FINAL BRIDGE
HYDROLOGY AND HYDRAULICS REPORT

EL PASO COUNTY
LORSON BOULEVARD BRIDGE
OVER JIMMY CAMP CREEK

LORSON RANCH DEVELOPMENT

COLORADO LICENSED
CHRISTIAN JOSEPH BURGY
42540
03/02/18
PROFESSIONAL ENGINEER

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MARCH 02, 2018

Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City/County for drainage reports and said report is in conformity with the master plan for the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

COLORADO LICENSED
CHRISTIAN JOSEPH BAROODY
#2540
03/02/18
PROFESSIONAL ENGINEER

Christian Joseph Baroody

Registered Professional Engineer
State of Colorado No. 42540

Seal

Developer's Statement:

I, the developer have read and will comply with all of the requirements specified in this drainage report and plan.

Larson LLC
Business Name

By:
Title: Authorized Signing Agent
Address: 212 N. Wahsatch
Colorado Springs, CO 80903

El Paso County:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Date

SECTION 1: HYDROLOGY AND HYDRAULICS REPORT

Section 1: Hydrology and Hydraulics Report i
Acronyms and abbreviations iii
List of Figures iv
List of Tables iv
1.0 Introduction 1
1.1 Project Location 1
1.2 Description of the Project 1
2.0 Data And Site Investigation 3
2.1 Existing Floodplain Studies 3
2.2 Survey Data 3
2.3 Geotechnical Investigation 4
3.0 Hydraulic Design Criteria 4
3.1 Design Frequency 4
3.2 Freeboard 4
3.3 Floodplain Regulations 4
3.4 Scour Requirements 5
4.0 Hydrology 5
5.0 Hydraulics 7
5.1 Hydraulic Modeling Approach 7
5.1.1 Floodplain Parameters 8
5.1.2 Boundary Conditions 9
5.1.3 Ineffective Flow Areas 10
5.1.4 Flow Rates 10
5.1.5 Bridge Parameters 10
6.0 Hydraulic Analysis Results 11
6.1 Bridge Hydraulics Results 11
6.2 Impacts to Floodplain 13
6.3 Scour Analysis Results 14
6.3.1 Contraction Scour 14
6.3.2 Pier Scour 14
6.3.3 Abutment Scour 15
7.0 Conclusions 16
7.1 Summary 16
7.2 Scour Countermeasures and Channel Stability 17
7.3 Water Quality Provisions 19
8.0 LIST OF REFERENCES 20

APPENDIX A – VICINITY MAPS 21
APPENDIX B – FLOOD INSURANCE RATE MAP 22
APPENDIX C – JIMMY CAMP CREEK LOMR 23
APPENDIX D – GRADATION OF STREAMBED SAMPLES 24
APPENDIX E – HEC-RAS LAYOUT and FLOODPLAIN 25
APPENDIX F – HEC-RAS PROFILE TABLES 26
APPENDIX G – HEC-RAS SCOUR ANALYSIS RESULTS 27
APPENDIX H – BRIDGE ARMAMENT CALCS & DETAILS 28
APPENDIX I – HEC-RAS MODEL CROSS-SECTIONS 29
APPENDIX J – HEC-RAS MODEL REPORT 30

ACRONYMS AND ABBREVIATIONS

AMC	Antecedent Moisture Condition
CDOT	Colorado Department of Transportation
CDWR	Colorado Division of Water Resources
cfs	cubic feet per second
CLOMR	Conditional Letter of Map Revision
CN	Curve Number
CR	County Road
CWCB	Colorado Water Conservation Board
DTM	Digital Terrain Model
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
fps	feet per second
GIS	Geographic Information System
HEC-RAS	Hydrologic Engineering Center's Hydrologic Modeling System
LOMR	Letter of Map Revision
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
SCS	Soil Conservation Service
SH	State Highway
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WSE	Water Surface Elevation

LIST OF FIGURES

Figure 1 Lorson Ranch Developement
Figure 2 Flow Rates from FHA of Jimmy Camp Creek, October 1975
Figure 3 Jimmy Camp Creek Channel and Bank Coverage
Figure 4 100-Year Flow Distribution at Lorson Boulevard Bridge
Figure 5 100-Year Profile at the Proposed Lorson Boulevard Bridge
Figure 6 100-Year Scour Profile at the Proposed Lorson Boulevard Bridge
Figure 7 500-Year Scour Profile at the Proposed Lorson Boulevard Bridge

LIST OF TABLES

Table 1 Peak Flow Rate of Jimmy Camp Creek for Lorson Boulevard Bridge (FEMA)
Table 2 Peak Flow Rate of Jimmy Camp Creek for Lorson Boulevard Bridge (DBPS)
Table 3 New Cross-Sections of Lorson Boulevard Bridge HEC-RAS Model
Table 4 Manning's n Values of Lorson Boulevard Bridge HEC-RAS Model
Table 5 Lower Boundary WSE of Lorson Boulevard Bridge HEC-RAS Model
Table 6 Flow Rates for Jimmy Camp Creek at Lorson Boulevard Bridge
Table 7 Lorson Boulevard Bridge HEC-RAS Model Parameters
Table 8 Bridge Hydraulic Performance (WSE)
Table 9 Bridge Hydraulic Performance (Velocity)
Table 10 Bridge Hydraulic Performance (Maximum Velocity)
Table 11 Bridge Hydraulic Performance (Freeboard)
Table 12 Jimmy Camp Creek Floodway Elevations With and Without Bridge (FEMA 100-Year)
Table 13 Lorson Boulevard Bridge Pier Scour Input Parameters
Table 14 Abutment Scour Analysis Results
Table 15 Abutment Riprap Analysis Input
Table 16 Pier Riprap Analysis Input

1.0 INTRODUCTION

Loris and Associates, Inc. (LORIS) has been contracted by Core Engineering Group to provide design services for the proposed Lorson Boulevard Bridge over Jimmy Camp Creek. Lorson Boulevard is a new roadway proposed as part of the 1400-acre Lorson Ranch Development located in El Paso County, southwest of Colorado Springs. The development is a phased residential community consisting of schools, commercial stores, open space, neighborhood parks and a connected trail system. Residential home building started in 2007 and there are currently 1000 completed homes. Nearly 3000 homes are to be constructed at the completion of the development in 2033.

This report presents the hydrologic and hydraulic analysis for the proposed bridge over Jimmy Camp Creek and describes the data and methodology used for the analysis. The analysis includes development of a hydraulic model, established from the latest effective model, which is updated to determine the existing base flood elevations and hydraulic conditions at the site of the proposed bridge. This updated model is then revised to incorporate the proposed bridge structure and modifications to the channel to assess the performance of the bridge under various flow conditions. Results of the modeling and analysis are used to:

- Verify the proposed bridge meets the drainage design criteria.
- Identify impacts to the existing floodplain and base flood elevations.
- Identify velocities at the bridge and within the channel to assess the stability of the channel.
- Identify potential scour at the bridge.

1.1 PROJECT LOCATION

Lorson Ranch is located in the central portion of El Paso County approximately 15-miles southeast of Colorado Springs. More precisely, the development is situated directly east of the intersection of Marksheffel Road and Fontaine Boulevard and is comprised of a series of phased developments that will extend approximately 2500-feet to the north and south of Fontaine Boulevard.

The project area is bordered to the west by Marksheffel Road; to the north by the Banning Lewis and Rolling Hills Ranch; and to the east by the future Meridian Road. The residential development and golf course of Peaceful Valley Estates is located to the south. Current land uses include agriculture, rangeland and land under various states of development. A Vicinity Map of Lorson Ranch within Colorado and El Paso County is shown in Appendix A. The development and project location is described by the following:

County:	El Paso
Town:	Colorado Springs, CO
Township:	015 South
Range:	065 West
Section:	23
Quarter Section:	NW
Latitude:	38°43’59” N
Longitude:	104°38’42” W
Elevation:	5700 ft.

1.2 DESCRIPTION OF THE PROJECT

Lorson Boulevard is new roadway proposed for the development. The roadway is to be a 40-foot wide urban section comprised of two vehicle lanes with bike lanes divided by a painted median. The roadway will travel primarily east to west and begin at a new intersection with Marksheffel Road which is to be constructed approximately 2600-feet south of Fontaine Boulevard. Approximately 500-feet east of the new intersection, the alignment will shift Lorson Boulevard to the north to a location approximately 1600-feet south of Fontaine Boulevard before crossing Jimmy Camp Creek. The roadway will continue another 1.5-mile as part of future phases of the development. A series of intersections will be constructed along the boulevard for access to a number of tracts within the development. Figure 1 shows the proposed location of Lorson Boulevard within the development.

Figure 1: Lorson Ranch Development

Jimmy Camp Creek runs through the development flowing from north to south at the western side of Lorson Ranch. Jimmy Camp Creek originally occupied a very wide shallow floodplain with a poorly defined main channel that meandered through the site. The channel was realigned and channelized as part of the first phase of the development to consolidate the wide floodplain in order to facilitate residential and commercial development, and provide the future residential properties safety from flooding.

The new channel section was sized to convey the 100-year flow entirely within the channel and is comprised of a 105-feet wide main channel approximately 3-feet deep. Two 52-feet wide benches sloped at 2% are located 12-feet from the toe of the main channel and act as overbank areas for the floodplain. A second set of benches approximately 16-feet wide, are located above the first bench and provide graded area for trails parallel to the channel. All sideslopes of the new channel are 4:1 and comprised of topsoil-covered riprap, which is grass-lined and includes trees planted in the bench areas.

The proposed Lorson Bridge is to carry Lorson Boulevard over Jimmy Camp Creek. The location and length of the bridge was determined during preliminary planning of the development. Details of the proposed bridge and site include:

- The proposed 256-feet bridge length will span the majority of the existing channel and will be comprised of two spans divided by a center pier located midway in the channel.
- The proposed bridge superstructure is to be BT72 prestressed concrete girders, spaced at 9.5-feet apart with an 8-inch concrete deck.
- The proposed Lorson Boulevard roadway and bridge will have an east-west bearing and will be located at a skew of approximately 15-degrees with the existing channel. The abutments and center pier are to be located parallel to the existing channel centerline.
- The proposed roadway alignment and vertical geometry has been set by the civil design team. The profile of the roadway is set to cross an existing irrigation channel that parallels Jimmy Camp Creek to the west.
- The upper benches of the channel are the location of two proposed trails that the bridge will span. These benches and trail alignment are to be shifted into the existing channel for the location and grading of the proposed abutments.

2.0 DATA AND SITE INVESTIGATION

2.1 EXISTING FLOODPLAIN STUDIES

A number of floodplain studies have been prepared for Jimmy Camp Creek over the years. According to the latest FEMA Flood Insurance (Panel 08041C0957F effective March 17, 1997), the project is located on Jimmy Camp Creek, which is designated as Zone AE. Therefore, base flood elevations have been established by detailed study of the floodplain. The Panel identifies this section of Jimmy Camp Creek located within El Paso County, the City of Colorado Springs and the City of Fountain. Jimmy Camp Creek is comprised of both a floodplain and floodway within the entire reach shown in the panel.

The panel shows the historic alignment of Jimmy Camp Creek as meandering within a wide and shallow floodplain. The main channel migrated westerly towards Marksheffel Road in a series of sharp sinusoidal curves. This Panel is shown in Appendix B. As described above, Jimmy Camp Creek was realigned and straightened in a north-south alignment during the first phase of the Lorson Ranch development. The realignment began approximately 2600-feet north of Fontaine Boulevard ending at Pleasant Valley Road for length of 5600-feet. A LOMR was prepared for the completed channel alignment as well as the construction of Fontaine Boulevard Bridge over Jimmy Camp Creek and submitted to FEMA, effective August 29, 2007. The LOMR and effective Map Panel are shown in Appendix C. The LOMR application, AutoCAD design files and HEC-RAS models used for preparation of the LOMR were provided to LORIS for the hydraulic analysis of the proposed Lorson Boulevard Bridge.

Currently the FIS for El Paso, County Colorado and Incorporated Areas are being updated as part of FIS number 08041CV001A. The preliminary FIS is dated July 29, 2015 and available for review. The preliminary FIS provides flood profiles with a vertical datum of NAVD88 where the existing FIS and available CLOMR for the project have a vertical datum of NGVD29.

2.2 SURVEY DATA

Topographic survey was obtained by Core Engineering Group for the entire development site. As a master planned development, Core Engineering Group is preparing the layout and design of all

roadways, site grading, utilities and tracts. Core Engineering Group has provided DTMs of existing and final grading in the AutoCAD Civil3D format to LORIS for the layout and design of the Lorson Boulevard Bridge.

A review of the DTMs and comparison with the AutoCAD design files used to prepare the LOMR shows they are correlated with each other and the existing Jimmy Creek channel designed and constructed during phase one of the development. The drawings use the same local or truncated coordinates with a NGVD29 vertical datum used in the LOMR.

2.3 GEOTECHNICAL INVESTIGATION

A geotechnical investigation was performed for the design of the proposed Lorson Boulevard Bridge. The investigation included drilling of eight exploratory borings at the bridge site, lab testing of material sampled at various depths of the borings and submittal of a final report. The report includes results of the lab testing and recommendations for the bridge foundation.

Borings CP-1 and CP-2 were taken within the streambed of Jimmy Camp Creek at the location of the proposed center pier at the upstream and downstream face of the proposed bridge. The borings included sampling at 4.0 and 9.0-foot depths of which gradations were performed and used as data for the analysis of scour at the proposed bridge. The report indicated the streambed is comprised of non-plastic, well to poorly drained, silty sand. Gradations of the samples taken at the 4.0 and 9.0 foot depth indicate the soil is uniformly sized with a D_{50} particle size of 0.50 mm.

The D_{50} particle size; determined from these gradation, is used as input to the procedures for analysis for general scour. The D_{50} and additional particle sizes are used for the calculation of local scour depth at the pier of the proposed bridge. The results of the gradation for samples taken at CP-1 and CP-2 are presented in Appendix D.

3.0 HYDRAULIC DESIGN CRITERIA

3.1 DESIGN FREQUENCY

Separate frequencies and discharges will be used for the design criteria for separate components of the proposed Lorson Boulevard Bridge. These frequencies and discharges Design frequencies are established from a combination of NFIP regulations, the El Paso County Drainage Criteria Manual and the CDOT Drainage Design Manual.

1. The FEMA 100-year flow is to be used to determine impacts to the existing floodway and floodplain.
2. The 100-year flows established for future development of the basin is to be used to determine the minimum freeboard at the bridge and scour design.

3.2 FREEBOARD

The Lorson Boulevard Bridge is to provide the minimum freeboard or clearance between the Water Surface Elevation (WSE) of the design flood event and the low girder of the bridge. Per Section 6.4.2 Allowable Clearance of Bridges of the El Paso County Drainage Criteria Manual all structures classified as a bridge shall not be overtopped and provide a minimum clearance of 2.0-feet between the low chord of the bridge and profile for the 100-year design flow. The manual does not specify an approach location on the profile where free freeboard is determined. For the Lorson Boulevard Bridge; the WSE at the upstream face of the bridge, will be used to compute the freeboard at the bridge.

3.3 FLOODPLAIN REGULATIONS

As described above, Jimmy Camp Creek is a regulated floodplain with a floodway. The proposed Lorson Bridge project is to meet all the requirements set forth in the NFIP regulations and regulations adopted by El Paso County. Determination of impacts to the existing floodplain will be made by detailed modeling of the proposed bridge. Modeling of the proposed Lorson Bridge shall be performed within the latest effective model used to establish the flood profiles of Jimmy Camp Creek in the latest LOMR. Comparison of the existing and proposed model will be made to determine impacts.

It is noted that the 100-year flow is completely contained within the channel; therefore, the floodplain and floodway are the same limit. Any impacts to the channel are expected to warrant the CLOMR/LOMR submittal process for the project. Per Section 60.3(d) of the NFIP regulations the community shall:

> *(3) Prohibit encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in flood levels within the community during the occurrence of the base flood discharge;*

3.4 SCOUR REQUIREMENTS

To ensure the bridge foundations will be designed and located with appropriate safety factors, a detailed scour analysis was performed for both the 100 and 500-Year design frequency discharges. El Paso County does not have a requirement for scour analysis in the drainage criteria manual; therefore, the CDOT Drainage Design Manual was used to establish the criteria.

Per the CDOT Drainage Design Manual Section 10.4.3 Scour Analysis, the design-frequency scour depth is used to design the bridge abutments (pier caps, abutment retaining walls, etc.); and the 500-year scour depth is used to design the bridge foundation. Scour depths shall be evaluated for the most severe scour condition. Scour should not cause failure of the bridge structure for the 500-year flood

Analysis of scour of the proposed structure is performed using the Hydraulic Design Function for Bridge Scour provided in the USACE HEC-RAS version 5.0.03 software. The computation of scour at bridges within HEC-RAS is based upon the methods outlined in the FHWA Hydraulic Engineering Circular No. 18 (HEC-18). The methodology includes procedures for determining two classifications of scour including general and local.

- General scour includes contraction scour, which is the removal of streambed material caused by the bridge constricting the natural channel flow. This contraction generally causes flow to accelerate, increasing the flows erosive strength. Contraction scour is directly additive to aggregation, degradation, and the local scour computed at piers and abutments.
- Local scour occurs around piers, abutments, the ends of guide banks, and any other obstructions to flow. Local scour is the result of the turbulence and local velocity vector changes caused by obstructions.

4.0 HYDROLOGY

A hydrologic analysis was not required for the Lorson Boulevard Bridge hydraulic analysis. Flow rates for the analysis were taken from the existing LOMR model and the latest Drainage Basin Planning Study of Jimmy Camp Creek to compile two sets of flow rates the hydraulic analysis of Lorson Bridge.

The first set of flow rates was taken from the existing LOMR study to evaluate the impact of the bridge on the existing floodplain and effective FIRM. According to the LOMR, the rates are from a FIS dated 1981 and extracted from the conversion of the HEC-2 model used in the FIS to the HEC-RAS model used in the LOMR for Jimmy Camp Creek. Peak flow rates for the 10, 50, 100 & 500-year events appear to be sourced from a study titled Flood Hazard Analysis Portion of Jimmy Camp Creek and Tributaries, prepared by the USDA Soil Conservation Service and the CWCB, dated October 1975. The boundary conditions used in the FIS appear to be sourced from the same study.

TABLE 1 (Continued) FLOOD FREQUENCY-ELEVATION AND DISCHARGE DATA 1/
JIMMY CAMP CREEK, REACH 1

Cross-Section Number	Stationing from Mouth Feet	Identification	Stream Bed Elevation ft. M.S.L.	Crest-Elevation ft. M.S.L., and Peak Discharge c.f.s.				
				10-Year Flood	25-Year Flood	50-Year Flood	100-Year Flood	500-Year Flood
J177	283+10		5664.1	5673.5 6,800	5674.4 9,000	5675.0 10,700	5675.7 12,900	5676.5 16,400

Figure 2: Flow Rates from FHA of Jimmy Camp Creek, October 1975

Table 1 presents the flow rates from the LOMR used in the Lorson Bridge hydraulic analysis to model effective flow conditions.

Table 1: Peak Flow Rate of Jimmy Camp Creek for Lorson Boulevard Bridge (FEMA)

Storm Event	Description / Source	Discharge (cfs)
FEMA 10-Year	From LOMR / Effective Model	6,800
FEMA 50-Year	From LOMR / Effective Model	10,700
FEMA 100-Year	From LOMR / Effective Model	12,900
FEMA 500-Year	From LOMR / Effective Model	16,400

The second set of peak discharges are taken from the Drainage Basin Planning Study (DBPS) of Jimmy Camp Creek, prepared by Kiowa Engineering Corporation, dated March of 2015. The DBPS provides updated hydrologic analysis of the basin and provides updated existing and future design flow rates. The flow rates from the DBPS are used to evaluate the hydraulic conditions of the bridge and verify the bridge provides sufficient freeboard for the 100-year design event.

The DBPS provides peak discharges for a number of design points within the basin. From Table III-10 Hydrology Results – Peak Flows of the study, design points within the reach include The Confluence of Marksheffel Tributary at the upper limits of the reach and at discharges at Peaceful Valley Road at the lower limits of the reach. The difference in flow rates between the design points are not significant. Therefore, the greater flow rates at Peaceful Valley Road were used for the updated existing and future flows in the HEC-RAS model.

The DBPS provides peak discharges for the 10 and 100-year storm events for both the existing and future conditions using a 24-hour Type II rainfall distribution and AMC II conditions. However, peak discharges need to be determined for the 500-year event to evaluate scour conditions at the proposed bridge. Per Section 7.2.5 500-Year Multipliers of the CDOT Drainage manual, a multiplier of 1.2 of the 100-year storm may be used to estimate peak discharges for the 500-year event for basins within the mountain region of Colorado. Table 2 presents the flow rates from the DBPS used in the Lorson Bridge hydraulic analysis to determine freeboard and scour at the proposed bridge.

Table 2: Peak Flow Rate of Jimmy Camp Creek for Lorson Boulevard Bridge (DBPS)		
Storm Event	**Description/ Source**	**Discharge (cfs)**
10-Year DBPS (Existing)	From 2015 DPBS (Existing)	7,731
100-Year DBPS (Existing)	From 2015 DPBS (Existing)	17,709
500-Year DBPS (Existing)	1.2 Flow Multiplier of 100-year	21,251
10-Year DBPS (Future)	From 2015 DPBS (Future)	13,402
100-Year DBPS (Future)	From 2015 DPBS (Future)	26,734
500-Year DBPS (Future)	1.2 Flow Multiplier of 100-year	32,081

5.0 HYDRAULICS

5.1 HYDRAULIC MODELING APPROACH

Detailed modeling of the proposed Lorson Boulevard Bridge was performed using the USACE HEC-RAS software. The proposed bridge span will require location of the abutments within the channel section. The abutments will be located within the upper bench of the channel and require grading to shift the bench away from the abutment to allow use of the bench as a bike path. A 2:1 sideslope will be applied between the bench and abutment and the proposed wingwalls. The proposed bridge and grading will produce a reduction in the bridge opening area within the channel.

