	160.7
Meander #1	Reach	125	I1000	238	150.4	154.1
Meander #1	Reach	125	I-AP	13777	150.4	168.4
Meander #1	Reach	125	I0500	102	150.4	153.1
Meander #1	Reach	125	I2000	496	150.4	155.8
Meander #1	Reach	125	I2500	638	150.4	156.5
Meander #1	Reach	125	I0200	19	150.4	152.1
Meander #1	Reach	125	I-APbw	10299	150.4	172.4
Meander #1	Reach	125	I3000	720	150.4	156.9
Meander #1	Reach	125	I7000	2518	150.4	160.6
Meander #1	Reach	124	I1000	238	150.7	154.1
Meander #1	Reach	124	I-AP	13777	150.7	168.4
Meander #1	Reach	124	I0500	102	150.7	153.1
Meander #1	Reach	124	I2000	496	150.7	155.8
Meander #1	Reach	124	I2500	638	150.7	156.5
Meander #1	Reach	124	I0200	19	150.7	152.1
Meander #1	Reach	124	I-APbw	10299	150.7	172.4
Meander #1	Reach	124	I3000	720	150.7	156.9
Meander #1	Reach	124	I7000	2518	150.7	160.5
Cache	Main	16	I1000	1000	147.2	155.0
Cache	Main	16	I-AP	30982	147.2	168.8
Cache	Main	16	I0500	500	147.2	153.8
Cache	Main	16	I2000	2000	147.2	156.8
Cache	Main	16	I2500	2500	147.2	157.5
Cache	Main	16	I0200	200	147.2	152.5
Cache	Main	16	I-APbw	30982	147.2	172.5
Cache	Main	16	I3000	3000	147.2	158.1
Cache	Main	16	I7000	7000	147.2	161.5

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Main	15.9	I1000	1000	147.2	154.5
Cache	Main	15.9	I-AP	30982	147.2	168.5
Cache	Main	15.9	I0500	500	147.2	153.5
Cache	Main	15.9	I2000	2000	147.2	156.1
Cache	Main	15.9	I2500	2500	147.2	156.8
Cache	Main	15.9	I0200	200	147.2	152.3
Cache	Main	15.9	I-APbw	30982	147.2	172.4
Cache	Main	15.9	I3000	3000	147.2	157.2
Cache	Main	15.9	I7000	7000	147.2	160.7
Cache	Reach_1	15	I1000	762	149.6	154.5
Cache	Reach_1	15	I-AP	17205	149.6	168.5
Cache	Reach_1	15	I0500	398	149.6	153.5
Cache	Reach_1	15	I2000	1504	149.6	156.1
Cache	Reach_1	15	I2500	1862	149.6	156.8
Cache	Reach_1	15	I0200	181	149.6	152.3
Cache	Reach_1	15	I-APbw	20683	149.6	172.4
Cache	Reach_1	15	I3000	2280	149.6	157.2
Cache	Reach_1	15	I7000	4482	149.6	160.8
Cache	Reach_1	14.98	I1000	762	149.6	154.5
Cache	Reach_1	14.98	I-AP	17205	149.6	168.5
Cache	Reach_1	14.98	I0500	398	149.6	153.5
Cache	Reach_1	14.98	I2000	1504	149.6	156.1
Cache	Reach_1	14.98	I2500	1862	149.6	156.8
Cache	Reach_1	14.98	I0200	181	149.6	152.3
Cache	Reach_1	14.98	I-APbw	20683	149.6	172.4
Cache	Reach_1	14.98	I3000	2280	149.6	157.2
Cache	Reach_1	14.98	I7000	4482	149.6	160.8
Cache	Reach_1	14.97	I1000	762	149.6	154.5
Cache	Reach_1	14.97	I-AP	17205	149.6	168.5
Cache	Reach_1	14.97	I0500	398	149.6	153.4
Cache	Reach_1	14.97	I2000	1504	149.6	156.1
Cache	Reach_1	14.97	I2500	1862	149.6	156.8
Cache	Reach_1	14.97	I0200	181	149.6	152.3
Cache	Reach_1	14.97	I-APbw	20683	149.6	172.4
Cache	Reach_1	14.97	I3000	2280	149.6	157.2
Cache	Reach_1	14.97	I7000	4482	149.6	160.7

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.96	I1000	762	149.6	154.5
Cache	Reach_1	14.96	I-AP	17205	149.6	168.5
Cache	Reach_1	14.96	I0500	398	149.6	153.4
Cache	Reach_1	14.96	I2000	1504	149.6	156.1
Cache	Reach_1	14.96	I2500	1862	149.6	156.8
Cache	Reach_1	14.96	I0200	181	149.6	152.3
Cache	Reach_1	14.96	I-APbw	20683	149.6	172.4
Cache	Reach_1	14.96	I3000	2280	149.6	157.2
Cache	Reach_1	14.96	I7000	4482	149.6	160.7
Cache	Reach_1	14.95	I1000	762	149.6	154.4
Cache	Reach_1	14.95	I-AP	17205	149.6	168.5
Cache	Reach_1	14.95	I0500	398	149.6	153.4
Cache	Reach_1	14.95	I2000	1504	149.6	156.1
Cache	Reach_1	14.95	I2500	1862	149.6	156.8
Cache	Reach_1	14.95	I0200	181	149.6	152.3
Cache	Reach_1	14.95	I-APbw	20683	149.6	172.4
Cache	Reach_1	14.95	I3000	2280	149.6	157.2
Cache	Reach_1	14.95	I7000	4482	149.6	160.7
Cache	Reach_1	14.9	I1000	762	149.6	154.1
Cache	Reach_1	14.9	I-AP	17205	149.6	168.4
Cache	Reach_1	14.9	I0500	398	149.6	153.1
Cache	Reach_1	14.9	I2000	1504	149.6	155.8
Cache	Reach_1	14.9	I2500	1862	149.6	156.4
Cache	Reach_1	14.9	I0200	181	149.6	152.1
Cache	Reach_1	14.9	I-APbw	20683	149.6	172.4
Cache	Reach_1	14.9	I3000	2280	149.6	156.8
Cache	Reach_1	14.9	I7000	4482	149.6	160.5
Cache	Reach_2	14	I1000	1000	149.0	154.0
Cache	Reach_2	14	I-AP	30982	149.0	168.4
Cache	Reach_2	14	I0500	500	149.0	153.1
Cache	Reach_2	14	I2000	2000	149.0	155.7
Cache	Reach_2	14	I2500	2500	149.0	156.4
Cache	Reach_2	14	I0200	200	149.0	152.1
Cache	Reach_2	14	I-APbw	30982	149.0	172.4
Cache	Reach_2	14	I3000	3000	149.0	156.8
Cache	Reach_2	14	I7000	7000	149.0	160.4

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_2	13.9	I1000	1000	149.0	153.1
Cache	Reach_2	13.9	I-AP	30982	149.0	168.1
Cache	Reach_2	13.9	I0500	500	149.0	152.2
Cache	Reach_2	13.9	I2000	2000	149.0	155.1
Cache	Reach_2	13.9	I2500	2500	149.0	155.8
Cache	Reach_2	13.9	I0200	200	149.0	151.4
Cache	Reach_2	13.9	I-APbw	30982	149.0	172.4
Cache	Reach_2	13.9	I3000	3000	149.0	156.1
Cache	Reach_2	13.9	I7000	7000	149.0	159.6
Cache	Reach_3	13	I1000	636	149.1	153.2
Cache	Reach_3	13	I-AP	16840	149.1	168.1
Cache	Reach_3	13	I0500	312	149.1	152.2
Cache	Reach_3	13	I2000	1281	149.1	155.1
Cache	Reach_3	13	I2500	1617	149.1	155.8
Cache	Reach_3	13	I0200	118	149.1	151.4
Cache	Reach_3	13	I-APbw	15698	149.1	172.4
Cache	Reach_3	13	I3000	1928	149.1	156.1
Cache	Reach_3	13	I7000	4489	149.1	159.7
Cache	Reach_3	12.99	I1000	636	149.1	153.2
Cache	Reach_3	12.99	I-AP	16840	149.1	168.1
Cache	Reach_3	12.99	I0500	312	149.1	152.2
Cache	Reach_3	12.99	I2000	1281	149.1	155.1
Cache	Reach_3	12.99	I2500	1617	149.1	155.8
Cache	Reach_3	12.99	I0200	118	149.1	151.4
Cache	Reach_3	12.99	I-APbw	15698	149.1	172.4
Cache	Reach_3	12.99	I3000	1928	149.1	156.1
Cache	Reach_3	12.99	I7000	4489	149.1	159.7
Cache	Reach_3	12.98	I1000	636	149.1	153.1
Cache	Reach_3	12.98	I-AP	16840	149.1	168.1
Cache	Reach_3	12.98	I0500	312	149.1	152.2
Cache	Reach_3	12.98	I2000	1281	149.1	155.1
Cache	Reach_3	12.98	I2500	1617	149.1	155.8
Cache	Reach_3	12.98	I0200	118	149.1	151.4
Cache	Reach_3	12.98	I-APbw	15698	149.1	172.4
Cache	Reach_3	12.98	I3000	1928	149.1	156.1
Cache	Reach_3	12.98	I7000	4489	149.1	159.6

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_3	12.97	I1000	636	149.1	153.1
Cache	Reach_3	12.97	I-AP	16840	149.1	168.1
Cache	Reach_3	12.97	I0500	312	149.1	152.2
Cache	Reach_3	12.97	I2000	1281	149.1	155.1
Cache	Reach_3	12.97	I2500	1617	149.1	155.8
Cache	Reach_3	12.97	I0200	118	149.1	151.4
Cache	Reach_3	12.97	I-APbw	15698	149.1	172.4
Cache	Reach_3	12.97	I3000	1928	149.1	156.1
Cache	Reach_3	12.97	I7000	4489	149.1	159.6
Cache	Reach_3	12.96	I1000	636	149.1	153.1
Cache	Reach_3	12.96	I-AP	16840	149.1	168.1
Cache	Reach_3	12.96	I0500	312	149.1	152.2
Cache	Reach_3	12.96	I2000	1281	149.1	155.1
Cache	Reach_3	12.96	I2500	1617	149.1	155.8
Cache	Reach_3	12.96	I0200	118	149.1	151.4
Cache	Reach_3	12.96	I-APbw	15698	149.1	172.4
Cache	Reach_3	12.96	I3000	1928	149.1	156.1
Cache	Reach_3	12.96	I7000	4489	149.1	159.6
Cache	Reach_3	12.9	I1000	636	149.1	152.8
Cache	Reach_3	12.9	I-AP	16840	149.1	168.0
Cache	Reach_3	12.9	I0500	312	149.1	151.9
Cache	Reach_3	12.9	I2000	1281	149.1	154.8
Cache	Reach_3	12.9	I2500	1617	149.1	155.6
Cache	Reach_3	12.9	I0200	118	149.1	151.2
Cache	Reach_3	12.9	I-APbw	15698	149.1	172.4
Cache	Reach_3	12.9	I3000	1928	149.1	155.8
Cache	Reach_3	12.9	I7000	4489	149.1	159.4
Cache	Reach_4	12.5	I1000	1000	149.1	152.8
Cache	Reach_4	12.5	I-AP	30982	149.1	168.0
Cache	Reach_4	12.5	I0500	500	149.1	151.9
Cache	Reach_4	12.5	I2000	2000	149.1	154.8
Cache	Reach_4	12.5	I2500	2500	149.1	155.5
Cache	Reach_4	12.5	I0200	200	149.1	151.2
Cache	Reach_4	12.5	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.5	I3000	3000	149.1	155.7
Cache	Reach_4	12.5	I7000	7000	149.1	159.3

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_4	12.2	I1000	1000	149.1	152.2
Cache	Reach_4	12.2	I-AP	30982	149.1	167.9
Cache	Reach_4	12.2	I0500	500	149.1	150.9
Cache	Reach_4	12.2	I2000	2000	149.1	154.6
Cache	Reach_4	12.2	I2500	2500	149.1	155.3
Cache	Reach_4	12.2	I0200	200	149.1	150.4
Cache	Reach_4	12.2	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.2	I3000	3000	149.1	155.4
Cache	Reach_4	12.2	I7000	7000	149.1	159.0
Cache	Reach_5	12	I1000	966	148.0	152.2
Cache	Reach_5	12	I-AP	21891	148.0	167.9
Cache	Reach_5	12	I0500	498	148.0	150.9
Cache	Reach_5	12	I2000	1794	148.0	154.6
Cache	Reach_5	12	I2500	2216	148.0	155.3
Cache	Reach_5	12	I0200	200	148.0	150.4
Cache	Reach_5	12	I-APbw	23557	148.0	172.4
Cache	Reach_5	12	I3000	2658	148.0	155.4
Cache	Reach_5	12	I7000	5713	148.0	159.0
Cache	Reach_5	11.99	I1000	966	148.0	152.2
Cache	Reach_5	11.99	I-AP	21891	148.0	167.9
Cache	Reach_5	11.99	I0500	498	148.0	150.9
Cache	Reach_5	11.99	I2000	1794	148.0	154.6
Cache	Reach_5	11.99	I2500	2216	148.0	155.3
Cache	Reach_5	11.99	I0200	200	148.0	150.4
Cache	Reach_5	11.99	I-APbw	23557	148.0	172.4
Cache	Reach_5	11.99	I3000	2658	148.0	155.4
Cache	Reach_5	11.99	I7000	5713	148.0	159.0
Cache	Reach_5	11.98	I1000	966	148.0	152.2
Cache	Reach_5	11.98	I-AP	21891	148.0	167.9
Cache	Reach_5	11.98	I0500	498	148.0	150.9
Cache	Reach_5	11.98	I2000	1794	148.0	154.6
Cache	Reach_5	11.98	I2500	2216	148.0	155.3
Cache	Reach_5	11.98	I0200	200	148.0	150.4
Cache	Reach_5	11.98	I-APbw	23557	148.0	172.4
Cache	Reach_5	11.98	I3000	2658	148.0	155.4
Cache	Reach_5	11.98	I7000	5713	148.0	159.0

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	11.97	I1000	966	148.0	152.2
Cache	Reach_5	11.97	I-AP	21891	148.0	167.9
Cache	Reach_5	11.97	I0500	498	148.0	150.9
Cache	Reach_5	11.97	I2000	1794	148.0	154.6
Cache	Reach_5	11.97	I2500	2216	148.0	155.3
Cache	Reach_5	11.97	I0200	200	148.0	150.4
Cache	Reach_5	11.97	I-APbw	23557	148.0	172.4
Cache	Reach_5	11.97	I3000	2658	148.0	155.4
Cache	Reach_5	11.97	I7000	5713	148.0	159.0
Cache	Reach_5	11.96	I1000	966	148.0	152.2
Cache	Reach_5	11.96	I-AP	21891	148.0	167.9
Cache	Reach_5	11.96	I0500	498	148.0	150.9
Cache	Reach_5	11.96	I2000	1794	148.0	154.5
Cache	Reach_5	11.96	I2500	2216	148.0	155.3
Cache	Reach_5	11.96	I0200	200	148.0	150.3
Cache	Reach_5	11.96	I-APbw	23557	148.0	172.4
Cache	Reach_5	11.96	I3000	2658	148.0	155.4
Cache	Reach_5	11.96	I7000	5713	148.0	159.0
Cache	Reach_5	11	I1000	966	147.6	151.7
Cache	Reach_5	11	I-AP	21891	147.6	167.7
Cache	Reach_5	11	I0500	498	147.6	149.8
Cache	Reach_5	11	I2000	1794	147.6	154.3
Cache	Reach_5	11	I2500	2216	147.6	155.0
Cache	Reach_5	11	I0200	200	147.6	148.2
Cache	Reach_5	11	I-APbw	23557	147.6	172.3
Cache	Reach_5	11	I3000	2658	147.6	155.1
Cache	Reach_5	11	I7000	5713	147.6	158.7
Cache	Reach_6	10	I1000	1000	145.0	151.7
Cache	Reach_6	10	I-AP	30982	145.0	167.5
Cache	Reach_6	10	I0500	500	145.0	149.8
Cache	Reach_6	10	I2000	2000	145.0	154.3
Cache	Reach_6	10	I2500	2500	145.0	155.0
Cache	Reach_6	10	I0200	200	145.0	148.1
Cache	Reach_6	10	I-APbw	30982	145.0	172.3
Cache	Reach_6	10	I3000	3000	145.0	155.1
Cache	Reach_6	10	I7000	7000	145.0	158.6

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	9	I1000	1000	143.8	151.6
Cache	Reach_6	9	I-AP	30982	143.8	166.9
Cache	Reach_6	9	I0500	500	143.8	149.6
Cache	Reach_6	9	I2000	2000	143.8	154.2
Cache	Reach_6	9	I2500	2500	143.8	154.9
Cache	Reach_6	9	I0200	200	143.8	148.1
Cache	Reach_6	9	I-APbw	30982	143.8	172.2
Cache	Reach_6	9	I3000	3000	143.8	154.8
Cache	Reach_6	9	I7000	7000	143.8	158.2
Cache	Reach_6	8	I1000	1000	143.8	151.5
Cache	Reach_6	8	I-AP	30982	143.8	166.2
Cache	Reach_6	8	I0500	500	143.8	149.6
Cache	Reach_6	8	I2000	2000	143.8	154.1
Cache	Reach_6	8	I2500	2500	143.8	154.8
Cache	Reach_6	8	I0200	200	143.8	148.0
Cache	Reach_6	8	I-APbw	30982	143.8	172.2
Cache	Reach_6	8	I3000	3000	143.8	154.7
Cache	Reach_6	8	I7000	7000	143.8	157.9
Cache	Reach_6	7	I1000	1000	144.4	151.5
Cache	Reach_6	7	I-AP	30982	144.4	165.9
Cache	Reach_6	7	I0500	500	144.4	149.6
Cache	Reach_6	7	I2000	2000	144.4	154.1
Cache	Reach_6	7	I2500	2500	144.4	154.7
Cache	Reach_6	7	I0200	200	144.4	148.0
Cache	Reach_6	7	I-APbw	30982	144.4	172.2
Cache	Reach_6	7	I3000	3000	144.4	154.7
Cache	Reach_6	7	I7000	7000	144.4	157.9
Cache	Reach_7	6.7	I1000	907	143.8	151.5
Cache	Reach_7	6.7	I-AP	19899	143.8	166.0
Cache	Reach_7	6.7	I0500	483	143.8	149.6
Cache	Reach_7	6.7	I2000	1740	143.8	154.1
Cache	Reach_7	6.7	I2500	2168	143.8	154.8
Cache	Reach_7	6.7	I0200	200	143.8	148.0
Cache	Reach_7	6.7	I-APbw	14834	143.8	172.1
Cache	Reach_7	6.7	I3000	2585	143.8	154.7
Cache	Reach_7	6.7	I7000	5780	143.8	157.9

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6.69	I1000	907	143.8	151.5
Cache	Reach_7	6.69	I-AP	19899	143.8	166.0
Cache	Reach_7	6.69	I0500	483	143.8	149.6
Cache	Reach_7	6.69	I2000	1740	143.8	154.1
Cache	Reach_7	6.69	I2500	2168	143.8	154.7
Cache	Reach_7	6.69	I0200	200	143.8	148.0
Cache	Reach_7	6.69	I-APbw	14834	143.8	172.1
Cache	Reach_7	6.69	I3000	2585	143.8	154.7
Cache	Reach_7	6.69	I7000	5780	143.8	157.9
Cache	Reach_7	6.68	I1000	907	143.8	151.5
Cache	Reach_7	6.68	I-AP	19899	143.8	166.0
Cache	Reach_7	6.68	I0500	483	143.8	149.6
Cache	Reach_7	6.68	I2000	1740	143.8	154.1
Cache	Reach_7	6.68	I2500	2168	143.8	154.7
Cache	Reach_7	6.68	I0200	200	143.8	148.0
Cache	Reach_7	6.68	I-APbw	14834	143.8	172.1
Cache	Reach_7	6.68	I3000	2585	143.8	154.7
Cache	Reach_7	6.68	I7000	5780	143.8	157.9
Cache	Reach_7	6.67	I1000	907	143.8	151.5
Cache	Reach_7	6.67	I-AP	19899	143.8	166.0
Cache	Reach_7	6.67	I0500	483	143.8	149.6
Cache	Reach_7	6.67	I2000	1740	143.8	154.1
Cache	Reach_7	6.67	I2500	2168	143.8	154.7
Cache	Reach_7	6.67	I0200	200	143.8	148.0
Cache	Reach_7	6.67	I-APbw	14834	143.8	172.1
Cache	Reach_7	6.67	I3000	2585	143.8	154.6
Cache	Reach_7	6.67	I7000	5780	143.8	157.9
Cache	Reach_7	6.66	I1000	907	143.8	151.5
Cache	Reach_7	6.66	I-AP	19899	143.8	166.0
Cache	Reach_7	6.66	I0500	483	143.8	149.6
Cache	Reach_7	6.66	I2000	1740	143.8	154.1
Cache	Reach_7	6.66	I2500	2168	143.8	154.7
Cache	Reach_7	6.66	I0200	200	143.8	148.0
Cache	Reach_7	6.66	I-APbw	14834	143.8	172.1
Cache	Reach_7	6.66	I3000	2585	143.8	154.6
Cache	Reach_7	6.66	I7000	5780	143.8	157.9

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6	I1000	907	143.8	151.5
Cache	Reach_7	6	I-AP	19899	143.8	165.8
Cache	Reach_7	6	I0500	483	143.8	149.5
Cache	Reach_7	6	I2000	1740	143.8	154.0
Cache	Reach_7	6	I2500	2168	143.8	154.7
Cache	Reach_7	6	I0200	200	143.8	148.0
Cache	Reach_7	6	I-APbw	14834	143.8	172.1
Cache	Reach_7	6	I3000	2585	143.8	154.6
Cache	Reach_7	6	I7000	5780	143.8	157.8
Cache	Reach_8	6.5	I1000	1000	143.8	151.5
Cache	Reach_8	6.5	I-AP	30982	143.8	165.6
Cache	Reach_8	6.5	I0500	500	143.8	149.5
Cache	Reach_8	6.5	I2000	2000	143.8	154.0
Cache	Reach_8	6.5	I2500	2500	143.8	154.7
Cache	Reach_8	6.5	I0200	200	143.8	148.0
Cache	Reach_8	6.5	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.5	I3000	3000	143.8	154.6
Cache	Reach_8	6.5	I7000	7000	143.8	157.7
Cache	Reach_8	6.4	I1000	1000	143.8	151.5
Cache	Reach_8	6.4	I-AP	30982	143.8	165.6
Cache	Reach_8	6.4	I0500	500	143.8	149.5
Cache	Reach_8	6.4	I2000	2000	143.8	154.0
Cache	Reach_8	6.4	I2500	2500	143.8	154.7
Cache	Reach_8	6.4	I0200	200	143.8	148.0
Cache	Reach_8	6.4	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.4	I3000	3000	143.8	154.6
Cache	Reach_8	6.4	I7000	7000	143.8	157.7
Cache	Reach_9	5	I1000	984	144.4	151.5
Cache	Reach_9	5	I-AP	18406	144.4	165.7
Cache	Reach_9	5	I0500	500	144.4	149.5
Cache	Reach_9	5	I2000	1771	144.4	154.0
Cache	Reach_9	5	I2500	2176	144.4	154.7
Cache	Reach_9	5	I0200	200	144.4	148.0
Cache	Reach_9	5	I-APbw	20708	144.4	172.1
Cache	Reach_9	5	I3000	2623	144.4	154.6
Cache	Reach_9	5	I7000	5610	144.4	157.7

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.99	I1000	984	144.4	151.5
Cache	Reach_9	4.99	I-AP	18406	144.4	165.7
Cache	Reach_9	4.99	I0500	500	144.4	149.5
Cache	Reach_9	4.99	I2000	1771	144.4	154.0
Cache	Reach_9	4.99	I2500	2176	144.4	154.7
Cache	Reach_9	4.99	I0200	200	144.4	148.0
Cache	Reach_9	4.99	I-APbw	20708	144.4	172.1
Cache	Reach_9	4.99	I3000	2623	144.4	154.6
Cache	Reach_9	4.99	I7000	5610	144.4	157.7
Cache	Reach_9	4.98	I1000	984	144.4	151.5
Cache	Reach_9	4.98	I-AP	18406	144.4	165.7
Cache	Reach_9	4.98	I0500	500	144.4	149.5
Cache	Reach_9	4.98	I2000	1771	144.4	154.0
Cache	Reach_9	4.98	I2500	2176	144.4	154.7
Cache	Reach_9	4.98	I0200	200	144.4	148.0
Cache	Reach_9	4.98	I-APbw	20708	144.4	172.1
Cache	Reach_9	4.98	I3000	2623	144.4	154.6
Cache	Reach_9	4.98	I7000	5610	144.4	157.7
Cache	Reach_9	4.97	I1000	984	144.4	151.5
Cache	Reach_9	4.97	I-AP	18406	144.4	165.7
Cache	Reach_9	4.97	I0500	500	144.4	149.5
Cache	Reach_9	4.97	I2000	1771	144.4	154.0
Cache	Reach_9	4.97	I2500	2176	144.4	154.7
Cache	Reach_9	4.97	I0200	200	144.4	148.0
Cache	Reach_9	4.97	I-APbw	20708	144.4	172.1
Cache	Reach_9	4.97	I3000	2623	144.4	154.6
Cache	Reach_9	4.97	I7000	5610	144.4	157.7
Cache	Reach_9	4.96	I1000	984	144.4	151.5
Cache	Reach_9	4.96	I-AP	18406	144.4	165.7
Cache	Reach_9	4.96	I0500	500	144.4	149.5
Cache	Reach_9	4.96	I2000	1771	144.4	154.0
Cache	Reach_9	4.96	I2500	2176	144.4	154.7
Cache	Reach_9	4.96	I0200	200	144.4	148.0
Cache	Reach_9	4.96	I-APbw	20708	144.4	172.1
Cache	Reach_9	4.96	I3000	2623	144.4	154.6
Cache	Reach_9	4.96	I7000	5610	144.4	157.7

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.5	I1000	984	144.4	151.4
Cache	Reach_9	4.5	I-AP	18406	144.4	165.4
Cache	Reach_9	4.5	I0500	500	144.4	149.5
Cache	Reach_9	4.5	I2000	1771	144.4	154.0
Cache	Reach_9	4.5	I2500	2176	144.4	154.6
Cache	Reach_9	4.5	I0200	200	144.4	147.9
Cache	Reach_9	4.5	I-APbw	20708	144.4	172.1
Cache	Reach_9	4.5	I3000	2623	144.4	154.5
Cache	Reach_9	4.5	I7000	5610	144.4	157.6
Cache	Reach_10	4	I1000	1000	144.7	151.4
Cache	Reach_10	4	I-AP	30982	144.7	165.4
Cache	Reach_10	4	I0500	500	144.7	149.5
Cache	Reach_10	4	I2000	2000	144.7	154.0
Cache	Reach_10	4	I2500	2500	144.7	154.6
Cache	Reach_10	4	I0200	200	144.7	147.9
Cache	Reach_10	4	I-APbw	30982	144.7	172.1
Cache	Reach_10	4	I3000	3000	144.7	154.5
Cache	Reach_10	4	I7000	7000	144.7	157.6
Cache	Reach_10	3	I1000	1000	144.7	151.4
Cache	Reach_10	3	I-AP	30982	144.7	165.3
Cache	Reach_10	3	I0500	500	144.7	149.4
Cache	Reach_10	3	I2000	2000	144.7	153.9
Cache	Reach_10	3	I2500	2500	144.7	154.6
Cache	Reach_10	3	I0200	200	144.7	147.9
Cache	Reach_10	3	I-APbw	30982	144.7	172.1
Cache	Reach_10	3	I3000	3000	144.7	154.4
Cache	Reach_10	3	I7000	7000	144.7	157.5
Cache	Reach_11	2.5	I1000	942	144.7	151.4
Cache	Reach_11	2.5	I-AP	24862	144.7	165.3
Cache	Reach_11	2.5	I0500	490	144.7	149.4
Cache	Reach_11	2.5	I2000	1852	144.7	153.9
Cache	Reach_11	2.5	I2500	2309	144.7	154.6
Cache	Reach_11	2.5	I0200	200	144.7	147.9
Cache	Reach_11	2.5	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.5	I3000	2770	144.7	154.4
Cache	Reach_11	2.5	I7000	6318	144.7	157.5