The hydraulic model for the proposed Lorson Bridge was established from the existing LOMR model for Jimmy Camp Creek. The model was updated with the insertion of eight new sections upstream and downstream of the proposed bridge. Each of the new cross-sections are referenced to the existing LOMR model using the channel alignment of Jimmy Camp Creek provided in the LOMR submittal AutoCAD drawings. Table 3 summarizes the river station and channel station of the new cross-sections with the LOMR cross-sections. Appendix E shows the layout of cross-sections in the LOMR with the new cross-sections used to model the Lorson Bridge.

Table 3: New Cross-Sections of Lorson Boulevard Bridge HEC-RAS Model					
River Station	**Channel Station**	**Description**	**Downstream Length**		
			LOB	**Channel**	**ROB**
136.00	56+88.49	Existing LOMR Section	332.63	332.63	332.63
135.60	53+55.42	Existing LOMR Section	62.7	55.42	47.48
135.553	53+00.00	New cross section	29.38	29.37	9.53
135.496	52+70.63	New cross section	55.38	35.02	20.44
135.472	52+35.61	New cross section	32.05	14.97	8.17
135.338	52+20.64	Bridge bounding section	82.00	82.00	82.00
135.298	51+38.03	Bridge bounding section	10.40	25.15	44.27
135.253	51+12.88	New cross section	10.40	27.83	51.05
135.140	50+85.05	New cross section	65.50	70.05	70.3
134.889	50+15.00	New cross section	139.22	155.06	171.54
134.80	48+59.94	Existing LOMR Section	293.50	293.50	293.50
134.40	45+65.84	Existing LOMR Section	355.07	354.08	353.89

Two of the new sections were located as bounding sections of the proposed bridge 8.5-feet offset from the bridge face. Additional sections were located to model the flow transition upstream and downstream of the bridge and compute the scour from blocked flow upstream of the abutment.

The AutoCAD Civil3D design software was used to generate DTM of the grading at the proposed bridge. The channel alignment and cross-section were exported to the GIS file format using the HEC-RAS export routines incorporated in the software. Import of the GIS file into HEC-RAS results in a georeferenced model, which includes the channel alignment, station-elevation data along each cross-section read from the DTM, downstream reach lengths and overbank locations. This information was used to create the new cross-sections inserted into the existing LOMR model to generate the proposed model for hydraulic analysis of the new bridge.

Appendix E shows the HEC-RAS layout of the channel alignment, cross sections, and resulting flood extents of the 100 and 500-year flood events for the proposed bridge and river reach. The following data was used to develop the HEC-RAS model.

5.1.1 Floodplain Parameters

The LOMR model uses a Manning's n of 0.040 for both the channel and overbank locations at each cross-section of the realigned channel. The 0.040 value appears to reflect the grassland areas of the channel and overbank comprised of high grass, some trees and scattered brush. The LOMR model uses a Manning's n of 0.100 at each of the riprap drop structures applied along the realigned channel.

The new cross-sections in the HEC-RAS model of Lorson Bridge used the same Manning's n values for the channel and overbanks as used in existing LOMR model. However, a composite channel was used with horizontal variation in Manning's n at the bridge to reflect the portions of the channel that are lined with riprap for armament of the abutment and piers. Manning's n values of the riprap was adjusted to account for depth of flow using the 100-year design event. Table 4 summarizes the locations and Manning's n values used in the HEC-RAS model.

Table 4: Manning's n Values of Lorson Boulevard Bridge HEC-RAS Model

Description	Location	Manning's n
Sandy Bed covered with grassland area of high grass	Channel	0.040
Grassland area with high grasses, some trees and brush	Floodplain (left)	0.040
Grassland area with high grasses, some trees and brush	Floodplain (right)	0.040
Riprap (24-inch) at Abutments (Sloped) Riprap (30-inch) at Piers and Riprap (24-inch) at Abutment Toe Channel Bed Grouted or Filled Riprap (24-inch) under Bike Path	Composite Channel	0.090 0.067 0.040 0.056

The existing LOMR model utilizes composite Main Channel Manning's n values with a compositing slope criteria of 5:1 in the geometric data. Compositing of the main channel using a 5:1 slope criteria is not optimal yet retained from the original LOMR model as it results in a conservative analysis with the horizontal variations in Manning's n used at the bridge.

Figure 3: Jimmy Camp Creek Channel and Bank Coverage

5.1.2 Boundary Conditions

Examination of the critical depth computed in steady flow analysis at the proposed bridge and upstream and downstream channel indicates subcritical flow will occur at the proposed bridge. Therefore, all modelling of the proposed bridge was performed using a subcritical flow regime. CDOT requires modeling of bridges be performed using a subcritical flow regime to meet a more conservative freeboard requirement.

The existing LOMR model uses known water surface elevation as the downstream boundary condition and critical depth for the upstream boundary condition. The confluence of Fountain Creek is the lower model limit of Jimmy Camp Creek; therefore, known WSE for the Jimmy Camp Creek LOMR were determined from the effective model of Fountain Creek. The effective models provides WSE for each of the 10, 25, 50 and 100-year effective flood events. A regression analysis of this data was used to compute lower boundary conditions for updated and future flood events provided in the 2015 Drainage Basin Planning Study. Table 5 summarizes the WSE used for the lower boundary condition for all flow rates.

Table 5: Lower Boundary WSE of Lorson Boulevard Bridge HEC-RAS Model

Storm Event	Discharge (cfs)	WSE (ft)
FEMA 10-Year	6,800	5673.50
FEMA 50-Year	9,000	5674.91
FEMA 100-Year	10,700	5675.33
FEMA 500-Year	12,900	5676.21
100-Year DBPS (Existing)	17,709	5676.81
500-Year DBPS (Existing)	21,251	5677.43
100-Year DBPS (Future)	26,734	5678.22
500-Year DBPS (Future)	32,081	5678.55

5.1.3 Ineffective Flow Areas

The application of ineffective flow areas was evaluated in the model of the proposed bridge. Application of a 1:1 contraction reach upstream of the bridge and a 3:1 expansion reach downstream of the bridge applied at the vertical portion of the abutment produce ineffective flow areas behind the proposed grading and below the flood events. Therefore, the application of the ineffective flow in the proposed models is not required. A suitable number of cross-sections are used upstream and downstream of the proposed bridge to model the flow transition from the natural channel to the bridge section.

5.1.4 Flow Rates

The two sets of peak discharges were input to the HEC-RAS model as Steady Flow Data. The respective boundary conditions were updated for each flow rate. The FEMA flow rates are used to evaluate the impact of the bridge on the existing flood plain. The DBPS (Future) flow rates are used to evaluate the freeboard of the bridge and compute the scour. Table 6 summarizes the flow rates and flow change locations used in the HEC-RAS model.

Table 6: Flow Rates for Jimmy Camp Creek at Lorson Boulevard Bridge

Storm Event	HEC-RAS Model Discharge and Station		
	160.0 (cfs)	152.0 (cfs)	141.6 (cfs)
FEMA 10-Year	6,100	6,600	6,800
FEMA 50-Year	9,800	10,500	10,700
FEMA 100-Year	11,800	12,600	12,900
FEMA 500-Year	15,100	16,100	16,400
DBPS (Future) 10-Year	13,402	13,402	13,402
DBPS (Future) 100-Year	26,734	26,734	26,734
DBPS (Future) 500-Year	32,081	32,081	32,081

5.1.5 Bridge Parameters

The proposed double span bridge was modeled within HEC-RAS using the Deck/Roadway Data Editor to reflect the structure depth of the 256-foot span and vertical portion of the bridge abutments. A pier was inserted into the bridge and modeled based on input into the Pier Data Editor available in HEC-RAS. Abutments were inserted into the bridge and modeled based on input into the Sloping Abutment Data Editor found in HEC-RAS

The proposed Lorson Bridge provides sufficient clearance above all design flows so that Low Flow Method is all that is required for approach to the bridge modelling. Since the bridge will include a pier the Standard Step Method, Momentum Balance and Yarnell Equation were used to compute energy losses through the bridge. The highest energy loss is selected by HEC-RAS to be applied at the bridge. The proposed bridge was modeled in HEC-RAS with the following parameters summarized in Table 7.

Table 7: Lorson Boulevard Bridge HEC-RAS Model Parameters	
Parameter	**Value**
Sloping Abutment	Spill Through
Center Pier	3-foot Width, No Debris
Modelling (Low Flow)	Energy (Standard Step) Momentum, Cd = 1.2 Yarnell, K = 0.95 Highest Energy Answer Selected
Modelling (High Flow)	Energy (Standard Step)
Weir Coefficient	2.60
Weir Crest shape	Broad Crested
Contraction Coefficient	0.30
Expansion Coefficient	0.50

6.0 HYDRAULIC ANALYSIS RESULTS

6.1 BRIDGE HYDRAULICS RESULTS

The LOMR model, revised with new cross-sections, was updated and modified with the data and parameters provided above to model the new bridge. Steady flow analysis was performed for the updated model with and without the bridge.

The new bridge is to reduce the bridge opening area as result of the placement of the abutments and roadway embankment in the upper bench of the channel section. This will result in an increase of the water surface elevations upstream of the proposed bridge compared to the channel without the bridge.

Table 8 compares the model results of the upstream and downstream Water Surface Elevations (WSE) in the Jimmy Camp Creek channel with and without the proposed Lorson Bridge. The results were taken from the bounding cross sections from the HEC-RAS model of the proposed bridge.

Table 8: Bridge Hydraulic Performance (WSE)					
Design Event	**Discharge**	**Without Bridge**		**With Lorson Bridge**	
		52+20.64 Upstream WSE	**51+38.03 Downstream WSE**	**52+20.64 Upstream WSE**	**51+38.03 Downstream WSE**
	(cfs)	**(ft)**	**(ft)**	**(ft)**	**(ft)**
10-Year FEMA	6,800	5690.97	5690.62	5691.76	5690.49
100-Year FEMA	12,900	5693.14	5692.80	5694.17	5692.50
10-Year DBPS	13,402	5693.28	5692.94	5694.34	5692.64
100-Year DBPS	26,734	5696.39	5696.06	5697.71	5695.41

Table 9 compares the model results of the upstream and downstream flow velocities in the Jimmy Camp Creek channel with and without the proposed Lorson Bridge. The results were taken from the bounding cross sections from the HEC-RAS model of the existing and proposed bridge. The results show an increase in the flow velocities within the channel at the location of the bridge.

Table 9: Bridge Hydraulic Performance (Velocity)					
Design Event	Discharge	Without Bridge		With Lorson Bridge	
		52+20.64 Upstream Velocity	51+38.03 Downstream Velocity	52+20.64 Upstream Velocity	51+38.03 Downstream Velocity
	(cfs)	(ft/sec)	(ft/sec)	(ft/sec)	(ft/sec)
10-Year FEMA	6,800	6.47	6.34	6.26	7.35
100-Year FEMA	12,900	7.81	7.66	7.85	9.61
10-Year DBPS	13,402	7.91	7.76	7.95	9.75
100-Year DBPS	26,734	9.99	9.84	10.63	13.13

Structural analysis calculations and evaluation of channel stability require the maximum flow velocities produced by the bridge within the channel. These velocities are produced at the downstream bridge opening in the deepest portion of the channel. Table 10 present the maximum and average flow velocities in the upstream and downstream bridge opening within the channel. These velocities were determined from the flow distribution of the Cross-Section Output of HEC-RAS as shown in Figure 4.

Table 10: Bridge Hydraulic Performance (Maximum Velocity)					
Design Event	Discharge	Lorson Bridge			
		52+12.14 Upstream Velocity (ft/sec)		51+46.53 Downstream Velocity (ft/sec)	
	(cfs)	Max	Ave	Max	Ave
100-Year DBPS	26,734	14.37	11.11	16.40	13.14
500-Year DBPS	32,081	15.57	12.06	17.89	14.32

Figure 4: 100-Year Flow Distribution at Lorson Boulevard Bridge

Table 11 summarizes the freeboard provided by the proposed bridge for each of the 100-year design discharges. The freeboard is computed between the low chord of the bridge and the water surface elevation at the upstream face of the bridge.

Table 11: Bridge Hydraulic Performance (Freeboard)				
Design Event	Discharge (cfs)	Bridge Low Chord WSE (ft)	Proposed Upstream WSE (ft)	Provided Freeboard (ft)
10-Year FEMA	6,800	5699.53	5691.64	7.89
100-Year FEMA	12,900	5699.53	5694.01	5.52
10-Year DBPS	13,402	5699.53	5694.18	5.35
100-Year DBPS	26,734	5699.53	5697.45	2.08

A comparison of the 100-year flow profiles in the channel with and without the proposed bridge shows that attenuation of the proposed 100-Year profile occurs 1495-feet upstream of the proposed bridge. Attenuation of the proposed 100-Year profile occurs 123-feet downstream of the proposed bridge. Figure 5 compares the existing and proposed 100-year profiles generated from HEC-RAS at the location of the bridge.

Figure 5: 100-Year Profile at the Proposed Lorson Boulevard Bridge

A layout of the HEC-RAS channel alignment and cross-sections prepared for the hydraulic analysis of the proposed bridge is shown in Appendix E. The GIS tool RAS Mapper which is available in HEC-RAS, was used to delineate the floodplain for the 100-year event using the digital terrain model. The delineation of the floodplain is shown in the attached Appendix for both the FEMA and DBPS 100-year flows. Appendix F presents the HEC-RAS Profile Summary Table of both the FEMA and DBPS 100-year flows for the existing and proposed condition. Cross sections of the HEC-RAS model of the proposed bridge and channel are provided in Appendix I.

6.2 IMPACTS TO FLOODPLAIN

The floodplain and floodway are both contained within the channel of Jimmy Camp Creek and have the same flood elevation and limits. There is no flood fringe or area outside of the floodway upon

which to encroach. The encroachment analysis is limited to any change in the floodway elevation. A comparison of the floodway elevations at each new cross-section with and without the bridge is shown in Table 12. There is expected to be a 1.21-foot rise in the floodway elevation upstream of the proposed bridge.

Table 12: Jimmy Camp Creek Floodway Elevations With and Without Bridge (FEMA 100-Year)

River Station	Channel Station	Description	Without Bridge Floodway Elev (ft)	With Bridge Floodway Elev (ft)	Delta (ft)
136.00	56+88.49	Existing LOMR Section	5695.37	5695.70	0.33
135.60	53+55.42	Existing LOMR Section	5694.23	5694.85	0.62
135.553	53+00.00	New cross section	5693.52	5694.73	1.21
135.496	52+70.63	New cross section	5693.32	5694.60	1.28
135.472	52+35.61	New cross section	5693.15	5694.27	1.12
135.338	52+20.64	Bridge bounding section	5693.14	5694.17	1.03
135.298	51+38.03	Bridge bounding section	5692.80	5692.50	-0.30
135.253	51+12.88	New cross section	5692.58	5692.33	-0.25
135.140	50+85.05	New cross section	5692.36	5692.21	-0.15
134.889	50+15.00	New cross section	5691.99	5691.98	-0.01
134.80	48+59.94	Existing LOMR Section	5691.28	5691.27	-0.01

6.3 SCOUR ANALYSIS RESULTS

There are three potential scour conditions at the proposed Lorson Boulevard Bridge. These include contraction scour and the two local scours at the abutments and pier. A scour analysis was performed for both the 100 and 500-year design frequency event using the Hydraulic Design Function for Bridge Scour in HEC-RAS. As noted above, the future DBPS flow rates are to be utilized for the scour computations. With the majority of design flows located within the channel, 43 of the available 45 flow distributions were assigned to the channel and the remaining distributions were used for each overbank for analysis of the scour.

The closest approach cross-section to the bridge is at river station 135.47 (channel station 52+35.61) but includes a reduced cross-section as it is within the new grading limits of the abutment. Therefore, scour for Lorson Bridge was computed using the flow, flow area, flow width and depth of flow obstructed at the approach cross-section river station 135.5 (channel station 52+70.63) which is upstream of all grading for the abutment. Computations of the pier and contraction scour used the default values determined from the HEC-RAS model as input to the Hydraulic Design Function.

6.3.1 Contraction Scour

Using the D_{50} grain size of 0.50-millimeters determined from the gradation provided in the geotechnical investigation, the analysis determined there is a live-bed scour condition at the proposed bridge. The new bridge will reduce the flow width in the channel from 307-feet during the 100 event and from 329-feet during the 500-year event to 242-feet. A live-bed contraction scour will yield 1.99-feet of scour for the 100-year event and 2.89-feet of scour for the 500-year event. The contraction scour is to be added to the local scour computed at the abutment and pier to compute the total scour at each element.

6.3.2 Pier Scour

The proposed bridge was modeled in HEC-RAS with the following parameters summarized in Table 13. The scour depth computed at the pier is 7.20-feet for both the 100 and 500-year event.

Table 13: Lorson Boulevard Bridge Pier Scour Input Parameters

Parameter	Value (100-Year)	Value (500-Year)
Shape	Round nose	Round nose
Pier Width	3.00 ft	3.00 ft
D_{50}	0.50 mm	0.50 mm
D_{95}	2.25 mm	2.25 mm
Upstream Depth	13.47 ft	14.59 ft
Upstream Velocity	13.71 ft/sec	14.39 ft/sec
Method	CSU Equation	CSU Equation
Nose shape factor, K1	1.00	1.00
Angle	0.0	0.0
Pier Length	65.0 ft	65.0 ft
Flow angle factor, K2	1.00	1.00
Bed Condition, K3	Clear-Water Scour	Clear-Water Scour
Armoring correction factor,K4	1.00	1.00

6.3.3 Abutment Scour

Use of the Froehlich's Equation is applicable for the computation of the abutment scour at the proposed bridge. Scour was computed as spill-thru abutments and determined from the amount of flow upstream of the bridge obstructed by the abutments and embankment. Table 14 summarizes the scour depths for the proposed Lorson Bridge. Figures 6 and 7 show the 100 and 500-Year scour profile at the proposed bridge. Appendix G present plots of the scour results computed by HEC-RAS.

Table 14: Abutment Scour Analysis Results

Storm Event	Left Abutment			Right Abutment		
	Contraction (ft)	Abutment (ft)	Total (ft)	Contraction (ft)	Abutment (ft)	Total (ft)
100-Year	1.99	11.65	13.64	1.99	11.93	13.92
500-Year	2.89	13.21	16.10	2.89	13.70	16.59

Figure 6: 100-Year Scour Profile at the Proposed Lorson Boulevard Bridge

Figure 7: 500-Year Scour Profile at the Proposed Lorson Boulevard Bridge

7.0 CONCLUSIONS

7.1 SUMMARY

The hydraulic analysis presented in this report has been prepared with close coordination between the civil and structural design teams in order to develop the hydraulic model that matches the ultimate configuration of the proposed Lorson Boulevard Bridge. The proposed model incorporates the latest existing topography, location and layout the proposed bridge and final grading to model the hydraulic performance of the bridge located within the Jimmy Creek channel.

The analysis evaluates three components of the proposed bridge and summarized below:

1. **Freeboard**
   The analysis shows the proposed bridge provides 2.1-feet of freeboard between the low chord of the bridge and the flow profile generated from the 100-year future flow rate of 26,734-cfs identified in the DPBS. Related to freeboard is the calculation of velocities

within the channel at the bridge, which may be used to determine whether the proposed bridge provides the necessary opening and span length. The CDOT Drainage Design Manual recommends that if the mean velocity in the bridge is greater than 16-fps the bridge should be lengthened. Average velocity during the 100-year event is 13.14-fps and indicates the bridge is of adequate length. The maximum velocity within the bridge is computed to be 16.40-fps.

2. **Computed Scour Depth**
   The hydraulic analysis adequately computes the scour depths expected to occur at the bridge under the 100 and 500-year events. These depths should be used by the structure design team to evaluate the stability of the structure under these conditions and make recommendations for the bridge foundation.

3. **Impacts to the floodplain**
   The hydraulic analysis indicates a measurable impact to the regulatory floodplain/floodway. The rise in the floodway as described above warrants the submittal of a CLOMR to FEMA per NFIP regulations. The CLOMR should be submitted once final bridge plans are completed and prior to start of construction. The CLOMR should include a submittal of riverine structures form for the new bridge and potentially the riverine hydrology hydraulics form for the revision to the effective model for updated survey of the new channel. A LOMR submittal will be required once construction of the bridge is completed.

7.2 SCOUR COUNTERMEASURES AND CHANNEL STABILITY

Scour countermeasures are required for the proposed Lorson Boulevard Bridge at each of the abutments and the center pier. Both the abutment and pier scour was determined per the procedures described above in the Scour Analysis Section of this report. Per the CDOT Drainage Design Manual, neither riprap nor other linings are part of the calculation to determine the depth of abutment scour. Nor can riprap or lining be included in the model for the purpose of determining the extent by which riprap may eliminate scour. Riprap revetment is generally employed at the abutments as a countermeasure to protect the abutments.

Analysis for the proposed riprap at the abutment and pier was performed in accordance to the procedures outlined in FHWA HEC-23 Bridge Scour and Stream Instability Countermeasures: Experience, Selection, and Design Guidance, 3rd Edition. The FHWA Hydraulic Toolbox 4.0 software was used to size the riprap using the Riprap Analysis Calculator within the software. The calculator includes analysis for Abutments and Guide Banks structure types per the procedures in HEC-23. Input into the software was taken directly from the Flow Distribution Output of the HEC-RAS results at the pier and abutments of the proposed bridge. The recurrence interval used to size the armament is the 100-year storm.

Table 15 summarizes the input to the Riprap Analysis Calculator for riprap at the abutment. The input parameters for the abutment include the maximum channel velocity, overbank discharge and setback area.

Table 15: Abutment Riprap Analysis Input		
Parameter	**Left Abutment**	**Right Abutment**
Abutment Type	Spill-Through	Spill-Through
Set-Back Length	27.56 ft	22.80 ft
Average Channel Flow Depth	12.16 ft	12.16 ft
Flow Depth at Abutment Toe	8.45 ft	8.45 ft
Total Discharge	26,734 cfs	26,734 cfs
Overbank Discharge	819.66 cfs	763.92 cfs
Total Bridge Flow Area	2411.22 ft^2	2411.22 ft^2
Setback Area	142.95 ft^2	159.80 ft^2
Maximum Channel Velocity	16.40 ft/sec	16.40 ft/sec
Specific Gravity of Riprap	2.65	2.65

The results of the analysis indicate that a riprap size of D_{50} equal to 24.73-inches should be used at the abutments for scour protection. A 4-foot thick mat of D_{50} equal to 24-inch riprap is selected as the abutment scour protection and should extend a minimum of 16.90-feet from the toe of the abutment and 25.00-feet at the abutment approach.