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.49	I1000	942	144.7	151.4
Cache	Reach_11	2.49	I-AP	24862	144.7	165.3
Cache	Reach_11	2.49	I0500	490	144.7	149.4
Cache	Reach_11	2.49	I2000	1852	144.7	153.9
Cache	Reach_11	2.49	I2500	2309	144.7	154.6
Cache	Reach_11	2.49	I0200	200	144.7	147.9
Cache	Reach_11	2.49	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.49	I3000	2770	144.7	154.4
Cache	Reach_11	2.49	I7000	6318	144.7	157.5
Cache	Reach_11	2.48	I1000	942	144.7	151.4
Cache	Reach_11	2.48	I-AP	24862	144.7	165.3
Cache	Reach_11	2.48	I0500	490	144.7	149.4
Cache	Reach_11	2.48	I2000	1852	144.7	153.9
Cache	Reach_11	2.48	I2500	2309	144.7	154.6
Cache	Reach_11	2.48	I0200	200	144.7	147.9
Cache	Reach_11	2.48	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.48	I3000	2770	144.7	154.4
Cache	Reach_11	2.48	I7000	6318	144.7	157.5
Cache	Reach_11	2.47	I1000	942	144.7	151.4
Cache	Reach_11	2.47	I-AP	24862	144.7	165.3
Cache	Reach_11	2.47	I0500	490	144.7	149.4
Cache	Reach_11	2.47	I2000	1852	144.7	153.9
Cache	Reach_11	2.47	I2500	2309	144.7	154.6
Cache	Reach_11	2.47	I0200	200	144.7	147.9
Cache	Reach_11	2.47	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.47	I3000	2770	144.7	154.4
Cache	Reach_11	2.47	I7000	6318	144.7	157.5
Cache	Reach_11	2.46	I1000	942	144.7	151.4
Cache	Reach_11	2.46	I-AP	24862	144.7	165.3
Cache	Reach_11	2.46	I0500	490	144.7	149.4
Cache	Reach_11	2.46	I2000	1852	144.7	153.9
Cache	Reach_11	2.46	I2500	2309	144.7	154.6
Cache	Reach_11	2.46	I0200	200	144.7	147.9
Cache	Reach_11	2.46	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.46	I3000	2770	144.7	154.4
Cache	Reach_11	2.46	I7000	6318	144.7	157.5

HEC-RAS Output for Meander Restoration with NO Closures Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.1	I1000	942	144.7	151.3
Cache	Reach_11	2.1	I-AP	24862	144.7	165.2
Cache	Reach_11	2.1	I0500	490	144.7	149.4
Cache	Reach_11	2.1	I2000	1852	144.7	153.9
Cache	Reach_11	2.1	I2500	2309	144.7	154.6
Cache	Reach_11	2.1	I0200	200	144.7	147.8
Cache	Reach_11	2.1	I-APbw	20335	144.7	172.1
Cache	Reach_11	2.1	I3000	2770	144.7	154.4
Cache	Reach_11	2.1	I7000	6318	144.7	157.5
Cache	Reach_12	2	I1000	1000	143.3	151.3
Cache	Reach_12	2	I-AP	30982	143.3	165.2
Cache	Reach_12	2	I0500	500	143.3	149.4
Cache	Reach_12	2	I2000	2000	143.3	153.9
Cache	Reach_12	2	I2500	2500	143.3	154.6
Cache	Reach_12	2	I0200	200	143.3	147.8
Cache	Reach_12	2	I-APbw	30982	143.3	172.1
Cache	Reach_12	2	I3000	3000	143.3	154.4
Cache	Reach_12	2	I7000	7000	143.3	157.4
Cache	Reach_12	1	I1000	1000	143.9	151.2
Cache	Reach_12	1	I-AP	30982	143.9	164.9
Cache	Reach_12	1	I0500	500	143.9	149.3
Cache	Reach_12	1	I2000	2000	143.9	153.8
Cache	Reach_12	1	I2500	2500	143.9	154.4
Cache	Reach_12	1	I0200	200	143.9	147.8
Cache	Reach_12	1	I-APbw	30982	143.9	172.0
Cache	Reach_12	1	I3000	3000	143.9	154.1
Cache	Reach_12	1	I7000	7000	143.9	157.0
Cache	Reach_12	0	I1000	1000	144.1	151.0
Cache	Reach_12	0	I-AP	30982	144.1	164.6
Cache	Reach_12	0	I0500	500	144.1	149.1
Cache	Reach_12	0	I2000	2000	144.1	153.6
Cache	Reach_12	0	I2500	2500	144.1	154.2
Cache	Reach_12	0	I0200	200	144.1	147.5
Cache	Reach_12	0	I-APbw	30982	144.1	172.0
Cache	Reach_12	0	I3000	3000	144.1	153.7
Cache	Reach_12	0	I7000	7000	144.1	156.6

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #6	Reach	104	I1000	1000	148.9	153.6
Meander #6	Reach	104	I-AP	6807	148.9	165.4
Meander #6	Reach	104	I0500	500	148.9	152.2
Meander #6	Reach	104	I2000	2000	148.9	155.6
Meander #6	Reach	104	I2500	2500	148.9	156.3
Meander #6	Reach	104	I0200	200	148.9	150.9
Meander #6	Reach	104	I-APbw	10784	148.9	172.1
Meander #6	Reach	104	I3000	3000	148.9	156.7
Meander #6	Reach	104	I7000	4502	148.9	158.7
Meander #6	Reach	103	I1000	1000	147.6	153.2
Meander #6	Reach	103	I-AP	6807	147.6	165.3
Meander #6	Reach	103	I0500	500	147.6	151.8
Meander #6	Reach	103	I2000	2000	147.6	155.3
Meander #6	Reach	103	I2500	2500	147.6	155.9
Meander #6	Reach	103	I0200	200	147.6	150.6
Meander #6	Reach	103	I-APbw	10784	147.6	172.1
Meander #6	Reach	103	I3000	3000	147.6	156.2
Meander #6	Reach	103	I7000	4502	147.6	158.4
Meander #6	Reach	102	I1000	1000	147.6	152.9
Meander #6	Reach	102	I-AP	6807	147.6	165.3
Meander #6	Reach	102	I0500	500	147.6	151.6
Meander #6	Reach	102	I2000	2000	147.6	154.9
Meander #6	Reach	102	I2500	2500	147.6	155.6
Meander #6	Reach	102	I0200	200	147.6	150.4
Meander #6	Reach	102	I-APbw	10784	147.6	172.1
Meander #6	Reach	102	I3000	3000	147.6	155.9
Meander #6	Reach	102	I7000	4502	147.6	158.1
Meander #6	Reach	101	I1000	1000	147.8	151.0
Meander #6	Reach	101	I-AP	6807	147.8	165.3
Meander #6	Reach	101	I0500	500	147.8	149.8
Meander #6	Reach	101	I2000	2000	147.8	153.7
Meander #6	Reach	101	I2500	2500	147.8	154.3
Meander #6	Reach	101	I0200	200	147.8	149.1
Meander #6	Reach	101	I-APbw	10784	147.8	172.1
Meander #6	Reach	101	I3000	3000	147.8	153.9
Meander #6	Reach	101	I7000	4502	147.8	157.2

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	110	I1000	986	150.4	158.1
Meander #5	Reach	110	I-AP	12637	150.4	165.8
Meander #5	Reach	110	I0500	495	150.4	158.0
Meander #5	Reach	110	I2000	1937	150.4	158.2
Meander #5	Reach	110	I2500	2389	150.4	158.3
Meander #5	Reach	110	I0200	200	150.4	158.0
Meander #5	Reach	110	I-APbw	10411	150.4	172.1
Meander #5	Reach	110	I3000	2799	150.4	158.4
Meander #5	Reach	110	I7000	5504	150.4	159.6
Meander #5	Reach	109	I1000	986	150.6	158.1
Meander #5	Reach	109	I-AP	12637	150.6	165.7
Meander #5	Reach	109	I0500	495	150.6	158.0
Meander #5	Reach	109	I2000	1937	150.6	158.2
Meander #5	Reach	109	I2500	2389	150.6	158.2
Meander #5	Reach	109	I0200	200	150.6	158.0
Meander #5	Reach	109	I-APbw	10411	150.6	172.1
Meander #5	Reach	109	I3000	2799	150.6	158.3
Meander #5	Reach	109	I7000	5504	150.6	159.4
Meander #5	Reach	108	I1000	986	147.4	158.0
Meander #5	Reach	108	I-AP	12637	147.4	165.6
Meander #5	Reach	108	I0500	495	147.4	158.0
Meander #5	Reach	108	I2000	1937	147.4	158.1
Meander #5	Reach	108	I2500	2389	147.4	158.1
Meander #5	Reach	108	I0200	200	147.4	158.0
Meander #5	Reach	108	I-APbw	10411	147.4	172.1
Meander #5	Reach	108	I3000	2799	147.4	158.2
Meander #5	Reach	108	I7000	5504	147.4	159.1
Meander #5	Reach	107	I1000	986	146.9	158.0
Meander #5	Reach	107	I-AP	12637	146.9	165.5
Meander #5	Reach	107	I0500	495	146.9	158.0
Meander #5	Reach	107	I2000	1937	146.9	158.1
Meander #5	Reach	107	I2500	2389	146.9	158.1
Meander #5	Reach	107	I0200	200	146.9	158.0
Meander #5	Reach	107	I-APbw	10411	146.9	172.1
Meander #5	Reach	107	I3000	2799	146.9	158.1
Meander #5	Reach	107	I7000	5504	146.9	159.0

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	106	I1000	986	148.1	158.0
Meander #5	Reach	106	I-AP	12637	148.1	165.5
Meander #5	Reach	106	I0500	495	148.1	158.0
Meander #5	Reach	106	I2000	1937	148.1	158.0
Meander #5	Reach	106	I2500	2389	148.1	158.0
Meander #5	Reach	106	I0200	200	148.1	158.0
Meander #5	Reach	106	I-APbw	10411	148.1	172.1
Meander #5	Reach	106	I3000	2799	148.1	158.1
Meander #5	Reach	106	I7000	5504	148.1	158.8
Meander #5	Reach	105	I1000	986	148.8	158.0
Meander #5	Reach	105	I-AP	12637	148.8	165.5
Meander #5	Reach	105	I0500	495	148.8	158.0
Meander #5	Reach	105	I2000	1937	148.8	158.0
Meander #5	Reach	105	I2500	2389	148.8	158.0
Meander #5	Reach	105	I0200	200	148.8	158.0
Meander #5	Reach	105	I-APbw	10411	148.8	172.1
Meander #5	Reach	105	I3000	2799	148.8	158.0
Meander #5	Reach	105	I7000	5504	148.8	158.8
Meander #4	Reach	113	I1000	1000	149.1	158.1
Meander #4	Reach	113	I-AP	13957	149.1	166.2
Meander #4	Reach	113	I0500	500	149.1	158.1
Meander #4	Reach	113	I2000	2000	149.1	158.4
Meander #4	Reach	113	I2500	2450	149.1	158.6
Meander #4	Reach	113	I0200	200	149.1	158.0
Meander #4	Reach	113	I-APbw	20671	149.1	172.2
Meander #4	Reach	113	I3000	2829	149.1	158.8
Meander #4	Reach	113	I7000	4819	149.1	160.2
Meander #4	Reach	112	I1000	1000	141.5	158.1
Meander #4	Reach	112	I-AP	13957	141.5	166.1
Meander #4	Reach	112	I0500	500	141.5	158.0
Meander #4	Reach	112	I2000	2000	141.5	158.3
Meander #4	Reach	112	I2500	2450	141.5	158.4
Meander #4	Reach	112	I0200	200	141.5	158.0
Meander #4	Reach	112	I-APbw	20671	141.5	172.2
Meander #4	Reach	112	I3000	2829	141.5	158.6
Meander #4	Reach	112	I7000	4819	141.5	159.9

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #4	Reach	111	I1000	1000	148.5	158.1
Meander #4	Reach	111	I-AP	13957	148.5	166.0
Meander #4	Reach	111	I0500	500	148.5	158.0
Meander #4	Reach	111	I2000	2000	148.5	158.2
Meander #4	Reach	111	I2500	2450	148.5	158.3
Meander #4	Reach	111	I0200	200	148.5	158.0
Meander #4	Reach	111	I-APbw	20671	148.5	172.2
Meander #4	Reach	111	I3000	2829	148.5	158.4
Meander #4	Reach	111	I7000	4819	148.5	159.7
Meander #3	Main	120	I1000	1000	150.4	158.8
Meander #3	Main	120	I-AP	9160	150.4	168.0
Meander #3	Main	120	I0500	500	150.4	158.6
Meander #3	Main	120	I2000	2000	150.4	159.4
Meander #3	Main	120	I2500	2500	150.4	159.7
Meander #3	Main	120	I0200	200	150.4	158.5
Meander #3	Main	120	I-APbw	7513	150.4	172.4
Meander #3	Main	120	I3000	2927	150.4	160.1
Meander #3	Main	120	I7000	3656	150.4	161.4
Meander #3	Main	119	I1000	1000	150.4	158.8
Meander #3	Main	119	I-AP	9160	150.4	168.0
Meander #3	Main	119	I0500	500	150.4	158.6
Meander #3	Main	119	I2000	2000	150.4	159.3
Meander #3	Main	119	I2500	2500	150.4	159.7
Meander #3	Main	119	I0200	200	150.4	158.5
Meander #3	Main	119	I-APbw	7513	150.4	172.4
Meander #3	Main	119	I3000	2927	150.4	160.1
Meander #3	Main	119	I7000	3656	150.4	161.3
Meander #3	Main	118	I1000	1000	150.7	158.7
Meander #3	Main	118	I-AP	9160	150.7	167.9
Meander #3	Main	118	I0500	500	150.7	158.6
Meander #3	Main	118	I2000	2000	150.7	159.2
Meander #3	Main	118	I2500	2500	150.7	159.6
Meander #3	Main	118	I0200	200	150.7	158.5
Meander #3	Main	118	I-APbw	7513	150.7	172.4
Meander #3	Main	118	I3000	2927	150.7	159.9
Meander #3	Main	118	I7000	3656	150.7	161.3

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	117	I1000	1000	150.4	158.7
Meander #3	Main	117	I-AP	9160	150.4	167.9
Meander #3	Main	117	I0500	500	150.4	158.6
Meander #3	Main	117	I2000	2000	150.4	159.0
Meander #3	Main	117	I2500	2500	150.4	159.3
Meander #3	Main	117	I0200	200	150.4	158.5
Meander #3	Main	117	I-APbw	7513	150.4	172.4
Meander #3	Main	117	I3000	2927	150.4	159.7
Meander #3	Main	117	I7000	3656	150.4	161.2
Meander #3	Main	116	I1000	1000	149.7	158.6
Meander #3	Main	116	I-AP	9160	149.7	167.8
Meander #3	Main	116	I0500	500	149.7	158.5
Meander #3	Main	116	I2000	2000	149.7	158.8
Meander #3	Main	116	I2500	2500	149.7	159.0
Meander #3	Main	116	I0200	200	149.7	158.5
Meander #3	Main	116	I-APbw	7513	149.7	172.4
Meander #3	Main	116	I3000	2927	149.7	159.3
Meander #3	Main	116	I7000	3656	149.7	160.9
Meander #3	Main	115	I1000	1000	149.7	158.6
Meander #3	Main	115	I-AP	9160	149.7	167.8
Meander #3	Main	115	I0500	500	149.7	158.5
Meander #3	Main	115	I2000	2000	149.7	158.7
Meander #3	Main	115	I2500	2500	149.7	158.9
Meander #3	Main	115	I0200	200	149.7	158.5
Meander #3	Main	115	I-APbw	7513	149.7	172.4
Meander #3	Main	115	I3000	2927	149.7	159.2
Meander #3	Main	115	I7000	3656	149.7	160.8
Meander #3	Main	114	I1000	1000	149.6	158.5
Meander #3	Main	114	I-AP	9160	149.6	167.7
Meander #3	Main	114	I0500	500	149.6	158.5
Meander #3	Main	114	I2000	2000	149.6	158.6
Meander #3	Main	114	I2500	2500	149.6	158.7
Meander #3	Main	114	I0200	200	149.6	158.5
Meander #3	Main	114	I-APbw	7513	149.6	172.4
Meander #3	Main	114	I3000	2927	149.6	159.0
Meander #3	Main	114	I7000	3656	149.6	160.7

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #2	Reach	123	I1000	899	149.5	160.0
Meander #2	Reach	123	I-AP	14111	149.5	168.2
Meander #2	Reach	123	I0500	500	149.5	160.0
Meander #2	Reach	123	I2000	1737	149.5	160.1
Meander #2	Reach	123	I2500	2155	149.5	160.2
Meander #2	Reach	123	I0200	200	149.5	160.0
Meander #2	Reach	123	I-APbw	15433	149.5	172.4
Meander #2	Reach	123	I3000	2549	149.5	160.3
Meander #2	Reach	123	I7000	4363	149.5	161.7
Meander #2	Reach	122	I1000	899	148.6	160.0
Meander #2	Reach	122	I-AP	14111	148.6	168.1
Meander #2	Reach	122	I0500	500	148.6	160.0
Meander #2	Reach	122	I2000	1737	148.6	160.1
Meander #2	Reach	122	I2500	2155	148.6	160.1
Meander #2	Reach	122	I0200	200	148.6	160.0
Meander #2	Reach	122	I-APbw	15433	148.6	172.4
Meander #2	Reach	122	I3000	2549	148.6	160.2
Meander #2	Reach	122	I7000	4363	148.6	161.6
Meander #2	Reach	121	I1000	899	149.7	160.0
Meander #2	Reach	121	I-AP	14111	149.7	168.1
Meander #2	Reach	121	I0500	500	149.7	160.0
Meander #2	Reach	121	I2000	1737	149.7	160.0
Meander #2	Reach	121	I2500	2155	149.7	160.0
Meander #2	Reach	121	I0200	200	149.7	160.0
Meander #2	Reach	121	I-APbw	15433	149.7	172.4
Meander #2	Reach	121	I3000	2549	149.7	160.1
Meander #2	Reach	121	I7000	4363	149.7	161.5
Meander #1	Reach	127	I1000	1000	151.4	160.1
Meander #1	Reach	127	I-AP	13930	151.4	168.6
Meander #1	Reach	127	I0500	500	151.4	160.1
Meander #1	Reach	127	I2000	2000	151.4	160.4
Meander #1	Reach	127	I2500	2466	151.4	160.6
Meander #1	Reach	127	I0200	200	151.4	160.0
Meander #1	Reach	127	I-APbw	15126	151.4	172.5
Meander #1	Reach	127	I3000	2861	151.4	160.8
Meander #1	Reach	127	I7000	5104	151.4	162.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #1	Reach	126	I1000	1000	150.8	160.1
Meander #1	Reach	126	I-AP	13930	150.8	168.5
Meander #1	Reach	126	I0500	500	150.8	160.0
Meander #1	Reach	126	I2000	2000	150.8	160.3
Meander #1	Reach	126	I2500	2466	150.8	160.5
Meander #1	Reach	126	I0200	200	150.8	160.0
Meander #1	Reach	126	I-APbw	15126	150.8	172.5
Meander #1	Reach	126	I3000	2861	150.8	160.7
Meander #1	Reach	126	I7000	5104	150.8	162.3
Meander #1	Reach	125	I1000	1000	150.4	160.1
Meander #1	Reach	125	I-AP	13930	150.4	168.5
Meander #1	Reach	125	I0500	500	150.4	160.0
Meander #1	Reach	125	I2000	2000	150.4	160.3
Meander #1	Reach	125	I2500	2466	150.4	160.4
Meander #1	Reach	125	I0200	200	150.4	160.0
Meander #1	Reach	125	I-APbw	15126	150.4	172.5
Meander #1	Reach	125	I3000	2861	150.4	160.6
Meander #1	Reach	125	I7000	5104	150.4	162.2
Meander #1	Reach	124	I1000	1000	150.7	160.0
Meander #1	Reach	124	I-AP	13930	150.7	168.4
Meander #1	Reach	124	I0500	500	150.7	160.0
Meander #1	Reach	124	I2000	2000	150.7	160.2
Meander #1	Reach	124	I2500	2466	150.7	160.3
Meander #1	Reach	124	I0200	200	150.7	160.0
Meander #1	Reach	124	I-APbw	15126	150.7	172.5
Meander #1	Reach	124	I3000	2861	150.7	160.5
Meander #1	Reach	124	I7000	5104	150.7	162.1
Cache	Main	16	I1000	1000	147.2	160.1
Cache	Main	16	I-AP	30982	147.2	168.8
Cache	Main	16	I0500	500	147.2	160.1
Cache	Main	16	I2000	2000	147.2	160.5
Cache	Main	16	I2500	2500	147.2	160.8
Cache	Main	16	I0200	200	147.2	160.0
Cache	Main	16	I-APbw	30982	147.2	172.5
Cache	Main	16	I3000	3000	147.2	161.0
Cache	Main	16	I7000	7000	147.2	162.9

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Main	15.9	I1000	1000	147.2	160.1
Cache	Main	15.9	I-AP	30982	147.2	168.5
Cache	Main	15.9	I0500	500	147.2	160.1
Cache	Main	15.9	I2000	2000	147.2	160.4
Cache	Main	15.9	I2500	2500	147.2	160.6
Cache	Main	15.9	I0200	200	147.2	160.0
Cache	Main	15.9	I-APbw	30982	147.2	172.5
Cache	Main	15.9	I3000	3000	147.2	160.8
Cache	Main	15.9	I7000	7000	147.2	162.5
Cache	Reach_1	15	I1000	0	149.6	160.5
Cache	Reach_1	15	I-AP	17052	149.6	168.6
Cache	Reach_1	15	I0500	0	149.6	160.5
Cache	Reach_1	15	I2000	0	149.6	160.5
Cache	Reach_1	15	I2500	34	149.6	160.6
Cache	Reach_1	15	I0200	0	149.6	160.5
Cache	Reach_1	15	I-APbw	15856	149.6	172.5
Cache	Reach_1	15	I3000	139	149.6	160.9
Cache	Reach_1	15	I7000	1896	149.6	162.5
Cache	Reach_1	14.98	I1000	0	149.6	160.5
Cache	Reach_1	14.98	I-AP	17052	149.6	168.6
Cache	Reach_1	14.98	I0500	0	149.6	160.5
Cache	Reach_1	14.98	I2000	0	149.6	160.5
Cache	Reach_1	14.98	I2500	34	149.6	160.6
Cache	Reach_1	14.98	I0200	0	149.6	160.5
Cache	Reach_1	14.98	I-APbw	15856	149.6	172.5
Cache	Reach_1	14.98	I3000	139	149.6	160.9
Cache	Reach_1	14.98	I7000	1896	149.6	162.5
Cache	Reach_1	14.97	I1000	0	149.6	160.5
Cache	Reach_1	14.97	I-AP	17052	149.6	168.6
Cache	Reach_1	14.97	I0500	0	149.6	160.5
Cache	Reach_1	14.97	I2000	0	149.6	160.5
Cache	Reach_1	14.97	I2500	34	149.6	160.6
Cache	Reach_1	14.97	I0200	0	149.6	160.5
Cache	Reach_1	14.97	I-APbw	15856	149.6	172.5
Cache	Reach_1	14.97	I3000	139	149.6	160.9
Cache	Reach_1	14.97	I7000	1896	149.6	162.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.965		Inl Struct		
Cache	Reach_1	14.96	I1000	0	149.6	160.1
Cache	Reach_1	14.96	I-AP	17052	149.6	168.5
Cache	Reach_1	14.96	I0500	0	149.6	160.0
Cache	Reach_1	14.96	I2000	0	149.6	160.2
Cache	Reach_1	14.96	I2500	34	149.6	160.4
Cache	Reach_1	14.96	I0200	0	149.6	160.0
Cache	Reach_1	14.96	I-APbw	15856	149.6	172.5
Cache	Reach_1	14.96	I3000	139	149.6	160.5
Cache	Reach_1	14.96	I7000	1896	149.6	162.2
Cache	Reach_1	14.95	I1000	0	149.6	160.1
Cache	Reach_1	14.95	I-AP	17052	149.6	168.5
Cache	Reach_1	14.95	I0500	0	149.6	160.0
Cache	Reach_1	14.95	I2000	0	149.6	160.2
Cache	Reach_1	14.95	I2500	34	149.6	160.4
Cache	Reach_1	14.95	I0200	0	149.6	160.0
Cache	Reach_1	14.95	I-APbw	15856	149.6	172.5
Cache	Reach_1	14.95	I3000	139	149.6	160.5
Cache	Reach_1	14.95	I7000	1896	149.6	162.2
Cache	Reach_1	14.9	I1000	0	149.6	160.1
Cache	Reach_1	14.9	I-AP	17052	149.6	168.4
Cache	Reach_1	14.9	I0500	0	149.6	160.0
Cache	Reach_1	14.9	I2000	0	149.6	160.2
Cache	Reach_1	14.9	I2500	34	149.6	160.4
Cache	Reach_1	14.9	I0200	0	149.6	160.0
Cache	Reach_1	14.9	I-APbw	15856	149.6	172.5
Cache	Reach_1	14.9	I3000	139	149.6	160.5
Cache	Reach_1	14.9	I7000	1896	149.6	162.1
Cache	Reach_2	14	I1000	1000	149.0	160.1
Cache	Reach_2	14	I-AP	30982	149.0	168.4
Cache	Reach_2	14	I0500	500	149.0	160.0
Cache	Reach_2	14	I2000	2000	149.0	160.2
Cache	Reach_2	14	I2500	2500	149.0	160.3
Cache	Reach_2	14	I0200	200	149.0	160.0
Cache	Reach_2	14	I-APbw	30982	149.0	172.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_2	14	I3000	3000	149.0	160.5
Cache	Reach_2	14	I7000	7000	149.0	162.1
Cache	Reach_2	13.9	I1000	1000	149.0	160.0
Cache	Reach_2	13.9	I-AP	30982	149.0	168.2
Cache	Reach_2	13.9	I0500	500	149.0	160.0
Cache	Reach_2	13.9	I2000	2000	149.0	160.2
Cache	Reach_2	13.9	I2500	2500	149.0	160.2
Cache	Reach_2	13.9	I0200	200	149.0	160.0
Cache	Reach_2	13.9	I-APbw	30982	149.0	172.4
Cache	Reach_2	13.9	I3000	3000	149.0	160.3
Cache	Reach_2	13.9	I7000	7000	149.0	161.7
Cache	Reach_3	13	I1000	101	149.1	160.0
Cache	Reach_3	13	I-AP	16871	149.1	168.2
Cache	Reach_3	13	I0500	0	149.1	160.0
Cache	Reach_3	13	I2000	263	149.1	160.2
Cache	Reach_3	13	I2500	345	149.1	160.3
Cache	Reach_3	13	I0200	0	149.1	160.0
Cache	Reach_3	13	I-APbw	15549	149.1	172.4
Cache	Reach_3	13	I3000	451	149.1	160.4
Cache	Reach_3	13	I7000	2637	149.1	161.7
Cache	Reach_3	12.99	I1000	101	149.1	160.0
Cache	Reach_3	12.99	I-AP	16871	149.1	168.2
Cache	Reach_3	12.99	I0500	0	149.1	160.0
Cache	Reach_3	12.99	I2000	263	149.1	160.2
Cache	Reach_3	12.99	I2500	345	149.1	160.3
Cache	Reach_3	12.99	I0200	0	149.1	160.0
Cache	Reach_3	12.99	I-APbw	15549	149.1	172.4
Cache	Reach_3	12.99	I3000	451	149.1	160.4
Cache	Reach_3	12.99	I7000	2637	149.1	161.7
Cache	Reach_3	12.98	I1000	101	149.1	160.0
Cache	Reach_3	12.98	I-AP	16871	149.1	168.2
Cache	Reach_3	12.98	I0500	0	149.1	160.0
Cache	Reach_3	12.98	I2000	263	149.1	160.2
Cache	Reach_3	12.98	I2500	345	149.1	160.3
Cache	Reach_3	12.98	I0200	0	149.1	160.0
Cache	Reach_3	12.98	I-APbw	15549	149.1	172.4

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_3	12.98	I3000	451	149.1	160.4
Cache	Reach_3	12.98	I7000	2637	149.1	161.7
Cache	Reach_3	12.975		Inl Struct		
Cache	Reach_3	12.97	I1000	101	149.1	160.0
Cache	Reach_3	12.97	I-AP	16871	149.1	168.2
Cache	Reach_3	12.97	I0500	0	149.1	160.0
Cache	Reach_3	12.97	I2000	263	149.1	160.0
Cache	Reach_3	12.97	I2500	345	149.1	160.1
Cache	Reach_3	12.97	I0200	0	149.1	160.0
Cache	Reach_3	12.97	I-APbw	15549	149.1	172.4
Cache	Reach_3	12.97	I3000	451	149.1	160.2
Cache	Reach_3	12.97	I7000	2637	149.1	161.6
Cache	Reach_3	12.96	I1000	101	149.1	160.0
Cache	Reach_3	12.96	I-AP	16871	149.1	168.2
Cache	Reach_3	12.96	I0500	0	149.1	160.0
Cache	Reach_3	12.96	I2000	263	149.1	160.0
Cache	Reach_3	12.96	I2500	345	149.1	160.1
Cache	Reach_3	12.96	I0200	0	149.1	160.0
Cache	Reach_3	12.96	I-APbw	15549	149.1	172.4
Cache	Reach_3	12.96	I3000	451	149.1	160.2
Cache	Reach_3	12.96	I7000	2637	149.1	161.6
Cache	Reach_3	12.9	I1000	101	149.1	160.0
Cache	Reach_3	12.9	I-AP	16871	149.1	168.1
Cache	Reach_3	12.9	I0500	0	149.1	160.0
Cache	Reach_3	12.9	I2000	263	149.1	160.0
Cache	Reach_3	12.9	I2500	345	149.1	160.1
Cache	Reach_3	12.9	I0200	0	149.1	160.0
Cache	Reach_3	12.9	I-APbw	15549	149.1	172.4
Cache	Reach_3	12.9	I3000	451	149.1	160.2
Cache	Reach_3	12.9	I7000	2637	149.1	161.5
Cache	Reach_4	12.5	I1000	1000	149.1	160.0
Cache	Reach_4	12.5	I-AP	30982	149.1	168.1
Cache	Reach_4	12.5	I0500	500	149.1	160.0
Cache	Reach_4	12.5	I2000	2000	149.1	160.0

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_4	12.5	I2500	2500	149.1	160.0
Cache	Reach_4	12.5	I0200	200	149.1	160.0
Cache	Reach_4	12.5	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.5	I3000	3000	149.1	160.1
Cache	Reach_4	12.5	I7000	7000	149.1	161.5
Cache	Reach_4	12.2	I1000	1000	149.1	160.0
Cache	Reach_4	12.2	I-AP	30982	149.1	167.9
Cache	Reach_4	12.2	I0500	500	149.1	160.0
Cache	Reach_4	12.2	I2000	2000	149.1	160.0
Cache	Reach_4	12.2	I2500	2500	149.1	160.0
Cache	Reach_4	12.2	I0200	200	149.1	160.0
Cache	Reach_4	12.2	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.2	I3000	3000	149.1	160.1
Cache	Reach_4	12.2	I7000	7000	149.1	161.3
Cache	Reach_5	12	I1000	0	148.0	160.0
Cache	Reach_5	12	I-AP	21822	148.0	167.9
Cache	Reach_5	12	I0500	0	148.0	160.0
Cache	Reach_5	12	I2000	0	148.0	160.0
Cache	Reach_5	12	I2500	0	148.0	160.0
Cache	Reach_5	12	I0200	0	148.0	160.0
Cache	Reach_5	12	I-APbw	23469	148.0	172.4
Cache	Reach_5	12	I3000	73	148.0	160.1
Cache	Reach_5	12	I7000	3344	148.0	161.4
Cache	Reach_5	11.99	I1000	0	148.0	160.0
Cache	Reach_5	11.99	I-AP	21822	148.0	167.9
Cache	Reach_5	11.99	I0500	0	148.0	160.0
Cache	Reach_5	11.99	I2000	0	148.0	160.0
Cache	Reach_5	11.99	I2500	0	148.0	160.0
Cache	Reach_5	11.99	I0200	0	148.0	160.0
Cache	Reach_5	11.99	I-APbw	23469	148.0	172.4
Cache	Reach_5	11.99	I3000	73	148.0	160.1
Cache	Reach_5	11.99	I7000	3344	148.0	161.4
Cache	Reach_5	11.98	I1000	0	148.0	160.0
Cache	Reach_5	11.98	I-AP	21822	148.0	167.9
Cache	Reach_5	11.98	I0500	0	148.0	160.0
Cache	Reach_5	11.98	I2000	0	148.0	160.0

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	11.98	I2500	0	148.0	160.0
Cache	Reach_5	11.98	I0200	0	148.0	160.0
Cache	Reach_5	11.98	I-APbw	23469	148.0	172.4
Cache	Reach_5	11.98	I3000	73	148.0	160.1
Cache	Reach_5	11.98	I7000	3344	148.0	161.4
Cache	Reach_5	11.975		Inl Struct		
Cache	Reach_5	11.97	I1000	0	148.0	158.5
Cache	Reach_5	11.97	I-AP	21822	148.0	167.9
Cache	Reach_5	11.97	I0500	0	148.0	158.5
Cache	Reach_5	11.97	I2000	0	148.0	158.6
Cache	Reach_5	11.97	I2500	0	148.0	158.8
Cache	Reach_5	11.97	I0200	0	148.0	158.5
Cache	Reach_5	11.97	I-APbw	23469	148.0	172.4
Cache	Reach_5	11.97	I3000	73	148.0	159.0
Cache	Reach_5	11.97	I7000	3344	148.0	160.8
Cache	Reach_5	11.96	I1000	0	148.0	158.5
Cache	Reach_5	11.96	I-AP	21822	148.0	167.9
Cache	Reach_5	11.96	I0500	0	148.0	158.5
Cache	Reach_5	11.96	I2000	0	148.0	158.6
Cache	Reach_5	11.96	I2500	0	148.0	158.8
Cache	Reach_5	11.96	I0200	0	148.0	158.5
Cache	Reach_5	11.96	I-APbw	23469	148.0	172.4
Cache	Reach_5	11.96	I3000	73	148.0	159.0
Cache	Reach_5	11.96	I7000	3344	148.0	160.8
Cache	Reach_5	11	I1000	0	147.6	158.5
Cache	Reach_5	11	I-AP	21822	147.6	167.7
Cache	Reach_5	11	I0500	0	147.6	158.5
Cache	Reach_5	11	I2000	0	147.6	158.6
Cache	Reach_5	11	I2500	0	147.6	158.8
Cache	Reach_5	11	I0200	0	147.6	158.5
Cache	Reach_5	11	I-APbw	23469	147.6	172.4
Cache	Reach_5	11	I3000	73	147.6	159.0
Cache	Reach_5	11	I7000	3344	147.6	160.7
Cache	Reach_6	10	I1000	1000	145.0	158.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	10	I-AP	30982	145.0	167.6
Cache	Reach_6	10	I0500	500	145.0	158.5
Cache	Reach_6	10	I2000	2000	145.0	158.6
Cache	Reach_6	10	I2500	2500	145.0	158.7
Cache	Reach_6	10	I0200	200	145.0	158.5
Cache	Reach_6	10	I-APbw	30982	145.0	172.3
Cache	Reach_6	10	I3000	3000	145.0	159.0
Cache	Reach_6	10	I7000	7000	145.0	160.7
Cache	Reach_6	9	I1000	1000	143.8	158.5
Cache	Reach_6	9	I-AP	30982	143.8	166.9
Cache	Reach_6	9	I0500	500	143.8	158.5
Cache	Reach_6	9	I2000	2000	143.8	158.5
Cache	Reach_6	9	I2500	2500	143.8	158.7
Cache	Reach_6	9	I0200	200	143.8	158.5
Cache	Reach_6	9	I-APbw	30982	143.8	172.3
Cache	Reach_6	9	I3000	3000	143.8	158.9
Cache	Reach_6	9	I7000	7000	143.8	160.5
Cache	Reach_6	8	I1000	1000	143.8	158.5
Cache	Reach_6	8	I-AP	30982	143.8	166.3
Cache	Reach_6	8	I0500	500	143.8	158.5
Cache	Reach_6	8	I2000	2000	143.8	158.5
Cache	Reach_6	8	I2500	2500	143.8	158.7
Cache	Reach_6	8	I0200	200	143.8	158.5
Cache	Reach_6	8	I-APbw	30982	143.8	172.2
Cache	Reach_6	8	I3000	3000	143.8	158.9
Cache	Reach_6	8	I7000	7000	143.8	160.3
Cache	Reach_6	7	I1000	1000	144.4	158.5
Cache	Reach_6	7	I-AP	30982	144.4	166.0
Cache	Reach_6	7	I0500	500	144.4	158.5
Cache	Reach_6	7	I2000	2000	144.4	158.5
Cache	Reach_6	7	I2500	2500	144.4	158.7
Cache	Reach_6	7	I0200	200	144.4	158.5
Cache	Reach_6	7	I-APbw	30982	144.4	172.2
Cache	Reach_6	7	I3000	3000	144.4	158.9
Cache	Reach_6	7	I7000	7000	144.4	160.3
Cache	Reach_7	6.7	I1000	0	143.8	158.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6.7	I-AP	17025	143.8	166.1
Cache	Reach_7	6.7	I0500	0	143.8	158.5
Cache	Reach_7	6.7	I2000	0	143.8	158.5
Cache	Reach_7	6.7	I2500	50	143.8	158.7
Cache	Reach_7	6.7	I0200	0	143.8	158.5
Cache	Reach_7	6.7	I-APbw	10311	143.8	172.2
Cache	Reach_7	6.7	I3000	171	143.8	158.9
Cache	Reach_7	6.7	I7000	2181	143.8	160.3
Cache	Reach_7	6.69	I1000	0	143.8	158.5
Cache	Reach_7	6.69	I-AP	17025	143.8	166.1
Cache	Reach_7	6.69	I0500	0	143.8	158.5
Cache	Reach_7	6.69	I2000	0	143.8	158.5
Cache	Reach_7	6.69	I2500	50	143.8	158.7
Cache	Reach_7	6.69	I0200	0	143.8	158.5
Cache	Reach_7	6.69	I-APbw	10311	143.8	172.2
Cache	Reach_7	6.69	I3000	171	143.8	158.9
Cache	Reach_7	6.69	I7000	2181	143.8	160.3
Cache	Reach_7	6.68	I1000	0	143.8	158.5
Cache	Reach_7	6.68	I-AP	17025	143.8	166.1
Cache	Reach_7	6.68	I0500	0	143.8	158.5
Cache	Reach_7	6.68	I2000	0	143.8	158.5
Cache	Reach_7	6.68	I2500	50	143.8	158.7
Cache	Reach_7	6.68	I0200	0	143.8	158.5
Cache	Reach_7	6.68	I-APbw	10311	143.8	172.2
Cache	Reach_7	6.68	I3000	171	143.8	158.9
Cache	Reach_7	6.68	I7000	2181	143.8	160.3
Cache	Reach_7	6.675		Inl Struct		
Cache	Reach_7	6.67	I1000	0	143.8	158.1
Cache	Reach_7	6.67	I-AP	17025	143.8	166.0
Cache	Reach_7	6.67	I0500	0	143.8	158.0
Cache	Reach_7	6.67	I2000	0	143.8	158.2
Cache	Reach_7	6.67	I2500	50	143.8	158.3
Cache	Reach_7	6.67	I0200	0	143.8	158.0
Cache	Reach_7	6.67	I-APbw	10311	143.8	172.2
Cache	Reach_7	6.67	I3000	171	143.8	158.5

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6.67	I7000	2181	143.8	159.7
Cache	Reach_7	6.66	I1000	0	143.8	158.1
Cache	Reach_7	6.66	I-AP	17025	143.8	166.0
Cache	Reach_7	6.66	I0500	0	143.8	158.0
Cache	Reach_7	6.66	I2000	0	143.8	158.2
Cache	Reach_7	6.66	I2500	50	143.8	158.3
Cache	Reach_7	6.66	I0200	0	143.8	158.0
Cache	Reach_7	6.66	I-APbw	10311	143.8	172.2
Cache	Reach_7	6.66	I3000	171	143.8	158.5
Cache	Reach_7	6.66	I7000	2181	143.8	159.7
Cache	Reach_7	6	I1000	0	143.8	158.1
Cache	Reach_7	6	I-AP	17025	143.8	165.9
Cache	Reach_7	6	I0500	0	143.8	158.0
Cache	Reach_7	6	I2000	0	143.8	158.2
Cache	Reach_7	6	I2500	50	143.8	158.3
Cache	Reach_7	6	I0200	0	143.8	158.0
Cache	Reach_7	6	I-APbw	10311	143.8	172.1
Cache	Reach_7	6	I3000	171	143.8	158.5
Cache	Reach_7	6	I7000	2181	143.8	159.7
Cache	Reach_8	6.5	I1000	1000	143.8	158.1
Cache	Reach_8	6.5	I-AP	30982	143.8	165.6
Cache	Reach_8	6.5	I0500	500	143.8	158.0
Cache	Reach_8	6.5	I2000	2000	143.8	158.2
Cache	Reach_8	6.5	I2500	2500	143.8	158.3
Cache	Reach_8	6.5	I0200	200	143.8	158.0
Cache	Reach_8	6.5	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.5	I3000	3000	143.8	158.4
Cache	Reach_8	6.5	I7000	7000	143.8	159.6
Cache	Reach_8	6.4	I1000	1000	143.8	158.1
Cache	Reach_8	6.4	I-AP	30982	143.8	165.6
Cache	Reach_8	6.4	I0500	500	143.8	158.0
Cache	Reach_8	6.4	I2000	2000	143.8	158.2
Cache	Reach_8	6.4	I2500	2500	143.8	158.3
Cache	Reach_8	6.4	I0200	200	143.8	158.0
Cache	Reach_8	6.4	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.4	I3000	3000	143.8	158.4

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_8	6.4	I7000	7000	143.8	159.6
Cache	Reach_9	5	I1000	14	144.4	158.1
Cache	Reach_9	5	I-AP	18345	144.4	165.7
Cache	Reach_9	5	I0500	5	144.4	158.0
Cache	Reach_9	5	I2000	63	144.4	158.2
Cache	Reach_9	5	I2500	111	144.4	158.3
Cache	Reach_9	5	I0200	0	144.4	158.0
Cache	Reach_9	5	I-APbw	20571	144.4	172.1
Cache	Reach_9	5	I3000	201	144.4	158.4
Cache	Reach_9	5	I7000	1496	144.4	159.7
Cache	Reach_9	4.99	I1000	14	144.4	158.1
Cache	Reach_9	4.99	I-AP	18345	144.4	165.7
Cache	Reach_9	4.99	I0500	5	144.4	158.0
Cache	Reach_9	4.99	I2000	63	144.4	158.2
Cache	Reach_9	4.99	I2500	111	144.4	158.3
Cache	Reach_9	4.99	I0200	0	144.4	158.0
Cache	Reach_9	4.99	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.99	I3000	201	144.4	158.4
Cache	Reach_9	4.99	I7000	1496	144.4	159.7
Cache	Reach_9	4.98	I1000	14	144.4	158.1
Cache	Reach_9	4.98	I-AP	18345	144.4	165.7
Cache	Reach_9	4.98	I0500	5	144.4	158.0
Cache	Reach_9	4.98	I2000	63	144.4	158.2
Cache	Reach_9	4.98	I2500	111	144.4	158.3
Cache	Reach_9	4.98	I0200	0	144.4	158.0
Cache	Reach_9	4.98	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.98	I3000	201	144.4	158.4
Cache	Reach_9	4.98	I7000	1496	144.4	159.7
Cache	Reach_9	4.975		Inl Struct		
Cache	Reach_9	4.97	I1000	14	144.4	158.0
Cache	Reach_9	4.97	I-AP	18345	144.4	165.7
Cache	Reach_9	4.97	I0500	5	144.4	158.0
Cache	Reach_9	4.97	I2000	63	144.4	158.0
Cache	Reach_9	4.97	I2500	111	144.4	158.0

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.97	I0200	0	144.4	158.0
Cache	Reach_9	4.97	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.97	I3000	201	144.4	158.1
Cache	Reach_9	4.97	I7000	1496	144.4	158.8
Cache	Reach_9	4.96	I1000	14	144.4	158.0
Cache	Reach_9	4.96	I-AP	18345	144.4	165.7
Cache	Reach_9	4.96	I0500	5	144.4	158.0
Cache	Reach_9	4.96	I2000	63	144.4	158.0
Cache	Reach_9	4.96	I2500	111	144.4	158.0
Cache	Reach_9	4.96	I0200	0	144.4	158.0
Cache	Reach_9	4.96	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.96	I3000	201	144.4	158.1
Cache	Reach_9	4.96	I7000	1496	144.4	158.8
Cache	Reach_9	4.5	I1000	14	144.4	158.0
Cache	Reach_9	4.5	I-AP	18345	144.4	165.4
Cache	Reach_9	4.5	I0500	5	144.4	158.0
Cache	Reach_9	4.5	I2000	63	144.4	158.0
Cache	Reach_9	4.5	I2500	111	144.4	158.0
Cache	Reach_9	4.5	I0200	0	144.4	158.0
Cache	Reach_9	4.5	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.5	I3000	201	144.4	158.1
Cache	Reach_9	4.5	I7000	1496	144.4	158.8
Cache	Reach_10	4	I1000	1000	144.7	158.0
Cache	Reach_10	4	I-AP	30982	144.7	165.4
Cache	Reach_10	4	I0500	500	144.7	158.0
Cache	Reach_10	4	I2000	2000	144.7	158.0
Cache	Reach_10	4	I2500	2500	144.7	158.0
Cache	Reach_10	4	I0200	200	144.7	158.0
Cache	Reach_10	4	I-APbw	30982	144.7	172.1
Cache	Reach_10	4	I3000	3000	144.7	158.0
Cache	Reach_10	4	I7000	7000	144.7	158.8
Cache	Reach_10	3	I1000	1000	144.7	158.0
Cache	Reach_10	3	I-AP	30982	144.7	165.3
Cache	Reach_10	3	I0500	500	144.7	158.0
Cache	Reach_10	3	I2000	2000	144.7	158.0
Cache	Reach_10	3	I2500	2500	144.7	158.0

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_10	3	I0200	200	144.7	158.0
Cache	Reach_10	3	I-APbw	30982	144.7	172.1
Cache	Reach_10	3	I3000	3000	144.7	158.0
Cache	Reach_10	3	I7000	7000	144.7	158.7
Cache	Reach_11	2.5	I1000	0	144.7	158.0
Cache	Reach_11	2.5	I-AP	24175	144.7	165.3
Cache	Reach_11	2.5	I0500	0	144.7	158.0
Cache	Reach_11	2.5	I2000	0	144.7	158.0
Cache	Reach_11	2.5	I2500	0	144.7	158.0
Cache	Reach_11	2.5	I0200	0	144.7	158.0
Cache	Reach_11	2.5	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.5	I3000	0	144.7	158.0
Cache	Reach_11	2.5	I7000	2498	144.7	158.7
Cache	Reach_11	2.49	I1000	0	144.7	158.0
Cache	Reach_11	2.49	I-AP	24175	144.7	165.3
Cache	Reach_11	2.49	I0500	0	144.7	158.0
Cache	Reach_11	2.49	I2000	0	144.7	158.0
Cache	Reach_11	2.49	I2500	0	144.7	158.0
Cache	Reach_11	2.49	I0200	0	144.7	158.0
Cache	Reach_11	2.49	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.49	I3000	0	144.7	158.0
Cache	Reach_11	2.49	I7000	2498	144.7	158.7
Cache	Reach_11	2.48	I1000	0	144.7	158.0
Cache	Reach_11	2.48	I-AP	24175	144.7	165.3
Cache	Reach_11	2.48	I0500	0	144.7	158.0
Cache	Reach_11	2.48	I2000	0	144.7	158.0
Cache	Reach_11	2.48	I2500	0	144.7	158.0
Cache	Reach_11	2.48	I0200	0	144.7	158.0
Cache	Reach_11	2.48	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.48	I3000	0	144.7	158.0
Cache	Reach_11	2.48	I7000	2498	144.7	158.7
Cache	Reach_11	2.475		Inl Struct		
Cache	Reach_11	2.47	I1000	0	144.7	151.3
Cache	Reach_11	2.47	I-AP	24175	144.7	165.3

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.47	I0500	0	144.7	149.4
Cache	Reach_11	2.47	I2000	0	144.7	153.9
Cache	Reach_11	2.47	I2500	0	144.7	154.6
Cache	Reach_11	2.47	I0200	0	144.7	147.8
Cache	Reach_11	2.47	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.47	I3000	0	144.7	154.4
Cache	Reach_11	2.47	I7000	2498	144.7	157.5
Cache	Reach_11	2.46	I1000	0	144.7	151.3
Cache	Reach_11	2.46	I-AP	24175	144.7	165.3
Cache	Reach_11	2.46	I0500	0	144.7	149.4
Cache	Reach_11	2.46	I2000	0	144.7	153.9
Cache	Reach_11	2.46	I2500	0	144.7	154.6
Cache	Reach_11	2.46	I0200	0	144.7	147.8
Cache	Reach_11	2.46	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.46	I3000	0	144.7	154.4
Cache	Reach_11	2.46	I7000	2498	144.7	157.5
Cache	Reach_11	2.1	I1000	0	144.7	151.3
Cache	Reach_11	2.1	I-AP	24175	144.7	165.2
Cache	Reach_11	2.1	I0500	0	144.7	149.4
Cache	Reach_11	2.1	I2000	0	144.7	153.9
Cache	Reach_11	2.1	I2500	0	144.7	154.6
Cache	Reach_11	2.1	I0200	0	144.7	147.8
Cache	Reach_11	2.1	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.1	I3000	0	144.7	154.4
Cache	Reach_11	2.1	I7000	2498	144.7	157.5
Cache	Reach_12	2	I1000	1000	143.3	151.3
Cache	Reach_12	2	I-AP	30982	143.3	165.2
Cache	Reach_12	2	I0500	500	143.3	149.4
Cache	Reach_12	2	I2000	2000	143.3	153.9
Cache	Reach_12	2	I2500	2500	143.3	154.6
Cache	Reach_12	2	I0200	200	143.3	147.8
Cache	Reach_12	2	I-APbw	30982	143.3	172.1
Cache	Reach_12	2	I3000	3000	143.3	154.4
Cache	Reach_12	2	I7000	7000	143.3	157.4
Cache	Reach_12	1	I1000	1000	143.9	151.2
Cache	Reach_12	1	I-AP	30982	143.9	164.9

HEC-RAS Output for Meander Restoration with Closure Weirs Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_12	1	I0500	500	143.9	149.3
Cache	Reach_12	1	I2000	2000	143.9	153.8
Cache	Reach_12	1	I2500	2500	143.9	154.4
Cache	Reach_12	1	I0200	200	143.9	147.8
Cache	Reach_12	1	I-APbw	30982	143.9	172.0
Cache	Reach_12	1	I3000	3000	143.9	154.1
Cache	Reach_12	1	I7000	7000	143.9	157.0
Cache	Reach_12	0	I1000	1000	144.1	151.0
Cache	Reach_12	0	I-AP	30982	144.1	164.6
Cache	Reach_12	0	I0500	500	144.1	149.1
Cache	Reach_12	0	I2000	2000	144.1	153.6
Cache	Reach_12	0	I2500	2500	144.1	154.2
Cache	Reach_12	0	I0200	200	144.1	147.5
Cache	Reach_12	0	I-APbw	30982	144.1	172.0
Cache	Reach_12	0	I3000	3000	144.1	153.7
Cache	Reach_12	0	I7000	7000	144.1	156.6

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #6	Reach	104	I1000	1000	148.9	153.6
Meander #6	Reach	104	I-AP	13592	148.9	165.5
Meander #6	Reach	104	I0500	500	148.9	152.2
Meander #6	Reach	104	I2000	2000	148.9	155.6
Meander #6	Reach	104	I2500	2500	148.9	156.3
Meander #6	Reach	104	I0200	200	148.9	150.9
Meander #6	Reach	104	I-APbw	10674	148.9	172.1
Meander #6	Reach	104	I3000	3000	148.9	156.7
Meander #6	Reach	104	I7000	5980	148.9	159.3
Meander #6	Reach	103	I1000	1000	147.6	153.2
Meander #6	Reach	103	I-AP	13592	147.6	165.4
Meander #6	Reach	103	I0500	500	147.6	151.8
Meander #6	Reach	103	I2000	2000	147.6	155.3
Meander #6	Reach	103	I2500	2500	147.6	155.9
Meander #6	Reach	103	I0200	200	147.6	150.6
Meander #6	Reach	103	I-APbw	10674	147.6	172.1
Meander #6	Reach	103	I3000	3000	147.6	156.2
Meander #6	Reach	103	I7000	5980	147.6	158.9
Meander #6	Reach	102	I1000	1000	147.6	152.9
Meander #6	Reach	102	I-AP	13592	147.6	165.3
Meander #6	Reach	102	I0500	500	147.6	151.6
Meander #6	Reach	102	I2000	2000	147.6	154.9
Meander #6	Reach	102	I2500	2500	147.6	155.6
Meander #6	Reach	102	I0200	200	147.6	150.4
Meander #6	Reach	102	I-APbw	10674	147.6	172.1
Meander #6	Reach	102	I3000	3000	147.6	155.9
Meander #6	Reach	102	I7000	5980	147.6	158.6
Meander #6	Reach	101	I1000	1000	147.8	151.0
Meander #6	Reach	101	I-AP	13592	147.8	165.3
Meander #6	Reach	101	I0500	500	147.8	149.8
Meander #6	Reach	101	I2000	2000	147.8	153.7
Meander #6	Reach	101	I2500	2500	147.8	154.3
Meander #6	Reach	101	I0200	200	147.8	149.1
Meander #6	Reach	101	I-APbw	10674	147.8	172.1
Meander #6	Reach	101	I3000	3000	147.8	153.9
Meander #6	Reach	101	I7000	5980	147.8	156.8
Meander #5	Reach	110	I1000	999	150.4	158.1