Table 16 summarizes the input to the Riprap Analysis Calculator for riprap at the pier. The input parameters for the pier include the local velocity at the pier, contraction scour depth and parameters for the pier width and shape.

Table 16: Pier Riprap Analysis Input	
Parameter	**Pier**
Velocity Input Type	Local velocity near pier
Local Velocity near Pier (Maximum)	13.71 ft/sec
Pier Shape Factor	Round-nose pier
Pier Width	3.00 ft
Contraction Scour Depth	1.99 ft
Bed Form Depth	0.50 ft
Specific Gravity of Riprap	2.65

The results of the analysis indicate that a riprap size of D_{50} equal to 33.08-inches should be used at the pier for scour protection. HEC-23 recommends a riprap thickness of 3 x D_{50} at the pier; therefore, a 7.5-foot thick mat of D_{50} equal to 30-inch riprap is selected as the abutment pier protection and should extend a minimum of 6.0-feet around all sides of the pier.

The output results of the software for each abutment and pier are provided in Appendix H. Appendix H also includes the details showing the configuration of riprap at each of the abutments.

7.3 WATER QUALITY PROVISIONS

There are two distinct areas within this project site that will determine whether permanent water quality BMP's are necessary. For areas outside the ROW and under the bridge there are no impervious surfaces proposed and thus does not need permanent WQ BMP's. The remaining areas are within the proposed ROW of Lorson Boulevard. The west portion of the ROW includes streets/sidewalk and flows westward in curb/gutter to existing inlets at a low point in Lorson Boulevard west of Wando Drive. The inlets drain south to existing Pond G1/G2 where it is treated for water quality prior to discharge into Jimmy Camp Creek. Pond G1/G2 has been sized to treat/detain runoff from Lorson Bouelvard from this drainage area. The east portion of the ROW includes streets/sidewalk and flows eastward in curb/gutter until the street construct terminates at Station 52+00. In interim conditions the runoff will enter a temporary sediment basin which will capture sediment prior to discharging offsite. This condition could last up to two years. When Lorson Bouelvard is constructed to the east all the runoff in the ROW will flow east in curb/gutter and will be collected in inlets north of existing Pond C1 and will flow into the pond. Pond C1 has been sized to treat/detain runoff from Lorson Bouelvard from this drainage area.

8.0 LIST OF REFERENCES

1. ***El Paso County Drainage Criteria Manual***
   El Paso County, September 30, 1990
2. ***CDOT Drainage Design Manual***
   CDOT, April 2004
3. ***Jimmy Camp Creek Drainage Basin Planning Study***
   Development of Alternatives & Design of Selected Plan Report
   Kiowa Engineering Corporation, March 9, 2015
4. ***Flood Hazard Analyses Portions of Jimmy Camp Creek and Tributaries***
   El Paso County, Colorado
   U.S. Department of Agriculture, Soil Conservation Service, October 1975
5. ***Regional Regression Equations for Estimation***
   Of Natural Streamflow Statistics in Colorado
   Capesius, J.P., and Stephens, V.C.
   USGS, Scientific Investigations Report 2009–5136, 2009
6. ***HEC-RAS River Analysis System User's Manual***
   Version 5.0
   US Army Corps of Engineers, March 2016
7. ***Hydraulic Engineering Circular No. 18,***
   Evaluating Scour at Bridges, Fifth Edition
   FHWA, April 2012
8. ***Hydraulic Engineering Circular No. 23,***
   Bridge Scour and Stream Instability Countermeasures:
   Experience, Selection, and Design Guidance, Third Edition
   FHWA, September 2009
9. ***Subsurface Soil Investigation***
   Lorson Boulevard Bridge over Jimmy Camp Creek, El Paso County Colorado
   Rocky Mountain Group, April 3, 2017

SECTION 2: APPENDICES

A. Vicinity Maps

B. Flood Insurance Rate Map

C. Jimmy Camp Creek LOMR

D. Gradation of Streambed Samples

E. HEC-RAS Layout and Floodplain Delineation

F. HEC-RAS Profile Tables (Existing and Proposed)

G. HEC-RAS Scour Analysis Results

H. Bridge Armament Calculations and Details

I. HEC-RAS Model Cross Sections (Proposed)

J. HEC-RAS Repot

APPENDIX A

APPENDIX A – VICINITY MAPS

Lorson Boulevard Bridge Over Jimmy Camp Creek Vicinity Map

County:	El Paso
Latitude:	38°43’49” N
Longitude:	104°38’46” W
Township:	015 South
Range:	065 West
Section:	22, 23

0 1.5 3 6 Miles

1 in = 3 miles

Lorson Boulevard Bridge and Lorson Ranch Developement

County:	El Paso
Latitude:	38°43'49" N
Longitude:	104°38'46" W
Township:	015 South
Range:	065 West
Section:	22, 23

0 0.1 0.2 0.4 Miles

1 in = 0.2 miles

APPENDIX B

APPENDIX B – FLOOD INSURANCE RATE MAP

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

HM1 — Elevation Reference Mark

M2 — River Mile

97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:

MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET
500 0 500

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 957 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0957	F
EL PASO COUNTY, UNINCORPORATED AREAS	080059	0957	F
FOUNTAIN, CITY OF	080061	0957	F

MAP NUMBER
08041C0957 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

APPENDIX C

APPENDIX C – JIMMY CAMP CREEK LOMR

Federal Emergency Management Agency

Washington, D.C. 20472

MAY 07 2007

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Dennis Hisey
Chairman, El Paso County
Board of Commissioners
27 East Vermijo Avenue
Colorado Springs, CO 80903

IN REPLY REFER TO:
Case No.: 06-08-B643P
Follows Conditional
Case No.: 05-08-0286R
Community Name: El Paso County, CO
Community No.: 080059
Effective Date of This Revision: AUG 29 2007

Dear Mr. Hisey:

The Flood Insurance Study report and Flood Insurance Rate Map for your community have been revised by this Letter of Map Revision (LOMR). Please use the enclosed annotated map panel(s) revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals issued in your community.

Additional documents are enclosed which provide information regarding this LOMR. Please see the List of Enclosures below to determine which documents are included. Other attachments specific to this request may be included as referenced in the Determination Document. If you have any questions regarding floodplain management regulations for your community or the National Flood Insurance Program (NFIP) in general, please contact the Consultation Coordination Officer for your community. If you have any technical questions regarding this LOMR, please contact the Director, Federal Insurance and Mitigation Division of the Department of Homeland Security's Federal Emergency Management Agency (FEMA) in Denver, Colorado, at (303) 235-4830, or the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at http://www.fema.gov/nfip.

Sincerely,

Patrick F. Sacbibit, P.E., CFM, Project Engineer
Engineering Management Section
Mitigation Division

For: William R. Blanton Jr., CFM, Chief
Engineering Management Section
Mitigation Division

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map
Annotated Flood Insurance Study Report

cc: The Honorable Lionel Rivera
Mayor, City of Colorado Springs

The Honorable Jeri Howells
Mayor, City of Fountain

[redacted]
Pentacor Engineering LLC

[redacted]
Landhuis Company

Mr. Phil Wuthier, P.E., CFM
Regional Floodplain Administrator
Pikes Peak Regional Building Department

 | Issue Date: MAY 07 2007 | Effective Date: AUG 29 2007 | Case No.: 06-08-B643P | LOMR-APP

Follows Conditional Case No.: 05-08-0286R

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	El Paso County Colorado (Unincorporated Areas)	CHANNEL RELOCATION	FLOODWAY HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 080059		
IDENTIFIER	Lorson Ranch Development – Jimmy Camp Creek	APPROXIMATE LATITUDE & LONGITUDE: 38.690, -104.686 SOURCE: USGS QUADRANGLE DATUM: NAD 27	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 08041C0957 F DATE: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 23, 1999 PROFILE(S): 107P and 108P FLOODWAY DATA TABLE: 5

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

Jimmy Camp Creek – from approximately 3,240 feet downstream to approximately 3,650 feet upstream of Fontaine Boulevard

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Jimmy Camp Creek	Zone AE	Zone AE	YES	YES
	Zone X (shaded)	Zone X (shaded)	YES	YES
	Floodway	Floodway	YES	YES
	BFEs*	BFEs	YES	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Patrick F. Sacbibit, P.E., CFM, Project Engineer
Engineering Management Section
Mitigation Division

109770 10.3.1.0608B643 102-I-A-C

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 080060 **Name:** City of Colorado Springs, Colorado

AFFECTED MAP PANELS			AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT
TYPE: FIRM	NO.: 08041C0957 F	DATE: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 23, 1999 PROFILE(S): 108P and 109P FLOODWAY DATA TABLE: 5

CID Number: 080061 **Name:** City of Fountain, Colorado

AFFECTED MAP PANELS			AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT
TYPE: FIRM	NO.: 08041C0957 F	DATE: March 17, 1997	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 23, 1999 PROFILE(S): 107P FLOODWAY DATA TABLE: 5

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Patrick F. Sacbibit, P.E., CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

We provide the floodway designation to your community as a tool to regulate floodplain development. Therefore, the floodway revision we have described in this letter, while acceptable to us, must also be acceptable to your community and adopted by appropriate community action, as specified in Paragraph 60.3(d) of the NFIP regulations.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Patrick F. Sacbibit, P.E., CFM, Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Jeanine D. Petterson
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267
(303) 235-4830

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

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Engineering Management Section
Mitigation Division

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

PUBLIC NOTIFICATION

FLOODING SOURCE	LOCATION OF REFERENCED ELEVATION	BFE (FEET NGVD 29)		MAP PANEL NUMBER(S)
		EFFECTIVE	REVISED	
Jimmy Camp Creek	Approximately 2,000 feet downstream of Fontaine Boulevard	5,693	5,692	08041C0957 F
	Approximately 2,500 feet upstream of Fontaine Boulevard	5,726	5,723	08041C0957 F

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. This revision is effective as of the date of this letter. However, until the 90-day period has elapsed, the revised BFEs presented in this LOMR may be changed.

A notice of changes will be published in the *Federal Register*. This information also will be published in your local newspaper on or about the dates listed below.

LOCAL NEWSPAPER Name: *El Paso County News*
Dates: 05/23/2007 05/30/2007

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMR Depot, 3601 Eisenhower Avenue, Alexandria, VA 22304. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Patrick F. Sacbibit, P.E., CFM, Project Engineer
Engineering Management Section
Mitigation Division

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Jimmy Camp Creek (Cont'd)								
AA	25,770	180	1,464	9.9	5,632.5	5,632.5	5,633.1	0.6
AB	27,710	300	2,552	5.6	5,641.1	5,641.1	5,641.5	0.4
AC	30,850	140	926	15.4	5,652.4	5,652.4	5,652.4	0.0
AD	31,610	220	1,367	10.5	5,659.8	5,659.8	5,659.9	0.1
AE	33,590	570	2,391	5.9	5,668.8	5,668.8	5,669.4	0.6
AF	34,870	450	1,890	6.8	5,674.5	5,674.5	5,674.5	0.0
AG	35,090	650	3,215	4.0	5,675.6	5,675.6	5,675.6	0.0
AH	36,070	200	1,109	11.6	5,678.9	5,678.9	5,678.9	0.0
AI	37,850	380	2,497	5.2	5,688.0	5,688.0	5,688.5	0.5
AJ	39,710	293	1,538	8.4	5,695.1	5,695.1	5,695.2	0.1
AK	41,060	274	1,481	8.7	5,704.7	5,704.7	5,704.7	0.0
AL	42,525	290	1,333	9.5	5,714.2	5,714.2	5,714.2	0.0
AM	43,890	445	1,454	8.7	5,729.6	5,729.6	5,729.7	0.1
AN	47,160	225	1,218	10.3	5,741.7	5,741.7	5,741.9	0.2
AO	48,820	440	1,455	8.1	5,753.9	5,753.9	5,754.6	0.7
AP	49,960	340	1,590	7.4	5,762.4	5,762.4	5,762.6	0.2
AQ	51,500	252	1,222	9.7	5,772.9	5,772.9	5,772.9	0.0
AR	53,060	646	2,265	5.2	5,785.1	5,785.1	5,786.1	1.0
AS	54,660	160	878	13.4	5,803.1	5,803.1	5,803.1	0.0
AT	56,750	320	1,466	7.8	5,823.3	5,823.3	5,823.5	0.2
AU	57,440	390	1,168	9.2	5,830.2	5,830.2	5,830.3	0.1
AV	58,240	140	711	10.4	5,839.0	5,839.0	5,839.2	0.2
AW	59,460	110	648	11.0	5,849.0	5,849.0	5,849.0	0.0
AX	60,580	150	656	10.8	5,859.6	5,859.6	5,859.7	0.1
AY	61,260	170	686	10.3	5,867.0	5,867.0	5,867.0	0.0
AZ	61,390	150	757	9.4	5,867.5	5,867.5	5,868.3	0.8

REVISED DATA

[1]Feet Above Confluence With Fountain Creek

REVISED TO REFLECT LOMR EFFECTIVE AUG 2 9 2007

TABLE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

FLOODWAY DATA

JIMMY CAMP CREEK

FLOOD PROFILES

JIMMY CAMP CREEK

REVISED TO REFLECT LOMR EFFECTIVE AUG 29 2007

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

JIMMY CAMP CREEK

REVISED TO REFLECT LOMR EFFECTIVE AUG 29 2007

FEDERAL EMERGENCY MANAGEMENT AGENCY

EL PASO COUNTY, CO
AND INCORPORATED AREAS

108P

ZONE X
5735
Jimmy
Camp
Creek
ZONE X
ZONE X
ZONE X
CITY OF COLORADO SPRINGS
080060
AM
ZONE AE
5730
5728
5726
ZONE X
AM
CITY OF COLORADO SPRINGS
EL PASO COUNTY
CORPORATE LIMITS
5724
5722
5720
5717
EL PASO COUNTY
UNINCORPORATED AREAS
080059
15
14
AL
5715
AL
REVISED AREA
ROAD
5713
5711
ZONE X
ZONE AE
5709
MARKSHEFFEL
5707
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 15 SOUTH, RANGE 65 WEST.
AK
5704
FONTAINE
BOULEVARD
5702
Jimmy
Camp
Creek
5700
ZONE X
5698
AJ
5696
ZONE AE
5694
CITY OF FOUNTAIN
080061
5693
ZONE X
ZONE AE
5693
5692
5690
East
Tributary
CITY OF FOUNTAIN
EL PASO COUNTY
5691
ZONE X
AI
5690
5687
Creek
5689
MARKSHEFFEL ROAD
22
23
5689
C
5686
ZONE AE
SAND TRAP DR
PENN CROSS PL
5685
Camp
5685
ZONE AE
Jimmy
CITY OF FOUNTAIN
080061
CITY OF FOUNTAIN
EL PASO COUNTY
ROAD
RIDGE
POE ANNUA ST
BLUEGRASS PLACE
CORPORATE LIMITS
5682
ZONE X
AH
5680
5679
A
B
ZONE X
5683
ZONE X
Legend
1% annual chance (100-Year) Floodplain
1% annual chance (100-Year) Floodway
0.2% annual chance (500-Year) Floodplain
APPROXIMATE SCALE IN FEET
500 0 500
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO
AND INCORPORATED AREAS
PANEL 957 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)
CONTAINS:
COMMUNITY NUMBER PANEL SUFFIX
COLORADO SPRINGS, CITY OF 080060 0957 F
EL PASO COUNTY, UNINCORPORATED AREAS 080059 0957 F
FOUNTAIN, CITY OF 080061 0957 F
REVISED TO REFLECT LOMR EFFECTIVE AUG 29 2007
MAP NUMBER
08041C0957 F
EFFECTIVE DATE:
MARCH 17, 1997
Federal Emergency Management Agency

APPENDIX D

APPENDIX D – GRADATION OF STREAMBED SAMPLES

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI	Cc	Cu
●	AB-3	44.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	2.0	25.1
⊠	AB-3	54.0	LEAN CLAY with SAND(CL)	33	14	19		
▲	AB-3	59.0	SANDY LEAN CLAY(CL)	34	14	20		
★	CP-2	4.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP	0.9	4.4
⊙	CP-2	9.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP	0.9	4.2

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	AB-3	44.0	14.1	75.2	10.7	
⊠	AB-3	54.0	0.0	27.8	72.2	
▲	AB-3	59.0	0.5	33.1	66.4	
★	CP-2	4.0	0.3	93.5	6.1	
⊙	CP-2	9.0	0.3	94.4	5.4	

Colorado Springs: (Corporate Office)
2910 Austin Bluffs Parkway
Colorado Spings, CO 80918
Voice (719) 548-0600
Fax (719) 548-0223

Structural • Geotechnical
RMG ENGINEERS

SOIL CLASSIFICATION DATA

JOB No. 155271

FIGURE No. 12

DATE 4/3/17

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI	Cc	Cu
●	CP-2	14.0	SILTY SAND(SM)	NP	NP	NP		
⊠	CP-2	19.0	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.7	9.1
▲	CP-2	29.0	WELL-GRADED SAND with SILT and GRAVEL(SW-SM)	NP	NP	NP	2.6	47.1
★	CP-2	39.0	SILTY GRAVEL with SAND(GM)	NP	NP	NP		
⊙	CP-2	49.0	CLAYEY SAND(SC)	31	14	17		

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	CP-2	14.0	0.5	80.2	19.3	
⊠	CP-2	19.0	2.9	87.4	9.8	
▲	CP-2	29.0	23.6	65.0	11.3	
★	CP-2	39.0	51.9	35.3	12.8	
⊙	CP-2	49.0	0.0	50.6	49.4	

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Colorado Spings, CO 80918
Voice (719) 548-0600
Fax (719) 548-0223

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RMG ENGINEERS

SOIL CLASSIFICATION DATA

JOB No. 155271

FIGURE No. 13

DATE 4/3/17

APPENDIX E

APPENDIX E – HEC-RAS LAYOUT AND FLOODPLAIN

Print Date:		Sheet Revisions	
File Name:		Date:	Comments	Init.
Horiz. Scale:	Vert. Scale: As Noted		
Unit Information	Unit Leader Initials		

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EMAIL: RichS@ceg1.com

As Constructed	
No Revisions:	
Revised:	
Void:	

LORSON BOULEVARD BRIDGE OVER JIMMY CAMP CREEK

BRIDGE HYDRAULICS LAYOUT
OVERALL HEC-RAS LAYOUT

Designer:	CJB	Structure Numbers	
Detailer:	CJB		
Sheet Subset:		Subset Sheets:	

Project No./Code
–
–
Sheet Number

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5015
5138
5148
5085
5221
5236
5271
5300
5355
EX. IRRIGATION CHANNEL
WEST ABUTMENT
STA. 13+66.92 (0.00',)
ABUTMENT GRADING
LORSON BRIDGE
HCL CHANNEL ALIGNMENT
FLOODWAY LIMITS (PROPOSED)
FLOODWAY LIMITS (EXISTING)
JIMMY CAMP CREEK
8.5
31.5
31.5
8.5
STA: 14+93.92 LORSON BLVD =
STA: 51+79.39 JIMMY CAMP CREEK LOMR
50+00
55+00
60+00
LOMR SECT 134.4 (EXISTING)
LOMR SECT 136.8 (EXISTING)
STA. 16+20.95 (0.00',)
EAST ABUTMENT
LORSON BOULEVARD
FLOODWAY LIMITS (PROPOSED)
FLOODWAY LIMITS (EXISTING)

LEGEND:

- HEC-RAS SECTION
- BRIDGE/CULVERT
- CHANNEL CENTERLINE
- CHANNEL BANKS
- FLOODPLAIN AREA (100-YEAR)
- FLOODPLAIN AREA (500-YEAR)

NOTES:

- CHANNEL GEOMETRY FROM LOMR OF JIMMY CAMP CREEK, EFFECTIVE DATE MARCH 29, 2007
- PROJECTION:
  LOCAL COORDINATE SYSTEM
  NGVD29 U.S. SURVEY FOOT
- FLOODPLAIN LIMITS SHOWN ON THE PLAN ARE DELINEATED FROM HYDRAULIC ANALYSIS PREPARED FOR THE PROPOSED LORSON BOULEVARD BRIDGE, DATED APRIL 26, 2017
- EXISTING AND PROPOSED FLOODPLAIN LIMITS DELINEATED FROM UPDATED TOPO DATA GENERATED FOR LORSON BRIDGE DESIGN.
- 1-FOOT CONTOUR INTERVALS

0 50 100
SCALE: 1" = 100'

Print Date:	Sheet Revisions				As Constructed	LORSON BOULEVARD BRIDGE OVER JIMMY CAMP CREEK	Project No./Code
File Name:	Date:	Comments	Init.		No Revisions:	BRIDGE HYDRAULICS LAYOUT 100-YEAR FLOODWAY	–
Horiz. Scale: Vert. Scale: As Noted					Revised:	Designer: CJB Structure Numbers	–
Unit Information Unit Leader Initials					Void:	Detailer: CJB	Sheet Number
						Sheet Subset: Subset Sheets:	

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5015
5138
5148
5085
5221
5236
5271
5300
5355

EX. IRRIGATION CHANNEL

WEST ABUTMENT

STA. 13+66.92 (0.00',)

100-YEAR FLOODPLAIN LIMITS (PROPOSED)

100-YEAR FLOODPLAIN LIMITS (DBPS)(EXISTING)

ABUTMENT GRADING
LORSON BRIDGE
HCL CHANNEL ALIGNMENT

8.5
31.5
31.5
8.5

JIMMY CAMP CREEK

STA: 14+93.92 LORSON BLVD =
STA: 51+79.39 JIMMY CAMP CREEK LOMR

50+00
55+00
60+00

STA. 16+20.95 (0.00',)

EAST ABUTMENT

LORSON BOULEVARD

LEGEND:

- HEC-RAS SECTION
- BRIDGE/CULVERT
- CHANNEL CENTERLINE
- CHANNEL BANKS
- FLOODPLAIN AREA (100-YEAR)
- FLOODPLAIN AREA (500-YEAR)

NOTES:

- CHANNEL GEOMETRY FROM LOMR OF JIMMY CAMP CREEK, EFFECTIVE DATE MARCH 29, 2007
- PROJECTION:
  LOCAL COORDINATE SYSTEM
  NGVD29 U.S. SURVEY FOOT
- FLOODPLAIN LIMITS SHOWN ON THE PLAN ARE DELINEATED FROM HYDRAULIC ANALYSIS PREPARED FOR THE PROPOSED LORSON BOULEVARD BRIDGE, DATED APRIL 25, 2017
- 1-FOOT CONTOUR INTERVALS

0 50 100
SCALE: 1" = 100'

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Print Date:			
File Name:			
Horiz. Scale:	Vert. Scale: As Noted		
Unit Information	Unit Leader Initials		

Sheet Revisions

Date:	Comments	Init.