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	110	I-AP	20190	150.4	166.3
Meander #5	Reach	110	I0500	500	150.4	158.0
Meander #5	Reach	110	I2000	1992	150.4	158.2
Meander #5	Reach	110	I2500	2480	150.4	158.3
Meander #5	Reach	110	I0200	200	150.4	158.0
Meander #5	Reach	110	I-APbw	10325	150.4	172.1
Meander #5	Reach	110	I3000	2970	150.4	158.4
Meander #5	Reach	110	I7000	6170	150.4	160.2
Meander #5	Reach	109	I1000	999	150.6	158.1
Meander #5	Reach	109	I-AP	20190	150.6	166.0
Meander #5	Reach	109	I0500	500	150.6	158.0
Meander #5	Reach	109	I2000	1992	150.6	158.2
Meander #5	Reach	109	I2500	2480	150.6	158.2
Meander #5	Reach	109	I0200	200	150.6	158.0
Meander #5	Reach	109	I-APbw	10325	150.6	172.1
Meander #5	Reach	109	I3000	2970	150.6	158.3
Meander #5	Reach	109	I7000	6170	150.6	160.0
Meander #5	Reach	108	I1000	999	147.4	158.1
Meander #5	Reach	108	I-AP	20190	147.4	165.8
Meander #5	Reach	108	I0500	500	147.4	158.0
Meander #5	Reach	108	I2000	1992	147.4	158.1
Meander #5	Reach	108	I2500	2480	147.4	158.1
Meander #5	Reach	108	I0200	200	147.4	158.0
Meander #5	Reach	108	I-APbw	10325	147.4	172.1
Meander #5	Reach	108	I3000	2970	147.4	158.2
Meander #5	Reach	108	I7000	6170	147.4	159.7
Meander #5	Reach	107	I1000	999	146.9	158.0
Meander #5	Reach	107	I-AP	20190	146.9	165.7
Meander #5	Reach	107	I0500	500	146.9	158.0
Meander #5	Reach	107	I2000	1992	146.9	158.1
Meander #5	Reach	107	I2500	2480	146.9	158.1
Meander #5	Reach	107	I0200	200	146.9	158.0
Meander #5	Reach	107	I-APbw	10325	146.9	172.1
Meander #5	Reach	107	I3000	2970	146.9	158.1
Meander #5	Reach	107	I7000	6170	146.9	159.6
Meander #5	Reach	106	I1000	999	148.1	158.0
Meander #5	Reach	106	I-AP	20190	148.1	165.7

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	106	I0500	500	148.1	158.0
Meander #5	Reach	106	I2000	1992	148.1	158.1
Meander #5	Reach	106	I2500	2480	148.1	158.1
Meander #5	Reach	106	I0200	200	148.1	158.0
Meander #5	Reach	106	I-APbw	10325	148.1	172.1
Meander #5	Reach	106	I3000	2970	148.1	158.1
Meander #5	Reach	106	I7000	6170	148.1	159.5
Meander #5	Reach	105	I1000	999	148.8	158.0
Meander #5	Reach	105	I-AP	20190	148.8	165.6
Meander #5	Reach	105	I0500	500	148.8	158.0
Meander #5	Reach	105	I2000	1992	148.8	158.0
Meander #5	Reach	105	I2500	2480	148.8	158.0
Meander #5	Reach	105	I0200	200	148.8	158.0
Meander #5	Reach	105	I-APbw	10325	148.8	172.1
Meander #5	Reach	105	I3000	2970	148.8	158.1
Meander #5	Reach	105	I7000	6170	148.8	159.4
Meander #4	Reach	113	I1000	1000	149.1	158.1
Meander #4	Reach	113	I-AP	20491	149.1	166.9
Meander #4	Reach	113	I0500	500	149.1	158.1
Meander #4	Reach	113	I2000	2000	149.1	158.5
Meander #4	Reach	113	I2500	2488	149.1	158.7
Meander #4	Reach	113	I0200	200	149.1	158.0
Meander #4	Reach	113	I-APbw	21741	149.1	172.2
Meander #4	Reach	113	I3000	2968	149.1	158.9
Meander #4	Reach	113	I7000	5779	149.1	160.8
Meander #4	Reach	112	I1000	1000	141.5	158.1
Meander #4	Reach	112	I-AP	20491	141.5	166.6
Meander #4	Reach	112	I0500	500	141.5	158.1
Meander #4	Reach	112	I2000	2000	141.5	158.3
Meander #4	Reach	112	I2500	2488	141.5	158.5
Meander #4	Reach	112	I0200	200	141.5	158.0
Meander #4	Reach	112	I-APbw	21741	141.5	172.2
Meander #4	Reach	112	I3000	2968	141.5	158.6
Meander #4	Reach	112	I7000	5779	141.5	160.5
Meander #4	Reach	111	I1000	1000	148.5	158.1
Meander #4	Reach	111	I-AP	20491	148.5	166.5
Meander #4	Reach	111	I0500	500	148.5	158.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #4	Reach	111	I2000	2000	148.5	158.2
Meander #4	Reach	111	I2500	2488	148.5	158.4
Meander #4	Reach	111	I0200	200	148.5	158.0
Meander #4	Reach	111	I-APbw	21741	148.5	172.2
Meander #4	Reach	111	I3000	2968	148.5	158.5
Meander #4	Reach	111	I7000	5779	148.5	160.2
Meander #3	Main	120	I1000	1000	150.4	158.8
Meander #3	Main	120	I-AP	12249	150.4	168.4
Meander #3	Main	120	I0500	500	150.4	158.6
Meander #3	Main	120	I2000	2000	150.4	159.4
Meander #3	Main	120	I2500	2500	150.4	159.8
Meander #3	Main	120	I0200	200	150.4	158.5
Meander #3	Main	120	I-APbw	7483	150.4	172.4
Meander #3	Main	120	I3000	2996	150.4	160.1
Meander #3	Main	120	I7000	5948	150.4	162.3
Meander #3	Main	119	I1000	1000	150.4	158.8
Meander #3	Main	119	I-AP	12249	150.4	168.4
Meander #3	Main	119	I0500	500	150.4	158.6
Meander #3	Main	119	I2000	2000	150.4	159.4
Meander #3	Main	119	I2500	2500	150.4	159.8
Meander #3	Main	119	I0200	200	150.4	158.5
Meander #3	Main	119	I-APbw	7483	150.4	172.4
Meander #3	Main	119	I3000	2996	150.4	160.1
Meander #3	Main	119	I7000	5948	150.4	162.3
Meander #3	Main	118	I1000	1000	150.7	158.8
Meander #3	Main	118	I-AP	12249	150.7	168.3
Meander #3	Main	118	I0500	500	150.7	158.6
Meander #3	Main	118	I2000	2000	150.7	159.2
Meander #3	Main	118	I2500	2500	150.7	159.6
Meander #3	Main	118	I0200	200	150.7	158.5
Meander #3	Main	118	I-APbw	7483	150.7	172.4
Meander #3	Main	118	I3000	2996	150.7	160.0
Meander #3	Main	118	I7000	5948	150.7	162.2
Meander #3	Main	117	I1000	1000	150.4	158.7
Meander #3	Main	117	I-AP	12249	150.4	168.3
Meander #3	Main	117	I0500	500	150.4	158.6
Meander #3	Main	117	I2000	2000	150.4	159.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	117	I2500	2500	150.4	159.4
Meander #3	Main	117	I0200	200	150.4	158.5
Meander #3	Main	117	I-APbw	7483	150.4	172.4
Meander #3	Main	117	I3000	2996	150.4	159.7
Meander #3	Main	117	I7000	5948	150.4	162.0
Meander #3	Main	116	I1000	1000	149.7	158.6
Meander #3	Main	116	I-AP	12249	149.7	168.2
Meander #3	Main	116	I0500	500	149.7	158.5
Meander #3	Main	116	I2000	2000	149.7	158.8
Meander #3	Main	116	I2500	2500	149.7	159.1
Meander #3	Main	116	I0200	200	149.7	158.5
Meander #3	Main	116	I-APbw	7483	149.7	172.4
Meander #3	Main	116	I3000	2996	149.7	159.4
Meander #3	Main	116	I7000	5948	149.7	161.6
Meander #3	Main	115	I1000	1000	149.7	158.6
Meander #3	Main	115	I-AP	12249	149.7	168.1
Meander #3	Main	115	I0500	500	149.7	158.5
Meander #3	Main	115	I2000	2000	149.7	158.7
Meander #3	Main	115	I2500	2500	149.7	159.0
Meander #3	Main	115	I0200	200	149.7	158.5
Meander #3	Main	115	I-APbw	7483	149.7	172.4
Meander #3	Main	115	I3000	2996	149.7	159.2
Meander #3	Main	115	I7000	5948	149.7	161.5
Meander #3	Main	114	I1000	1000	149.6	158.5
Meander #3	Main	114	I-AP	12249	149.6	168.0
Meander #3	Main	114	I0500	500	149.6	158.5
Meander #3	Main	114	I2000	2000	149.6	158.6
Meander #3	Main	114	I2500	2500	149.6	158.8
Meander #3	Main	114	I0200	200	149.6	158.5
Meander #3	Main	114	I-APbw	7483	149.6	172.4
Meander #3	Main	114	I3000	2996	149.6	159.0
Meander #3	Main	114	I7000	5948	149.6	161.2
Meander #2	Reach	123	I1000	992	149.5	160.1
Meander #2	Reach	123	I-AP	17308	149.5	168.6
Meander #2	Reach	123	I0500	496	149.5	160.0
Meander #2	Reach	123	I2000	1976	149.5	160.2
Meander #2	Reach	123	I2500	2465	149.5	160.2

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #2	Reach	123	I0200	198	149.5	160.0
Meander #2	Reach	123	I-APbw	15304	149.5	172.5
Meander #2	Reach	123	I3000	2935	149.5	160.4
Meander #2	Reach	123	I7000	6030	149.5	162.7
Meander #2	Reach	122	I1000	992	148.6	160.0
Meander #2	Reach	122	I-AP	17308	148.6	168.5
Meander #2	Reach	122	I0500	496	148.6	160.0
Meander #2	Reach	122	I2000	1976	148.6	160.1
Meander #2	Reach	122	I2500	2465	148.6	160.1
Meander #2	Reach	122	I0200	198	148.6	160.0
Meander #2	Reach	122	I-APbw	15304	148.6	172.4
Meander #2	Reach	122	I3000	2935	148.6	160.3
Meander #2	Reach	122	I7000	6030	148.6	162.6
Meander #2	Reach	121	I1000	992	149.7	160.0
Meander #2	Reach	121	I-AP	17308	149.7	168.4
Meander #2	Reach	121	I0500	496	149.7	160.0
Meander #2	Reach	121	I2000	1976	149.7	160.1
Meander #2	Reach	121	I2500	2465	149.7	160.1
Meander #2	Reach	121	I0200	198	149.7	160.0
Meander #2	Reach	121	I-APbw	15304	149.7	172.4
Meander #2	Reach	121	I3000	2935	149.7	160.2
Meander #2	Reach	121	I7000	6030	149.7	162.5
Meander #1	Reach	127	I1000	1000	151.4	160.2
Meander #1	Reach	127	I-AP	16491	151.4	169.0
Meander #1	Reach	127	I0500	500	151.4	160.1
Meander #1	Reach	127	I2000	2000	151.4	160.5
Meander #1	Reach	127	I2500	2498	151.4	160.6
Meander #1	Reach	127	I0200	200	151.4	160.0
Meander #1	Reach	127	I-APbw	14984	151.4	172.5
Meander #1	Reach	127	I3000	2986	151.4	160.9
Meander #1	Reach	127	I7000	6191	151.4	163.4
Meander #1	Reach	126	I1000	1000	150.8	160.1
Meander #1	Reach	126	I-AP	16491	150.8	168.9
Meander #1	Reach	126	I0500	500	150.8	160.1
Meander #1	Reach	126	I2000	2000	150.8	160.4
Meander #1	Reach	126	I2500	2498	150.8	160.5
Meander #1	Reach	126	I0200	200	150.8	160.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #1	Reach	126	I-APbw	14984	150.8	172.5
Meander #1	Reach	126	I3000	2986	150.8	160.7
Meander #1	Reach	126	I7000	6191	150.8	163.2
Meander #1	Reach	125	I1000	1000	150.4	160.1
Meander #1	Reach	125	I-AP	16491	150.4	168.8
Meander #1	Reach	125	I0500	500	150.4	160.1
Meander #1	Reach	125	I2000	2000	150.4	160.3
Meander #1	Reach	125	I2500	2498	150.4	160.4
Meander #1	Reach	125	I0200	200	150.4	160.0
Meander #1	Reach	125	I-APbw	14984	150.4	172.5
Meander #1	Reach	125	I3000	2986	150.4	160.6
Meander #1	Reach	125	I7000	6191	150.4	163.1
Meander #1	Reach	124	I1000	1000	150.7	160.1
Meander #1	Reach	124	I-AP	16491	150.7	168.8
Meander #1	Reach	124	I0500	500	150.7	160.0
Meander #1	Reach	124	I2000	2000	150.7	160.2
Meander #1	Reach	124	I2500	2498	150.7	160.3
Meander #1	Reach	124	I0200	200	150.7	160.0
Meander #1	Reach	124	I-APbw	14984	150.7	172.5
Meander #1	Reach	124	I3000	2986	150.7	160.5
Meander #1	Reach	124	I7000	6191	150.7	163.0
Cache	Main	16	I1000	1000	147.2	160.2
Cache	Main	16	I-AP	30982	147.2	169.1
Cache	Main	16	I0500	500	147.2	160.1
Cache	Main	16	I2000	2000	147.2	160.5
Cache	Main	16	I2500	2500	147.2	160.8
Cache	Main	16	I0200	200	147.2	160.0
Cache	Main	16	I-APbw	30982	147.2	172.5
Cache	Main	16	I3000	3000	147.2	161.1
Cache	Main	16	I7000	7000	147.2	163.6
Cache	Main	15.9	I1000	1000	147.2	160.2
Cache	Main	15.9	I-AP	30982	147.2	168.9
Cache	Main	15.9	I0500	500	147.2	160.1
Cache	Main	15.9	I2000	2000	147.2	160.5
Cache	Main	15.9	I2500	2500	147.2	160.6
Cache	Main	15.9	I0200	200	147.2	160.0
Cache	Main	15.9	I-APbw	30982	147.2	172.5

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Main	15.9	I3000	3000	147.2	160.9
Cache	Main	15.9	I7000	7000	147.2	163.4
Cache	Reach_1	15	I1000	0	149.6	160.5
Cache	Reach_1	15	I-AP	14491	149.6	168.9
Cache	Reach_1	15	I0500	0	149.6	160.5
Cache	Reach_1	15	I2000	0	149.6	160.6
Cache	Reach_1	15	I2500	2	149.6	160.7
Cache	Reach_1	15	I0200	0	149.6	160.5
Cache	Reach_1	15	I-APbw	15998	149.6	172.5
Cache	Reach_1	15	I3000	14	149.6	160.9
Cache	Reach_1	15	I7000	809	149.6	163.4
Cache	Reach_1	14.98	I1000	0	149.6	160.5
Cache	Reach_1	14.98	I-AP	14491	149.6	168.9
Cache	Reach_1	14.98	I0500	0	149.6	160.5
Cache	Reach_1	14.98	I2000	0	149.6	160.6
Cache	Reach_1	14.98	I2500	2	149.6	160.7
Cache	Reach_1	14.98	I0200	0	149.6	160.5
Cache	Reach_1	14.98	I-APbw	15998	149.6	172.5
Cache	Reach_1	14.98	I3000	14	149.6	160.9
Cache	Reach_1	14.98	I7000	809	149.6	163.4
Cache	Reach_1	14.97	I1000	0	160.5	160.5
Cache	Reach_1	14.97	I-AP	14491	160.5	168.9
Cache	Reach_1	14.97	I0500	0	160.5	160.5
Cache	Reach_1	14.97	I2000	0	160.5	160.6
Cache	Reach_1	14.97	I2500	2	160.5	160.7
Cache	Reach_1	14.97	I0200	0	160.5	160.5
Cache	Reach_1	14.97	I-APbw	15998	160.5	172.5
Cache	Reach_1	14.97	I3000	14	160.5	160.9
Cache	Reach_1	14.97	I7000	809	160.5	163.4
Cache	Reach_1	14.96	I1000	0	160.5	160.5
Cache	Reach_1	14.96	I-AP	14491	160.5	168.9
Cache	Reach_1	14.96	I0500	0	160.5	160.5
Cache	Reach_1	14.96	I2000	0	160.5	160.6
Cache	Reach_1	14.96	I2500	2	160.5	160.7
Cache	Reach_1	14.96	I0200	0	160.5	160.5
Cache	Reach_1	14.96	I-APbw	15998	160.5	172.5
Cache	Reach_1	14.96	I3000	14	160.5	160.9

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.96	I7000	809	160.5	163.4
Cache	Reach_1	14.95	I1000	0	160.5	160.5
Cache	Reach_1	14.95	I-AP	14491	160.5	168.9
Cache	Reach_1	14.95	I0500	0	160.5	160.5
Cache	Reach_1	14.95	I2000	0	160.5	160.6
Cache	Reach_1	14.95	I2500	2	160.5	160.7
Cache	Reach_1	14.95	I0200	0	160.5	160.5
Cache	Reach_1	14.95	I-APbw	15998	160.5	172.5
Cache	Reach_1	14.95	I3000	14	160.5	160.9
Cache	Reach_1	14.95	I7000	809	160.5	163.4
Cache	Reach_1	14.9	I1000	0	160.5	160.5
Cache	Reach_1	14.9	I-AP	14491	160.5	168.8
Cache	Reach_1	14.9	I0500	0	160.5	160.5
Cache	Reach_1	14.9	I2000	0	160.5	160.5
Cache	Reach_1	14.9	I2500	2	160.5	160.5
Cache	Reach_1	14.9	I0200	0	160.5	160.5
Cache	Reach_1	14.9	I-APbw	15998	160.5	172.5
Cache	Reach_1	14.9	I3000	14	160.5	160.6
Cache	Reach_1	14.9	I7000	809	160.5	163.0
Cache	Reach_2	14	I1000	1000	149.0	160.1
Cache	Reach_2	14	I-AP	30982	149.0	168.8
Cache	Reach_2	14	I0500	500	149.0	160.0
Cache	Reach_2	14	I2000	2000	149.0	160.3
Cache	Reach_2	14	I2500	2500	149.0	160.3
Cache	Reach_2	14	I0200	200	149.0	160.0
Cache	Reach_2	14	I-APbw	30982	149.0	172.5
Cache	Reach_2	14	I3000	3000	149.0	160.5
Cache	Reach_2	14	I7000	7000	149.0	163.0
Cache	Reach_2	13.9	I1000	1000	149.0	160.1
Cache	Reach_2	13.9	I-AP	30982	149.0	168.6
Cache	Reach_2	13.9	I0500	500	149.0	160.0
Cache	Reach_2	13.9	I2000	2000	149.0	160.2
Cache	Reach_2	13.9	I2500	2500	149.0	160.3
Cache	Reach_2	13.9	I0200	200	149.0	160.0
Cache	Reach_2	13.9	I-APbw	30982	149.0	172.4
Cache	Reach_2	13.9	I3000	3000	149.0	160.4
Cache	Reach_2	13.9	I7000	7000	149.0	162.7

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_3	13	I1000	8	149.1	160.1
Cache	Reach_3	13	I-AP	13674	149.1	168.6
Cache	Reach_3	13	I0500	4	149.1	160.0
Cache	Reach_3	13	I2000	24	149.1	160.2
Cache	Reach_3	13	I2500	35	149.1	160.3
Cache	Reach_3	13	I0200	2	149.1	160.0
Cache	Reach_3	13	I-APbw	15678	149.1	172.4
Cache	Reach_3	13	I3000	65	149.1	160.4
Cache	Reach_3	13	I7000	970	149.1	162.7
Cache	Reach_3	12.99	I1000	8	149.1	160.1
Cache	Reach_3	12.99	I-AP	13674	149.1	168.6
Cache	Reach_3	12.99	I0500	4	149.1	160.0
Cache	Reach_3	12.99	I2000	24	149.1	160.2
Cache	Reach_3	12.99	I2500	35	149.1	160.3
Cache	Reach_3	12.99	I0200	2	149.1	160.0
Cache	Reach_3	12.99	I-APbw	15678	149.1	172.4
Cache	Reach_3	12.99	I3000	65	149.1	160.4
Cache	Reach_3	12.99	I7000	970	149.1	162.7
Cache	Reach_3	12.98	I1000	8	159.8	160.1
Cache	Reach_3	12.98	I-AP	13674	159.8	168.6
Cache	Reach_3	12.98	I0500	4	159.8	160.0
Cache	Reach_3	12.98	I2000	24	159.8	160.2
Cache	Reach_3	12.98	I2500	35	159.8	160.3
Cache	Reach_3	12.98	I0200	2	159.8	160.0
Cache	Reach_3	12.98	I-APbw	15678	159.8	172.4
Cache	Reach_3	12.98	I3000	65	159.8	160.4
Cache	Reach_3	12.98	I7000	970	159.8	162.7
Cache	Reach_3	12.97	I1000	8	159.8	160.1
Cache	Reach_3	12.97	I-AP	13674	159.8	168.6
Cache	Reach_3	12.97	I0500	4	159.8	160.0
Cache	Reach_3	12.97	I2000	24	159.8	160.2
Cache	Reach_3	12.97	I2500	35	159.8	160.3
Cache	Reach_3	12.97	I0200	2	159.8	160.0
Cache	Reach_3	12.97	I-APbw	15678	159.8	172.4
Cache	Reach_3	12.97	I3000	65	159.8	160.4
Cache	Reach_3	12.97	I7000	970	159.8	162.7

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_3	12.96	I1000	8	159.8	160.1
Cache	Reach_3	12.96	I-AP	13674	159.8	168.6
Cache	Reach_3	12.96	I0500	4	159.8	160.0
Cache	Reach_3	12.96	I2000	24	159.8	160.2
Cache	Reach_3	12.96	I2500	35	159.8	160.3
Cache	Reach_3	12.96	I0200	2	159.8	160.0
Cache	Reach_3	12.96	I-APbw	15678	159.8	172.4
Cache	Reach_3	12.96	I3000	65	159.8	160.4
Cache	Reach_3	12.96	I7000	970	159.8	162.7
Cache	Reach_3	12.9	I1000	8	159.8	160.0
Cache	Reach_3	12.9	I-AP	13674	159.8	168.5
Cache	Reach_3	12.9	I0500	4	159.8	160.0
Cache	Reach_3	12.9	I2000	24	159.8	160.1
Cache	Reach_3	12.9	I2500	35	159.8	160.1
Cache	Reach_3	12.9	I0200	2	159.8	160.0
Cache	Reach_3	12.9	I-APbw	15678	159.8	172.4
Cache	Reach_3	12.9	I3000	65	159.8	160.2
Cache	Reach_3	12.9	I7000	970	159.8	162.5
Cache	Reach_4	12.5	I1000	1000	149.1	160.0
Cache	Reach_4	12.5	I-AP	30982	149.1	168.4
Cache	Reach_4	12.5	I0500	500	149.1	160.0
Cache	Reach_4	12.5	I2000	2000	149.1	160.1
Cache	Reach_4	12.5	I2500	2500	149.1	160.1
Cache	Reach_4	12.5	I0200	200	149.1	160.0
Cache	Reach_4	12.5	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.5	I3000	3000	149.1	160.2
Cache	Reach_4	12.5	I7000	7000	149.1	162.4
Cache	Reach_4	12.2	I1000	1000	149.1	160.0
Cache	Reach_4	12.2	I-AP	30982	149.1	168.4
Cache	Reach_4	12.2	I0500	500	149.1	160.0
Cache	Reach_4	12.2	I2000	2000	149.1	160.0
Cache	Reach_4	12.2	I2500	2500	149.1	160.0
Cache	Reach_4	12.2	I0200	200	149.1	160.0
Cache	Reach_4	12.2	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.2	I3000	3000	149.1	160.2
Cache	Reach_4	12.2	I7000	7000	149.1	162.4
Cache	Reach_5	12	I1000	0	148.0	160.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	12	I-AP	18733	148.0	168.4
Cache	Reach_5	12	I0500	0	148.0	160.0
Cache	Reach_5	12	I2000	0	148.0	160.1
Cache	Reach_5	12	I2500	0	148.0	160.1
Cache	Reach_5	12	I0200	0	148.0	160.0
Cache	Reach_5	12	I-APbw	23499	148.0	172.4
Cache	Reach_5	12	I3000	4	148.0	160.2
Cache	Reach_5	12	I7000	1052	148.0	162.4
Cache	Reach_5	11.99	I1000	0	148.0	160.0
Cache	Reach_5	11.99	I-AP	18733	148.0	168.4
Cache	Reach_5	11.99	I0500	0	148.0	160.0
Cache	Reach_5	11.99	I2000	0	148.0	160.1
Cache	Reach_5	11.99	I2500	0	148.0	160.1
Cache	Reach_5	11.99	I0200	0	148.0	160.0
Cache	Reach_5	11.99	I-APbw	23499	148.0	172.4
Cache	Reach_5	11.99	I3000	4	148.0	160.2
Cache	Reach_5	11.99	I7000	1052	148.0	162.4
Cache	Reach_5	11.98	I1000	0	160.0	160.0
Cache	Reach_5	11.98	I-AP	18733	160.0	168.4
Cache	Reach_5	11.98	I0500	0	160.0	160.0
Cache	Reach_5	11.98	I2000	0	160.0	160.1
Cache	Reach_5	11.98	I2500	0	160.0	160.1
Cache	Reach_5	11.98	I0200	0	160.0	160.0
Cache	Reach_5	11.98	I-APbw	23499	160.0	172.4
Cache	Reach_5	11.98	I3000	4	160.0	160.2
Cache	Reach_5	11.98	I7000	1052	160.0	162.4
Cache	Reach_5	11.97	I1000	0	160.0	160.0
Cache	Reach_5	11.97	I-AP	18733	160.0	168.4
Cache	Reach_5	11.97	I0500	0	160.0	160.0
Cache	Reach_5	11.97	I2000	0	160.0	160.1
Cache	Reach_5	11.97	I2500	0	160.0	160.1
Cache	Reach_5	11.97	I0200	0	160.0	160.0
Cache	Reach_5	11.97	I-APbw	23499	160.0	172.4
Cache	Reach_5	11.97	I3000	4	160.0	160.2
Cache	Reach_5	11.97	I7000	1052	160.0	162.4
Cache	Reach_5	11.96	I1000	0	160.0	160.0
Cache	Reach_5	11.96	I-AP	18733	160.0	168.4