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FAX: 719.570.1106
CONTACT: RICHARD L. SCHINDLER, P.E.
EMAIL: RichS@cegl.com

As Constructed

No Revisions:	
Revised:	
Void:	

LORSON BOULEVARD BRIDGE OVER JIMMY CAMP CREEK

BRIDGE HYDRAULICS LAYOUT 100-YEAR (DBPS)

Designer:	CJB	Structure Numbers	
Detailer:	CJB		
Sheet Subset:		Subset Sheets:	

Project No./Code

–

–

Sheet Number

APPENDIX F

APPENDIX F – HEC-RAS PROFILE TABLES

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: FEMA 100-Year

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	160	FEMA 100-Year	Lorson (Proposed)	11800.00	5756.70	5762.40	5761.52	5763.38	0.007982	9.49	1683.50	464.37	0.76
Lorson Ranch	160	FEMA 100-Year	Lorson (Existing)	11800.00	5756.70	5762.40	5761.52	5763.38	0.007982	9.49	1683.50	464.37	0.76
Lorson Ranch	156	FEMA 100-Year	Lorson (Proposed)	11800.00	5748.70	5753.99	5753.12	5754.84	0.007044	8.01	1724.41	508.73	0.70
Lorson Ranch	156	FEMA 100-Year	Lorson (Existing)	11800.00	5748.70	5753.99	5753.12	5754.84	0.007044	8.01	1724.41	508.73	0.70
Lorson Ranch	155.2*	FEMA 100-Year	Lorson (Proposed)	11800.00	5745.96	5751.65	5750.80	5752.61	0.006778	8.53	1623.16	413.30	0.70
Lorson Ranch	155.2*	FEMA 100-Year	Lorson (Existing)	11800.00	5745.96	5751.65	5750.80	5752.61	0.006778	8.53	1623.16	413.30	0.70
Lorson Ranch	154.4*	FEMA 100-Year	Lorson (Proposed)	11800.00	5743.22	5749.34	5748.44	5750.40	0.006812	8.72	1559.89	435.06	0.70
Lorson Ranch	154.4*	FEMA 100-Year	Lorson (Existing)	11800.00	5743.22	5749.34	5748.44	5750.40	0.006812	8.72	1559.89	435.06	0.70
Lorson Ranch	153.6*	FEMA 100-Year	Lorson (Proposed)	11800.00	5740.48	5746.59	5746.12	5747.93	0.008328	9.74	1450.69	472.48	0.78
Lorson Ranch	153.6*	FEMA 100-Year	Lorson (Existing)	11800.00	5740.48	5746.59	5746.12	5747.93	0.008328	9.74	1450.69	472.48	0.78
Lorson Ranch	152.8*	FEMA 100-Year	Lorson (Proposed)	11800.00	5737.74	5744.24	5743.45	5745.46	0.006716	9.41	1586.87	476.85	0.71
Lorson Ranch	152.8*	FEMA 100-Year	Lorson (Existing)	11800.00	5737.74	5744.24	5743.45	5745.46	0.006716	9.41	1586.87	476.85	0.71
Lorson Ranch	152	FEMA 100-Year	Lorson (Proposed)	12600.00	5735.00	5741.67	5741.22	5743.16	0.007280	10.36	1495.83	374.33	0.75
Lorson Ranch	152	FEMA 100-Year	Lorson (Existing)	12600.00	5735.00	5741.67	5741.22	5743.16	0.007280	10.36	1495.83	374.33	0.75
Lorson Ranch	151.333*	FEMA 100-Year	Lorson (Proposed)	12600.00	5733.17	5739.58	5739.36	5741.06	0.005101	10.16	1561.20	491.28	0.81
Lorson Ranch	151.333*	FEMA 100-Year	Lorson (Existing)	12600.00	5733.17	5739.58	5739.36	5741.06	0.005101	10.16	1561.20	491.28	0.81
Lorson Ranch	150.666*	FEMA 100-Year	Lorson (Proposed)	12600.00	5731.33	5737.69	5737.69	5739.31	0.004969	10.71	1632.07	609.44	0.81
Lorson Ranch	150.666*	FEMA 100-Year	Lorson (Existing)	12600.00	5731.33	5737.69	5737.69	5739.31	0.004969	10.71	1632.07	609.44	0.81
Lorson Ranch	150.*	FEMA 100-Year	Lorson (Proposed)	12600.00	5729.50	5735.95	5735.95	5737.44	0.004553	10.28	1761.70	750.53	0.78
Lorson Ranch	150.*	FEMA 100-Year	Lorson (Existing)	12600.00	5729.50	5735.95	5735.95	5737.44	0.004553	10.28	1761.70	750.53	0.78
Lorson Ranch	149.333*	FEMA 100-Year	Lorson (Proposed)	12600.00	5727.67	5734.23	5734.23	5735.59	0.004132	9.86	1937.78	1000.97	0.74
Lorson Ranch	149.333*	FEMA 100-Year	Lorson (Existing)	12600.00	5727.67	5734.23	5734.23	5735.59	0.004132	9.86	1937.78	1000.97	0.74
Lorson Ranch	148.666*	FEMA 100-Year	Lorson (Proposed)	12600.00	5725.83	5732.39	5732.39	5733.53	0.003671	9.23	2353.60	1405.74	0.70
Lorson Ranch	148.666*	FEMA 100-Year	Lorson (Existing)	12600.00	5725.83	5732.39	5732.39	5733.53	0.003671	9.23	2353.60	1405.74	0.70
Lorson Ranch	148	FEMA 100-Year	Lorson (Proposed)	12600.00	5724.00	5730.14	5729.14	5730.60	0.027012	4.22	2514.38	1748.50	0.34
Lorson Ranch	148	FEMA 100-Year	Lorson (Existing)	12600.00	5724.00	5730.14	5729.14	5730.60	0.027012	4.22	2514.38	1748.50	0.34
Lorson Ranch	147.992*	FEMA 100-Year	Lorson (Proposed)	12600.00	5723.54	5729.80	5728.81	5730.27	0.028233	4.37	2493.93	1631.83	0.34
Lorson Ranch	147.992*	FEMA 100-Year	Lorson (Existing)	12600.00	5723.54	5729.80	5728.81	5730.27	0.028233	4.37	2493.93	1631.83	0.34
Lorson Ranch	147.985*	FEMA 100-Year	Lorson (Proposed)	12600.00	5723.08	5729.46	5728.47	5729.94	0.028598	4.47	2484.30	1476.93	0.35
Lorson Ranch	147.985*	FEMA 100-Year	Lorson (Existing)	12600.00	5723.08	5729.46	5728.47	5729.94	0.028598	4.47	2484.30	1476.93	0.35
Lorson Ranch	147.978*	FEMA 100-Year	Lorson (Proposed)	12600.00	5722.62	5729.15	5728.22	5729.61	0.027791	4.48	2496.55	1329.07	0.34
Lorson Ranch	147.978*	FEMA 100-Year	Lorson (Existing)	12600.00	5722.62	5729.15	5728.22	5729.61	0.027791	4.48	2496.55	1329.07	0.34
Lorson Ranch	147.971*	FEMA 100-Year	Lorson (Proposed)	12600.00	5722.16	5728.86	5728.16	5729.30	0.025850	4.41	2530.67	1238.21	0.33
Lorson Ranch	147.971*	FEMA 100-Year	Lorson (Existing)	12600.00	5722.16	5728.86	5728.16	5729.30	0.025850	4.41	2530.67	1238.21	0.33
Lorson Ranch	147.964*	FEMA 100-Year	Lorson (Proposed)	12600.00	5721.70	5728.61	5727.75	5729.02	0.023097	4.27	2580.58	1151.41	0.32
Lorson Ranch	147.964*	FEMA 100-Year	Lorson (Existing)	12600.00	5721.70	5728.61	5727.75	5729.02	0.023097	4.27	2580.58	1151.41	0.32
Lorson Ranch	147.957*	FEMA 100-Year	Lorson (Proposed)	12600.00	5721.24	5728.40	5727.32	5728.78	0.020040	4.09	2638.88	1065.36	0.30
Lorson Ranch	147.957*	FEMA 100-Year	Lorson (Existing)	12600.00	5721.24	5728.40	5727.32	5728.78	0.020040	4.09	2638.88	1065.36	0.30
Lorson Ranch	147.95*	FEMA 100-Year	Lorson (Proposed)	12600.00	5720.78	5728.21	5726.91	5728.58	0.017286	3.92	2689.66	980.23	0.28
Lorson Ranch	147.95*	FEMA 100-Year	Lorson (Existing)	12600.00	5720.78	5728.21	5726.91	5728.58	0.017286	3.92	2689.66	980.23	0.28
Lorson Ranch	147.942*	FEMA 100-Year	Lorson (Proposed)	12600.00	5720.32	5728.05	5726.51	5728.41	0.015186	3.79	2715.12	894.69	0.26
Lorson Ranch	147.942*	FEMA 100-Year	Lorson (Existing)	12600.00	5720.32	5728.05	5726.51	5728.41	0.015186	3.79	2715.12	894.69	0.26
Lorson Ranch	147.935*	FEMA 100-Year	Lorson (Proposed)	12600.00	5719.86	5727.90	5726.11	5728.26	0.013864	3.74	2700.35	808.74	0.25
Lorson Ranch	147.935*	FEMA 100-Year	Lorson (Existing)	12600.00	5719.86	5727.90	5726.11	5728.26	0.013864	3.74	2700.35	808.74	0.25
Lorson Ranch	147.928*	FEMA 100-Year	Lorson (Proposed)	12600.00	5719.40	5727.73	5725.73	5728.12	0.013425	3.79	2631.10	721.80	0.25
Lorson Ranch	147.928*	FEMA 100-Year	Lorson (Existing)	12600.00	5719.40	5727.73	5725.73	5728.12	0.013425	3.79	2631.10	721.80	0.25
Lorson Ranch	147.921*	FEMA 100-Year	Lorson (Proposed)	12600.00	5718.94	5727.54	5725.37	5727.98	0.014002	3.98	2500.53	634.33	0.26
Lorson Ranch	147.921*	FEMA 100-Year	Lorson (Existing)	12600.00	5718.94	5727.54	5725.37	5727.98	0.014002	3.98	2500.53	634.33	0.26
Lorson Ranch	147.914*	FEMA 100-Year	Lorson (Proposed)	12600.00	5718.48	5727.30	5725.03	5727.82	0.016222	4.38	2298.54	546.84	0.28
Lorson Ranch	147.914*	FEMA 100-Year	Lorson (Existing)	12600.00	5718.48	5727.30	5725.03	5727.82	0.016222	4.38	2298.54	546.84	0.28
Lorson Ranch	147.907*	FEMA 100-Year	Lorson (Proposed)	12600.00	5718.02	5726.93	5724.79	5727.62	0.022163	5.17	2008.01	458.88	0.33
Lorson Ranch	147.907*	FEMA 100-Year	Lorson (Existing)	12600.00	5718.02	5726.93	5724.79	5727.62	0.022163	5.17	2008.01	458.88	0.33
Lorson Ranch	147.9	FEMA 100-Year	Lorson (Proposed)	12600.00	5717.56	5726.45	5724.65	5727.33	0.035820	7.53	1674.35	380.82	0.63
Lorson Ranch	147.9	FEMA 100-Year	Lorson (Existing)	12600.00	5717.56	5726.45	5724.65	5727.33	0.035820	7.53	1674.35	380.82	0.63
Lorson Ranch	147.8	FEMA 100-Year	Lorson (Proposed)	12600.00	5715.70	5725.24	5723.01	5726.15	0.013581	7.64	1649.17	294.65	0.57
Lorson Ranch	147.8	FEMA 100-Year	Lorson (Existing)	12600.00	5715.70	5725.24	5723.01	5726.15	0.013581	7.64	1649.17	294.65	0.57
Lorson Ranch	147.7	FEMA 100-Year	Lorson (Proposed)	12600.00	5715.60	5724.95	5722.07	5725.68	0.008556	6.84	1842.00	292.24	0.48
Lorson Ranch	147.7	FEMA 100-Year	Lorson (Existing)	12600.00	5715.60	5724.95	5722.07	5725.68	0.008556	6.84	1842.00	292.24	0.48
Lorson Ranch	147.6	FEMA 100-Year	Lorson (Proposed)	12600.00	5715.00	5724.04	5721.36	5724.79	0.009390	6.94	1815.12	298.00	0.50
Lorson Ranch	147.6	FEMA 100-Year	Lorson (Existing)	12600.00	5715.00	5724.04	5721.36	5724.79	0.009390	6.94	1815.12	298.00	0.50
Lorson Ranch	147.2	FEMA 100-Year	Lorson (Proposed)	12600.00	5713.34	5721.64	5719.82	5722.65	0.013940	8.04	1566.36	283.13	0.60
Lorson Ranch	147.2	FEMA 100-Year	Lorson (Existing)	12600.00	5713.34	5721.64	5719.82	5722.65	0.013940	8.04	1566.36	283.13	0.60

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: FEMA 100-Year (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	146.3	FEMA 100-Year	Lorson (Proposed)	12600.00	5712.29	5719.25	5719.25	5721.41	0.022964	11.80	1068.11	253.05	1.01
Lorson Ranch	146.3	FEMA 100-Year	Lorson (Existing)	12600.00	5712.29	5719.25	5719.25	5721.41	0.022964	11.80	1068.11	253.05	1.01
Lorson Ranch	146.1	FEMA 100-Year	Lorson (Proposed)	12600.00	5711.71	5719.37	5717.98	5720.54	0.005352	8.67	1452.93	288.26	0.68
Lorson Ranch	146.1	FEMA 100-Year	Lorson (Existing)	12600.00	5711.71	5719.37	5717.98	5720.54	0.005352	8.67	1452.93	288.26	0.68
Lorson Ranch	145.6	FEMA 100-Year	Lorson (Proposed)	12600.00	5710.99	5717.34	5717.20	5719.31	0.021211	11.26	1119.29	263.55	0.96
Lorson Ranch	145.6	FEMA 100-Year	Lorson (Existing)	12600.00	5710.99	5717.34	5717.20	5719.31	0.021211	11.26	1119.29	263.55	0.96
Lorson Ranch	144.7	FEMA 100-Year	Lorson (Proposed)	12600.00	5708.87	5717.48	5715.24	5718.36	0.006471	7.53	1673.17	292.83	0.56
Lorson Ranch	144.7	FEMA 100-Year	Lorson (Existing)	12600.00	5708.87	5717.48	5715.24	5718.36	0.006471	7.53	1673.17	292.83	0.56
Lorson Ranch	144.6	FEMA 100-Year	Lorson (Proposed)	12600.00	5709.16	5716.61	5715.33	5717.77	0.009840	8.65	1456.26	295.90	0.69
Lorson Ranch	144.6	FEMA 100-Year	Lorson (Existing)	12600.00	5709.16	5716.61	5715.33	5717.77	0.009840	8.65	1456.26	295.90	0.69
Lorson Ranch	144.4	FEMA 100-Year	Lorson (Proposed)	12600.00	5707.20	5715.66	5714.21	5716.81	0.005147	8.62	1462.34	288.95	0.68
Lorson Ranch	144.4	FEMA 100-Year	Lorson (Existing)	12600.00	5707.20	5715.66	5714.21	5716.81	0.005147	8.62	1462.34	288.95	0.68
Lorson Ranch	144	FEMA 100-Year	Lorson (Proposed)	12600.00	5706.95	5713.77	5713.45	5715.48	0.010587	10.49	1200.81	282.93	0.90
Lorson Ranch	144	FEMA 100-Year	Lorson (Existing)	12600.00	5706.95	5713.77	5713.45	5715.48	0.010587	10.49	1200.81	282.93	0.90
Lorson Ranch	143.2	FEMA 100-Year	Lorson (Proposed)	12600.00	5704.54	5713.90	5711.49	5714.73	0.010752	7.31	1722.82	295.35	0.53
Lorson Ranch	143.2	FEMA 100-Year	Lorson (Existing)	12600.00	5704.54	5713.90	5711.49	5714.73	0.010752	7.31	1722.82	295.35	0.53
Lorson Ranch	142.4	FEMA 100-Year	Lorson (Proposed)	12600.00	5703.00	5711.26	5709.34	5712.19	0.003907	7.72	1631.16	295.22	0.58
Lorson Ranch	142.4	FEMA 100-Year	Lorson (Existing)	12600.00	5703.00	5711.26	5709.34	5712.19	0.003907	7.72	1631.16	295.22	0.58
Lorson Ranch	141.6	FEMA 100-Year	Lorson (Proposed)	12900.00	5701.00	5709.41	5707.03	5710.25	0.003219	7.32	1761.13	296.58	0.53
Lorson Ranch	141.6	FEMA 100-Year	Lorson (Existing)	12900.00	5701.00	5709.41	5707.03	5710.25	0.003219	7.32	1761.13	296.58	0.53
Lorson Ranch	140.8	FEMA 100-Year	Lorson (Proposed)	12900.00	5698.38	5705.24	5704.53	5706.78	0.027579	9.96	1295.34	278.83	0.81
Lorson Ranch	140.8	FEMA 100-Year	Lorson (Existing)	12900.00	5698.38	5705.24	5704.53	5706.78	0.027579	9.96	1295.34	278.83	0.81
Lorson Ranch	140	FEMA 100-Year	Lorson (Proposed)	12900.00	5696.02	5704.66	5703.16	5705.84	0.018162	8.71	1480.40	273.97	0.66
Lorson Ranch	140	FEMA 100-Year	Lorson (Existing)	12900.00	5696.02	5704.66	5703.16	5705.84	0.018162	8.71	1480.40	273.97	0.66
Lorson Ranch	139.7	FEMA 100-Year	Lorson (Proposed)	12900.00	5695.16	5704.17	5702.06	5705.14	0.012765	7.90	1632.20	270.21	0.57
Lorson Ranch	139.7	FEMA 100-Year	Lorson (Existing)	12900.00	5695.16	5704.17	5702.06	5705.14	0.012765	7.90	1632.20	270.21	0.57
Lorson Ranch	139.3	FEMA 100-Year	Lorson (Proposed)	12900.00	5695.00	5702.81	5701.63	5704.22	0.006196	9.53	1352.98	255.38	0.73
Lorson Ranch	139.3	FEMA 100-Year	Lorson (Existing)	12900.00	5695.00	5702.81	5701.63	5704.22	0.006196	9.53	1352.98	255.38	0.73
Lorson Ranch	138.8			Bridge									
Lorson Ranch	138.3	FEMA 100-Year	Lorson (Proposed)	12900.00	5694.00	5701.94	5700.36	5703.08	0.004799	8.58	1504.34	278.66	0.65
Lorson Ranch	138.3	FEMA 100-Year	Lorson (Existing)	12900.00	5694.00	5701.94	5700.36	5703.08	0.004799	8.58	1504.34	278.66	0.65
Lorson Ranch	138	FEMA 100-Year	Lorson (Proposed)	12900.00	5692.18	5699.70	5698.88	5701.23	0.007276	9.92	1300.98	276.64	0.81
Lorson Ranch	138	FEMA 100-Year	Lorson (Existing)	12900.00	5692.18	5699.70	5698.88	5701.23	0.007272	9.91	1301.25	276.70	0.81
Lorson Ranch	137.6	FEMA 100-Year	Lorson (Proposed)	12900.00	5688.97	5697.79	5696.50	5698.98	0.005280	8.76	1473.15	290.41	0.69
Lorson Ranch	137.6	FEMA 100-Year	Lorson (Existing)	12900.00	5688.97	5697.83	5696.50	5699.00	0.005170	8.69	1484.22	291.08	0.68
Lorson Ranch	136.8	FEMA 100-Year	Lorson (Proposed)	12900.00	5687.60	5697.64	5695.49	5698.52	0.012054	7.53	1713.03	296.89	0.55
Lorson Ranch	136.8	FEMA 100-Year	Lorson (Existing)	12900.00	5687.60	5697.68	5695.49	5698.55	0.011763	7.47	1725.80	297.52	0.55
Lorson Ranch	136	FEMA 100-Year	Lorson (Proposed)	12900.00	5687.00	5695.62	5693.57	5696.54	0.003699	7.69	1678.16	296.90	0.57
Lorson Ranch	136	FEMA 100-Year	Lorson (Existing)	12900.00	5687.00	5695.20	5693.57	5696.27	0.004636	8.30	1554.10	293.29	0.64
Lorson Ranch	135.6	FEMA 100-Year	Lorson (Proposed)	12900.00	5685.38	5694.73	5691.97	5695.46	0.002594	6.89	1873.58	297.63	0.48
Lorson Ranch	135.6	FEMA 100-Year	Lorson (Existing)	12900.00	5685.38	5693.78	5691.96	5694.80	0.004161	8.09	1595.32	290.17	0.61
Lorson Ranch	135.55	FEMA 100-Year	Lorson (Proposed)	12900.00	5684.91	5694.60	5691.71	5695.31	0.002820	6.76	1907.21	298.82	0.47
Lorson Ranch	135.55	FEMA 100-Year	Lorson (Existing)	12900.00	5684.91	5693.52	5691.65	5694.54	0.005044	8.12	1588.21	292.74	0.61
Lorson Ranch	135.50	FEMA 100-Year	Lorson (Proposed)	12900.00	5684.89	5694.46	5691.70	5695.22	0.003089	6.99	1844.73	294.41	0.49
Lorson Ranch	135.50	FEMA 100-Year	Lorson (Existing)	12900.00	5684.89	5693.32	5691.60	5694.38	0.005409	8.28	1558.04	294.08	0.63
Lorson Ranch	135.47	FEMA 100-Year	Lorson (Proposed)	12900.00	5684.86	5694.10	5691.65	5695.07	0.003817	7.92	1628.25	251.46	0.55
Lorson Ranch	135.47	FEMA 100-Year	Lorson (Existing)	12900.00	5684.86	5693.15	5691.38	5694.19	0.005254	8.17	1578.04	297.01	0.63
Lorson Ranch	135.34	FEMA 100-Year	Lorson (Proposed)	12900.00	5684.19	5694.00	5691.43	5695.00	0.004813	8.05	1603.46	240.93	0.55
Lorson Ranch	135.34	FEMA 100-Year	Lorson (Existing)	12900.00	5684.19	5693.14	5691.17	5694.09	0.004615	7.81	1652.45	302.39	0.59
Lorson Ranch	135.3135			Bridge									
Lorson Ranch	135.29	FEMA 100-Year	Lorson (Proposed)	12900.00	5683.95	5692.50	5690.88	5693.93	0.007986	9.62	1341.08	225.09	0.69
Lorson Ranch	135.29	FEMA 100-Year	Lorson (Existing)	12900.00	5683.95	5692.80	5690.71	5693.71	0.004322	7.66	1685.04	302.36	0.57
Lorson Ranch	135.25	FEMA 100-Year	Lorson (Proposed)	12900.00	5683.93	5692.33	5690.82	5693.73	0.006482	9.49	1359.76	238.70	0.70
Lorson Ranch	135.25	FEMA 100-Year	Lorson (Existing)	12900.00	5683.93	5692.58	5690.69	5693.58	0.004911	8.02	1608.06	295.98	0.61
Lorson Ranch	135.14	FEMA 100-Year	Lorson (Proposed)	12900.00	5683.91	5692.21	5690.75	5693.53	0.006349	9.22	1399.72	253.13	0.69
Lorson Ranch	135.14	FEMA 100-Year	Lorson (Existing)	12900.00	5683.91	5692.36	5690.65	5693.43	0.005476	8.33	1549.24	292.62	0.64
Lorson Ranch	134.89	FEMA 100-Year	Lorson (Proposed)	12900.00	5683.00	5691.99	5690.18	5693.05	0.005244	8.25	1563.75	291.53	0.63
Lorson Ranch	134.89	FEMA 100-Year	Lorson (Existing)	12900.00	5683.00	5691.99	5690.18	5693.05	0.005244	8.25	1563.74	291.53	0.63
Lorson Ranch	134.8	FEMA 100-Year	Lorson (Proposed)	12900.00	5683.03	5691.28	5689.52	5692.31	0.004284	8.12	1588.14	289.88	0.61
Lorson Ranch	134.8	FEMA 100-Year	Lorson (Existing)	12900.00	5683.03	5691.28	5689.52	5692.31	0.004284	8.12	1588.14	289.88	0.61
Lorson Ranch	134.4	FEMA 100-Year	Lorson (Proposed)	12900.00	5682.00	5689.97	5688.18	5691.03	0.004424	8.24	1565.83	289.21	0.62
Lorson Ranch	134.4	FEMA 100-Year	Lorson (Existing)	12900.00	5682.00	5689.97	5688.18	5691.03	0.004424	8.24	1565.83	289.21	0.62

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: FEMA 100-Year (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	133.6	FEMA 100-Year	Lorson (Proposed)	12900.00	5680.06	5688.85	5686.38	5689.67	0.003035	7.28	1772.07	285.41	0.52
Lorson Ranch	133.6	FEMA 100-Year	Lorson (Existing)	12900.00	5680.06	5688.85	5686.38	5689.67	0.003035	7.28	1772.07	285.41	0.52
Lorson Ranch	132.8	FEMA 100-Year	Lorson (Proposed)	12900.00	5677.64	5688.85	5685.13	5689.47	0.006123	6.29	2051.68	277.93	0.41
Lorson Ranch	132.8	FEMA 100-Year	Lorson (Existing)	12900.00	5677.64	5688.85	5685.13	5689.47	0.006123	6.29	2051.68	277.93	0.41
Lorson Ranch	132.2	FEMA 100-Year	Lorson (Proposed)	12900.00	5675.48	5688.06	5685.74	5689.05	0.011392	7.97	1619.50	277.27	0.58
Lorson Ranch	132.2	FEMA 100-Year	Lorson (Existing)	12900.00	5675.48	5688.06	5685.74	5689.05	0.011392	7.97	1619.50	277.27	0.58
Lorson Ranch	132	FEMA 100-Year	Lorson (Proposed)	12900.00	5679.40	5687.95	5685.73	5688.51	0.002544	7.34	2808.09	648.12	0.46
Lorson Ranch	132	FEMA 100-Year	Lorson (Existing)	12900.00	5679.40	5687.95	5685.73	5688.51	0.002544	7.34	2808.09	648.12	0.46
Lorson Ranch	128	FEMA 100-Year	Lorson (Proposed)	12900.00	5670.60	5678.93	5678.93	5680.85	0.008286	12.94	1560.41	404.73	0.83
Lorson Ranch	128	FEMA 100-Year	Lorson (Existing)	12900.00	5670.60	5678.93	5678.93	5680.85	0.008286	12.94	1560.41	404.73	0.83
Lorson Ranch	124	FEMA 100-Year	Lorson (Proposed)	12900.00	5664.10	5675.38	5671.27	5675.50	0.000521	3.21	5296.81	1203.85	0.19
Lorson Ranch	124	FEMA 100-Year	Lorson (Existing)	12900.00	5664.10	5675.38	5671.27	5675.50	0.000521	3.21	5296.81	1203.85	0.19
Lorson Ranch	120.4	FEMA 100-Year	Lorson (Proposed)	12900.00	5664.10	5675.33	5671.46	5675.45	0.000536	3.25	5235.90	1195.46	0.19
Lorson Ranch	120.4	FEMA 100-Year	Lorson (Existing)	12900.00	5664.10	5675.33	5671.46	5675.45	0.000536	3.25	5235.90	1195.46	0.19

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: DBPS-2015_100

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	160	DBPS-2015_100	Lorson (Existing)	26734.00	5756.70	5764.94	5764.13	5766.64	0.010289	13.25	3347.05	969.76	0.91
Lorson Ranch	160	DBPS-2015_100	Lorson (Proposed)	26734.00	5756.70	5764.67	5764.06	5766.17	0.009191	12.24	3099.53	913.19	0.85
Lorson Ranch	156	DBPS-2015_100	Lorson (Existing)	26734.00	5748.70	5756.59	5755.39	5757.87	0.005872	10.10	3388.92	719.99	0.69
Lorson Ranch	156	DBPS-2015_100	Lorson (Proposed)	26734.00	5748.70	5756.54	5755.38	5757.82	0.005956	10.12	3350.12	711.91	0.69
Lorson Ranch	155.2*	DBPS-2015_100	Lorson (Existing)	26734.00	5745.96	5754.17	5753.25	5755.79	0.006920	11.49	2952.84	815.00	0.76
Lorson Ranch	155.2*	DBPS-2015_100	Lorson (Proposed)	26734.00	5745.96	5754.15	5753.25	5755.74	0.006841	11.40	2933.05	806.50	0.75
Lorson Ranch	154.4*	DBPS-2015_100	Lorson (Existing)	26734.00	5743.22	5751.78	5751.32	5753.51	0.007223	11.73	3091.88	812.04	0.77
Lorson Ranch	154.4*	DBPS-2015_100	Lorson (Proposed)	26734.00	5743.22	5751.63	5751.24	5753.41	0.007639	11.89	2973.35	780.98	0.79
Lorson Ranch	153.6*	DBPS-2015_100	Lorson (Existing)	26734.00	5740.48	5749.28	5749.28	5751.14	0.007548	12.28	3222.40	846.77	0.79
Lorson Ranch	153.6*	DBPS-2015_100	Lorson (Proposed)	26734.00	5740.48	5748.96	5748.82	5750.87	0.008257	12.48	2955.55	819.93	0.82
Lorson Ranch	152.8*	DBPS-2015_100	Lorson (Existing)	26734.00	5737.74	5747.37	5746.32	5748.77	0.005055	10.91	3448.29	616.57	0.66
Lorson Ranch	152.8*	DBPS-2015_100	Lorson (Proposed)	26734.00	5737.74	5747.35	5746.16	5748.71	0.004946	10.77	3437.15	616.46	0.65
Lorson Ranch	152	DBPS-2015_100	Lorson (Existing)	26734.00	5735.00	5744.12	5743.71	5746.61	0.008526	13.88	2420.53	379.63	0.85
Lorson Ranch	152	DBPS-2015_100	Lorson (Proposed)	26734.00	5735.00	5744.09	5743.64	5746.57	0.008562	13.88	2408.48	379.46	0.85
Lorson Ranch	151.333*	DBPS-2015_100	Lorson (Existing)	26734.00	5733.17	5741.69	5741.58	5744.18	0.005851	13.69	2603.04	504.06	0.92
Lorson Ranch	151.333*	DBPS-2015_100	Lorson (Proposed)	26734.00	5733.17	5741.68	5741.51	5744.14	0.005809	13.64	2599.35	503.96	0.91
Lorson Ranch	150.666*	DBPS-2015_100	Lorson (Existing)	26734.00	5731.33	5739.86	5739.86	5742.20	0.005280	13.80	2995.72	656.90	0.89
Lorson Ranch	150.666*	DBPS-2015_100	Lorson (Proposed)	26734.00	5731.33	5739.82	5739.82	5742.17	0.005348	13.84	2969.13	655.32	0.89
Lorson Ranch	150.*	DBPS-2015_100	Lorson (Existing)	26734.00	5729.50	5738.01	5738.01	5740.04	0.004800	13.08	3418.63	884.37	0.84
Lorson Ranch	150.*	DBPS-2015_100	Lorson (Proposed)	26734.00	5729.50	5737.98	5737.98	5740.01	0.004832	13.09	3392.31	882.76	0.85
Lorson Ranch	149.333*	DBPS-2015_100	Lorson (Existing)	26734.00	5727.67	5736.14	5736.14	5737.84	0.004286	12.26	4092.90	1276.34	0.80
Lorson Ranch	149.333*	DBPS-2015_100	Lorson (Proposed)	26734.00	5727.67	5736.08	5736.08	5737.78	0.004351	12.29	4020.25	1267.18	0.80
Lorson Ranch	148.666*	DBPS-2015_100	Lorson (Existing)	26734.00	5725.83	5733.94	5733.94	5735.39	0.004228	11.71	4672.47	1541.16	0.78
Lorson Ranch	148.666*	DBPS-2015_100	Lorson (Proposed)	26734.00	5725.83	5733.89	5733.89	5735.35	0.004284	11.74	4600.25	1540.29	0.79
Lorson Ranch	148	DBPS-2015_100	Lorson (Existing)	26734.00	5724.00	5731.77	5730.78	5732.23	0.012871	3.53	5393.71	1778.33	0.24
Lorson Ranch	148	DBPS-2015_100	Lorson (Proposed)	26734.00	5724.00	5731.71	5730.82	5732.20	0.013134	3.54	5284.34	1777.21	0.25
Lorson Ranch	147.992*	DBPS-2015_100	Lorson (Existing)	26734.00	5723.54	5731.67	5730.43	5732.08	0.010662	3.32	5619.00	1682.42	0.22
Lorson Ranch	147.992*	DBPS-2015_100	Lorson (Proposed)	26734.00	5723.54	5731.61	5730.48	5732.05	0.010764	3.32	5515.53	1681.28	0.22
Lorson Ranch	147.985*	DBPS-2015_100	Lorson (Existing)	26734.00	5723.08	5731.59	5730.10	5731.97	0.008953	3.15	5813.43	1587.15	0.21
Lorson Ranch	147.985*	DBPS-2015_100	Lorson (Proposed)	26734.00	5723.08	5731.53	5730.17	5731.93	0.008944	3.13	5720.46	1586.05	0.21
Lorson Ranch	147.978*	DBPS-2015_100	Lorson (Existing)	26734.00	5722.62	5731.52	5729.76	5731.88	0.007698	3.02	5958.79	1492.06	0.19
Lorson Ranch	147.978*	DBPS-2015_100	Lorson (Proposed)	26734.00	5722.62	5731.46	5729.79	5731.84	0.007598	2.99	5876.49	1491.02	0.19
Lorson Ranch	147.971*	DBPS-2015_100	Lorson (Existing)	26734.00	5722.16	5731.45	5729.46	5731.80	0.006804	2.93	6045.77	1397.54	0.18
Lorson Ranch	147.971*	DBPS-2015_100	Lorson (Proposed)	26734.00	5722.16	5731.40	5729.44	5731.76	0.006631	2.88	5973.46	1396.54	0.18
Lorson Ranch	147.964*	DBPS-2015_100	Lorson (Existing)	26734.00	5721.70	5731.39	5728.98	5731.73	0.006182	2.89	6073.22	1303.20	0.18
Lorson Ranch	147.964*	DBPS-2015_100	Lorson (Proposed)	26734.00	5721.70	5731.34	5729.08	5731.69	0.005948	2.82	6010.88	1302.25	0.17
Lorson Ranch	147.957*	DBPS-2015_100	Lorson (Existing)	26734.00	5721.24	5731.32	5728.64	5731.67	0.005792	2.88	6035.26	1209.30	0.17
Lorson Ranch	147.957*	DBPS-2015_100	Lorson (Proposed)	26734.00	5721.24	5731.28	5728.73	5731.63	0.005503	2.80	5981.55	1208.40	0.17
Lorson Ranch	147.95*	DBPS-2015_100	Lorson (Existing)	26734.00	5720.78	5731.25	5728.32	5731.61	0.005613	2.92	5928.50	1116.14	0.17
Lorson Ranch	147.95*	DBPS-2015_100	Lorson (Proposed)	26734.00	5720.78	5731.21	5728.42	5731.58	0.005268	2.82	5882.19	1115.27	0.16
Lorson Ranch	147.942*	DBPS-2015_100	Lorson (Existing)	26734.00	5720.32	5731.16	5728.02	5731.55	0.005657	3.01	5746.55	1023.48	0.17
Lorson Ranch	147.942*	DBPS-2015_100	Lorson (Proposed)	26734.00	5720.32	5731.12	5728.14	5731.52	0.005243	2.89	5706.58	1022.64	0.17
Lorson Ranch	147.935*	DBPS-2015_100	Lorson (Existing)	26734.00	5719.86	5731.06	5727.77	5731.48	0.005945	3.16	5492.18	931.93	0.18
Lorson Ranch	147.935*	DBPS-2015_100	Lorson (Proposed)	26734.00	5719.86	5731.02	5727.89	5731.46	0.005442	3.02	5457.62	931.09	0.17
Lorson Ranch	147.928*	DBPS-2015_100	Lorson (Existing)	26734.00	5719.40	5730.94	5727.55	5731.41	0.006629	3.42	5168.19	850.09	0.19
Lorson Ranch	147.928*	DBPS-2015_100	Lorson (Proposed)	26734.00	5719.40	5730.90	5727.69	5731.40	0.005920	3.22	5137.90	849.67	0.18
Lorson Ranch	147.921*	DBPS-2015_100	Lorson (Existing)	26734.00	5718.94	5730.76	5727.42	5731.33	0.007682	3.75	4759.14	749.41	0.20
Lorson Ranch	147.921*	DBPS-2015_100	Lorson (Proposed)	26734.00	5718.94	5730.73	5727.56	5731.33	0.006844	3.53	4733.90	748.88	0.19
Lorson Ranch	147.914*	DBPS-2015_100	Lorson (Existing)	26734.00	5718.48	5730.51	5727.36	5731.23	0.009797	4.30	4253.60	650.93	0.23
Lorson Ranch	147.914*	DBPS-2015_100	Lorson (Proposed)	26734.00	5718.48	5730.47	5727.54	5731.23	0.008686	4.04	4229.77	650.34	0.22
Lorson Ranch	147.907*	DBPS-2015_100	Lorson (Existing)	26734.00	5718.02	5730.08	5727.46	5731.08	0.014575	5.27	3625.16	552.23	0.28
Lorson Ranch	147.907*	DBPS-2015_100	Lorson (Proposed)	26734.00	5718.02	5730.02	5727.62	5731.09	0.012934	4.94	3591.48	551.12	0.26
Lorson Ranch	147.9	DBPS-2015_100	Lorson (Existing)	26734.00	5717.56	5730.00	5727.47	5730.90	0.016368	7.84	3692.34	864.14	0.52
Lorson Ranch	147.9	DBPS-2015_100	Lorson (Proposed)	26734.00	5717.56	5730.00	5727.46	5730.89	0.016111	7.79	3698.25	864.46	0.51
Lorson Ranch	147.8	DBPS-2015_100	Lorson (Existing)	26734.00	5715.70	5728.53	5726.02	5730.05	0.012595	9.91	2733.01	501.81	0.63
Lorson Ranch	147.8	DBPS-2015_100	Lorson (Proposed)	26734.00	5715.70	5728.53	5726.02	5730.05	0.012583	9.90	2733.75	502.20	0.63
Lorson Ranch	147.7	DBPS-2015_100	Lorson (Existing)	26734.00	5715.60	5728.20	5725.03	5729.58	0.009117	9.43	2835.70	319.26	0.56
Lorson Ranch	147.7	DBPS-2015_100	Lorson (Proposed)	26734.00	5715.60	5728.20	5725.03	5729.58	0.009117	9.43	2835.70	319.26	0.56
Lorson Ranch	147.6	DBPS-2015_100	Lorson (Existing)	26734.00	5715.00	5727.23	5724.22	5728.65	0.009649	9.54	2803.04	318.50	0.57
Lorson Ranch	147.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5715.00	5727.23	5724.22	5728.65	0.009649	9.54	2803.04	318.50	0.57
Lorson Ranch	147.2	DBPS-2015_100	Lorson (Existing)	26734.00	5713.34	5724.47	5722.68	5726.39	0.014856	11.10	2407.50	307.55	0.70
Lorson Ranch	147.2	DBPS-2015_100	Lorson (Proposed)	26734.00	5713.34	5724.47	5722.68	5726.39	0.014856	11.10	2407.50	307.55	0.70