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	11.96	I0500	0	160.0	160.0
Cache	Reach_5	11.96	I2000	0	160.0	160.1
Cache	Reach_5	11.96	I2500	0	160.0	160.1
Cache	Reach_5	11.96	I0200	0	160.0	160.0
Cache	Reach_5	11.96	I-APbw	23499	160.0	172.4
Cache	Reach_5	11.96	I3000	4	160.0	160.2
Cache	Reach_5	11.96	I7000	1052	160.0	162.4
Cache	Reach_5	11	I1000	0	160.0	160.0
Cache	Reach_5	11	I-AP	18733	160.0	168.0
Cache	Reach_5	11	I0500	0	160.0	160.0
Cache	Reach_5	11	I2000	0	160.0	160.0
Cache	Reach_5	11	I2500	0	160.0	160.0
Cache	Reach_5	11	I0200	0	160.0	160.0
Cache	Reach_5	11	I-APbw	23499	160.0	172.4
Cache	Reach_5	11	I3000	4	160.0	160.0
Cache	Reach_5	11	I7000	1052	160.0	161.2
Cache	Reach_6	10	I1000	1000	145.0	158.6
Cache	Reach_6	10	I-AP	30982	145.0	167.9
Cache	Reach_6	10	I0500	500	145.0	158.5
Cache	Reach_6	10	I2000	2000	145.0	158.6
Cache	Reach_6	10	I2500	2500	145.0	158.8
Cache	Reach_6	10	I0200	200	145.0	158.5
Cache	Reach_6	10	I-APbw	30982	145.0	172.3
Cache	Reach_6	10	I3000	3000	145.0	159.0
Cache	Reach_6	10	I7000	7000	145.0	161.2
Cache	Reach_6	9	I1000	1000	143.8	158.5
Cache	Reach_6	9	I-AP	30982	143.8	167.4
Cache	Reach_6	9	I0500	500	143.8	158.5
Cache	Reach_6	9	I2000	2000	143.8	158.6
Cache	Reach_6	9	I2500	2500	143.8	158.8
Cache	Reach_6	9	I0200	200	143.8	158.5
Cache	Reach_6	9	I-APbw	30982	143.8	172.3
Cache	Reach_6	9	I3000	3000	143.8	159.0
Cache	Reach_6	9	I7000	7000	143.8	161.0
Cache	Reach_6	8	I1000	1000	143.8	158.5
Cache	Reach_6	8	I-AP	30982	143.8	166.9
Cache	Reach_6	8	I0500	500	143.8	158.5

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	8	I2000	2000	143.8	158.5
Cache	Reach_6	8	I2500	2500	143.8	158.8
Cache	Reach_6	8	I0200	200	143.8	158.5
Cache	Reach_6	8	I-APbw	30982	143.8	172.2
Cache	Reach_6	8	I3000	3000	143.8	158.9
Cache	Reach_6	8	I7000	7000	143.8	160.9
Cache	Reach_6	7	I1000	1000	144.4	158.5
Cache	Reach_6	7	I-AP	30982	144.4	166.7
Cache	Reach_6	7	I0500	500	144.4	158.5
Cache	Reach_6	7	I2000	2000	144.4	158.5
Cache	Reach_6	7	I2500	2500	144.4	158.8
Cache	Reach_6	7	I0200	200	144.4	158.5
Cache	Reach_6	7	I-APbw	30982	144.4	172.2
Cache	Reach_6	7	I3000	3000	144.4	158.9
Cache	Reach_6	7	I7000	7000	144.4	160.9
Cache	Reach_7	6.7	I1000	0	143.8	158.5
Cache	Reach_7	6.7	I-AP	10491	143.8	166.9
Cache	Reach_7	6.7	I0500	0	143.8	158.5
Cache	Reach_7	6.7	I2000	0	143.8	158.5
Cache	Reach_7	6.7	I2500	12	143.8	158.8
Cache	Reach_7	6.7	I0200	0	143.8	158.5
Cache	Reach_7	6.7	I-APbw	9241	143.8	172.2
Cache	Reach_7	6.7	I3000	32	143.8	158.9
Cache	Reach_7	6.7	I7000	1221	143.8	160.9
Cache	Reach_7	6.69	I1000	0	143.8	158.5
Cache	Reach_7	6.69	I-AP	10491	143.8	166.9
Cache	Reach_7	6.69	I0500	0	143.8	158.5
Cache	Reach_7	6.69	I2000	0	143.8	158.5
Cache	Reach_7	6.69	I2500	12	143.8	158.8
Cache	Reach_7	6.69	I0200	0	143.8	158.5
Cache	Reach_7	6.69	I-APbw	9241	143.8	172.2
Cache	Reach_7	6.69	I3000	32	143.8	158.9
Cache	Reach_7	6.69	I7000	1221	143.8	160.9
Cache	Reach_7	6.68	I1000	0	158.5	158.5
Cache	Reach_7	6.68	I-AP	10491	158.5	166.8
Cache	Reach_7	6.68	I0500	0	158.5	158.5
Cache	Reach_7	6.68	I2000	0	158.5	158.5

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6.68	I2500	12	158.5	158.8
Cache	Reach_7	6.68	I0200	0	158.5	158.5
Cache	Reach_7	6.68	I-APbw	9241	158.5	172.2
Cache	Reach_7	6.68	I3000	32	158.5	158.9
Cache	Reach_7	6.68	I7000	1221	158.5	160.9
Cache	Reach_7	6.67	I1000	0	158.5	158.5
Cache	Reach_7	6.67	I-AP	10491	158.5	166.7
Cache	Reach_7	6.67	I0500	0	158.5	158.5
Cache	Reach_7	6.67	I2000	0	158.5	158.5
Cache	Reach_7	6.67	I2500	12	158.5	158.8
Cache	Reach_7	6.67	I0200	0	158.5	158.5
Cache	Reach_7	6.67	I-APbw	9241	158.5	172.2
Cache	Reach_7	6.67	I3000	32	158.5	158.9
Cache	Reach_7	6.67	I7000	1221	158.5	160.9
Cache	Reach_7	6.66	I1000	0	158.5	158.5
Cache	Reach_7	6.66	I-AP	10491	158.5	166.7
Cache	Reach_7	6.66	I0500	0	158.5	158.5
Cache	Reach_7	6.66	I2000	0	158.5	158.5
Cache	Reach_7	6.66	I2500	12	158.5	158.8
Cache	Reach_7	6.66	I0200	0	158.5	158.5
Cache	Reach_7	6.66	I-APbw	9241	158.5	172.2
Cache	Reach_7	6.66	I3000	32	158.5	158.9
Cache	Reach_7	6.66	I7000	1221	158.5	160.8
Cache	Reach_7	6	I1000	0	158.5	158.5
Cache	Reach_7	6	I-AP	10491	158.5	166.4
Cache	Reach_7	6	I0500	0	158.5	158.5
Cache	Reach_7	6	I2000	0	158.5	158.5
Cache	Reach_7	6	I2500	12	158.5	158.5
Cache	Reach_7	6	I0200	0	158.5	158.5
Cache	Reach_7	6	I-APbw	9241	158.5	172.1
Cache	Reach_7	6	I3000	32	158.5	158.6
Cache	Reach_7	6	I7000	1221	158.5	160.2
Cache	Reach_8	6.5	I1000	1000	143.8	158.1
Cache	Reach_8	6.5	I-AP	30982	143.8	166.2
Cache	Reach_8	6.5	I0500	500	143.8	158.0
Cache	Reach_8	6.5	I2000	2000	143.8	158.3
Cache	Reach_8	6.5	I2500	2500	143.8	158.4

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_8	6.5	I0200	200	143.8	158.0
Cache	Reach_8	6.5	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.5	I3000	3000	143.8	158.5
Cache	Reach_8	6.5	I7000	7000	143.8	160.2
Cache	Reach_8	6.4	I1000	1000	143.8	158.1
Cache	Reach_8	6.4	I-AP	30982	143.8	166.2
Cache	Reach_8	6.4	I0500	500	143.8	158.0
Cache	Reach_8	6.4	I2000	2000	143.8	158.3
Cache	Reach_8	6.4	I2500	2500	143.8	158.4
Cache	Reach_8	6.4	I0200	200	143.8	158.0
Cache	Reach_8	6.4	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.4	I3000	3000	143.8	158.5
Cache	Reach_8	6.4	I7000	7000	143.8	160.2
Cache	Reach_9	5	I1000	1	144.4	158.1
Cache	Reach_9	5	I-AP	10792	144.4	166.4
Cache	Reach_9	5	I0500	0	144.4	158.0
Cache	Reach_9	5	I2000	8	144.4	158.3
Cache	Reach_9	5	I2500	20	144.4	158.4
Cache	Reach_9	5	I0200	0	144.4	158.0
Cache	Reach_9	5	I-APbw	20657	144.4	172.1
Cache	Reach_9	5	I3000	30	144.4	158.5
Cache	Reach_9	5	I7000	830	144.4	160.3
Cache	Reach_9	4.99	I1000	1	144.4	158.1
Cache	Reach_9	4.99	I-AP	10792	144.4	166.4
Cache	Reach_9	4.99	I0500	0	144.4	158.0
Cache	Reach_9	4.99	I2000	8	144.4	158.3
Cache	Reach_9	4.99	I2500	20	144.4	158.4
Cache	Reach_9	4.99	I0200	0	144.4	158.0
Cache	Reach_9	4.99	I-APbw	20657	144.4	172.1
Cache	Reach_9	4.99	I3000	30	144.4	158.5
Cache	Reach_9	4.99	I7000	830	144.4	160.3
Cache	Reach_9	4.98	I1000	1	158.0	158.1
Cache	Reach_9	4.98	I-AP	10792	158.0	166.3
Cache	Reach_9	4.98	I0500	0	158.0	158.0
Cache	Reach_9	4.98	I2000	8	158.0	158.3
Cache	Reach_9	4.98	I2500	20	158.0	158.4
Cache	Reach_9	4.98	I0200	0	158.0	158.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.98	I-APbw	20657	158.0	172.2
Cache	Reach_9	4.98	I3000	30	158.0	158.5
Cache	Reach_9	4.98	I7000	830	158.0	160.2
Cache	Reach_9	4.97	I1000	1	158.0	158.1
Cache	Reach_9	4.97	I-AP	10792	158.0	166.3
Cache	Reach_9	4.97	I0500	0	158.0	158.0
Cache	Reach_9	4.97	I2000	8	158.0	158.3
Cache	Reach_9	4.97	I2500	20	158.0	158.4
Cache	Reach_9	4.97	I0200	0	158.0	158.0
Cache	Reach_9	4.97	I-APbw	20657	158.0	172.2
Cache	Reach_9	4.97	I3000	30	158.0	158.5
Cache	Reach_9	4.97	I7000	830	158.0	160.2
Cache	Reach_9	4.96	I1000	1	158.0	158.1
Cache	Reach_9	4.96	I-AP	10792	158.0	166.3
Cache	Reach_9	4.96	I0500	0	158.0	158.0
Cache	Reach_9	4.96	I2000	8	158.0	158.3
Cache	Reach_9	4.96	I2500	20	158.0	158.4
Cache	Reach_9	4.96	I0200	0	158.0	158.0
Cache	Reach_9	4.96	I-APbw	20657	158.0	172.1
Cache	Reach_9	4.96	I3000	30	158.0	158.5
Cache	Reach_9	4.96	I7000	830	158.0	160.2
Cache	Reach_9	4.5	I1000	1	158.0	158.0
Cache	Reach_9	4.5	I-AP	10792	158.0	165.5
Cache	Reach_9	4.5	I0500	0	158.0	158.0
Cache	Reach_9	4.5	I2000	8	158.0	158.0
Cache	Reach_9	4.5	I2500	20	158.0	158.1
Cache	Reach_9	4.5	I0200	0	158.0	158.0
Cache	Reach_9	4.5	I-APbw	20657	158.0	172.1
Cache	Reach_9	4.5	I3000	30	158.0	158.1
Cache	Reach_9	4.5	I7000	830	158.0	159.4
Cache	Reach_10	4	I1000	1000	144.7	158.0
Cache	Reach_10	4	I-AP	30982	144.7	165.6
Cache	Reach_10	4	I0500	500	144.7	158.0
Cache	Reach_10	4	I2000	2000	144.7	158.0
Cache	Reach_10	4	I2500	2500	144.7	158.0
Cache	Reach_10	4	I0200	200	144.7	158.0
Cache	Reach_10	4	I-APbw	30982	144.7	172.1

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_10	4	I3000	3000	144.7	158.0
Cache	Reach_10	4	I7000	7000	144.7	159.4
Cache	Reach_10	3	I1000	1000	144.7	158.0
Cache	Reach_10	3	I-AP	30982	144.7	165.4
Cache	Reach_10	3	I0500	500	144.7	158.0
Cache	Reach_10	3	I2000	2000	144.7	158.0
Cache	Reach_10	3	I2500	2500	144.7	158.0
Cache	Reach_10	3	I0200	200	144.7	158.0
Cache	Reach_10	3	I-APbw	30982	144.7	172.1
Cache	Reach_10	3	I3000	3000	144.7	158.0
Cache	Reach_10	3	I7000	7000	144.7	159.3
Cache	Reach_11	2.5	I1000	0	144.7	158.0
Cache	Reach_11	2.5	I-AP	17390	144.7	165.5
Cache	Reach_11	2.5	I0500	0	144.7	158.0
Cache	Reach_11	2.5	I2000	0	144.7	158.0
Cache	Reach_11	2.5	I2500	0	144.7	158.0
Cache	Reach_11	2.5	I0200	0	144.7	158.0
Cache	Reach_11	2.5	I-APbw	20308	144.7	172.1
Cache	Reach_11	2.5	I3000	0	144.7	158.0
Cache	Reach_11	2.5	I7000	1020	144.7	159.4
Cache	Reach_11	2.49	I1000	0	144.7	158.0
Cache	Reach_11	2.49	I-AP	17390	144.7	165.5
Cache	Reach_11	2.49	I0500	0	144.7	158.0
Cache	Reach_11	2.49	I2000	0	144.7	158.0
Cache	Reach_11	2.49	I2500	0	144.7	158.0
Cache	Reach_11	2.49	I0200	0	144.7	158.0
Cache	Reach_11	2.49	I-APbw	20308	144.7	172.1
Cache	Reach_11	2.49	I3000	0	144.7	158.0
Cache	Reach_11	2.49	I7000	1020	144.7	159.4
Cache	Reach_11	2.48	I1000	0	158.0	158.0
Cache	Reach_11	2.48	I-AP	17390	158.0	165.4
Cache	Reach_11	2.48	I0500	0	158.0	158.0
Cache	Reach_11	2.48	I2000	0	158.0	158.0
Cache	Reach_11	2.48	I2500	0	158.0	158.0
Cache	Reach_11	2.48	I0200	0	158.0	158.0
Cache	Reach_11	2.48	I-APbw	20308	158.0	172.1
Cache	Reach_11	2.48	I3000	0	158.0	158.0

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.48	I7000	1020	158.0	159.4
Cache	Reach_11	2.47	I1000	0	158.0	158.0
Cache	Reach_11	2.47	I-AP	17390	158.0	165.4
Cache	Reach_11	2.47	I0500	0	158.0	158.0
Cache	Reach_11	2.47	I2000	0	158.0	158.0
Cache	Reach_11	2.47	I2500	0	158.0	158.0
Cache	Reach_11	2.47	I0200	0	158.0	158.0
Cache	Reach_11	2.47	I-APbw	20308	158.0	172.1
Cache	Reach_11	2.47	I3000	0	158.0	158.0
Cache	Reach_11	2.47	I7000	1020	158.0	159.3
Cache	Reach_11	2.46	I1000	0	158.0	158.0
Cache	Reach_11	2.46	I-AP	17390	158.0	165.4
Cache	Reach_11	2.46	I0500	0	158.0	158.0
Cache	Reach_11	2.46	I2000	0	158.0	158.0
Cache	Reach_11	2.46	I2500	0	158.0	158.0
Cache	Reach_11	2.46	I0200	0	158.0	158.0
Cache	Reach_11	2.46	I-APbw	20308	158.0	172.1
Cache	Reach_11	2.46	I3000	0	158.0	158.0
Cache	Reach_11	2.46	I7000	1020	158.0	159.3
Cache	Reach_11	2.1	I1000	0	158.0	158.0
Cache	Reach_11	2.1	I-AP	17390	158.0	165.3
Cache	Reach_11	2.1	I0500	0	158.0	158.0
Cache	Reach_11	2.1	I2000	0	158.0	158.0
Cache	Reach_11	2.1	I2500	0	158.0	158.0
Cache	Reach_11	2.1	I0200	0	158.0	158.0
Cache	Reach_11	2.1	I-APbw	20308	158.0	172.1
Cache	Reach_11	2.1	I3000	0	158.0	158.0
Cache	Reach_11	2.1	I7000	1020	158.0	158.3
Cache	Reach_12	2	I1000	1000	143.3	151.3
Cache	Reach_12	2	I-AP	30982	143.3	165.2
Cache	Reach_12	2	I0500	500	143.3	149.4
Cache	Reach_12	2	I2000	2000	143.3	153.9
Cache	Reach_12	2	I2500	2500	143.3	154.6
Cache	Reach_12	2	I0200	200	143.3	147.8
Cache	Reach_12	2	I-APbw	30982	143.3	172.1
Cache	Reach_12	2	I3000	3000	143.3	154.4
Cache	Reach_12	2	I7000	7000	143.3	157.4

HEC-RAS Output for Meander Restoration with Fill Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_12	1	I1000	1000	143.9	151.2
Cache	Reach_12	1	I-AP	30982	143.9	164.9
Cache	Reach_12	1	I0500	500	143.9	149.3
Cache	Reach_12	1	I2000	2000	143.9	153.8
Cache	Reach_12	1	I2500	2500	143.9	154.4
Cache	Reach_12	1	I0200	200	143.9	147.8
Cache	Reach_12	1	I-APbw	30982	143.9	172.0
Cache	Reach_12	1	I3000	3000	143.9	154.1
Cache	Reach_12	1	I7000	7000	143.9	157.0
Cache	Reach_12	0	I1000	1000	144.1	151.0
Cache	Reach_12	0	I-AP	30982	144.1	164.6
Cache	Reach_12	0	I0500	500	144.1	149.1
Cache	Reach_12	0	I2000	2000	144.1	153.6
Cache	Reach_12	0	I2500	2500	144.1	154.2
Cache	Reach_12	0	I0200	200	144.1	147.5
Cache	Reach_12	0	I-APbw	30982	144.1	172.0
Cache	Reach_12	0	I3000	3000	144.1	153.7
Cache	Reach_12	0	I7000	7000	144.1	156.6

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #6	Reach	104	I1000	1000	148.9	153.6
Meander #6	Reach	104	I-AP	14376	148.9	165.5
Meander #6	Reach	104	I0500	500	148.9	152.2
Meander #6	Reach	104	I2000	2000	148.9	155.6
Meander #6	Reach	104	I2500	2500	148.9	156.3
Meander #6	Reach	104	I0200	200	148.9	150.9
Meander #6	Reach	104	I-APbw	10861	148.9	172.1
Meander #6	Reach	104	I3000	3000	148.9	156.7
Meander #6	Reach	104	I7000	6073	148.9	159.3
Meander #6	Reach	103	I1000	1000	147.6	153.2
Meander #6	Reach	103	I-AP	14376	147.6	165.4
Meander #6	Reach	103	I0500	500	147.6	151.8
Meander #6	Reach	103	I2000	2000	147.6	155.3
Meander #6	Reach	103	I2500	2500	147.6	155.9
Meander #6	Reach	103	I0200	200	147.6	150.6
Meander #6	Reach	103	I-APbw	10861	147.6	172.1
Meander #6	Reach	103	I3000	3000	147.6	156.2
Meander #6	Reach	103	I7000	6073	147.6	158.9
Meander #6	Reach	102	I1000	1000	147.6	152.9
Meander #6	Reach	102	I-AP	14376	147.6	165.3
Meander #6	Reach	102	I0500	500	147.6	151.6
Meander #6	Reach	102	I2000	2000	147.6	154.9
Meander #6	Reach	102	I2500	2500	147.6	155.6
Meander #6	Reach	102	I0200	200	147.6	150.4
Meander #6	Reach	102	I-APbw	10861	147.6	172.1
Meander #6	Reach	102	I3000	3000	147.6	155.9
Meander #6	Reach	102	I7000	6073	147.6	158.6
Meander #6	Reach	101	I1000	1000	147.8	151.0
Meander #6	Reach	101	I-AP	14376	147.8	165.3
Meander #6	Reach	101	I0500	500	147.8	149.8
Meander #6	Reach	101	I2000	2000	147.8	153.7
Meander #6	Reach	101	I2500	2500	147.8	154.3
Meander #6	Reach	101	I0200	200	147.8	149.1
Meander #6	Reach	101	I-APbw	10861	147.8	172.1
Meander #6	Reach	101	I3000	3000	147.8	153.9
Meander #6	Reach	101	I7000	6073	147.8	156.8

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	110	I1000	1000	150.4	158.1
Meander #5	Reach	110	I-AP	21364	150.4	166.4
Meander #5	Reach	110	I0500	500	150.4	158.0
Meander #5	Reach	110	I2000	1994	150.4	158.2
Meander #5	Reach	110	I2500	2490	150.4	158.3
Meander #5	Reach	110	I0200	200	150.4	158.0
Meander #5	Reach	110	I-APbw	14992	150.4	172.2
Meander #5	Reach	110	I3000	2978	150.4	158.4
Meander #5	Reach	110	I7000	6378	150.4	160.3
Meander #5	Reach	109	I1000	1000	150.6	158.1
Meander #5	Reach	109	I-AP	21364	150.6	166.0
Meander #5	Reach	109	I0500	500	150.6	158.0
Meander #5	Reach	109	I2000	1994	150.6	158.2
Meander #5	Reach	109	I2500	2490	150.6	158.2
Meander #5	Reach	109	I0200	200	150.6	158.0
Meander #5	Reach	109	I-APbw	14992	150.6	172.1
Meander #5	Reach	109	I3000	2978	150.6	158.3
Meander #5	Reach	109	I7000	6378	150.6	160.1
Meander #5	Reach	108	I1000	1000	147.4	158.1
Meander #5	Reach	108	I-AP	21364	147.4	165.8
Meander #5	Reach	108	I0500	500	147.4	158.0
Meander #5	Reach	108	I2000	1994	147.4	158.1
Meander #5	Reach	108	I2500	2490	147.4	158.1
Meander #5	Reach	108	I0200	200	147.4	158.0
Meander #5	Reach	108	I-APbw	14992	147.4	172.1
Meander #5	Reach	108	I3000	2978	147.4	158.2
Meander #5	Reach	108	I7000	6378	147.4	159.7
Meander #5	Reach	107	I1000	1000	146.9	158.0
Meander #5	Reach	107	I-AP	21364	146.9	165.8
Meander #5	Reach	107	I0500	500	146.9	158.0
Meander #5	Reach	107	I2000	1994	146.9	158.1
Meander #5	Reach	107	I2500	2490	146.9	158.1
Meander #5	Reach	107	I0200	200	146.9	158.0
Meander #5	Reach	107	I-APbw	14992	146.9	172.1
Meander #5	Reach	107	I3000	2978	146.9	158.1
Meander #5	Reach	107	I7000	6378	146.9	159.6

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	106	I1000	1000	148.1	158.0
Meander #5	Reach	106	I-AP	21364	148.1	165.7
Meander #5	Reach	106	I0500	500	148.1	158.0
Meander #5	Reach	106	I2000	1994	148.1	158.1
Meander #5	Reach	106	I2500	2490	148.1	158.1
Meander #5	Reach	106	I0200	200	148.1	158.0
Meander #5	Reach	106	I-APbw	14992	148.1	172.1
Meander #5	Reach	106	I3000	2978	148.1	158.1
Meander #5	Reach	106	I7000	6378	148.1	159.5
Meander #5	Reach	105	I1000	1000	148.8	158.0
Meander #5	Reach	105	I-AP	21364	148.8	165.7
Meander #5	Reach	105	I0500	500	148.8	158.0
Meander #5	Reach	105	I2000	1994	148.8	158.0
Meander #5	Reach	105	I2500	2490	148.8	158.1
Meander #5	Reach	105	I0200	200	148.8	158.0
Meander #5	Reach	105	I-APbw	14992	148.8	172.1
Meander #5	Reach	105	I3000	2978	148.8	158.1
Meander #5	Reach	105	I7000	6378	148.8	159.5
Meander #4	Reach	113	I1000	1000	149.1	158.1
Meander #4	Reach	113	I-AP	22608	149.1	167.0
Meander #4	Reach	113	I0500	500	149.1	158.1
Meander #4	Reach	113	I2000	2000	149.1	158.5
Meander #4	Reach	113	I2500	2496	149.1	158.6
Meander #4	Reach	113	I0200	200	149.1	158.0
Meander #4	Reach	113	I-APbw	24493	149.1	172.2
Meander #4	Reach	113	I3000	2976	149.1	158.9
Meander #4	Reach	113	I7000	6024	149.1	160.9
Meander #4	Reach	112	I1000	1000	141.5	158.1
Meander #4	Reach	112	I-AP	22608	141.5	166.8
Meander #4	Reach	112	I0500	500	141.5	158.1
Meander #4	Reach	112	I2000	2000	141.5	158.4
Meander #4	Reach	112	I2500	2496	141.5	158.5
Meander #4	Reach	112	I0200	200	141.5	158.0
Meander #4	Reach	112	I-APbw	24493	141.5	172.2
Meander #4	Reach	112	I3000	2976	141.5	158.6
Meander #4	Reach	112	I7000	6024	141.5	160.6

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #4	Reach	111	I1000	1000	148.5	158.1
Meander #4	Reach	111	I-AP	22608	148.5	166.6
Meander #4	Reach	111	I0500	500	148.5	158.1
Meander #4	Reach	111	I2000	2000	148.5	158.3
Meander #4	Reach	111	I2500	2496	148.5	158.3
Meander #4	Reach	111	I0200	200	148.5	158.0
Meander #4	Reach	111	I-APbw	24493	148.5	172.2
Meander #4	Reach	111	I3000	2976	148.5	158.5
Meander #4	Reach	111	I7000	6024	148.5	160.3
Meander #3	Main	120	I1000	1000	150.4	158.8
Meander #3	Main	120	I-AP	12742	150.4	168.5
Meander #3	Main	120	I0500	500	150.4	158.6
Meander #3	Main	120	I2000	2000	150.4	159.4
Meander #3	Main	120	I2500	2500	150.4	159.8
Meander #3	Main	120	I0200	200	150.4	158.5
Meander #3	Main	120	I-APbw	8846	150.4	172.4
Meander #3	Main	120	I3000	2997	150.4	160.1
Meander #3	Main	120	I7000	6126	150.4	162.4
Meander #3	Main	119	I1000	1000	150.4	158.8
Meander #3	Main	119	I-AP	12742	150.4	168.5
Meander #3	Main	119	I0500	500	150.4	158.6
Meander #3	Main	119	I2000	2000	150.4	159.4
Meander #3	Main	119	I2500	2500	150.4	159.7
Meander #3	Main	119	I0200	200	150.4	158.5
Meander #3	Main	119	I-APbw	8846	150.4	172.4
Meander #3	Main	119	I3000	2997	150.4	160.1
Meander #3	Main	119	I7000	6126	150.4	162.4
Meander #3	Main	118	I1000	1000	150.7	158.8
Meander #3	Main	118	I-AP	12742	150.7	168.4
Meander #3	Main	118	I0500	500	150.7	158.6
Meander #3	Main	118	I2000	2000	150.7	159.2
Meander #3	Main	118	I2500	2500	150.7	159.6
Meander #3	Main	118	I0200	200	150.7	158.5
Meander #3	Main	118	I-APbw	8846	150.7	172.4
Meander #3	Main	118	I3000	2997	150.7	160.0
Meander #3	Main	118	I7000	6126	150.7	162.3

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	117	I1000	1000	150.4	158.7
Meander #3	Main	117	I-AP	12742	150.4	168.4
Meander #3	Main	117	I0500	500	150.4	158.6
Meander #3	Main	117	I2000	2000	150.4	159.0
Meander #3	Main	117	I2500	2500	150.4	159.3
Meander #3	Main	117	I0200	200	150.4	158.5
Meander #3	Main	117	I-APbw	8846	150.4	172.4
Meander #3	Main	117	I3000	2997	150.4	159.7
Meander #3	Main	117	I7000	6126	150.4	162.2
Meander #3	Main	116	I1000	1000	149.7	158.6
Meander #3	Main	116	I-AP	12742	149.7	168.2
Meander #3	Main	116	I0500	500	149.7	158.6
Meander #3	Main	116	I2000	2000	149.7	158.8
Meander #3	Main	116	I2500	2500	149.7	159.0
Meander #3	Main	116	I0200	200	149.7	158.5
Meander #3	Main	116	I-APbw	8846	149.7	172.4
Meander #3	Main	116	I3000	2997	149.7	159.4
Meander #3	Main	116	I7000	6126	149.7	161.8
Meander #3	Main	115	I1000	1000	149.7	158.6
Meander #3	Main	115	I-AP	12742	149.7	168.2
Meander #3	Main	115	I0500	500	149.7	158.5
Meander #3	Main	115	I2000	2000	149.7	158.7
Meander #3	Main	115	I2500	2500	149.7	158.9
Meander #3	Main	115	I0200	200	149.7	158.5
Meander #3	Main	115	I-APbw	8846	149.7	172.4
Meander #3	Main	115	I3000	2997	149.7	159.2
Meander #3	Main	115	I7000	6126	149.7	161.6
Meander #3	Main	114	I1000	1000	149.6	158.6
Meander #3	Main	114	I-AP	12742	149.6	168.1
Meander #3	Main	114	I0500	500	149.6	158.5
Meander #3	Main	114	I2000	2000	149.6	158.6
Meander #3	Main	114	I2500	2500	149.6	158.7
Meander #3	Main	114	I0200	200	149.6	158.5
Meander #3	Main	114	I-APbw	8846	149.6	172.4
Meander #3	Main	114	I3000	2997	149.6	159.0
Meander #3	Main	114	I7000	6126	149.6	161.3

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #2	Reach	123	I1000	994	149.5	160.1
Meander #2	Reach	123	I-AP	17557	149.5	168.7
Meander #2	Reach	123	I0500	497	149.5	160.0
Meander #2	Reach	123	I2000	1984	149.5	160.2
Meander #2	Reach	123	I2500	2472	149.5	160.3
Meander #2	Reach	123	I0200	199	149.5	160.0
Meander #2	Reach	123	I-APbw	15312	149.5	172.5
Meander #2	Reach	123	I3000	2954	149.5	160.4
Meander #2	Reach	123	I7000	6299	149.5	162.8
Meander #2	Reach	122	I1000	994	148.6	160.1
Meander #2	Reach	122	I-AP	17557	148.6	168.6
Meander #2	Reach	122	I0500	497	148.6	160.0
Meander #2	Reach	122	I2000	1984	148.6	160.1
Meander #2	Reach	122	I2500	2472	148.6	160.1
Meander #2	Reach	122	I0200	199	148.6	160.0
Meander #2	Reach	122	I-APbw	15312	148.6	172.5
Meander #2	Reach	122	I3000	2954	148.6	160.3
Meander #2	Reach	122	I7000	6299	148.6	162.7
Meander #2	Reach	121	I1000	994	149.7	160.0
Meander #2	Reach	121	I-AP	17557	149.7	168.5
Meander #2	Reach	121	I0500	497	149.7	160.0
Meander #2	Reach	121	I2000	1984	149.7	160.1
Meander #2	Reach	121	I2500	2472	149.7	160.1
Meander #2	Reach	121	I0200	199	149.7	160.0
Meander #2	Reach	121	I-APbw	15312	149.7	172.4
Meander #2	Reach	121	I3000	2954	149.7	160.2
Meander #2	Reach	121	I7000	6299	149.7	162.6
Meander #1	Reach	127	I1000	1000	151.4	160.2
Meander #1	Reach	127	I-AP	16608	151.4	169.1
Meander #1	Reach	127	I0500	500	151.4	160.1
Meander #1	Reach	127	I2000	2000	151.4	160.5
Meander #1	Reach	127	I2500	2498	151.4	160.7
Meander #1	Reach	127	I0200	200	151.4	160.0
Meander #1	Reach	127	I-APbw	14988	151.4	172.5
Meander #1	Reach	127	I3000	2986	151.4	160.9
Meander #1	Reach	127	I7000	6413	151.4	163.5

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #1	Reach	126	I1000	1000	150.8	160.1
Meander #1	Reach	126	I-AP	16608	150.8	169.0
Meander #1	Reach	126	I0500	500	150.8	160.1
Meander #1	Reach	126	I2000	2000	150.8	160.4
Meander #1	Reach	126	I2500	2498	150.8	160.5
Meander #1	Reach	126	I0200	200	150.8	160.0
Meander #1	Reach	126	I-APbw	14988	150.8	172.5
Meander #1	Reach	126	I3000	2986	150.8	160.8
Meander #1	Reach	126	I7000	6413	150.8	163.3
Meander #1	Reach	125	I1000	1000	150.4	160.1
Meander #1	Reach	125	I-AP	16608	150.4	168.9
Meander #1	Reach	125	I0500	500	150.4	160.1
Meander #1	Reach	125	I2000	2000	150.4	160.3
Meander #1	Reach	125	I2500	2498	150.4	160.5
Meander #1	Reach	125	I0200	200	150.4	160.0
Meander #1	Reach	125	I-APbw	14988	150.4	172.5
Meander #1	Reach	125	I3000	2986	150.4	160.7
Meander #1	Reach	125	I7000	6413	150.4	163.2
Meander #1	Reach	124	I1000	1000	150.7	160.1
Meander #1	Reach	124	I-AP	16608	150.7	168.9
Meander #1	Reach	124	I0500	500	150.7	160.1
Meander #1	Reach	124	I2000	2000	150.7	160.2
Meander #1	Reach	124	I2500	2498	150.7	160.4
Meander #1	Reach	124	I0200	200	150.7	160.0
Meander #1	Reach	124	I-APbw	14988	150.7	172.5
Meander #1	Reach	124	I3000	2986	150.7	160.6
Meander #1	Reach	124	I7000	6413	150.7	163.1
Cache	Main	16	I1000	1000	147.2	160.2
Cache	Main	16	I-AP	30982	147.2	169.2
Cache	Main	16	I0500	500	147.2	160.1
Cache	Main	16	I2000	2000	147.2	160.5
Cache	Main	16	I2500	2500	147.2	160.8
Cache	Main	16	I0200	200	147.2	160.0
Cache	Main	16	I-APbw	30982	147.2	172.6
Cache	Main	16	I3000	3000	147.2	161.1
Cache	Main	16	I7000	7000	147.2	163.7

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Main	15.9	I1000	1000	147.2	160.2
Cache	Main	15.9	I-AP	30982	147.2	169.0
Cache	Main	15.9	I0500	500	147.2	160.1
Cache	Main	15.9	I2000	2000	147.2	160.5
Cache	Main	15.9	I2500	2500	147.2	160.7
Cache	Main	15.9	I0200	200	147.2	160.0
Cache	Main	15.9	I-APbw	30982	147.2	172.5
Cache	Main	15.9	I3000	3000	147.2	160.9
Cache	Main	15.9	I7000	7000	147.2	163.5
Cache	Reach_1	15	I1000	0	149.6	160.6
Cache	Reach_1	15	I-AP	14374	149.6	169.0
Cache	Reach_1	15	I0500	0	149.6	160.5
Cache	Reach_1	15	I2000	0	149.6	160.6
Cache	Reach_1	15	I2500	2	149.6	160.7
Cache	Reach_1	15	I0200	0	149.6	160.5
Cache	Reach_1	15	I-APbw	15994	149.6	172.5
Cache	Reach_1	15	I3000	14	149.6	161.0
Cache	Reach_1	15	I7000	587	149.6	163.5
Cache	Reach_1	14.98	I1000	0	149.6	160.6
Cache	Reach_1	14.98	I-AP	14374	149.6	169.0
Cache	Reach_1	14.98	I0500	0	149.6	160.5
Cache	Reach_1	14.98	I2000	0	149.6	160.6
Cache	Reach_1	14.98	I2500	2	149.6	160.7
Cache	Reach_1	14.98	I0200	0	149.6	160.5
Cache	Reach_1	14.98	I-APbw	15994	149.6	172.5
Cache	Reach_1	14.98	I3000	14	149.6	161.0
Cache	Reach_1	14.98	I7000	587	149.6	163.5
Cache	Reach_1	14.97	I1000	0	160.5	160.6
Cache	Reach_1	14.97	I-AP	14374	160.5	169.0
Cache	Reach_1	14.97	I0500	0	160.5	160.5
Cache	Reach_1	14.97	I2000	0	160.5	160.6
Cache	Reach_1	14.97	I2500	2	160.5	160.7
Cache	Reach_1	14.97	I0200	0	160.5	160.5
Cache	Reach_1	14.97	I-APbw	15994	160.5	172.5
Cache	Reach_1	14.97	I3000	14	160.5	161.0
Cache	Reach_1	14.97	I7000	587	160.5	163.5

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.96	I1000	0	160.5	160.6
Cache	Reach_1	14.96	I-AP	14374	160.5	169.0
Cache	Reach_1	14.96	I0500	0	160.5	160.5
Cache	Reach_1	14.96	I2000	0	160.5	160.6
Cache	Reach_1	14.96	I2500	2	160.5	160.7
Cache	Reach_1	14.96	I0200	0	160.5	160.5
Cache	Reach_1	14.96	I-APbw	15994	160.5	172.5
Cache	Reach_1	14.96	I3000	14	160.5	160.9
Cache	Reach_1	14.96	I7000	587	160.5	163.5
Cache	Reach_1	14.95	I1000	0	160.5	160.6
Cache	Reach_1	14.95	I-AP	14374	160.5	169.0
Cache	Reach_1	14.95	I0500	0	160.5	160.5
Cache	Reach_1	14.95	I2000	0	160.5	160.6
Cache	Reach_1	14.95	I2500	2	160.5	160.7
Cache	Reach_1	14.95	I0200	0	160.5	160.5
Cache	Reach_1	14.95	I-APbw	15994	160.5	172.5
Cache	Reach_1	14.95	I3000	14	160.5	160.9
Cache	Reach_1	14.95	I7000	587	160.5	163.5
Cache	Reach_1	14.9	I1000	0	160.5	160.5
Cache	Reach_1	14.9	I-AP	14374	160.5	168.9
Cache	Reach_1	14.9	I0500	0	160.5	160.5
Cache	Reach_1	14.9	I2000	0	160.5	160.5
Cache	Reach_1	14.9	I2500	2	160.5	160.5
Cache	Reach_1	14.9	I0200	0	160.5	160.5
Cache	Reach_1	14.9	I-APbw	15994	160.5	172.5
Cache	Reach_1	14.9	I3000	14	160.5	160.6
Cache	Reach_1	14.9	I7000	587	160.5	163.1
Cache	Reach_2	14	I1000	1000	149.0	160.1
Cache	Reach_2	14	I-AP	30982	149.0	168.9
Cache	Reach_2	14	I0500	500	149.0	160.1
Cache	Reach_2	14	I2000	2000	149.0	160.2
Cache	Reach_2	14	I2500	2500	149.0	160.4
Cache	Reach_2	14	I0200	200	149.0	160.0
Cache	Reach_2	14	I-APbw	30982	149.0	172.5
Cache	Reach_2	14	I3000	3000	149.0	160.6
Cache	Reach_2	14	I7000	7000	149.0	163.1

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_2	13.9	I1000	1000	149.0	160.1
Cache	Reach_2	13.9	I-AP	30982	149.0	168.7
Cache	Reach_2	13.9	I0500	500	149.0	160.0
Cache	Reach_2	13.9	I2000	2000	149.0	160.2
Cache	Reach_2	13.9	I2500	2500	149.0	160.3
Cache	Reach_2	13.9	I0200	200	149.0	160.0
Cache	Reach_2	13.9	I-APbw	30982	149.0	172.5
Cache	Reach_2	13.9	I3000	3000	149.0	160.4
Cache	Reach_2	13.9	I7000	7000	149.0	162.8
Cache	Reach_3	13	I1000	6	149.1	160.1
Cache	Reach_3	13	I-AP	13425	149.1	168.7
Cache	Reach_3	13	I0500	3	149.1	160.1
Cache	Reach_3	13	I2000	16	149.1	160.2
Cache	Reach_3	13	I2500	28	149.1	160.3
Cache	Reach_3	13	I0200	1	149.1	160.0
Cache	Reach_3	13	I-APbw	15670	149.1	172.5
Cache	Reach_3	13	I3000	46	149.1	160.5
Cache	Reach_3	13	I7000	701	149.1	162.9
Cache	Reach_3	12.99	I1000	6	149.1	160.1
Cache	Reach_3	12.99	I-AP	13425	149.1	168.7
Cache	Reach_3	12.99	I0500	3	149.1	160.1
Cache	Reach_3	12.99	I2000	16	149.1	160.2
Cache	Reach_3	12.99	I2500	28	149.1	160.3
Cache	Reach_3	12.99	I0200	1	149.1	160.0
Cache	Reach_3	12.99	I-APbw	15670	149.1	172.5
Cache	Reach_3	12.99	I3000	46	149.1	160.5
Cache	Reach_3	12.99	I7000	701	149.1	162.9
Cache	Reach_3	12.98	I1000	6	159.8	160.1
Cache	Reach_3	12.98	I-AP	13425	159.8	168.7
Cache	Reach_3	12.98	I0500	3	159.8	160.1
Cache	Reach_3	12.98	I2000	16	159.8	160.2
Cache	Reach_3	12.98	I2500	28	159.8	160.3
Cache	Reach_3	12.98	I0200	1	159.8	160.0
Cache	Reach_3	12.98	I-APbw	15670	159.8	172.5
Cache	Reach_3	12.98	I3000	46	159.8	160.5
Cache	Reach_3	12.98	I7000	701	159.8	162.9

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_3	12.97	I1000	6	159.8	160.1
Cache	Reach_3	12.97	I-AP	13425	159.8	168.7
Cache	Reach_3	12.97	I0500	3	159.8	160.1
Cache	Reach_3	12.97	I2000	16	159.8	160.2
Cache	Reach_3	12.97	I2500	28	159.8	160.3
Cache	Reach_3	12.97	I0200	1	159.8	160.0
Cache	Reach_3	12.97	I-APbw	15670	159.8	172.5
Cache	Reach_3	12.97	I3000	46	159.8	160.5
Cache	Reach_3	12.97	I7000	701	159.8	162.8
Cache	Reach_3	12.96	I1000	6	159.8	160.1
Cache	Reach_3	12.96	I-AP	13425	159.8	168.7
Cache	Reach_3	12.96	I0500	3	159.8	160.0
Cache	Reach_3	12.96	I2000	16	159.8	160.2
Cache	Reach_3	12.96	I2500	28	159.8	160.3
Cache	Reach_3	12.96	I0200	1	159.8	160.0
Cache	Reach_3	12.96	I-APbw	15670	159.8	172.5
Cache	Reach_3	12.96	I3000	46	159.8	160.5
Cache	Reach_3	12.96	I7000	701	159.8	162.8
Cache	Reach_3	12.9	I1000	6	159.8	160.1
Cache	Reach_3	12.9	I-AP	13425	159.8	168.6
Cache	Reach_3	12.9	I0500	3	159.8	160.0
Cache	Reach_3	12.9	I2000	16	159.8	160.1
Cache	Reach_3	12.9	I2500	28	159.8	160.1
Cache	Reach_3	12.9	I0200	1	159.8	160.0
Cache	Reach_3	12.9	I-APbw	15670	159.8	172.4
Cache	Reach_3	12.9	I3000	46	159.8	160.2
Cache	Reach_3	12.9	I7000	701	159.8	162.6
Cache	Reach_4	12.5	I1000	1000	149.1	160.0
Cache	Reach_4	12.5	I-AP	30982	149.1	168.5
Cache	Reach_4	12.5	I0500	500	149.1	160.0
Cache	Reach_4	12.5	I2000	2000	149.1	160.1
Cache	Reach_4	12.5	I2500	2500	149.1	160.1
Cache	Reach_4	12.5	I0200	200	149.1	160.0
Cache	Reach_4	12.5	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.5	I3000	3000	149.1	160.2
Cache	Reach_4	12.5	I7000	7000	149.1	162.5

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_4	12.2	I1000	1000	149.1	160.0
Cache	Reach_4	12.2	I-AP	30982	149.1	168.5
Cache	Reach_4	12.2	I0500	500	149.1	160.0
Cache	Reach_4	12.2	I2000	2000	149.1	160.0
Cache	Reach_4	12.2	I2500	2500	149.1	160.1
Cache	Reach_4	12.2	I0200	200	149.1	160.0
Cache	Reach_4	12.2	I-APbw	30982	149.1	172.4
Cache	Reach_4	12.2	I3000	3000	149.1	160.2
Cache	Reach_4	12.2	I7000	7000	149.1	162.5
Cache	Reach_5	12	I1000	0	148.0	160.0
Cache	Reach_5	12	I-AP	18240	148.0	168.5
Cache	Reach_5	12	I0500	0	148.0	160.0
Cache	Reach_5	12	I2000	0	148.0	160.1
Cache	Reach_5	12	I2500	0	148.0	160.1
Cache	Reach_5	12	I0200	0	148.0	160.0
Cache	Reach_5	12	I-APbw	22136	148.0	172.4
Cache	Reach_5	12	I3000	3	148.0	160.2
Cache	Reach_5	12	I7000	874	148.0	162.5
Cache	Reach_5	11.99	I1000	0	148.0	160.0
Cache	Reach_5	11.99	I-AP	18240	148.0	168.5
Cache	Reach_5	11.99	I0500	0	148.0	160.0
Cache	Reach_5	11.99	I2000	0	148.0	160.1
Cache	Reach_5	11.99	I2500	0	148.0	160.1
Cache	Reach_5	11.99	I0200	0	148.0	160.0
Cache	Reach_5	11.99	I-APbw	22136	148.0	172.4
Cache	Reach_5	11.99	I3000	3	148.0	160.2
Cache	Reach_5	11.99	I7000	874	148.0	162.5
Cache	Reach_5	11.98	I1000	0	160.0	160.0
Cache	Reach_5	11.98	I-AP	18240	160.0	168.5
Cache	Reach_5	11.98	I0500	0	160.0	160.0
Cache	Reach_5	11.98	I2000	0	160.0	160.1
Cache	Reach_5	11.98	I2500	0	160.0	160.1
Cache	Reach_5	11.98	I0200	0	160.0	160.0
Cache	Reach_5	11.98	I-APbw	22136	160.0	172.4
Cache	Reach_5	11.98	I3000	3	160.0	160.2
Cache	Reach_5	11.98	I7000	874	160.0	162.5

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	11.97	I1000	0	160.0	160.0
Cache	Reach_5	11.97	I-AP	18240	160.0	168.5
Cache	Reach_5	11.97	I0500	0	160.0	160.0
Cache	Reach_5	11.97	I2000	0	160.0	160.1
Cache	Reach_5	11.97	I2500	0	160.0	160.1
Cache	Reach_5	11.97	I0200	0	160.0	160.0
Cache	Reach_5	11.97	I-APbw	22136	160.0	172.4
Cache	Reach_5	11.97	I3000	3	160.0	160.2
Cache	Reach_5	11.97	I7000	874	160.0	162.5
Cache	Reach_5	11.96	I1000	0	160.0	160.0
Cache	Reach_5	11.96	I-AP	18240	160.0	168.5
Cache	Reach_5	11.96	I0500	0	160.0	160.0
Cache	Reach_5	11.96	I2000	0	160.0	160.1
Cache	Reach_5	11.96	I2500	0	160.0	160.1
Cache	Reach_5	11.96	I0200	0	160.0	160.0
Cache	Reach_5	11.96	I-APbw	22136	160.0	172.4
Cache	Reach_5	11.96	I3000	3	160.0	160.2
Cache	Reach_5	11.96	I7000	874	160.0	162.5
Cache	Reach_5	11	I1000	0	160.0	160.0
Cache	Reach_5	11	I-AP	18240	160.0	168.1
Cache	Reach_5	11	I0500	0	160.0	160.0
Cache	Reach_5	11	I2000	0	160.0	160.0
Cache	Reach_5	11	I2500	0	160.0	160.0
Cache	Reach_5	11	I0200	0	160.0	160.0
Cache	Reach_5	11	I-APbw	22136	160.0	172.4
Cache	Reach_5	11	I3000	3	160.0	160.0
Cache	Reach_5	11	I7000	874	160.0	161.3
Cache	Reach_6	10	I1000	1000	145.0	158.6
Cache	Reach_6	10	I-AP	30982	145.0	168.0
Cache	Reach_6	10	I0500	500	145.0	158.5
Cache	Reach_6	10	I2000	2000	145.0	158.6
Cache	Reach_6	10	I2500	2500	145.0	158.8
Cache	Reach_6	10	I0200	200	145.0	158.5
Cache	Reach_6	10	I-APbw	30982	145.0	172.4
Cache	Reach_6	10	I3000	3000	145.0	159.1
Cache	Reach_6	10	I7000	7000	145.0	161.3

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	9	I1000	1000	143.8	158.5
Cache	Reach_6	9	I-AP	30982	143.8	167.5
Cache	Reach_6	9	I0500	500	143.8	158.5
Cache	Reach_6	9	I2000	2000	143.8	158.6
Cache	Reach_6	9	I2500	2500	143.8	158.7
Cache	Reach_6	9	I0200	200	143.8	158.5
Cache	Reach_6	9	I-APbw	30982	143.8	172.3
Cache	Reach_6	9	I3000	3000	143.8	159.0
Cache	Reach_6	9	I7000	7000	143.8	161.2
Cache	Reach_6	8	I1000	1000	143.8	158.5
Cache	Reach_6	8	I-AP	30982	143.8	167.1
Cache	Reach_6	8	I0500	500	143.8	158.5
Cache	Reach_6	8	I2000	2000	143.8	158.6
Cache	Reach_6	8	I2500	2500	143.8	158.7
Cache	Reach_6	8	I0200	200	143.8	158.5
Cache	Reach_6	8	I-APbw	30982	143.8	172.2
Cache	Reach_6	8	I3000	3000	143.8	159.0
Cache	Reach_6	8	I7000	7000	143.8	161.1
Cache	Reach_6	7	I1000	1000	144.4	158.5
Cache	Reach_6	7	I-AP	30982	144.4	166.9
Cache	Reach_6	7	I0500	500	144.4	158.5
Cache	Reach_6	7	I2000	2000	144.4	158.6
Cache	Reach_6	7	I2500	2500	144.4	158.7
Cache	Reach_6	7	I0200	200	144.4	158.5
Cache	Reach_6	7	I-APbw	30982	144.4	172.2
Cache	Reach_6	7	I3000	3000	144.4	158.9
Cache	Reach_6	7	I7000	7000	144.4	161.0
Cache	Reach_7	6.7	I1000	0	143.8	158.5
Cache	Reach_7	6.7	I-AP	8374	143.8	167.0
Cache	Reach_7	6.7	I0500	0	143.8	158.5
Cache	Reach_7	6.7	I2000	0	143.8	158.6
Cache	Reach_7	6.7	I2500	4	143.8	158.7
Cache	Reach_7	6.7	I0200	0	143.8	158.5
Cache	Reach_7	6.7	I-APbw	6489	143.8	172.2
Cache	Reach_7	6.7	I3000	24	143.8	159.0
Cache	Reach_7	6.7	I7000	976	143.8	161.1

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6.69	I1000	0	143.8	158.5
Cache	Reach_7	6.69	I-AP	8374	143.8	167.0
Cache	Reach_7	6.69	I0500	0	143.8	158.5
Cache	Reach_7	6.69	I2000	0	143.8	158.6
Cache	Reach_7	6.69	I2500	4	143.8	158.7
Cache	Reach_7	6.69	I0200	0	143.8	158.5
Cache	Reach_7	6.69	I-APbw	6489	143.8	172.2
Cache	Reach_7	6.69	I3000	24	143.8	159.0
Cache	Reach_7	6.69	I7000	976	143.8	161.1
Cache	Reach_7	6.68	I1000	0	158.5	158.5
Cache	Reach_7	6.68	I-AP	8374	158.5	167.0
Cache	Reach_7	6.68	I0500	0	158.5	158.5
Cache	Reach_7	6.68	I2000	0	158.5	158.6
Cache	Reach_7	6.68	I2500	4	158.5	158.7
Cache	Reach_7	6.68	I0200	0	158.5	158.5
Cache	Reach_7	6.68	I-APbw	6489	158.5	172.2
Cache	Reach_7	6.68	I3000	24	158.5	159.0
Cache	Reach_7	6.68	I7000	976	158.5	161.0
Cache	Reach_7	6.67	I1000	0	158.5	158.5
Cache	Reach_7	6.67	I-AP	8374	158.5	167.0
Cache	Reach_7	6.67	I0500	0	158.5	158.5
Cache	Reach_7	6.67	I2000	0	158.5	158.6
Cache	Reach_7	6.67	I2500	4	158.5	158.7
Cache	Reach_7	6.67	I0200	0	158.5	158.5
Cache	Reach_7	6.67	I-APbw	6489	158.5	172.2
Cache	Reach_7	6.67	I3000	24	158.5	159.0
Cache	Reach_7	6.67	I7000	976	158.5	161.0
Cache	Reach_7	6.66	I1000	0	158.5	158.5
Cache	Reach_7	6.66	I-AP	8374	158.5	167.0
Cache	Reach_7	6.66	I0500	0	158.5	158.5
Cache	Reach_7	6.66	I2000	0	158.5	158.6
Cache	Reach_7	6.66	I2500	4	158.5	158.7
Cache	Reach_7	6.66	I0200	0	158.5	158.5
Cache	Reach_7	6.66	I-APbw	6489	158.5	172.2
Cache	Reach_7	6.66	I3000	24	158.5	158.9
Cache	Reach_7	6.66	I7000	976	158.5	161.0

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_7	6	I1000	0	158.5	158.5
Cache	Reach_7	6	I-AP	8374	158.5	166.6
Cache	Reach_7	6	I0500	0	158.5	158.5
Cache	Reach_7	6	I2000	0	158.5	158.5
Cache	Reach_7	6	I2500	4	158.5	158.5
Cache	Reach_7	6	I0200	0	158.5	158.5
Cache	Reach_7	6	I-APbw	6489	158.5	172.2
Cache	Reach_7	6	I3000	24	158.5	158.6
Cache	Reach_7	6	I7000	976	158.5	160.4
Cache	Reach_8	6.5	I1000	1000	143.8	158.1
Cache	Reach_8	6.5	I-AP	30982	143.8	166.4
Cache	Reach_8	6.5	I0500	500	143.8	158.1
Cache	Reach_8	6.5	I2000	2000	143.8	158.3
Cache	Reach_8	6.5	I2500	2500	143.8	158.3
Cache	Reach_8	6.5	I0200	200	143.8	158.0
Cache	Reach_8	6.5	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.5	I3000	3000	143.8	158.5
Cache	Reach_8	6.5	I7000	7000	143.8	160.3
Cache	Reach_8	6.4	I1000	1000	143.8	158.1
Cache	Reach_8	6.4	I-AP	30982	143.8	166.3
Cache	Reach_8	6.4	I0500	500	143.8	158.1
Cache	Reach_8	6.4	I2000	2000	143.8	158.3
Cache	Reach_8	6.4	I2500	2500	143.8	158.3
Cache	Reach_8	6.4	I0200	200	143.8	158.0
Cache	Reach_8	6.4	I-APbw	30982	143.8	172.1
Cache	Reach_8	6.4	I3000	3000	143.8	158.5
Cache	Reach_8	6.4	I7000	7000	143.8	160.3
Cache	Reach_9	5	I1000	0	144.4	158.1
Cache	Reach_9	5	I-AP	9618	144.4	166.5
Cache	Reach_9	5	I0500	0	144.4	158.1
Cache	Reach_9	5	I2000	6	144.4	158.3
Cache	Reach_9	5	I2500	10	144.4	158.3
Cache	Reach_9	5	I0200	0	144.4	158.0
Cache	Reach_9	5	I-APbw	15990	144.4	172.2
Cache	Reach_9	5	I3000	22	144.4	158.5
Cache	Reach_9	5	I7000	622	144.4	160.4