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: DBPS-2015_100 (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	146.3	DBPS-2015_100	Lorson (Existing)	26734.00	5712.29	5722.11	5722.11	5725.20	0.019239	14.11	1894.55	308.59	1.00
Lorson Ranch	146.3	DBPS-2015_100	Lorson (Proposed)	26734.00	5712.29	5722.11	5722.11	5725.20	0.019239	14.11	1894.55	308.59	1.00
Lorson Ranch	146.1	DBPS-2015_100	Lorson (Existing)	26734.00	5711.71	5722.32	5720.80	5724.34	0.005864	11.42	2340.79	312.51	0.74
Lorson Ranch	146.1	DBPS-2015_100	Lorson (Proposed)	26734.00	5711.71	5722.32	5720.80	5724.34	0.005864	11.42	2340.79	312.51	0.74
Lorson Ranch	145.6	DBPS-2015_100	Lorson (Existing)	26734.00	5710.99	5720.37	5719.99	5723.16	0.016313	13.41	1994.03	305.07	0.92
Lorson Ranch	145.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5710.99	5720.37	5719.99	5723.16	0.016313	13.41	1994.03	305.07	0.92
Lorson Ranch	144.7	DBPS-2015_100	Lorson (Existing)	26734.00	5708.87	5720.59	5718.14	5722.21	0.007116	10.19	2623.61	317.10	0.62
Lorson Ranch	144.7	DBPS-2015_100	Lorson (Proposed)	26734.00	5708.87	5720.59	5718.14	5722.21	0.007116	10.19	2623.61	317.10	0.62
Lorson Ranch	144.6	DBPS-2015_100	Lorson (Existing)	26734.00	5709.16	5719.70	5718.05	5721.61	0.009019	11.10	2409.42	321.16	0.71
Lorson Ranch	144.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5709.16	5719.70	5718.05	5721.61	0.009021	11.10	2409.26	321.16	0.71
Lorson Ranch	144.4	DBPS-2015_100	Lorson (Existing)	26734.00	5707.20	5718.60	5717.07	5720.62	0.005749	11.39	2348.07	312.24	0.73
Lorson Ranch	144.4	DBPS-2015_100	Lorson (Proposed)	26734.00	5707.20	5718.60	5717.07	5720.62	0.005750	11.39	2347.92	312.24	0.73
Lorson Ranch	144	DBPS-2015_100	Lorson (Existing)	26734.00	5706.95	5716.99	5716.10	5719.35	0.008385	12.33	2168.36	314.15	0.83
Lorson Ranch	144	DBPS-2015_100	Lorson (Proposed)	26734.00	5706.95	5716.99	5716.10	5719.35	0.008390	12.33	2167.90	314.13	0.83
Lorson Ranch	143.2	DBPS-2015_100	Lorson (Existing)	26734.00	5704.54	5717.18	5714.40	5718.67	0.010116	9.77	2736.08	320.95	0.59
Lorson Ranch	143.2	DBPS-2015_100	Lorson (Proposed)	26734.00	5704.54	5717.18	5714.40	5718.67	0.010120	9.77	2735.77	320.95	0.59
Lorson Ranch	142.4	DBPS-2015_100	Lorson (Existing)	26734.00	5703.00	5714.56	5712.08	5716.15	0.004003	10.12	2654.60	325.28	0.61
Lorson Ranch	142.4	DBPS-2015_100	Lorson (Proposed)	26734.00	5703.00	5714.56	5712.08	5716.15	0.004003	10.11	2654.60	325.28	0.61
Lorson Ranch	141.6	DBPS-2015_100	Lorson (Existing)	26734.00	5701.00	5712.56	5709.78	5714.06	0.003626	9.81	2729.64	316.04	0.58
Lorson Ranch	141.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5701.00	5712.56	5709.78	5714.06	0.003625	9.81	2729.64	316.04	0.58
Lorson Ranch	140.8	DBPS-2015_100	Lorson (Existing)	26734.00	5698.38	5708.20	5707.26	5710.55	0.020906	12.30	2173.30	309.89	0.82
Lorson Ranch	140.8	DBPS-2015_100	Lorson (Proposed)	26734.00	5698.38	5708.20	5707.26	5710.55	0.020906	12.30	2173.30	309.89	0.82
Lorson Ranch	140	DBPS-2015_100	Lorson (Existing)	26734.00	5696.02	5707.90	5706.03	5709.74	0.014770	10.89	2454.13	316.78	0.69
Lorson Ranch	140	DBPS-2015_100	Lorson (Proposed)	26734.00	5696.02	5707.90	5706.03	5709.74	0.014767	10.89	2454.28	316.78	0.69
Lorson Ranch	139.7	DBPS-2015_100	Lorson (Existing)	26734.00	5695.16	5707.48	5704.89	5709.10	0.012564	10.23	2612.33	330.29	0.64
Lorson Ranch	139.7	DBPS-2015_100	Lorson (Proposed)	26734.00	5695.16	5707.48	5704.89	5709.11	0.012561	10.23	2612.50	330.30	0.64
Lorson Ranch	139.3	DBPS-2015_100	Lorson (Existing)	26734.00	5695.00	5706.03	5704.66	5708.19	0.006015	11.81	2269.23	306.72	0.75
Lorson Ranch	139.3	DBPS-2015_100	Lorson (Proposed)	26734.00	5695.00	5706.03	5704.66	5708.19	0.006014	11.81	2269.38	306.72	0.75
Lorson Ranch	138.8			Bridge									
Lorson Ranch	138.3	DBPS-2015_100	Lorson (Existing)	26734.00	5694.00	5705.02	5703.20	5706.92	0.005154	11.05	2418.67	309.49	0.70
Lorson Ranch	138.3	DBPS-2015_100	Lorson (Proposed)	26734.00	5694.00	5705.02	5703.20	5706.92	0.005163	11.06	2417.46	309.46	0.70
Lorson Ranch	138	DBPS-2015_100	Lorson (Existing)	26734.00	5692.18	5702.70	5701.67	5705.02	0.007005	12.23	2185.04	305.77	0.81
Lorson Ranch	138	DBPS-2015_100	Lorson (Proposed)	26734.00	5692.18	5702.76	5701.67	5705.05	0.006830	12.13	2203.72	306.20	0.80
Lorson Ranch	137.6	DBPS-2015_100	Lorson (Existing)	26734.00	5688.97	5700.95	5699.20	5702.80	0.005169	10.91	2450.85	321.64	0.70
Lorson Ranch	137.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5688.97	5701.18	5699.20	5702.92	0.004724	10.59	2525.09	322.63	0.67
Lorson Ranch	136.8	DBPS-2015_100	Lorson (Existing)	26734.00	5687.60	5700.85	5698.22	5702.34	0.010898	9.80	2726.84	328.45	0.60
Lorson Ranch	136.8	DBPS-2015_100	Lorson (Proposed)	26734.00	5687.60	5701.10	5698.22	5702.50	0.009860	9.52	2807.83	329.72	0.58
Lorson Ranch	136	DBPS-2015_100	Lorson (Existing)	26734.00	5687.00	5698.43	5696.29	5700.15	0.004573	10.51	2543.77	319.67	0.65
Lorson Ranch	136	DBPS-2015_100	Lorson (Proposed)	26734.00	5687.00	5699.53	5696.29	5700.86	0.003037	9.24	2901.16	328.33	0.54
Lorson Ranch	135.6	DBPS-2015_100	Lorson (Existing)	26734.00	5685.38	5696.93	5694.72	5698.64	0.004464	10.49	2548.87	315.01	0.65
Lorson Ranch	135.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5685.38	5698.79	5694.72	5699.91	0.002353	8.51	3146.59	329.78	0.48
Lorson Ranch	135.55	DBPS-2015_100	Lorson (Existing)	26734.00	5684.91	5696.68	5694.47	5698.38	0.004934	10.48	2552.92	317.87	0.65
Lorson Ranch	135.55	DBPS-2015_100	Lorson (Proposed)	26734.00	5684.91	5698.69	5694.49	5699.77	0.002315	8.38	3278.48	465.01	0.46
Lorson Ranch	135.50	DBPS-2015_100	Lorson (Existing)	26734.00	5684.89	5696.51	5694.41	5698.24	0.005085	10.54	2537.81	319.85	0.66
Lorson Ranch	135.50	DBPS-2015_100	Lorson (Proposed)	26734.00	5684.89	5698.55	5694.51	5699.69	0.002480	8.59	3185.08	442.49	0.48
Lorson Ranch	135.47	DBPS-2015_100	Lorson (Existing)	26734.00	5684.86	5696.37	5694.19	5698.04	0.004944	10.38	2576.16	323.21	0.65
Lorson Ranch	135.47	DBPS-2015_100	Lorson (Proposed)	26734.00	5684.86	5697.96	5694.67	5699.55	0.003484	10.14	2678.44	317.87	0.56
Lorson Ranch	135.34	DBPS-2015_100	Lorson (Existing)	26734.00	5684.19	5696.39	5693.94	5697.94	0.004435	9.99	2677.06	329.15	0.62
Lorson Ranch	135.34	DBPS-2015_100	Lorson (Proposed)	26734.00	5684.19	5697.71	5694.62	5699.46	0.006627	10.63	2529.26	259.32	0.59
Lorson Ranch	135.29	DBPS-2015_100	Lorson (Existing)	26734.00	5683.95	5696.06	5693.49	5697.56	0.004254	9.84	2716.57	329.83	0.60
Lorson Ranch	135.29	DBPS-2015_100	Lorson (Proposed)	26734.00	5683.95	5695.41	5694.18	5698.08	0.012565	13.13	2036.86	245.60	0.80
Lorson Ranch	135.25	DBPS-2015_100	Lorson (Existing)	26734.00	5683.93	5695.79	5693.50	5697.44	0.004729	10.28	2600.08	322.24	0.64
Lorson Ranch	135.25	DBPS-2015_100	Lorson (Proposed)	26734.00	5683.93	5695.26	5694.04	5697.75	0.007447	12.67	2110.45	265.67	0.79
Lorson Ranch	135.14	DBPS-2015_100	Lorson (Existing)	26734.00	5683.91	5695.55	5693.47	5697.29	0.005054	10.60	2524.02	318.64	0.66
Lorson Ranch	135.14	DBPS-2015_100	Lorson (Proposed)	26734.00	5683.91	5695.26	5693.80	5697.47	0.006741	11.94	2239.44	289.15	0.75
Lorson Ranch	134.89	DBPS-2015_100	Lorson (Existing)	26734.00	5683.00	5695.21	5693.04	5696.95	0.004761	10.60	2542.36	317.40	0.64
Lorson Ranch	134.89	DBPS-2015_100	Lorson (Proposed)	26734.00	5683.00	5695.20	5693.04	5696.94	0.004775	10.61	2538.80	317.31	0.64
Lorson Ranch	134.8	DBPS-2015_100	Lorson (Existing)	26734.00	5683.03	5694.58	5692.29	5696.21	0.004357	10.24	2609.58	330.42	0.64
Lorson Ranch	134.8	DBPS-2015_100	Lorson (Proposed)	26734.00	5683.03	5694.56	5692.29	5696.20	0.004393	10.27	2602.80	330.30	0.64
Lorson Ranch	134.4	DBPS-2015_100	Lorson (Existing)	26734.00	5682.00	5693.15	5691.01	5694.89	0.004589	10.56	2531.46	316.88	0.66
Lorson Ranch	134.4	DBPS-2015_100	Lorson (Proposed)	26734.00	5682.00	5693.10	5691.01	5694.85	0.004690	10.64	2513.21	316.59	0.67
Lorson Ranch	133.6	DBPS-2015_100	Lorson (Existing)	26734.00	5680.06	5691.72	5689.14	5693.34	0.003995	10.22	2615.98	302.10	0.61

HEC-RAS River: Jimmy Camp Creek Reach: Lorson Ranch Profile: DBPS-2015_100 (Continued)

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Lorson Ranch	133.6	DBPS-2015_100	Lorson (Proposed)	26734.00	5680.06	5691.59	5689.14	5693.26	0.004187	10.37	2577.19	302.10	0.63
Lorson Ranch	132.8	DBPS-2015_100	Lorson (Existing)	26734.00	5677.64	5691.73	5687.96	5693.06	0.008460	9.24	2892.75	304.33	0.53
Lorson Ranch	132.8	DBPS-2015_100	Lorson (Proposed)	26734.00	5677.64	5691.61	5687.96	5692.97	0.008867	9.37	2854.41	304.33	0.54
Lorson Ranch	132.2	DBPS-2015_100	Lorson (Existing)	26734.00	5675.48	5690.41	5688.94	5692.46	0.015846	11.47	2331.66	326.46	0.76
Lorson Ranch	132.2	DBPS-2015_100	Lorson (Proposed)	26734.00	5675.48	5689.92	5688.94	5692.27	0.019891	12.32	2170.78	317.90	0.83
Lorson Ranch	132	DBPS-2015_100	Lorson (Existing)	26734.00	5679.40	5690.84	5688.17	5691.63	0.002601	9.17	4896.18	793.80	0.49
Lorson Ranch	132	DBPS-2015_100	Lorson (Proposed)	26734.00	5679.40	5690.54	5687.93	5691.31	0.002620	9.03	4661.43	778.01	0.49
Lorson Ranch	128	DBPS-2015_100	Lorson (Existing)	26734.00	5670.60	5681.96	5681.96	5684.19	0.007371	15.30	3299.65	734.61	0.83
Lorson Ranch	128	DBPS-2015_100	Lorson (Proposed)	26734.00	5670.60	5681.52	5681.52	5683.72	0.007708	15.21	2983.33	700.22	0.84
Lorson Ranch	124	DBPS-2015_100	Lorson (Existing)	26734.00	5664.10	5678.27	5673.03	5678.43	0.000522	3.88	8889.00	1260.32	0.20
Lorson Ranch	124	DBPS-2015_100	Lorson (Proposed)	26734.00	5664.10	5678.27	5673.04	5678.43	0.000512	3.84	8887.15	1260.31	0.20
Lorson Ranch	120.4	DBPS-2015_100	Lorson (Existing)	26734.00	5664.10	5678.22	5673.04	5678.39	0.000533	3.91	8825.01	1259.75	0.20
Lorson Ranch	120.4	DBPS-2015_100	Lorson (Proposed)	26734.00	5664.10	5678.22	5673.06	5678.38	0.000523	3.87	8825.01	1259.75	0.20

APPENDIX G

APPENDIX G – HEC-RAS SCOUR ANALYSIS RESULTS

Hydraulic Design Data

Contraction Scour

	Left	Channel	Right
Input Data			
Average Depth (ft):	0.53	10.07	0.86
Approach Velocity (ft/s):	1.67	8.59	1.79
Br Average Depth (ft):		9.94	1.06
BR Opening Flow (cfs):		26726.88	7.12
BR Top WD (ft):		242.00	4.44
Grain Size D50 (mm):	0.50	0.50	0.50
Approach Flow (cfs):	66.72	26574.92	92.36
Approach Top WD (ft):	75.09	307.28	60.13
K1 Coefficient:	0.64	0.690	0.640
Results			
Scour Depth Ys (ft):		1.99	0.00
Critical Velocity (ft/s):		1.94	1.29
Equation:		Live	Live

Pier Scour

All piers have the same scour depth

Input Data	
Pier Shape: Round nose	
Pier Width (ft):	3.00
Grain Size D50 (mm):	0.50000
Depth Upstream (ft):	13.47
Velocity Upstream (ft/s):	13.71
K1 Nose Shape:	1.00
Pier Angle:	0.00
Pier Length (ft):	65.00
K2 Angle Coef:	1.00
K3 Bed Cond Coef:	1.10
Grain Size D90 (mm):	2.25000
K4 Armouring Coef:	1.00
Results	
Scour Depth Ys (ft):	7.20
Froude #:	0.66
Equation:	CSU equation

Pier Scour Limited to Maximum of Ys = 2.4 * a

Abutment Scour

	Left	Right
Input Data		
Station at Toe (ft):	588.30	822.67
Toe Sta at appr (ft):	581.88	830.90
Abutment Length (ft):	110.43	83.05
Depth at Toe (ft) :	5.71	4.71
K1 Shape Coef: 0.55 - Spill-through abutment		
Degree of Skew (degrees):	75.00	105.00
K2 Skew Coef:	0.98	1.02
Projected Length L' (ft):	54.15	40.69
Avg Depth Obstructed Ya (ft):	3.89	3.46
Flow Obstructed Qe (cfs):	819.66	763.92
Area Obstructed Ae (sq ft):	210.46	141.41
Results		
Scour Depth Ys (ft):	11.65	11.93
Qe/Ae = Ve:	3.89	5.40
Froude #:	0.35	0.51
Equation:	Froehlich	Froehlich

Combined Scour Depths

Pier Scour + Contraction Scour (ft):	
Channel:	9.19
Left abutment scour + contraction scour (ft):	13.64
Right abutment scour + contraction scour (ft):	13.92

Print Date:		Sheet Revisions			
File Name:		Date:	Comments	Init.	
Horiz. Scale:	Vert. Scale: As Noted				
Unit Information	Unit Leader Initials				

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As Constructed	HYDRAULIC ANALYSIS (PROPOSED) SCOUR ANALYSIS (100-YEAR)		Project No./Code
No Revisions:			–
Revised:	Designer: CJB	Structure Numbers	–
	Detailer: CJB		
Void:	Sheet Subset:	Subset Sheets:	Sheet Number

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Hydraulic Design Data
Contraction Scour

	Left	Channel	Right
Input Data			
Average Depth (ft):	1.19	11.44	2.00
Approach Velocity (ft/s):	2.20	8.82	2.86
Br Average Depth (ft):		10.99	1.48
BR Opening Flow (cfs):		32058.85	22.15
BR Top WD (ft):		242.00	7.11
Grain Size D50 (mm):	0.50	0.50	0.50
Approach Flow (cfs):	669.61	31006.00	405.39
Approach Top WD (ft):	256.80	307.28	70.88
K1 Coefficient:	0.64	0.690	0.640
Results			
Scour Depth Ys (ft):		2.89	0.00
Critical Velocity (ft/s):		1.98	1.48
Equation:		Live	Live

Pier Scour
All piers have the same scour depth

Input Data	
Pier Shape:	Round nose
Pier Width (ft):	3.00
Grain Size D50 (mm):	0.50000
Depth Upstream (ft):	14.59
Velocity Upstream (ft/s):	14.39
K1 Nose Shape:	1.00
Pier Angle:	0.00
Pier Length (ft):	65.00
K2 Angle Coef:	1.00
K3 Bed Cond Coef:	1.10
Grain Size D90 (mm):	2.25000
K4 Armouring Coef:	1.00
Results	
Scour Depth Ys (ft):	7.20
Froude #:	0.66
Equation:	CSU equation

Pier Scour Limited to Maximum of Ys = 2.4 * a

Abutment Scour

	Left	Right
Input Data		
Station at Toe (ft):	588.30	822.67
Toe Sta at appr (ft):	581.88	830.90
Abutment Length (ft):	292.14	93.80
Depth at Toe (ft):	6.82	5.82
K1 Shape Coef: 0.55 - Spill-through abutment		
Degree of Skew (degrees):	75.00	105.00
K2 Skew Coef:	0.98	1.02
Projected Length L' (ft):	62.00	46.14
Avg Depth Obstructed Ya (ft):	4.28	3.92
Flow Obstructed Qe (cfs):	1136.44	1076.29
Area Obstructed Ae (sq ft):	265.65	180.91
Results		
Scour Depth Ys (ft):	13.21	13.70
Qe/Ae = Ve:	4.28	5.95
Froude #:	0.36	0.53
Equation:	Froehlich	Froehlich

Combined Scour Depths

Pier Scour + Contraction Scour (ft):	
Channel:	10.09
Left abutment scour + contraction scour (ft):	16.10
Right abutment scour + contraction scour (ft):	16.59

Print Date:		Sheet Revisions	
File Name:		Date:	Comments	Init.
Horiz. Scale:	Vert. Scale: As Noted		
Unit Information	Unit Leader Initials		

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As Constructed
No Revisions:
Revised:
Void:

HYDRAULIC ANALYSIS (PROPOSED)
SCOUR ANALYSIS (500-YEAR)

Designer: CJB
Detailer: CJB
Structure Numbers
Sheet Subset:
Subset Sheets:

Project No./Code
–
–
Sheet Number

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APPENDIX H

APPENDIX H – BRIDGE ARMAMENT CALCS & DETAILS

Hydraulic Analysis Report

Project Data

Project Title: Lorson Bridge

Designer: CJB

Project Date: Monday, September 25, 2017

Project Units: U.S. Customary Units

Notes: Lorson Boulevard Bridge - Armament Analysis (HEC-23)

Riprap Analysis: Riprap Analysis - Pier

Notes: Lorson Boulevard Bridge Armament Analysis - Pier

Input Parameters

Riprap Type: Pier

The velocity is specified as local velocity near pier

Local Velocity near Pier: 13.71 ft

The piers have a round shape

Pier Width (normal to flow): 3 ft

Contraction Scour Depth: 1.99 ft

Bed Form Depth: 0.5 ft

Specific Gravity of Riprap: 2.65

Result Parameters

Design Velocity: 20.565 ft/s

Design velocity never less than average channel velocity

Computed D50: 33.077 in

Riprap Class

Riprap Name: RIPRAP 30-INCH

Riprap Class: VIII

The following values are an 'average' of the size fraction range for the selected riprap class.

d100: 53 in

d85: 42.5 in

d50: 33.25 in

d15: 22.25 in

Layout Recommendations

Depth of Riprap below Streambed: 8.31 ft (99.75 in)

Design thickness of riprap below streambed is greatest of Contraction Scour Depth (includes Long-Term Degradation, if applicable), Bed Form Depth, or 3x Design D50

Minimum Riprap Extent: 6 ft

Filter Placement Extent: 4 ft

See HEC 23, Figure 11.15

No channel used in calculations

Riprap Analysis: Riprap Analysis - Abutment (Left)

Notes: Lorson Boulevard Bridge

Armament Analysis - Abutment (Left)

Input Parameters

Riprap Type: Abutment/Guide Bank

The structure is an abutment

The water will spill through the abutment

Set-back Length: 27.56 ft

The set-back length is the distance from the near edge of the main channel to the toe of abutment

Main Channel Average Flow Depth: 12.59 ft

Flow Depth at Toe of Abutment: 8.45 ft

Calculations will use either total or overbank discharges.

Total Discharge: 26734 cfs

Overbank Discharge: 819.66 cfs

Total Bridge Area: 2411.22 ft^2

Setback Area: 210.48 ft^2

Maximum Channel Velocity: 16.4 ft/s

Specific Gravity of Riprap: 2.65

Result Parameters

Set-back ratio: 2.18904

Characteristic Velocity: 11.0873 ft/s

Froude Number at the Abutment Toe: 0.672429

Abutment Coefficient: 0.89

Computed D50: 24.7307 in

Riprap Class

Riprap Name: RIPRAP 24-INCH

Riprap Class: VII

The following values are an 'average' of the size fraction range for the selected riprap class.

d100: 42.5 in

d85: 34 in

d50: 25.25 in

d15: 17.75 in

Layout Recommendations

Minimum Riprap Thickness: 42.5 in

Minimum Horizontal Extent of the Toe Apron from the Abutment Toe: 16.9 ft

Minimum Extent of "Wrap Around" beyond the Abutment Radius, along the Approach Embankment: 25 ft

See HEC 23, Figure 14.7

No channel used in calculations

Riprap Analysis: Riprap Analysis - Abutment (Right)

Notes: Lorson Boulevard Bridge

Armament Analysis - Abutment (Right)

Input Parameters

Riprap Type: Abutment/Guide Bank

The structure is an abutment

The water will spill through the abutment

Set-back Length: 27.56 ft

The set-back length is the distance from the near edge of the main channel to the toe of abutment

Main Channel Average Flow Depth: 12.59 ft

Flow Depth at Toe of Abutment: 8.45 ft

Calculations will use either total or overbank discharges.