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.99	I1000	0	144.4	158.1
Cache	Reach_9	4.99	I-AP	9618	144.4	166.5
Cache	Reach_9	4.99	I0500	0	144.4	158.1
Cache	Reach_9	4.99	I2000	6	144.4	158.3
Cache	Reach_9	4.99	I2500	10	144.4	158.3
Cache	Reach_9	4.99	I0200	0	144.4	158.0
Cache	Reach_9	4.99	I-APbw	15990	144.4	172.2
Cache	Reach_9	4.99	I3000	22	144.4	158.5
Cache	Reach_9	4.99	I7000	622	144.4	160.4
Cache	Reach_9	4.98	I1000	0	158.0	158.1
Cache	Reach_9	4.98	I-AP	9618	158.0	166.5
Cache	Reach_9	4.98	I0500	0	158.0	158.1
Cache	Reach_9	4.98	I2000	6	158.0	158.3
Cache	Reach_9	4.98	I2500	10	158.0	158.3
Cache	Reach_9	4.98	I0200	0	158.0	158.0
Cache	Reach_9	4.98	I-APbw	15990	158.0	172.2
Cache	Reach_9	4.98	I3000	22	158.0	158.5
Cache	Reach_9	4.98	I7000	622	158.0	160.3
Cache	Reach_9	4.97	I1000	0	158.0	158.1
Cache	Reach_9	4.97	I-AP	9618	158.0	166.5
Cache	Reach_9	4.97	I0500	0	158.0	158.1
Cache	Reach_9	4.97	I2000	6	158.0	158.3
Cache	Reach_9	4.97	I2500	10	158.0	158.3
Cache	Reach_9	4.97	I0200	0	158.0	158.0
Cache	Reach_9	4.97	I-APbw	15990	158.0	172.2
Cache	Reach_9	4.97	I3000	22	158.0	158.5
Cache	Reach_9	4.97	I7000	622	158.0	160.3
Cache	Reach_9	4.96	I1000	0	158.0	158.1
Cache	Reach_9	4.96	I-AP	9618	158.0	166.4
Cache	Reach_9	4.96	I0500	0	158.0	158.1
Cache	Reach_9	4.96	I2000	6	158.0	158.3
Cache	Reach_9	4.96	I2500	10	158.0	158.3
Cache	Reach_9	4.96	I0200	0	158.0	158.0
Cache	Reach_9	4.96	I-APbw	15990	158.0	172.2
Cache	Reach_9	4.96	I3000	22	158.0	158.5
Cache	Reach_9	4.96	I7000	622	158.0	160.3

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.5	I1000	0	158.0	158.0
Cache	Reach_9	4.5	I-AP	9618	158.0	165.6
Cache	Reach_9	4.5	I0500	0	158.0	158.0
Cache	Reach_9	4.5	I2000	6	158.0	158.0
Cache	Reach_9	4.5	I2500	10	158.0	158.0
Cache	Reach_9	4.5	I0200	0	158.0	158.0
Cache	Reach_9	4.5	I-APbw	15990	158.0	172.1
Cache	Reach_9	4.5	I3000	22	158.0	158.1
Cache	Reach_9	4.5	I7000	622	158.0	159.5
Cache	Reach_10	4	I1000	1000	144.7	158.0
Cache	Reach_10	4	I-AP	30982	144.7	165.6
Cache	Reach_10	4	I0500	500	144.7	158.0
Cache	Reach_10	4	I2000	2000	144.7	158.0
Cache	Reach_10	4	I2500	2500	144.7	158.0
Cache	Reach_10	4	I0200	200	144.7	158.0
Cache	Reach_10	4	I-APbw	30982	144.7	172.1
Cache	Reach_10	4	I3000	3000	144.7	158.1
Cache	Reach_10	4	I7000	7000	144.7	159.4
Cache	Reach_10	3	I1000	1000	144.7	158.0
Cache	Reach_10	3	I-AP	30982	144.7	165.5
Cache	Reach_10	3	I0500	500	144.7	158.0
Cache	Reach_10	3	I2000	2000	144.7	158.0
Cache	Reach_10	3	I2500	2500	144.7	158.0
Cache	Reach_10	3	I0200	200	144.7	158.0
Cache	Reach_10	3	I-APbw	30982	144.7	172.1
Cache	Reach_10	3	I3000	3000	144.7	158.0
Cache	Reach_10	3	I7000	7000	144.7	159.4
Cache	Reach_11	2.5	I1000	0	144.7	158.0
Cache	Reach_11	2.5	I-AP	16606	144.7	165.5
Cache	Reach_11	2.5	I0500	0	144.7	158.0
Cache	Reach_11	2.5	I2000	0	144.7	158.0
Cache	Reach_11	2.5	I2500	0	144.7	158.0
Cache	Reach_11	2.5	I0200	0	144.7	158.0
Cache	Reach_11	2.5	I-APbw	20121	144.7	172.1
Cache	Reach_11	2.5	I3000	0	144.7	158.0
Cache	Reach_11	2.5	I7000	927	144.7	159.4

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.49	I1000	0	144.7	158.0
Cache	Reach_11	2.49	I-AP	16606	144.7	165.5
Cache	Reach_11	2.49	I0500	0	144.7	158.0
Cache	Reach_11	2.49	I2000	0	144.7	158.0
Cache	Reach_11	2.49	I2500	0	144.7	158.0
Cache	Reach_11	2.49	I0200	0	144.7	158.0
Cache	Reach_11	2.49	I-APbw	20121	144.7	172.1
Cache	Reach_11	2.49	I3000	0	144.7	158.0
Cache	Reach_11	2.49	I7000	927	144.7	159.4
Cache	Reach_11	2.48	I1000	0	158.0	158.0
Cache	Reach_11	2.48	I-AP	16606	158.0	165.5
Cache	Reach_11	2.48	I0500	0	158.0	158.0
Cache	Reach_11	2.48	I2000	0	158.0	158.0
Cache	Reach_11	2.48	I2500	0	158.0	158.0
Cache	Reach_11	2.48	I0200	0	158.0	158.0
Cache	Reach_11	2.48	I-APbw	20121	158.0	172.1
Cache	Reach_11	2.48	I3000	0	158.0	158.0
Cache	Reach_11	2.48	I7000	927	158.0	159.4
Cache	Reach_11	2.47	I1000	0	158.0	158.0
Cache	Reach_11	2.47	I-AP	16606	158.0	165.5
Cache	Reach_11	2.47	I0500	0	158.0	158.0
Cache	Reach_11	2.47	I2000	0	158.0	158.0
Cache	Reach_11	2.47	I2500	0	158.0	158.0
Cache	Reach_11	2.47	I0200	0	158.0	158.0
Cache	Reach_11	2.47	I-APbw	20121	158.0	172.1
Cache	Reach_11	2.47	I3000	0	158.0	158.0
Cache	Reach_11	2.47	I7000	927	158.0	159.4
Cache	Reach_11	2.46	I1000	0	158.0	158.0
Cache	Reach_11	2.46	I-AP	16606	158.0	165.5
Cache	Reach_11	2.46	I0500	0	158.0	158.0
Cache	Reach_11	2.46	I2000	0	158.0	158.0
Cache	Reach_11	2.46	I2500	0	158.0	158.0
Cache	Reach_11	2.46	I0200	0	158.0	158.0
Cache	Reach_11	2.46	I-APbw	20121	158.0	172.1
Cache	Reach_11	2.46	I3000	0	158.0	158.0
Cache	Reach_11	2.46	I7000	927	158.0	159.4

HEC-RAS Output for Meander Restoration with Fill and Aged Manning's N Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.1	I1000	0	158.0	158.0
Cache	Reach_11	2.1	I-AP	16606	158.0	165.3
Cache	Reach_11	2.1	I0500	0	158.0	158.0
Cache	Reach_11	2.1	I2000	0	158.0	158.0
Cache	Reach_11	2.1	I2500	0	158.0	158.0
Cache	Reach_11	2.1	I0200	0	158.0	158.0
Cache	Reach_11	2.1	I-APbw	20121	158.0	172.1
Cache	Reach_11	2.1	I3000	0	158.0	158.0
Cache	Reach_11	2.1	I7000	927	158.0	158.3
Cache	Reach_12	2	I1000	1000	143.3	151.3
Cache	Reach_12	2	I-AP	30982	143.3	165.2
Cache	Reach_12	2	I0500	500	143.3	149.4
Cache	Reach_12	2	I2000	2000	143.3	153.9
Cache	Reach_12	2	I2500	2500	143.3	154.6
Cache	Reach_12	2	I0200	200	143.3	147.8
Cache	Reach_12	2	I-APbw	30982	143.3	172.1
Cache	Reach_12	2	I3000	3000	143.3	154.4
Cache	Reach_12	2	I7000	7000	143.3	157.4
Cache	Reach_12	1	I1000	1000	143.9	151.2
Cache	Reach_12	1	I-AP	30982	143.9	164.9
Cache	Reach_12	1	I0500	500	143.9	149.3
Cache	Reach_12	1	I2000	2000	143.9	153.8
Cache	Reach_12	1	I2500	2500	143.9	154.4
Cache	Reach_12	1	I0200	200	143.9	147.8
Cache	Reach_12	1	I-APbw	30982	143.9	172.0
Cache	Reach_12	1	I3000	3000	143.9	154.1
Cache	Reach_12	1	I7000	7000	143.9	157.0
Cache	Reach_12	0	I1000	1000	144.1	151.0
Cache	Reach_12	0	I-AP	30982	144.1	164.6
Cache	Reach_12	0	I0500	500	144.1	149.1
Cache	Reach_12	0	I2000	2000	144.1	153.6
Cache	Reach_12	0	I2500	2500	144.1	154.2
Cache	Reach_12	0	I0200	200	144.1	147.5
Cache	Reach_12	0	I-APbw	30982	144.1	172.0
Cache	Reach_12	0	I3000	3000	144.1	153.7
Cache	Reach_12	0	I7000	7000	144.1	156.6

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #6	Reach	104	I1000	1000	148.9	153.6
Meander #6	Reach	104	I-AP	6328	148.9	165.4
Meander #6	Reach	104	I0500	500	148.9	152.2
Meander #6	Reach	104	I2000	2000	148.9	155.6
Meander #6	Reach	104	I2500	2500	148.9	156.3
Meander #6	Reach	104	I0200	200	148.9	150.9
Meander #6	Reach	104	I-APbw	10784	148.9	172.1
Meander #6	Reach	104	I3000	3000	148.9	156.7
Meander #6	Reach	104	I7000	4515	148.9	158.7
Meander #6	Reach	103	I1000	1000	147.6	153.2
Meander #6	Reach	103	I-AP	6328	147.6	165.3
Meander #6	Reach	103	I0500	500	147.6	151.8
Meander #6	Reach	103	I2000	2000	147.6	155.3
Meander #6	Reach	103	I2500	2500	147.6	155.9
Meander #6	Reach	103	I0200	200	147.6	150.6
Meander #6	Reach	103	I-APbw	10784	147.6	172.1
Meander #6	Reach	103	I3000	3000	147.6	156.2
Meander #6	Reach	103	I7000	4515	147.6	158.4
Meander #6	Reach	102	I1000	1000	147.6	152.9
Meander #6	Reach	102	I-AP	6328	147.6	165.3
Meander #6	Reach	102	I0500	500	147.6	151.6
Meander #6	Reach	102	I2000	2000	147.6	154.9
Meander #6	Reach	102	I2500	2500	147.6	155.6
Meander #6	Reach	102	I0200	200	147.6	150.4
Meander #6	Reach	102	I-APbw	10784	147.6	172.1
Meander #6	Reach	102	I3000	3000	147.6	155.9
Meander #6	Reach	102	I7000	4515	147.6	158.1
Meander #6	Reach	101	I1000	1000	147.8	151.0
Meander #6	Reach	101	I-AP	6328	147.8	165.3
Meander #6	Reach	101	I0500	500	147.8	149.8
Meander #6	Reach	101	I2000	2000	147.8	153.7
Meander #6	Reach	101	I2500	2500	147.8	154.3
Meander #6	Reach	101	I0200	200	147.8	149.1
Meander #6	Reach	101	I-APbw	10784	147.8	172.1
Meander #6	Reach	101	I3000	3000	147.8	153.9
Meander #6	Reach	101	I7000	4515	147.8	157.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	110	I1000	986	150.4	158.1
Meander #5	Reach	110	I-AP	12918	150.4	165.8
Meander #5	Reach	110	I0500	495	150.4	158.0
Meander #5	Reach	110	I2000	1937	150.4	158.2
Meander #5	Reach	110	I2500	2389	150.4	158.3
Meander #5	Reach	110	I0200	200	150.4	158.0
Meander #5	Reach	110	I-APbw	10411	150.4	172.1
Meander #5	Reach	110	I3000	2799	150.4	158.4
Meander #5	Reach	110	I7000	5496	150.4	159.6
Meander #5	Reach	109	I1000	986	150.6	158.1
Meander #5	Reach	109	I-AP	12918	150.6	165.7
Meander #5	Reach	109	I0500	495	150.6	158.0
Meander #5	Reach	109	I2000	1937	150.6	158.2
Meander #5	Reach	109	I2500	2389	150.6	158.2
Meander #5	Reach	109	I0200	200	150.6	158.0
Meander #5	Reach	109	I-APbw	10411	150.6	172.1
Meander #5	Reach	109	I3000	2799	150.6	158.3
Meander #5	Reach	109	I7000	5496	150.6	159.4
Meander #5	Reach	108	I1000	986	147.4	158.0
Meander #5	Reach	108	I-AP	12918	147.4	165.6
Meander #5	Reach	108	I0500	495	147.4	158.0
Meander #5	Reach	108	I2000	1937	147.4	158.1
Meander #5	Reach	108	I2500	2389	147.4	158.1
Meander #5	Reach	108	I0200	200	147.4	158.0
Meander #5	Reach	108	I-APbw	10411	147.4	172.1
Meander #5	Reach	108	I3000	2799	147.4	158.2
Meander #5	Reach	108	I7000	5496	147.4	159.1
Meander #5	Reach	107	I1000	986	146.9	158.0
Meander #5	Reach	107	I-AP	12918	146.9	165.5
Meander #5	Reach	107	I0500	495	146.9	158.0
Meander #5	Reach	107	I2000	1937	146.9	158.1
Meander #5	Reach	107	I2500	2389	146.9	158.1
Meander #5	Reach	107	I0200	200	146.9	158.0
Meander #5	Reach	107	I-APbw	10411	146.9	172.1
Meander #5	Reach	107	I3000	2799	146.9	158.1
Meander #5	Reach	107	I7000	5496	146.9	159.0

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #5	Reach	106	I1000	986	148.1	158.0
Meander #5	Reach	106	I-AP	12918	148.1	165.5
Meander #5	Reach	106	I0500	495	148.1	158.0
Meander #5	Reach	106	I2000	1937	148.1	158.0
Meander #5	Reach	106	I2500	2389	148.1	158.0
Meander #5	Reach	106	I0200	200	148.1	158.0
Meander #5	Reach	106	I-APbw	10411	148.1	172.1
Meander #5	Reach	106	I3000	2799	148.1	158.1
Meander #5	Reach	106	I7000	5496	148.1	158.8
Meander #5	Reach	105	I1000	986	148.8	158.0
Meander #5	Reach	105	I-AP	12918	148.8	165.5
Meander #5	Reach	105	I0500	495	148.8	158.0
Meander #5	Reach	105	I2000	1937	148.8	158.0
Meander #5	Reach	105	I2500	2389	148.8	158.0
Meander #5	Reach	105	I0200	200	148.8	158.0
Meander #5	Reach	105	I-APbw	10411	148.8	172.1
Meander #5	Reach	105	I3000	2799	148.8	158.0
Meander #5	Reach	105	I7000	5496	148.8	158.8
Meander #3	Main	120	I1000	1000	150.4	158.5
Meander #3	Main	120	I-AP	9099	150.4	167.9
Meander #3	Main	120	I0500	500	150.4	158.1
Meander #3	Main	120	I2000	2000	150.4	159.2
Meander #3	Main	120	I2500	2500	150.4	159.6
Meander #3	Main	120	I0200	200	150.4	158.1
Meander #3	Main	120	I-APbw	7548	150.4	172.4
Meander #3	Main	120	I3000	3000	150.4	159.9
Meander #3	Main	120	I7000	4135	150.4	161.2
Meander #3	Main	119	I1000	1000	150.4	158.4
Meander #3	Main	119	I-AP	9099	150.4	167.9
Meander #3	Main	119	I0500	500	150.4	158.1
Meander #3	Main	119	I2000	2000	150.4	159.2
Meander #3	Main	119	I2500	2500	150.4	159.6
Meander #3	Main	119	I0200	200	150.4	158.1
Meander #3	Main	119	I-APbw	7548	150.4	172.4
Meander #3	Main	119	I3000	3000	150.4	159.9
Meander #3	Main	119	I7000	4135	150.4	161.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	118	I1000	1000	150.7	158.4
Meander #3	Main	118	I-AP	9099	150.7	167.9
Meander #3	Main	118	I0500	500	150.7	158.1
Meander #3	Main	118	I2000	2000	150.7	159.0
Meander #3	Main	118	I2500	2500	150.7	159.4
Meander #3	Main	118	I0200	200	150.7	158.0
Meander #3	Main	118	I-APbw	7548	150.7	172.4
Meander #3	Main	118	I3000	3000	150.7	159.7
Meander #3	Main	118	I7000	4135	150.7	161.0
Meander #3	Main	117	I1000	1000	150.4	158.2
Meander #3	Main	117	I-AP	9099	150.4	167.9
Meander #3	Main	117	I0500	500	150.4	158.1
Meander #3	Main	117	I2000	2000	150.4	158.8
Meander #3	Main	117	I2500	2500	150.4	159.1
Meander #3	Main	117	I0200	200	150.4	158.0
Meander #3	Main	117	I-APbw	7548	150.4	172.4
Meander #3	Main	117	I3000	3000	150.4	159.4
Meander #3	Main	117	I7000	4135	150.4	160.9
Meander #3	Main	116	I1000	1000	149.7	158.2
Meander #3	Main	116	I-AP	9099	149.7	167.8
Meander #3	Main	116	I0500	500	149.7	158.1
Meander #3	Main	116	I2000	2000	149.7	158.5
Meander #3	Main	116	I2500	2500	149.7	158.7
Meander #3	Main	116	I0200	200	149.7	158.0
Meander #3	Main	116	I-APbw	7548	149.7	172.4
Meander #3	Main	116	I3000	3000	149.7	159.0
Meander #3	Main	116	I7000	4135	149.7	160.5
Meander #3	Main	115	I1000	1000	149.7	158.1
Meander #3	Main	115	I-AP	9099	149.7	167.8
Meander #3	Main	115	I0500	500	149.7	158.0
Meander #3	Main	115	I2000	2000	149.7	158.4
Meander #3	Main	115	I2500	2500	149.7	158.6
Meander #3	Main	115	I0200	200	149.7	158.0
Meander #3	Main	115	I-APbw	7548	149.7	172.4
Meander #3	Main	115	I3000	3000	149.7	158.8
Meander #3	Main	115	I7000	4135	149.7	160.4

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #3	Main	114	I1000	1000	149.6	158.1
Meander #3	Main	114	I-AP	9099	149.6	167.7
Meander #3	Main	114	I0500	500	149.6	158.0
Meander #3	Main	114	I2000	2000	149.6	158.3
Meander #3	Main	114	I2500	2500	149.6	158.4
Meander #3	Main	114	I0200	200	149.6	158.0
Meander #3	Main	114	I-APbw	7548	149.6	172.4
Meander #3	Main	114	I3000	3000	149.6	158.5
Meander #3	Main	114	I7000	4135	149.6	160.2
Meander #1	Reach	127	I1000	1000	151.4	160.1
Meander #1	Reach	127	I-AP	14141	151.4	168.5
Meander #1	Reach	127	I0500	500	151.4	160.0
Meander #1	Reach	127	I2000	2000	151.4	160.3
Meander #1	Reach	127	I2500	2500	151.4	160.5
Meander #1	Reach	127	I0200	200	151.4	160.0
Meander #1	Reach	127	I-APbw	15140	151.4	172.5
Meander #1	Reach	127	I3000	2966	151.4	160.6
Meander #1	Reach	127	I7000	5343	151.4	162.4
Meander #1	Reach	126	I1000	1000	150.8	160.1
Meander #1	Reach	126	I-AP	14141	150.8	168.4
Meander #1	Reach	126	I0500	500	150.8	160.0
Meander #1	Reach	126	I2000	2000	150.8	160.2
Meander #1	Reach	126	I2500	2500	150.8	160.3
Meander #1	Reach	126	I0200	200	150.8	160.0
Meander #1	Reach	126	I-APbw	15140	150.8	172.5
Meander #1	Reach	126	I3000	2966	150.8	160.4
Meander #1	Reach	126	I7000	5343	150.8	162.1
Meander #1	Reach	125	I1000	1000	150.4	160.1
Meander #1	Reach	125	I-AP	14141	150.4	168.4
Meander #1	Reach	125	I0500	500	150.4	160.0
Meander #1	Reach	125	I2000	2000	150.4	160.2
Meander #1	Reach	125	I2500	2500	150.4	160.2
Meander #1	Reach	125	I0200	200	150.4	160.0
Meander #1	Reach	125	I-APbw	15140	150.4	172.5
Meander #1	Reach	125	I3000	2966	150.4	160.3
Meander #1	Reach	125	I7000	5343	150.4	162.0

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Meander #1	Reach	124	I1000	1000	150.7	160.0
Meander #1	Reach	124	I-AP	14141	150.7	168.3
Meander #1	Reach	124	I0500	500	150.7	160.0
Meander #1	Reach	124	I2000	2000	150.7	160.1
Meander #1	Reach	124	I2500	2500	150.7	160.1
Meander #1	Reach	124	I0200	200	150.7	160.0
Meander #1	Reach	124	I-APbw	15140	150.7	172.5
Meander #1	Reach	124	I3000	2966	150.7	160.2
Meander #1	Reach	124	I7000	5343	150.7	161.8
Cache	Main	16	I1000	1000	147.2	160.1
Cache	Main	16	I-AP	30982	147.2	168.7
Cache	Main	16	I0500	500	147.2	160.0
Cache	Main	16	I2000	2000	147.2	160.4
Cache	Main	16	I2500	2500	147.2	160.6
Cache	Main	16	I0200	200	147.2	160.0
Cache	Main	16	I-APbw	30982	147.2	172.6
Cache	Main	16	I3000	3000	147.2	160.8
Cache	Main	16	I7000	7000	147.2	162.7
Cache	Main	15.9	I1000	1000	147.2	160.1
Cache	Main	15.9	I-AP	30982	147.2	168.4
Cache	Main	15.9	I0500	500	147.2	160.0
Cache	Main	15.9	I2000	2000	147.2	160.3
Cache	Main	15.9	I2500	2500	147.2	160.5
Cache	Main	15.9	I0200	200	147.2	160.0
Cache	Main	15.9	I-APbw	30982	147.2	172.5
Cache	Main	15.9	I3000	3000	147.2	160.6
Cache	Main	15.9	I7000	7000	147.2	162.3
Cache	Reach_1	15	I1000	0	149.6	160.5
Cache	Reach_1	15	I-AP	16841	149.6	168.5
Cache	Reach_1	15	I0500	0	149.6	160.5
Cache	Reach_1	15	I2000	0	149.6	160.5
Cache	Reach_1	15	I2500	0	149.6	160.5
Cache	Reach_1	15	I0200	0	149.6	160.5
Cache	Reach_1	15	I-APbw	15842	149.6	172.5
Cache	Reach_1	15	I3000	34	149.6	160.7
Cache	Reach_1	15	I7000	1657	149.6	162.4

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.98	I1000	0	149.6	160.5
Cache	Reach_1	14.98	I-AP	16841	149.6	168.5
Cache	Reach_1	14.98	I0500	0	149.6	160.5
Cache	Reach_1	14.98	I2000	0	149.6	160.5
Cache	Reach_1	14.98	I2500	0	149.6	160.5
Cache	Reach_1	14.98	I0200	0	149.6	160.5
Cache	Reach_1	14.98	I-APbw	15842	149.6	172.5
Cache	Reach_1	14.98	I3000	34	149.6	160.7
Cache	Reach_1	14.98	I7000	1657	149.6	162.4
Cache	Reach_1	14.97	I1000	0	149.6	160.5
Cache	Reach_1	14.97	I-AP	16841	149.6	168.4
Cache	Reach_1	14.97	I0500	0	149.6	160.5
Cache	Reach_1	14.97	I2000	0	149.6	160.5
Cache	Reach_1	14.97	I2500	0	149.6	160.5
Cache	Reach_1	14.97	I0200	0	149.6	160.5
Cache	Reach_1	14.97	I-APbw	15842	149.6	172.5
Cache	Reach_1	14.97	I3000	34	149.6	160.7
Cache	Reach_1	14.97	I7000	1657	149.6	162.4
Cache	Reach_1	14.965		Inl Struct		
Cache	Reach_1	14.96	I1000	0	149.6	160.0
Cache	Reach_1	14.96	I-AP	16841	149.6	168.4
Cache	Reach_1	14.96	I0500	0	149.6	160.0
Cache	Reach_1	14.96	I2000	0	149.6	160.1
Cache	Reach_1	14.96	I2500	0	149.6	160.2
Cache	Reach_1	14.96	I0200	0	149.6	160.0
Cache	Reach_1	14.96	I-APbw	15842	149.6	172.5
Cache	Reach_1	14.96	I3000	34	149.6	160.2
Cache	Reach_1	14.96	I7000	1657	149.6	161.9
Cache	Reach_1	14.95	I1000	0	149.6	160.0
Cache	Reach_1	14.95	I-AP	16841	149.6	168.4
Cache	Reach_1	14.95	I0500	0	149.6	160.0
Cache	Reach_1	14.95	I2000	0	149.6	160.1
Cache	Reach_1	14.95	I2500	0	149.6	160.2
Cache	Reach_1	14.95	I0200	0	149.6	160.0
Cache	Reach_1	14.95	I-APbw	15842	149.6	172.5

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_1	14.95	I3000	34	149.6	160.2
Cache	Reach_1	14.95	I7000	1657	149.6	161.9
Cache	Reach_1	14.9	I1000	0	149.6	160.0
Cache	Reach_1	14.9	I-AP	16841	149.6	168.3
Cache	Reach_1	14.9	I0500	0	149.6	160.0
Cache	Reach_1	14.9	I2000	0	149.6	160.1
Cache	Reach_1	14.9	I2500	0	149.6	160.2
Cache	Reach_1	14.9	I0200	0	149.6	160.0
Cache	Reach_1	14.9	I-APbw	15842	149.6	172.5
Cache	Reach_1	14.9	I3000	34	149.6	160.2
Cache	Reach_1	14.9	I7000	1657	149.6	161.8
Cache	Reach_2	14	I1000	1000	149.0	160.0
Cache	Reach_2	14	I-AP	30982	149.0	168.3
Cache	Reach_2	14	I0500	500	149.0	160.0
Cache	Reach_2	14	I2000	2000	149.0	160.1
Cache	Reach_2	14	I2500	2500	149.0	160.1
Cache	Reach_2	14	I0200	200	149.0	160.0
Cache	Reach_2	14	I-APbw	30982	149.0	172.5
Cache	Reach_2	14	I3000	3000	149.0	160.2
Cache	Reach_2	14	I7000	7000	149.0	161.8
Cache	Reach_2	13.9	I1000	1000	149.0	160.0
Cache	Reach_2	13.9	I-AP	30982	149.0	168.0
Cache	Reach_2	13.9	I0500	500	149.0	160.0
Cache	Reach_2	13.9	I2000	2000	149.0	160.0
Cache	Reach_2	13.9	I2500	2500	149.0	160.0
Cache	Reach_2	13.9	I0200	200	149.0	160.0
Cache	Reach_2	13.9	I-APbw	30982	149.0	172.5
Cache	Reach_2	13.9	I3000	3000	149.0	160.0
Cache	Reach_2	13.9	I7000	7000	149.0	161.3
Cache	Reach_2	13	I1000	100	149.1	160.0
Cache	Reach_2	13	I-AP	3098	149.1	168.1
Cache	Reach_2	13	I0500	50	149.1	160.0
Cache	Reach_2	13	I2000	200	149.1	160.0
Cache	Reach_2	13	I2500	250	149.1	160.1
Cache	Reach_2	13	I0200	20	149.1	160.0
Cache	Reach_2	13	I-APbw	3098	149.1	172.5

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_2	13	I3000	300	149.1	160.1
Cache	Reach_2	13	I7000	700	149.1	161.4
Cache	Reach_2	12.99	I1000	100	149.1	160.0
Cache	Reach_2	12.99	I-AP	3098	149.1	168.1
Cache	Reach_2	12.99	I0500	50	149.1	160.0
Cache	Reach_2	12.99	I2000	200	149.1	160.0
Cache	Reach_2	12.99	I2500	250	149.1	160.1
Cache	Reach_2	12.99	I0200	20	149.1	160.0
Cache	Reach_2	12.99	I-APbw	3098	149.1	172.5
Cache	Reach_2	12.99	I3000	300	149.1	160.1
Cache	Reach_2	12.99	I7000	700	149.1	161.4
Cache	Reach_2	12.98	I1000	100	149.1	160.0
Cache	Reach_2	12.98	I-AP	3098	149.1	168.1
Cache	Reach_2	12.98	I0500	50	149.1	160.0
Cache	Reach_2	12.98	I2000	200	149.1	160.0
Cache	Reach_2	12.98	I2500	250	149.1	160.1
Cache	Reach_2	12.98	I0200	20	149.1	160.0
Cache	Reach_2	12.98	I-APbw	3098	149.1	172.5
Cache	Reach_2	12.98	I3000	300	149.1	160.1
Cache	Reach_2	12.98	I7000	700	149.1	161.4
Cache	Reach_2	12.97	I1000	100	149.1	160.0
Cache	Reach_2	12.97	I-AP	3098	149.1	168.1
Cache	Reach_2	12.97	I0500	50	149.1	160.0
Cache	Reach_2	12.97	I2000	200	149.1	160.0
Cache	Reach_2	12.97	I2500	250	149.1	160.1
Cache	Reach_2	12.97	I0200	20	149.1	160.0
Cache	Reach_2	12.97	I-APbw	3098	149.1	172.5
Cache	Reach_2	12.97	I3000	300	149.1	160.1
Cache	Reach_2	12.97	I7000	700	149.1	161.4
Cache	Reach_2	12.96	I1000	100	149.1	160.0
Cache	Reach_2	12.96	I-AP	3098	149.1	168.1
Cache	Reach_2	12.96	I0500	50	149.1	160.0
Cache	Reach_2	12.96	I2000	200	149.1	160.0
Cache	Reach_2	12.96	I2500	250	149.1	160.1
Cache	Reach_2	12.96	I0200	20	149.1	160.0
Cache	Reach_2	12.96	I-APbw	3098	149.1	172.5

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_2	12.96	I3000	300	149.1	160.1
Cache	Reach_2	12.96	I7000	700	149.1	161.4
Cache	Reach_2	12.9	I1000	100	149.1	160.0
Cache	Reach_2	12.9	I-AP	3098	149.1	168.1
Cache	Reach_2	12.9	I0500	50	149.1	160.0
Cache	Reach_2	12.9	I2000	200	149.1	160.0
Cache	Reach_2	12.9	I2500	250	149.1	160.1
Cache	Reach_2	12.9	I0200	20	149.1	160.0
Cache	Reach_2	12.9	I-APbw	3098	149.1	172.5
Cache	Reach_2	12.9	I3000	300	149.1	160.1
Cache	Reach_2	12.9	I7000	700	149.1	161.4
Cache	Reach_2	12.5	I1000	1000	149.1	160.0
Cache	Reach_2	12.5	I-AP	30982	149.1	168.0
Cache	Reach_2	12.5	I0500	500	149.1	160.0
Cache	Reach_2	12.5	I2000	2000	149.1	160.0
Cache	Reach_2	12.5	I2500	2500	149.1	160.0
Cache	Reach_2	12.5	I0200	200	149.1	160.0
Cache	Reach_2	12.5	I-APbw	30982	149.1	172.5
Cache	Reach_2	12.5	I3000	3000	149.1	160.0
Cache	Reach_2	12.5	I7000	7000	149.1	161.3
Cache	Reach_2	12.2	I1000	1000	149.1	160.0
Cache	Reach_2	12.2	I-AP	30982	149.1	167.9
Cache	Reach_2	12.2	I0500	500	149.1	160.0
Cache	Reach_2	12.2	I2000	2000	149.1	160.0
Cache	Reach_2	12.2	I2500	2500	149.1	160.0
Cache	Reach_2	12.2	I0200	200	149.1	160.0
Cache	Reach_2	12.2	I-APbw	30982	149.1	172.5
Cache	Reach_2	12.2	I3000	3000	149.1	160.0
Cache	Reach_2	12.2	I7000	7000	149.1	161.2
Cache	Reach_5	12	I1000	0	148.0	160.0
Cache	Reach_5	12	I-AP	21883	148.0	167.9
Cache	Reach_5	12	I0500	0	148.0	160.0
Cache	Reach_5	12	I2000	0	148.0	160.0
Cache	Reach_5	12	I2500	0	148.0	160.0
Cache	Reach_5	12	I0200	0	148.0	160.0
Cache	Reach_5	12	I-APbw	23434	148.0	172.5

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	12	I3000	0	148.0	160.0
Cache	Reach_5	12	I7000	2865	148.0	161.2
Cache	Reach_5	11.99	I1000	0	148.0	160.0
Cache	Reach_5	11.99	I-AP	21883	148.0	167.9
Cache	Reach_5	11.99	I0500	0	148.0	160.0
Cache	Reach_5	11.99	I2000	0	148.0	160.0
Cache	Reach_5	11.99	I2500	0	148.0	160.0
Cache	Reach_5	11.99	I0200	0	148.0	160.0
Cache	Reach_5	11.99	I-APbw	23434	148.0	172.5
Cache	Reach_5	11.99	I3000	0	148.0	160.0
Cache	Reach_5	11.99	I7000	2865	148.0	161.2
Cache	Reach_5	11.98	I1000	0	148.0	160.0
Cache	Reach_5	11.98	I-AP	21883	148.0	167.9
Cache	Reach_5	11.98	I0500	0	148.0	160.0
Cache	Reach_5	11.98	I2000	0	148.0	160.0
Cache	Reach_5	11.98	I2500	0	148.0	160.0
Cache	Reach_5	11.98	I0200	0	148.0	160.0
Cache	Reach_5	11.98	I-APbw	23434	148.0	172.5
Cache	Reach_5	11.98	I3000	0	148.0	160.0
Cache	Reach_5	11.98	I7000	2865	148.0	161.2
Cache	Reach_5	11.975		Inl Struct		
Cache	Reach_5	11.97	I1000	0	148.0	158.1
Cache	Reach_5	11.97	I-AP	21883	148.0	167.9
Cache	Reach_5	11.97	I0500	0	148.0	158.0
Cache	Reach_5	11.97	I2000	0	148.0	158.3
Cache	Reach_5	11.97	I2500	0	148.0	158.4
Cache	Reach_5	11.97	I0200	0	148.0	158.0
Cache	Reach_5	11.97	I-APbw	23434	148.0	172.4
Cache	Reach_5	11.97	I3000	0	148.0	158.6
Cache	Reach_5	11.97	I7000	2865	148.0	160.3
Cache	Reach_5	11.96	I1000	0	148.0	158.1
Cache	Reach_5	11.96	I-AP	21883	148.0	167.9
Cache	Reach_5	11.96	I0500	0	148.0	158.0
Cache	Reach_5	11.96	I2000	0	148.0	158.3

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_5	11.96	I2500	0	148.0	158.4
Cache	Reach_5	11.96	I0200	0	148.0	158.0
Cache	Reach_5	11.96	I-APbw	23434	148.0	172.4
Cache	Reach_5	11.96	I3000	0	148.0	158.6
Cache	Reach_5	11.96	I7000	2865	148.0	160.3
Cache	Reach_5	11	I1000	0	147.6	158.1
Cache	Reach_5	11	I-AP	21883	147.6	167.7
Cache	Reach_5	11	I0500	0	147.6	158.0
Cache	Reach_5	11	I2000	0	147.6	158.3
Cache	Reach_5	11	I2500	0	147.6	158.4
Cache	Reach_5	11	I0200	0	147.6	158.0
Cache	Reach_5	11	I-APbw	23434	147.6	172.4
Cache	Reach_5	11	I3000	0	147.6	158.6
Cache	Reach_5	11	I7000	2865	147.6	160.3
Cache	Reach_6	10	I1000	1000	145.0	158.1
Cache	Reach_6	10	I-AP	30982	145.0	167.5
Cache	Reach_6	10	I0500	500	145.0	158.0
Cache	Reach_6	10	I2000	2000	145.0	158.3
Cache	Reach_6	10	I2500	2500	145.0	158.4
Cache	Reach_6	10	I0200	200	145.0	158.0
Cache	Reach_6	10	I-APbw	30982	145.0	172.4
Cache	Reach_6	10	I3000	3000	145.0	158.6
Cache	Reach_6	10	I7000	7000	145.0	160.2
Cache	Reach_6	9	I1000	1000	143.8	158.1
Cache	Reach_6	9	I-AP	30982	143.8	166.9
Cache	Reach_6	9	I0500	500	143.8	158.0
Cache	Reach_6	9	I2000	2000	143.8	158.2
Cache	Reach_6	9	I2500	2500	143.8	158.3
Cache	Reach_6	9	I0200	200	143.8	158.0
Cache	Reach_6	9	I-APbw	30982	143.8	172.3
Cache	Reach_6	9	I3000	3000	143.8	158.5
Cache	Reach_6	9	I7000	7000	143.8	159.9
Cache	Reach_6	8	I1000	1000	143.8	158.1
Cache	Reach_6	8	I-AP	30982	143.8	166.2
Cache	Reach_6	8	I0500	500	143.8	158.0
Cache	Reach_6	8	I2000	2000	143.8	158.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	8	I2500	2500	143.8	158.3
Cache	Reach_6	8	I0200	200	143.8	158.0
Cache	Reach_6	8	I-APbw	30982	143.8	172.3
Cache	Reach_6	8	I3000	3000	143.8	158.5
Cache	Reach_6	8	I7000	7000	143.8	159.8
Cache	Reach_6	7	I1000	1000	144.4	158.1
Cache	Reach_6	7	I-AP	30982	144.4	165.9
Cache	Reach_6	7	I0500	500	144.4	158.0
Cache	Reach_6	7	I2000	2000	144.4	158.2
Cache	Reach_6	7	I2500	2500	144.4	158.3
Cache	Reach_6	7	I0200	200	144.4	158.0
Cache	Reach_6	7	I-APbw	30982	144.4	172.3
Cache	Reach_6	7	I3000	3000	144.4	158.4
Cache	Reach_6	7	I7000	7000	144.4	159.7
Cache	Reach_6	6.9	I1000	1000	143.8	158.1
Cache	Reach_6	6.9	I-AP	30982	143.8	165.8
Cache	Reach_6	6.9	I0500	500	143.8	158.0
Cache	Reach_6	6.9	I2000	2000	143.8	158.2
Cache	Reach_6	6.9	I2500	2500	143.8	158.3
Cache	Reach_6	6.9	I0200	200	143.8	158.0
Cache	Reach_6	6.9	I-APbw	30982	143.8	172.0
Cache	Reach_6	6.9	I3000	3000	143.8	158.4
Cache	Reach_6	6.9	I7000	7000	143.8	159.7
Cache	Reach_6	6.7	I1000	100	143.8	158.1
Cache	Reach_6	6.7	I-AP	3098	143.8	166.1
Cache	Reach_6	6.7	I0500	50	143.8	158.0
Cache	Reach_6	6.7	I2000	200	143.8	158.2
Cache	Reach_6	6.7	I2500	250	143.8	158.3
Cache	Reach_6	6.7	I0200	20	143.8	158.0
Cache	Reach_6	6.7	I-APbw	3098	143.8	172.2
Cache	Reach_6	6.7	I3000	300	143.8	158.5
Cache	Reach_6	6.7	I7000	700	143.8	159.7
Cache	Reach_6	6.69	I1000	100	143.8	158.1
Cache	Reach_6	6.69	I-AP	3098	143.8	166.1
Cache	Reach_6	6.69	I0500	50	143.8	158.0
Cache	Reach_6	6.69	I2000	200	143.8	158.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	6.69	I2500	250	143.8	158.3
Cache	Reach_6	6.69	I0200	20	143.8	158.0
Cache	Reach_6	6.69	I-APbw	3098	143.8	172.2
Cache	Reach_6	6.69	I3000	300	143.8	158.5
Cache	Reach_6	6.69	I7000	700	143.8	159.7
Cache	Reach_6	6.68	I1000	100	143.8	158.1
Cache	Reach_6	6.68	I-AP	3098	143.8	166.1
Cache	Reach_6	6.68	I0500	50	143.8	158.0
Cache	Reach_6	6.68	I2000	200	143.8	158.2
Cache	Reach_6	6.68	I2500	250	143.8	158.3
Cache	Reach_6	6.68	I0200	20	143.8	158.0
Cache	Reach_6	6.68	I-APbw	3098	143.8	172.2
Cache	Reach_6	6.68	I3000	300	143.8	158.5
Cache	Reach_6	6.68	I7000	700	143.8	159.7
Cache	Reach_6	6.67	I1000	100	143.8	158.1
Cache	Reach_6	6.67	I-AP	3098	143.8	166.1
Cache	Reach_6	6.67	I0500	50	143.8	158.0
Cache	Reach_6	6.67	I2000	200	143.8	158.2
Cache	Reach_6	6.67	I2500	250	143.8	158.3
Cache	Reach_6	6.67	I0200	20	143.8	158.0
Cache	Reach_6	6.67	I-APbw	3098	143.8	172.2
Cache	Reach_6	6.67	I3000	300	143.8	158.5
Cache	Reach_6	6.67	I7000	700	143.8	159.7
Cache	Reach_6	6.66	I1000	100	143.8	158.1
Cache	Reach_6	6.66	I-AP	3098	143.8	166.1
Cache	Reach_6	6.66	I0500	50	143.8	158.0
Cache	Reach_6	6.66	I2000	200	143.8	158.2
Cache	Reach_6	6.66	I2500	250	143.8	158.3
Cache	Reach_6	6.66	I0200	20	143.8	158.0
Cache	Reach_6	6.66	I-APbw	3098	143.8	172.2
Cache	Reach_6	6.66	I3000	300	143.8	158.5
Cache	Reach_6	6.66	I7000	700	143.8	159.7
Cache	Reach_6	6.5	I1000	1000	143.8	158.1
Cache	Reach_6	6.5	I-AP	30982	143.8	165.6
Cache	Reach_6	6.5	I0500	500	143.8	158.0
Cache	Reach_6	6.5	I2000	2000	143.8	158.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_6	6.5	I2500	2500	143.8	158.3
Cache	Reach_6	6.5	I0200	200	143.8	158.0
Cache	Reach_6	6.5	I-APbw	30982	143.8	172.1
Cache	Reach_6	6.5	I3000	3000	143.8	158.4
Cache	Reach_6	6.5	I7000	7000	143.8	159.6
Cache	Reach_6	6.4	I1000	1000	143.8	158.1
Cache	Reach_6	6.4	I-AP	30982	143.8	165.6
Cache	Reach_6	6.4	I0500	500	143.8	158.0
Cache	Reach_6	6.4	I2000	2000	143.8	158.2
Cache	Reach_6	6.4	I2500	2500	143.8	158.3
Cache	Reach_6	6.4	I0200	200	143.8	158.0
Cache	Reach_6	6.4	I-APbw	30982	143.8	172.1
Cache	Reach_6	6.4	I3000	3000	143.8	158.4
Cache	Reach_6	6.4	I7000	7000	143.8	159.6
Cache	Reach_9	5	I1000	14	144.4	158.1
Cache	Reach_9	5	I-AP	18064	144.4	165.7
Cache	Reach_9	5	I0500	5	144.4	158.0
Cache	Reach_9	5	I2000	63	144.4	158.2
Cache	Reach_9	5	I2500	111	144.4	158.3
Cache	Reach_9	5	I0200	0	144.4	158.0
Cache	Reach_9	5	I-APbw	20571	144.4	172.1
Cache	Reach_9	5	I3000	201	144.4	158.4
Cache	Reach_9	5	I7000	1504	144.4	159.7
Cache	Reach_9	4.99	I1000	14	144.4	158.1
Cache	Reach_9	4.99	I-AP	18064	144.4	165.7
Cache	Reach_9	4.99	I0500	5	144.4	158.0
Cache	Reach_9	4.99	I2000	63	144.4	158.2
Cache	Reach_9	4.99	I2500	111	144.4	158.3
Cache	Reach_9	4.99	I0200	0	144.4	158.0
Cache	Reach_9	4.99	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.99	I3000	201	144.4	158.4
Cache	Reach_9	4.99	I7000	1504	144.4	159.7
Cache	Reach_9	4.98	I1000	14	144.4	158.1
Cache	Reach_9	4.98	I-AP	18064	144.4	165.7
Cache	Reach_9	4.98	I0500	5	144.4	158.0
Cache	Reach_9	4.98	I2000	63	144.4	158.2

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_9	4.98	I2500	111	144.4	158.3
Cache	Reach_9	4.98	I0200	0	144.4	158.0
Cache	Reach_9	4.98	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.98	I3000	201	144.4	158.4
Cache	Reach_9	4.98	I7000	1504	144.4	159.7
Cache	Reach_9	4.975		Inl Struct		
Cache	Reach_9	4.97	I1000	14	144.4	158.0
Cache	Reach_9	4.97	I-AP	18064	144.4	165.7
Cache	Reach_9	4.97	I0500	5	144.4	158.0
Cache	Reach_9	4.97	I2000	63	144.4	158.0
Cache	Reach_9	4.97	I2500	111	144.4	158.0
Cache	Reach_9	4.97	I0200	0	144.4	158.0
Cache	Reach_9	4.97	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.97	I3000	201	144.4	158.1
Cache	Reach_9	4.97	I7000	1504	144.4	158.8
Cache	Reach_9	4.96	I1000	14	144.4	158.0
Cache	Reach_9	4.96	I-AP	18064	144.4	165.7
Cache	Reach_9	4.96	I0500	5	144.4	158.0
Cache	Reach_9	4.96	I2000	63	144.4	158.0
Cache	Reach_9	4.96	I2500	111	144.4	158.0
Cache	Reach_9	4.96	I0200	0	144.4	158.0
Cache	Reach_9	4.96	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.96	I3000	201	144.4	158.1
Cache	Reach_9	4.96	I7000	1504	144.4	158.8
Cache	Reach_9	4.5	I1000	14	144.4	158.0
Cache	Reach_9	4.5	I-AP	18064	144.4	165.4
Cache	Reach_9	4.5	I0500	5	144.4	158.0
Cache	Reach_9	4.5	I2000	63	144.4	158.0
Cache	Reach_9	4.5	I2500	111	144.4	158.0
Cache	Reach_9	4.5	I0200	0	144.4	158.0
Cache	Reach_9	4.5	I-APbw	20571	144.4	172.1
Cache	Reach_9	4.5	I3000	201	144.4	158.1
Cache	Reach_9	4.5	I7000	1504	144.4	158.8
Cache	Reach_10	4	I1000	1000	144.7	158.0

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_10	4	I-AP	30982	144.7	165.4
Cache	Reach_10	4	I0500	500	144.7	158.0
Cache	Reach_10	4	I2000	2000	144.7	158.0
Cache	Reach_10	4	I2500	2500	144.7	158.0
Cache	Reach_10	4	I0200	200	144.7	158.0
Cache	Reach_10	4	I-APbw	30982	144.7	172.1
Cache	Reach_10	4	I3000	3000	144.7	158.0
Cache	Reach_10	4	I7000	7000	144.7	158.8
Cache	Reach_10	3	I1000	1000	144.7	158.0
Cache	Reach_10	3	I-AP	30982	144.7	165.3
Cache	Reach_10	3	I0500	500	144.7	158.0
Cache	Reach_10	3	I2000	2000	144.7	158.0
Cache	Reach_10	3	I2500	2500	144.7	158.0
Cache	Reach_10	3	I0200	200	144.7	158.0
Cache	Reach_10	3	I-APbw	30982	144.7	172.1
Cache	Reach_10	3	I3000	3000	144.7	158.0
Cache	Reach_10	3	I7000	7000	144.7	158.7
Cache	Reach_11	2.5	I1000	0	144.7	158.0
Cache	Reach_11	2.5	I-AP	24654	144.7	165.3
Cache	Reach_11	2.5	I0500	0	144.7	158.0
Cache	Reach_11	2.5	I2000	0	144.7	158.0
Cache	Reach_11	2.5	I2500	0	144.7	158.0
Cache	Reach_11	2.5	I0200	0	144.7	158.0
Cache	Reach_11	2.5	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.5	I3000	0	144.7	158.0
Cache	Reach_11	2.5	I7000	2485	144.7	158.7
Cache	Reach_11	2.49	I1000	0	144.7	158.0
Cache	Reach_11	2.49	I-AP	24654	144.7	165.3
Cache	Reach_11	2.49	I0500	0	144.7	158.0
Cache	Reach_11	2.49	I2000	0	144.7	158.0
Cache	Reach_11	2.49	I2500	0	144.7	158.0
Cache	Reach_11	2.49	I0200	0	144.7	158.0
Cache	Reach_11	2.49	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.49	I3000	0	144.7	158.0
Cache	Reach_11	2.49	I7000	2485	144.7	158.7
Cache	Reach_11	2.48	I1000	0	144.7	158.0

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.48	I-AP	24654	144.7	165.3
Cache	Reach_11	2.48	I0500	0	144.7	158.0
Cache	Reach_11	2.48	I2000	0	144.7	158.0
Cache	Reach_11	2.48	I2500	0	144.7	158.0
Cache	Reach_11	2.48	I0200	0	144.7	158.0
Cache	Reach_11	2.48	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.48	I3000	0	144.7	158.0
Cache	Reach_11	2.48	I7000	2485	144.7	158.7
Cache	Reach_11	2.475		Inl Struct		
Cache	Reach_11	2.47	I1000	0	144.7	151.3
Cache	Reach_11	2.47	I-AP	24654	144.7	165.3
Cache	Reach_11	2.47	I0500	0	144.7	149.4
Cache	Reach_11	2.47	I2000	0	144.7	153.9
Cache	Reach_11	2.47	I2500	0	144.7	154.6
Cache	Reach_11	2.47	I0200	0	144.7	147.8
Cache	Reach_11	2.47	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.47	I3000	0	144.7	154.4
Cache	Reach_11	2.47	I7000	2485	144.7	157.5
Cache	Reach_11	2.46	I1000	0	144.7	151.3
Cache	Reach_11	2.46	I-AP	24654	144.7	165.3
Cache	Reach_11	2.46	I0500	0	144.7	149.4
Cache	Reach_11	2.46	I2000	0	144.7	153.9
Cache	Reach_11	2.46	I2500	0	144.7	154.6
Cache	Reach_11	2.46	I0200	0	144.7	147.8
Cache	Reach_11	2.46	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.46	I3000	0	144.7	154.4
Cache	Reach_11	2.46	I7000	2485	144.7	157.5
Cache	Reach_11	2.1	I1000	0	144.7	151.3
Cache	Reach_11	2.1	I-AP	24654	144.7	165.2
Cache	Reach_11	2.1	I0500	0	144.7	149.4
Cache	Reach_11	2.1	I2000	0	144.7	153.9
Cache	Reach_11	2.1	I2500	0	144.7	154.6
Cache	Reach_11	2.1	I0200	0	144.7	147.8
Cache	Reach_11	2.1	I-APbw	20198	144.7	172.1
Cache	Reach_11	2.1	I3000	0	144.7	154.4

HEC-RAS Output Alternative 2b. Meander Restoration with Weir Closures: Meanders 1, 3, 5, 6 Only Model

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)
Cache	Reach_11	2.1	I7000	2485	144.7	157.5
Cache	Reach_12	2	I1000	1000	143.3	151.3
Cache	Reach_12	2	I-AP	30982	143.3	165.2
Cache	Reach_12	2	I0500	500	143.3	149.4
Cache	Reach_12	2	I2000	2000	143.3	153.9
Cache	Reach_12	2	I2500	2500	143.3	154.6
Cache	Reach_12	2	I0200	200	143.3	147.8
Cache	Reach_12	2	I-APbw	30982	143.3	172.1
Cache	Reach_12	2	I3000	3000	143.3	154.4
Cache	Reach_12	2	I7000	7000	143.3	157.4
Cache	Reach_12	1	I1000	1000	143.9	151.2
Cache	Reach_12	1	I-AP	30982	143.9	164.9
Cache	Reach_12	1	I0500	500	143.9	149.3
Cache	Reach_12	1	I2000	2000	143.9	153.8
Cache	Reach_12	1	I2500	2500	143.9	154.4
Cache	Reach_12	1	I0200	200	143.9	147.8
Cache	Reach_12	1	I-APbw	30982	143.9	172.0
Cache	Reach_12	1	I3000	3000	143.9	154.1
Cache	Reach_12	1	I7000	7000	143.9	157.0
Cache	Reach_12	0	I1000	1000	144.1	151.0
Cache	Reach_12	0	I-AP	30982	144.1	164.6
Cache	Reach_12	0	I0500	500	144.1	149.1
Cache	Reach_12	0	I2000	2000	144.1	153.6
Cache	Reach_12	0	I2500	2500	144.1	154.2
Cache	Reach_12	0	I0200	200	144.1	147.5
Cache	Reach_12	0	I-APbw	30982	144.1	172.0
Cache	Reach_12	0	I3000	3000	144.1	153.7
Cache	Reach_12	0	I7000	7000	144.1	156.6