Total Discharge: 26734 cfs

Overbank Discharge: 763.92 cfs

Total Bridge Area: 2411.22 ft^2

Setback Area: 141.41 ft^2

Maximum Channel Velocity: 16.4 ft/s

Specific Gravity of Riprap: 2.65

Result Parameters

Set-back ratio: 2.18904

Characteristic Velocity: 11.0873 ft/s

Froude Number at the Abutment Toe: 0.672429

Abutment Coefficient: 0.89

Computed D50: 24.7307 in

Riprap Class

Riprap Name: RIPRAP 24-INCH

Riprap Class: VII

The following values are an 'average' of the size fraction range for the selected riprap class.

d100: 42.5 in

d85: 34 in

d50: 25.25 in

d15: 17.75 in

Layout Recommendations

Minimum Riprap Thickness: 42.5 in

Minimum Horizontal Extent of the Toe Apron from the Abutment Toe: 16.9 ft

Minimum Extent of "Wrap Around" beyond the Abutment Radius, along the Approach Embankment: 25 ft

See HEC 23, Figure 14.7

No channel used in calculations

ARMAMENT
WEST ABUTMENT

ARMAMENT
CENTER PIER

ARMAMENT
EAST ABUTMENT

Print Date:		Sheet Revisions	
File Name:		Date:	Comments	Init.
Horiz. Scale:	Vert. Scale: As Noted		
Unit Information	Unit Leader Initials		

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EMAIL: RichS@ceg1.com

As Constructed	LORSON BOULEVARD BRIDGE OVER JIMMY CAMP CREEK		Project No./Code
No Revisions:	BRIDGE HYDRAULIC ARMAMENT DETAILS		–
Revised:	Designer: CJB	Structure Numbers	–
Void:	Detailer: CJB		
	Sheet Subset:	Subset Sheets:	Sheet Number

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APPENDIX I

APPENDIX I – HEC-RAS MODEL CROSS-SECTIONS

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 136.8 Bottom of 2nd Drop Structure. Cross section at river station 60

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 160 FEMA cross section AP

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 156 FEMA cross section AO

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 155.2*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 154.4*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 153.6*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 152.8*

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 152 FEMA cross section AN

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 151.333*

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 150.666*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 150.*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 149.333*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 148.666*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 148 FEMA Cross Section AM
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.992*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing)
9/24/2017
RS = 147.985*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing)
9/24/2017
RS = 147.978*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing)
9/24/2017
RS = 147.971*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.964*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.957*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.95*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.942*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.935*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
5.5 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.928*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
4.5 ft/s
5.0 ft/s
5.5 ft/s
6.0 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.921*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.914*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Existing) 9/24/2017
RS = 147.907*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 147.9 Top of 7th Drop Structure and Bottom of Berm. Cross section at

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 147.8 Bottom of 7th Drop Structure and Top of Berm. Cross section at

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 147.7 50' Downstream of 7th Drop Structure. Added X-Sec from As Built

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 147.6 cross section at river station 93+55

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 147.2 Top of 6th Drop Structure. Cross section at river station 91+69

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 146.3 Bottom of 6th Drop Structure

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 146.1 50' Downstream of 6th Drop Structure
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 145.6 Top of 5th Drop Structure. Cross section at river station 89+48
.04
.06
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 144.7 Bottom of 5th Drop Structure. DCBO Jimmy Camp Creek River Stati
.04
.06
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 144.6 50' Downstream of 5th Drop Structure. DCBO Jimmy Camp Creek Riv

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 144.4 cross section at river station 86+85

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 144 Top of 4th Drop Structure. Cross section at river station 85+12

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 143.2 Bottom of 4th Drop Structure. Cross section at river station 84

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 142.4 cross section at river station 80+45

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 141.6 cross section at river station 75+58

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 140.8 Top of 3rd Drop Structure. Cross section at river station 70+87
.04
.1
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
16 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 140 Bottom of 3rd Drop Structure. Cross section at river station 70
.04
.1
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 139.7 Added X-Sec from As-built 8/21/06 50' Downstream of 3rd Drop Str
.04
.1
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 139.3 cross section upstream of bridge at river station 69+00
.04
.04
.04
Elevation (ft)
5715
5710
5705
5700
5695
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 138.8 BR DBCO Proposed Bridge
.04
.04
.04
Elevation (ft)
5720
5715
5710
5705
5700
5695
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 138.8 BR DBCO Proposed Bridge
.04
.04
.04
Elevation (ft)
5720
5715
5710
5705
5700
5695
5690
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 138.3 cross section downstream of bridge at river station 67+19

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 138 cross section after full expansion at river station 64+80

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 137.6 Top of 2nd Drop Structure. Cross section at river station 60+65

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 136 cross section at river station 56+89
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.6 cross section at river station 53+55
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.55 Cross Section: Sta. 53+00.00
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.50 Cross Section: Sta. 52+70.63
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.47 Cross Section: Sta. 52+35.61
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.34 Cross Section: Sta. 52+20.64 US Lorson Bridge
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.29 Cross Section: Sta. 51+38.03 - DS Lorson Bridge
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.25 Cross Section: Sta. 5112.888
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 135.14 Cross Section: Sta. 50+85.05
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 134.89 Cross Section: Sta. 50+15.00

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 134.8 cross section at river station 48+60

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 134.4 cross section at river station 45+66

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 133.6 Top of 1st Drop structure. Cross section at river station 42+23

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 132.8 Bottom of 1st Drop Structure

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 132.2 50' Downstream of 1st Drop Structure

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 132 FEMA cross section AI

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 128 FEMA cross section AH

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017

RS = 124 FEMA cross section AG

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Existing) 9/24/2017
RS = 120.4 Intermediate station downstream of FEMA cross section AG
.045
.045
.045
Elevation (ft)
5682
5680
5678
5676
5674
5672
5670
5668
5666
5664
1000
1200
1400
1600
1800
2000
2200
2400
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
1 ft/s
2 ft/s
3 ft/s
4 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 136.8 Bottom of 2nd Drop Structure. Cross section at river station 60

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 160 FEMA cross section AP

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 156 FEMA cross section AO

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 155.2*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 154.4*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 153.6*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 152.8*
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 152 FEMA cross section AN
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta
OWS FEMA 100-Year

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 151.333*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 150.666*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 150.*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 149.333*
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 148.666*

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 148 FEMA Cross Section AM

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.992*

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 147.985*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 147.978*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 147.971*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
1 ft/s
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.964*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.957*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.95*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.942*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.935*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.928*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.921*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.914*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge
Plan: Lorson Bridge (Proposed)
9/24/2017
RS = 147.907*
.06
.167
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
9 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.9 Top of 7th Drop Structure and Bottom of Berm. Cross section at

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.8 Bottom of 7th Drop Structure and Top of Berm. Cross section at

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.7 50' Downstream of 7th Drop Structure. Added X-Sec from As Built

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.6 cross section at river station 93+55

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 147.2 Top of 6th Drop Structure. Cross section at river station 91+69

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 146.3 Bottom of 6th Drop Structure

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 146.1 50' Downstream of 6th Drop Structure

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 145.6 Top of 5th Drop Structure. Cross section at river station 89+48

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 144.7 Bottom of 5th Drop Structure. DCBO Jimmy Camp Creek River Stati

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 144.6 50' Downstream of 5th Drop Structure. DCBO Jimmy Camp Creek Riv
.04
.06
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 144.4 cross section at river station 86+85
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 144 Top of 4th Drop Structure. Cross section at river station 85+12
.045
.04
.045
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 143.2 Bottom of 4th Drop Structure. Cross section at river station 84

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 142.4 cross section at river station 80+45

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 141.6 cross section at river station 75+58

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 140.8 Top of 3rd Drop Structure. Cross section at river station 70+87

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 140 Bottom of 3rd Drop Structure. Cross section at river station 70

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 139.7 Added X-Sec from As-built 8/21/06 50' Downstream of 3rd Drop Str

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 139.3 cross section upstream of bridge at river station 69+00
.04
.04
.04
Elevation (ft)
5715
5710
5705
5700
5695
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 138.8 BR DBCO Proposed Bridge
.04
.04
.04
Elevation (ft)
5720
5715
5710
5705
5700
5695
0
50
100
150
200
250
300
350
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 138.8 BR DBCO Proposed Bridge
.04
.04
.04
Elevation (ft)
5720
5715
5710
5705
5700
5695
5690
0
50
100
150
200
250
300
350
400
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 138.3 cross section downstream of bridge at river station 67+19

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 138 cross section after full expansion at river station 64+80

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 137.6 Top of 2nd Drop Structure. Cross section at river station 60+65

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 136 cross section at river station 56+89
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.6 Cross Section: Sta. 53+55
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.55 Cross Section: Sta. 53+00.00
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 135.50 Cross Section: Sta. 52+70.63

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 135.47 Cross Section: Sta. 52+35.61

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017

RS = 135.34 Cross Section: Sta. 52+20.64 US Lorson Bridge

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.3135 BR
.04
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.3135 BR
.04
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.29 Cross Section: Sta. 51+38.03 - DS Lorson Bridge
.04
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.25 Cross Section: Sta. 51+12.888
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 135.14 Cross Section: Sta. 50+85.05
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 134.89 Cross Section: Sta. 50+15.00
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 134.8 cross section at river station 48+60
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 134.4 cross section at river station 45+66
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta
LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 133.6 Top of 1st Drop structure. Cross section at river station 42+23
.04
.04
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 132.8 Bottom of 1st Drop Structure
.04
.1
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 132.2 50' Downstream of 1st Drop Structure
.04
.1
.04
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0 ft/s
2 ft/s
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 132 FEMA cross section AI
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
2 ft/s
3 ft/s
4 ft/s
5 ft/s
6 ft/s
7 ft/s
8 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 128 FEMA cross section AH
.06
.04
.06
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
4 ft/s
6 ft/s
8 ft/s
10 ft/s
12 ft/s
14 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 124 FEMA cross section AG
.045
.045
.045
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
Ground
Bank Sta

LOMR w/ Lorson Bridge Plan: Lorson Bridge (Proposed) 9/24/2017
RS = 120.4 Intermediate station downstream of FEMA cross section AG
.045
.045
.045
Elevation (ft)
Station (ft)
Legend
WS DBPS-2015_100
WS FEMA 100-Year
0.5 ft/s
1.0 ft/s
1.5 ft/s
2.0 ft/s
2.5 ft/s
3.0 ft/s
3.5 ft/s
4.0 ft/s
Ground
Bank Sta

APPENDIX J

APPENDIX J – HEC-RAS REPORT

```
HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California


X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: LOMR w/ Lorson Bridge
Project File : lomr.prj
Run Date and Time: 9/24/2017 1:06:11 PM

Project in English units

Project Description:
8/21/06 JCB: Pentacor Engineering added a new geometry file based on as-built information on drop structures given by RMLS.

8/2/06 JCB: Pentacor
Engineering added a new geometry file based on as-built information on drop structures.

7/12/06 ALB: Pentacor Engineering added a new geometry file
based on as-built information (received from Rocky Mountain Land Services).
This file will be used to support the LOMR application for the main channel of Jimmy Camp Creek

6/16/06 ALB: Pentacor Engineering added a new geometry
file to simulate the proposed Lorson Boulevard Bridge. Results of the analysis with the bridge were used to perform scour and stable particle size analysis for the channel in the vicinity of the bridge.

02/13/06 JDH: Revisions to
account for moving of northernmost drop structure and regrading of northern channel taper by PentaCorp. Correct problem with starting water surface elevation boundary condition and reinsert floodway profile (but not

encroachment information). Main solution was to adjust Manning's n upward to 0.167 to force WSEL at Station 148 to increase to a point where effects of hydraulic jump in channel transition does not carry upstream and provide erroneous water surface elevations.

11/10/05 JDH: Cross-section data from original CLOMR submittal was revised to include an additional bench and low flow channel based on USACE comments regarding balancing of sediment transport. Once project is constructed a LOMR will need to be submitted which will require modifications to this model to include Floodway modeling for comparison with Duplicate Effective Floodway model results.

08/02/05 JDH: Base model copied from CLOMR submittal's proposed conditions model. Modified to include wing wall configuration at bridge for purpose of modeling abutment scour.

04/12/17 CJB: Added Flows to LOMR Steady Flow Data from DBPS 2015 for freeboard and scour computation of Lorson Bridge

04/12/17 CJB: LOMR model copied for inclusion of Lorson Bridge. Modified to include additional sections for bridge hydraulics analysis channel grading for freeboard and scour calculations.

09/25/17 CJB: Final Model revised for Final Report. Manning's n revised at Lorson Bridge for armament limits and n values for depth of flow.

PLAN DATA

Plan Title: Lorson Bridge (Existing)
Plan File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.p03

Geometry Title: Lorson Bridge - From LOMR (Existing)
Geometry File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.g03

Flow Title : FIS Flows for LOMR
Flow File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.f01

Plan Description:
Lorson Bridge Analysis (Existing 2) (09/25/17)

Existing sections applied at
proposed section locations

Plan Summary Information:

Number of:	Cross Sections	= 68	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 1	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options

Critical depth computed at all cross sections
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FIS Flows for LOMR
Flow File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.f01

Flow Data (cfs)

River	Reach	RS	FEMA 100-Year	FEMA 10-Year	FEMA 50-Year	FEMA 100-Year_FW	FEMA 500-Year	DBPS-2015_10	DBPS-2015_100	DBPS-2015_500
Jimmy Camp Creek	Lorson Ranch	160	11800	6100	9800	11800	15000	13402	26734	32081
Jimmy Camp Creek	Lorson Ranch	152	12600	6600	10500	12600	16100	13402	26734	32081
Jimmy Camp Creek	Lorson Ranch	141.6	12900	6800	10700	12900	16400	13402	26734	32081

River	Reach	RS	DBPS_EX_100	DBPS_EX_500
Jimmy Camp Creek	Lorson Ranch	160	17709	21251
Jimmy Camp Creek	Lorson Ranch	152	17709	21251
Jimmy Camp Creek	Lorson Ranch	141.6	17709	21251

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Jimmy Camp Creek	Lorson Ranch	FEMA 100-Year	Critical	Known WS = 5675.33
Jimmy Camp Creek	Lorson Ranch	FEMA 10-Year	Critical	Known WS = 5673.5
Jimmy Camp Creek	Lorson Ranch	FEMA 50-Year	Critical	Known WS = 5674.91
Jimmy Camp Creek	Lorson Ranch	FEMA 100-Year_FW	Critical	Known WS = 5675.7
Jimmy Camp Creek	Lorson Ranch	FEMA 500-Year	Critical	Known WS = 5676.21
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_10	Critical	Known WS = 5675.85
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_100	Critical	Known WS = 5678.22
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_500	Critical	Known WS = 5678.85
Jimmy Camp Creek	Lorson Ranch	DBPS_EX_100	Critical	Known WS = 5676.81
Jimmy Camp Creek	Lorson Ranch	DBPS_EX_500	Critical	Known WS = 5677.43

Observed Water Surface Marks

River	Reach	RS	FEMA 100-Year	FEMA 10-Year	FEMA 50-Year	FEMA 100-Year_FW	FEMA 500-Year	DBPS-2015_10	DBPS-2015_100	DBPS-2015_500
Jimmy Camp Creek	Lorson Ranch	160	5762.42	5760.95						

Jimmy Camp Creek	Lorson Ranch	156	5753.93	
Jimmy Camp Creek	Lorson Ranch	152	5741.68	5739.8

River	Reach	RS	DBPS_EX_100	DBPS_EX_500
Jimmy Camp Creek	Lorson Ranch	160		
Jimmy Camp Creek	Lorson Ranch	156		
Jimmy Camp Creek	Lorson Ranch	152		

GEOMETRY DATA

Geometry Title: Lorson Bridge - From LOMR (Existing)
Geometry File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.g03

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 160

INPUT
Description: FEMA cross section AP
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5773	23	5771	74	5769.7	116	5769	126	5768
143	5772	163	5767	185	5763.7	227	5763	343	5764.2
401	5765.2	460	5763.7	499	5762.5	600	5760	625	5760.7
641	5767	893	5768.2	996	5769.2	1078	5768.7	1148	5765
1215	5764.2	1316	5764.7	1349	5759.5	1394	5757.7	1523	5757.7
1560	5756.7	1618	5757.2	1659	5758.7	1673	5764	1680	5762.5
1691	5765.2	1731	5765.5	1752	5765.5	1774	5768.2	1812	5770.2
1985	5769.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	1523	.04	1691	.06

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1523    1691          1119.96    1140 1160.04             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 156

INPUT
Description: FEMA cross section AO
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     551  5761.2     751  5760.5     817  5759.2     920  5760.2     957  5759.2
     981  5761.2    1002  5757.7    1043    5757    1139    5758    1214  5756.5
    1236    5758    1269  5759.7    1300    5758    1404    5756    1450  5758.2
    1580  5759.7    1630  5751.7    1696  5750.2    1765  5750.5    1792    5752
    1828  5750.7    1863    5750    1945    5749    1988  5748.7    2031  5749.7
    2067  5750.4    2079  5754.7    2218  5753.7    2264  5755.4    2285  5759.4
    2297  5758.2    2344  5758.2    2355  5760.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     551     .06    1792     .04    2079     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1792    2079           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 155.2*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   840.8 5757.16 1007.09 5756.53 1061.96 5755.46  1147.6 5756.22 1178.36 5755.41
 1198.31    5757 1215.77 5754.19 1249.86 5753.62 1290.56 5754.01 1329.68 5754.28
 1392.04 5752.88 1410.33 5754.02 1437.76  5755.3 1463.54 5753.85 1481.05 5753.48
 1550.01 5752.39 1588.25 5754.25 1696.34 5755.74 1719.15 5752.29 1737.91 5749.35
 1792.78 5747.99 1850.15 5748.06  1872.6  5749.2 1903.38 5748.05 1933.31 5747.38
 2003.43 5746.33  2040.2 5745.96  2058.6 5745.96  2062.6 5745.96  2098.7 5747.61
 2128.93 5748.88    2139 5752.56 2161.29 5753.44 2185.29  5753.3    2205  5753.8
 2284.04 5756.23 2293.29 5756.82 2306.14 5757.99 2332.04 5759.56 2353.96 5763.48
 2366.48 5762.92 2379.86 5763.36 2415.52 5763.97    2427 5765.92
```

```
Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   840.8     .06 1850.15     .04  1872.6     .04    2139     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1872.6  2098.7           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 154.4*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1130.6 5753.12 1263.17 5752.55 1306.92 5751.72 1375.19 5752.25 1399.72 5751.62
 1415.63  5752.8 1429.55 5750.69 1456.72 5750.24 1489.17 5750.51 1520.36 5750.55
 1570.07 5749.26 1584.65 5750.05 1606.53 5750.89 1627.08 5749.71 1641.03 5749.36
 1696.01 5748.77  1726.5  5750.3 1812.68 5751.78 1830.86 5749.27 1845.82 5746.99
 1889.57 5745.78  1935.3 5745.63  1953.2  5746.4 1978.77  5745.4 2003.62 5744.77
 2061.86 5743.66  2092.4 5743.22  2129.2 5743.22  2137.2 5743.22  2166.4 5745.52
 2190.85 5747.37    2199 5750.42 2222.21 5752.33 2247.21 5752.23 2267.75 5753.35
 2350.09 5758.75 2359.71 5759.62 2373.11 5761.49 2400.09 5763.73 2422.91 5767.55
 2435.96 5767.65 2449.89 5768.52 2487.04 5769.73    2499 5771.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1130.6     .06  1953.2     .04    2199     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1953.2    2199           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 153.6*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1420.4 5749.08 1519.26 5748.58 1551.88 5747.98 1602.79 5748.27 1621.08 5747.83
 1632.94  5748.6 1643.32 5747.18 1663.59 5746.85 1687.78    5747 1711.04 5746.83
 1748.11 5745.64 1758.98 5746.07 1775.29 5746.49 1790.61 5745.57 1801.02 5745.24
 1842.02 5745.16 1864.76 5746.34 1929.01 5747.82 1942.58 5746.24 1953.73 5744.64
```

```
 1986.35 5743.57 2020.45 5743.19  2033.8  5743.6 2054.15 5742.75 2073.94 5742.15
 2120.29    5741  2144.6 5740.48  2199.8 5740.48  2211.8 5740.48  2234.1 5743.43
 2252.78 5745.85    2259 5748.28 2283.14 5751.22 2309.14 5751.15  2330.5  5752.9
 2416.13 5761.28 2426.14 5762.41 2440.07 5764.99 2468.13 5767.89 2491.87 5771.63
 2505.43 5772.37 2519.93 5773.68 2558.57  5775.5    2571 5776.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1420.4     .06  2033.8     .04    2259     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        2033.8    2259           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 152.8*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1710.2 5745.04 1775.34  5744.6 1796.84 5744.25 1830.39 5744.29 1842.44 5744.04
 1850.25  5744.4 1857.09 5743.67 1870.45 5743.47 1886.39  5743.5 1901.71 5743.11
 1926.14 5742.02 1933.31 5742.09 1944.06 5742.09 1954.15 5741.42 1961.01 5741.12
 1988.03 5741.54 2003.01 5742.39 2045.35 5743.85 2054.29 5743.22 2061.64 5742.29
 2083.13 5741.36 2105.61 5740.76  2114.4  5740.8 2129.53  5740.1 2144.25 5739.53
 2178.72 5738.33  2196.8 5737.74  2270.4 5737.74  2286.4 5737.74  2301.8 5741.34
  2314.7 5744.33    2319 5746.14 2344.07 5750.11 2371.07 5750.08 2393.25 5752.45
 2482.17  5763.8 2492.57 5765.21 2507.04  5768.5 2536.17 5772.05 2560.83 5775.71
 2574.91  5777.1 2589.96 5778.84 2630.09 5781.26    2643 5782.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1710.2     .06  2114.4     .04    2319     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        2114.4    2319           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 152

INPUT
Description: FEMA cross section AN
```

```
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    2000    5741    2085    5740    2121    5737    2166  5740.2    2195    5738
    2249    5735    2341    5735    2361    5735    2379    5744    2405    5749
    2433    5749    2456    5752    2559    5768    2574    5772    2660    5784
    2715    5788

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    2000     .06    2195     .04    2379     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          2195    2379           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 151.333*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1666.67    5739 1698.16 5738.97 1739.67 5738.71 1795.13 5738.36 1799.25 5738.33
 1855.41 5735.83  1900.7 5737.55  1925.6  5738.5 1970.83 5736.67 2029.83 5733.17
 2076.12 5733.17 2122.52 5733.17 2142.67 5733.17 2161.33    5741 2178.43 5742.25
 2194.37  5743.1  2222.1 5744.51 2239.09 5745.48 2245.67  5745.5 2316.83 5745.83
 2322.82 5746.07 2363.27 5749.14  2370.9 5749.41 2373.21 5749.66 2377.13 5750.14
 2391.61  5751.4 2403.47 5752.51 2443.21  5755.9 2699.64 5767.12  2744.5 5770.47
 3001.69 5780.59 3166.17    5784

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1666.67     .06  1925.6     .03 2161.33     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1925.6 2161.33           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 150.666*

INPUT
Description:
Station Elevation Data    num=      32
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1333.33    5737 1376.13 5737.18 1432.53 5736.97 1507.91 5736.69  1513.5 5736.67
 1589.81 5734.67 1651.36 5736.04  1685.2  5736.8 1746.67 5735.33 1810.67 5731.33
  1857.3 5731.33 1904.04 5731.33 1924.33 5731.33 1943.67    5738 1972.14  5739.4
  1998.7 5740.08 2044.88  5741.1 2073.18 5741.95 2084.13    5742 2202.66 5742.67
 2212.65 5743.14 2280.02 5747.51 2292.72 5747.73 2296.56 5748.13 2303.11 5748.91
 2327.22  5750.8 2346.98 5752.41 2413.17 5757.12 2840.27 5766.24 2914.99 5768.94
 3343.37 5777.18 3617.33    5780

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1333.33     .06 1746.67     .03 1943.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1746.67 1943.67           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 150.*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    1000    5735 1054.09 5735.38  1125.4 5735.22 1220.68 5735.02 1227.76    5735
 1324.22  5733.5 1402.02 5734.53 1444.79  5735.1  1522.5    5734  1591.5  5729.5
 1638.47  5729.5 1685.55  5729.5    1706  5729.5    1726    5735 1765.86 5736.55
 1803.02 5737.06 1867.66  5737.7 1907.26 5738.43  1922.6  5738.5  2088.5  5739.5
 2102.47 5740.21 2196.76 5745.88 2214.54 5746.05 2219.92  5746.6 2229.08 5747.68
 2262.82  5750.2 2290.48 5752.31 2383.13 5758.34 2980.91 5765.35 3085.49 5767.42
 3685.06 5773.77  4068.5    5776

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    1000     .06  1522.5     .03    1726     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1522.5    1726           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 149.333*

INPUT
```

```
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  666.67    5733  732.06 5733.59  818.27 5733.48  933.45 5733.34  942.01 5733.33
 1058.62 5732.33 1152.68 5733.02 1204.39  5733.4 1298.33 5732.67 1372.33 5727.67
 1419.65 5727.67 1467.07 5727.67 1487.67 5727.67 1508.33    5732 1559.57  5733.7
 1607.35 5734.04 1690.44  5734.3 1741.35 5734.91 1761.07    5735 1974.33 5736.33
  1992.3 5737.28 2113.51 5744.25 2136.36 5744.37 2143.28 5745.07 2155.05 5746.46
 2198.43  5749.6 2233.99 5752.21 2353.09 5759.56 3121.55 5764.47 3255.98 5765.89
 4026.74 5770.36 4519.67    5772

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  666.67     .06 1298.33     .03 1508.33     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1298.33 1508.33           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 148.666*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  333.33    5731  410.03 5731.79  511.13 5731.74  646.23 5731.67  656.26 5731.67
  793.03 5731.17  903.34 5731.51  963.99  5731.7 1074.17 5731.33 1153.17 5725.83
 1200.82 5725.83 1248.59 5725.83 1269.33 5725.83 1290.67    5729 1353.29 5730.85
 1411.67 5731.02 1513.22  5730.9 1575.44 5731.38 1599.53  5731.5 1860.17 5733.17
 1882.12 5734.35 2030.25 5742.63 2058.18 5742.68 2066.64 5743.53 2081.03 5745.23
 2134.04    5749 2177.49  5752.1 2323.04 5760.78 3262.18 5763.59 3426.48 5764.36
 4368.43 5766.95 4970.83    5768

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  333.33     .06 1074.17     .03 1290.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1074.17 1290.67           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 148
```

```
INPUT
Description: FEMA Cross Section AM
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5729      88    5730     204    5730     359    5730     654    5730
     850    5730     934    5724     982    5724    1051    5724    1073    5726
    1147    5728    1216    5728    1336  5727.5    1438    5728    1746    5730
    1947    5741    1980    5741    1990    5742    2007    5744    2121    5752
    2293    5762    5422    5764

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     850    .167    1073     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           850    1073              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.992*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.06   82.42 5729.82  156.51 5729.68  191.07 5729.67  256.88 5729.66
  336.24 5729.53  366.07 5729.48  612.54 5729.42  796.11 5729.38  802.96 5728.74
  845.68 5726.01  882.61 5723.54  927.18 5723.54  991.25 5723.54 1012.67 5725.67
 1082.33 5727.55 1147.28 5727.58 1260.24 5727.16 1326.49  5727.5 1356.25 5727.67
    1523  5728.9 1646.17 5729.71 1835.37 5739.95 1866.44 5739.95 1875.85 5740.88
 1883.86 5741.81 1891.85 5742.74 1999.16 5750.25 2117.27 5757.11 2161.07 5759.62
 2411.92 5759.77 2726.37 5759.94 3024.67 5760.12 3322.76 5760.35 3616.51 5760.55
  3927.9 5760.78 4228.58 5760.98 4534.16 5761.26 4832.19 5761.56 5106.41 5761.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  796.11    .167 1012.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        796.11 1012.67              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
```

REACH: Lorson Ranch RS: 147.985*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.12	76.84	5729.65	145.91	5729.35	178.13	5729.34	239.49	5729.32
313.48	5729.06	341.29	5728.97	571.08	5728.84	742.23	5728.75	749.27	5727.96
793.23	5725.45	831.22	5723.08	872.36	5723.08	931.5	5723.08	952.34	5725.33
1017.66	5727.1	1078.56	5727.15	1184.47	5726.81	1246.6	5727.16	1274.5	5727.35
1430.85	5728.65	1546.34	5729.41	1723.75	5738.89	1752.87	5738.9	1761.7	5739.76
1769.21	5740.62	1776.7	5741.49	1877.32	5748.5	1988.07	5754.92	2029.13	5757.24
2264.35	5757.37	2559.19	5757.49	2838.89	5757.66	3118.39	5757.92	3393.83	5758.11
3685.8	5758.36	3967.73	5758.55	4254.26	5758.91	4533.71	5759.3	4790.83	5759.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	742.23	.167	952.34	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
742.23	952.34	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.978*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.18	71.26	5729.47	135.32	5729.03	165.2	5729.01	222.1	5728.98
290.72	5728.59	316.51	5728.45	529.62	5728.26	688.34	5728.12	695.58	5727.18
740.77	5724.89	779.83	5722.62	817.54	5722.62	871.76	5722.62	892.02	5725
952.99	5726.65	1009.84	5726.73	1108.71	5726.47	1166.7	5726.82	1192.75	5727.02
1338.7	5728.4	1446.51	5729.12	1612.12	5737.84	1639.31	5737.85	1647.55	5738.64
1654.56	5739.43	1661.56	5740.23	1755.48	5746.75	1858.86	5752.74	1897.2	5754.86
2116.77	5754.98	2392.01	5755.04	2653.11	5755.2	2914.02	5755.48	3171.14	5755.67
3443.7	5755.93	3706.88	5756.12	3974.35	5756.55	4235.22	5757.04	4475.24	5757.49

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	688.34	.167	892.02	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
688.34	892.02	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.971*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.24	65.68	5729.3	124.73	5728.71	152.27	5728.68	204.71	5728.64
267.96	5728.13	291.74	5727.93	488.15	5727.69	634.45	5727.5	641.89	5726.4
688.31	5724.34	728.44	5722.16	762.72	5722.16	812.01	5722.16	831.69	5724.66
888.32	5726.2	941.12	5726.3	1032.94	5726.12	1086.8	5726.48	1111	5726.7
1246.55	5728.15	1346.69	5728.82	1500.5	5736.78	1525.75	5736.8	1533.4	5737.52
1539.91	5738.24	1546.41	5738.98	1633.65	5745	1729.66	5750.55	1765.26	5752.48
1969.2	5752.58	2224.83	5752.6	2467.32	5752.73	2709.65	5753.04	2948.46	5753.23
3201.6	5753.51	3446.03	5753.69	3694.45	5754.2	3936.73	5754.79	4159.66	5755.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	634.45	.167	831.69	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
634.45	831.69	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.964*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.3	60.11	5729.12	114.13	5728.38	139.34	5728.35	187.33	5728.3
245.2	5727.66	266.96	5727.42	446.69	5727.11	580.56	5726.88	588.2	5725.62
635.86	5723.78	677.05	5721.7	707.9	5721.7	752.26	5721.7	771.36	5724.33
823.64	5725.75	872.39	5725.88	957.18	5725.78	1006.91	5726.13	1029.25	5726.37
1154.4	5727.9	1246.86	5728.53	1388.87	5735.73	1412.19	5735.75	1419.25	5736.4
1425.26	5737.05	1431.26	5737.72	1511.81	5743.25	1600.46	5748.36	1633.33	5750.1
1821.62	5750.18	2057.64	5750.15	2281.54	5750.27	2505.28	5750.61	2725.77	5750.79
2959.5	5751.09	3185.18	5751.27	3414.54	5751.85	3638.24	5752.53	3844.07	5753.14

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	580.56	.167	771.36	.06

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        580.56  771.36              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.957*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.36   54.53 5728.95  103.54 5728.06   126.4 5728.02  169.94 5727.96
  222.44 5727.19  242.18  5726.9  405.23 5726.53  526.68 5726.25  534.51 5724.83
   583.4 5723.23  625.66 5721.24  653.08 5721.24  692.51 5721.24  711.03 5723.99
  758.97  5725.3  803.67 5725.45  881.41 5725.44  927.01 5725.79  947.49 5726.05
 1062.26 5727.65 1147.03 5728.24 1277.24 5734.68 1298.62  5734.7  1305.1 5735.28
 1310.61 5735.86 1316.11 5736.47 1389.97  5741.5 1471.25 5746.18  1501.4 5747.72
 1674.04 5747.78 1890.46  5747.7 2095.76 5747.81 2300.91 5748.17 2503.09 5748.35
 2717.39 5748.67 2924.33 5748.84 3134.64 5749.49 3339.76 5750.27 3528.49 5750.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  526.68    .167  711.03     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        526.68  711.03              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.95*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.42   48.95 5728.77   92.95 5727.74  113.47 5727.69  152.55 5727.62
  199.68 5726.72   217.4 5726.38  363.77 5725.95  472.79 5725.62  480.82 5724.05
  530.95 5722.67  574.27 5720.78  598.27 5720.78  632.77 5720.78  650.71 5723.66
   694.3 5724.85  734.95 5725.03  805.65 5725.09  847.12 5725.45  865.74 5725.72
  970.11  5727.4  1047.2 5727.94 1165.62 5733.62 1185.06 5733.65 1190.95 5734.16
 1195.96 5734.67 1200.97 5735.21 1268.13 5739.75 1342.05 5743.99 1369.46 5745.34
 1526.47 5745.39 1723.28 5745.26 1909.98 5745.34 2096.54 5745.73  2280.4 5745.91
 2475.29 5746.25 2663.48 5746.41 2854.74 5747.14 3041.27 5748.02  3212.9  5748.8
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  472.79    .167  650.71     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        472.79  650.71              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.942*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.49   43.37  5728.6   82.35 5727.41  100.54 5727.36  135.16 5727.27
  176.92 5726.25  192.62 5725.87  322.31 5725.37   418.9    5725  427.13 5723.27
  478.49 5722.11  522.87 5720.32  543.45 5720.32  573.02 5720.32  590.38 5723.32
  629.63  5724.4  666.23  5724.6  729.89 5724.75  767.22  5725.1  783.99  5725.4
  877.96 5727.15  947.37 5727.65 1053.99 5732.57  1071.5  5732.6  1076.8 5733.04
 1081.31 5733.48 1085.82 5733.95 1146.29    5738 1212.85 5741.81 1237.53 5742.96
 1378.89 5742.99  1556.1 5742.81 1724.19 5742.88 1892.17  5743.3 2057.71 5743.47
 2233.19 5743.82 2402.63 5743.98 2574.83 5744.79 2742.78 5745.76 2897.31 5746.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   418.9    .167  590.38     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         418.9  590.38              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.935*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.55   37.79 5728.42   71.76 5727.09    87.6 5727.04  117.78 5726.93
  154.17 5725.78  167.84 5725.35  280.85 5724.79  365.02 5724.38  373.44 5722.49
  426.03 5721.56  471.48 5719.86  488.63 5719.86  513.27 5719.86  530.05 5722.98
  564.96 5723.95  597.51 5724.18  654.12  5724.4  687.33 5724.76  702.24 5725.07
```

```
  785.81  5726.9  847.54 5727.35  942.37 5731.52  957.93 5731.55  962.65 5731.92
  966.67 5732.29  970.67  5732.7 1024.45 5736.25 1083.64 5739.62  1105.6 5740.58
 1231.32 5740.59 1388.91 5740.36 1538.41 5740.42 1687.81 5740.86 1835.03 5741.03
 1991.09  5741.4 2141.78 5741.56 2294.93 5742.43  2444.3  5743.5 2581.73 5744.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  365.02    .167  530.05     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        365.02  530.05              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.928*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.61   32.21 5728.25   61.16 5726.76   74.67 5726.71  100.39 5726.59
  131.41 5725.32  143.06 5724.84  239.39 5724.21  311.13 5723.75  319.75 5721.71
  373.58    5721  420.09  5719.4  433.81  5719.4  453.52  5719.4  469.72 5722.65
  500.29  5723.5  528.79 5723.75  578.36 5724.06  607.43 5724.42  620.49 5724.75
  693.66 5726.65  747.71 5727.06  830.74 5730.46  844.37  5730.5   848.5  5730.8
  852.02  5731.1  855.52 5731.44  902.61  5734.5  954.44 5737.43  973.66  5738.2
 1083.74 5738.19 1221.73 5737.92 1352.63 5737.95 1483.44 5738.43 1612.34 5738.59
 1748.99 5738.98 1880.93 5739.13 2015.03 5740.08 2145.81 5741.25 2266.14 5742.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  311.13    .167  469.72     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        311.13  469.72              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.921*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0 5729.67   26.63 5728.07   50.57 5726.44   61.74 5726.38      83 5726.25
  108.65 5724.85  118.29 5724.32  197.92 5723.63  257.24 5723.12  266.06 5720.93
  321.12 5720.45   368.7 5718.94  378.99 5718.94  393.77 5718.94  409.39 5722.31
  435.62 5723.05  460.07 5723.33  502.59 5723.71  527.54 5724.08  538.74 5724.42
  601.51  5726.4  647.89 5726.77  719.11 5729.41  730.81 5729.46  734.35 5729.68
  737.37 5729.91  740.38 5730.19  780.78 5732.75  825.24 5735.25  841.73 5735.82
  936.17 5735.79 1054.55 5735.47 1166.85 5735.49 1279.07 5735.99 1389.66 5736.15
 1506.89 5736.56 1620.08  5736.7 1735.12 5737.73 1847.32 5738.99 1950.56 5740.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  257.24    .167  409.39     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        257.24  409.39              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.914*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.73   21.05 5727.89   39.98 5726.12   48.81 5726.05   65.61 5725.91
   85.89 5724.38   93.51  5723.8  156.46 5723.06  203.35  5722.5  212.37 5720.14
  268.66 5719.89  317.31 5718.48  324.17 5718.48  334.03 5718.48  349.07 5721.98
  370.95  5722.6  391.35 5722.91  426.83 5723.37  447.64 5723.73  456.99 5724.09
  509.37 5726.15  548.06 5726.47  607.49 5728.35  617.25 5728.41   620.2 5728.56
  622.72 5728.72  625.23 5728.93  658.94    5731  696.04 5733.06  709.79 5733.44
  788.59  5733.4  887.37 5733.02  981.06 5733.03  1074.7 5733.55 1166.97 5733.71
 1264.78 5734.13 1359.23 5734.27 1455.22 5735.38 1548.83 5736.73 1634.97 5737.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  203.35    .167  349.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        203.35  349.07              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.907*
```

```
INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.79   15.47 5727.72   29.38 5725.79   35.87 5725.72   48.23 5725.57
   63.13 5723.91   68.73 5723.29     115 5722.48  149.47 5721.88  149.675721.825
  158.68 5719.36  216.21 5719.34  265.92 5718.02  269.35 5718.02  274.28 5718.02
  288.74 5721.65  306.27 5722.15  322.63 5722.48  351.06 5723.03  367.75 5723.39
  375.24 5723.77  417.22  5725.9  448.23 5726.18  495.86  5727.3  503.68 5727.36
  506.05 5727.44  508.07 5727.53  510.08 5727.68   537.1 5729.25  566.83 5730.88
  577.86 5731.06  641.02    5731  720.18 5730.58  795.28 5730.56  870.33 5731.12
  944.29 5731.27 1022.68 5731.71 1098.38 5731.85 1175.31 5733.02 1250.35 5734.48
 1319.39 5735.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  149.47    .167  288.74     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        149.47  288.74              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.9

INPUT
Description: Top of 7th Drop Structure and Bottom of Berm.  Cross section at
             upper most part of newly constructed channel at river station
             95+56.08
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.85   18.79 5725.47   30.84 5725.23   43.95 5722.77   95.58 5721.25
  104.99 5718.58  163.75 5718.78  214.53 5717.56  228.41 5721.31  287.85 5723.05
  325.07 5725.65  393.42 5726.34  437.63 5728.69  493.44  5728.6     553 5728.13
   609.5  5728.1  665.96 5728.68   721.6 5728.83  780.58 5729.29  837.53 5729.42
  895.41 5730.67  951.86 5732.22  1003.8  5733.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   95.58    .167  228.41     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  437.63             44.6   56.43   10.77             .1       .3

CROSS SECTION
```

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.8

INPUT
Description: Bottom of 7th Drop Structure and Top of Berm. Cross section at river station 95+14.03
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.42	16.94	5724.89	33.65	5724.12	46.35	5722.15	93.18	5720.64
111.9	5715.7	214.97	5715.88	231.42	5721.28	277.5	5721.82	291.81	5724.13
305.72	5724.87	319.71	5726.01	329.2	5727.82	381.88	5729.2	437.63	5728.69
493.44	5728.6	553	5728.13	609.5	5728.1	665.96	5728.68	721.6	5728.83
780.58	5729.29	837.53	5729.42	895.41	5730.67	951.86	5732.22	1003.8	5733.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	93.18	.1	231.42	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	381.88	51.82	39.16	664.1	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.7

INPUT
Description: 50' Downstream of 7th Drop Structure. Added X-Sec from As Built 8/21/06
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.35	18.48	5724.73	29.39	5724.45	44.98	5721.08	87.77	5719.35
105.63	5715.61	203.7	5715.6	225.46	5718.68	274.6	5719.55	290.14	5722.45
301.55	5723.03	324.29	5728.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	87.77	.1	225.46	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	324.29	103.99	99.4	95.42	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek

```
REACH: Lorson Ranch       RS: 147.6

INPUT
Description: cross section at river station 93+55
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5726    2.76    5725       6    5724    9.48    5723   22.22    5722
   32.57    5721   39.82    5720   47.67    5719   87.75    5718    93.7    5717
   98.61    5716  102.64    5715  162.58    5715  210.64    5716  216.64    5717
  232.04    5718  264.94    5719  270.81    5720  276.55    5721  281.68    5722
  283.65    5722  291.46    5722  299.16    5723  303.72    5724  308.14    5725
  312.29    5726  316.42    5727  325.34    5728  464.22 5728.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   87.75      .1  232.04     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.34           173.91  186.52  199.66             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.2

INPUT
Description: Top of 6th Drop Structure.  Cross section at river station 91+69
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5723.75   20.14 5720.51    22.1 5719.65   35.95 5717.04   84.49  5716.7
   96.26 5713.34  201.62 5713.78  216.75 5717.14  265.99 5717.76  278.35 5719.97
  293.53 5720.96  316.12 5726.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   84.49      .1  216.75     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  316.12            50.74   63.56   56.41             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 146.3

INPUT
```

```
Description: Bottom of 6th Drop Structure
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5724.71   17.48 5720.46    36.6 5719.79   48.92 5717.33   98.86 5716.54
  114.07  5712.9  216.97 5712.29  231.25 5716.45  278.82 5717.49  294.46 5719.52
  313.21 5720.28  330.57 5725.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   98.86     .06  231.25     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  330.57            47.58   47.58   47.58             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 146.1

INPUT
Description: 50' Downstream of 6th Drop Structure
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5723.32   19.57 5718.52   33.63 5718.19   49.46 5715.46    93.7 5714.97
  114.11 5711.71  210.32 5711.74  229.41 5714.94  279.25  5715.6  294.35 5718.75
  305.76 5719.45  325.54 5724.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04    93.7     .04  229.41     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.54            90.06  120.53  150.87             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 145.6

INPUT
Description: Top of 5th Drop Structure.  Cross section at river station 89+48
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5722.65   17.01 5718.69   35.76 5717.07   47.05 5714.82   95.08  5714.1
  111.15 5710.99   217.5 5711.14  230.16 5713.87  280.45 5715.13  291.43 5716.86
  306.75 5718.42  323.21 5722.37
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   95.08     .06  230.16     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  323.21            55.82   58.14   60.59             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.7

INPUT
Description: Bottom of 5th Drop Structure.  DCBO Jimmy Camp Creek River Station
             88+90
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5721.66    16.1  5717.5   33.78 5715.97   45.78 5713.57      75 5712.29
  109.26  5709.3     213 5708.87  228.22 5712.53   277.2 5712.81  292.62 5716.45
  306.79 5716.86  325.43 5721.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04      75     .06  228.22     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.43            70.87   70.87   70.87             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.6

INPUT
Description: 50' Downstream of 5th Drop Structure.  DCBO Jimmy Camp Creek River
             Station 88+21
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5721.97    29.4 5716.05   44.44 5714.92   56.89 5712.57  108.47 5711.68
  124.18 5709.58  222.63 5709.16  238.48 5711.98  292.05 5712.93  303.99 5715.39
  319.58 5715.69  338.15 5721.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  108.47     .06  238.48     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  338.15           138.02  138.02  138.02             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.4

INPUT
Description: cross section at river station 86+85
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5720.77    7.74 5720.79    7.89 5720.75    8.74 5720.75   10.87 5720.16
    28.9 5715.44   43.83  5714.9    45.6 5714.87   46.89 5714.55   57.38 5712.02
  102.45 5711.01  108.95 5710.93  120.93  5708.9  122.51 5708.59  210.79  5707.4
  225.66  5707.2  228.13 5707.72  241.38 5711.48  248.52 5711.62  288.16 5711.82
  291.82 5712.46  305.29 5714.91  307.59 5715.05  316.82 5715.61  320.36 5716.46
  334.28 5719.89  335.58 5719.91  344.73 5719.91  348.72 5719.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  108.95     .04  241.38     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.74  335.58           174.49  178.55  183.34             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144

INPUT
Description: Top of 4th Drop Structure.  Cross section at river station 85+12
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5718.59   18.13 5714.39   35.51 5712.82   46.68 5710.97   97.69 5710.11
     110 5708.24  214.33 5706.95  230.63 5709.81  279.68 5710.31  291.31 5712.54
  306.09 5713.31  325.93 5718.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .045   97.69     .04  230.63    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.93            46.66   45.83   45.03             .1       .3
```

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 143.2

INPUT
Description: Bottom of 4th Drop Structure. Cross section at river station 84+71
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5717.86	17.92	5713.18	33.62	5712.22	45.7	5710.12	96.03	5709.26
113.89	5704.54	210.75	5704.58	226.65	5709.07	276.73	5708.79	291.09	5712.54
305.41	5712.62	323.55	5717.13						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	96.03	.1	226.65	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	323.55	415.26	415.73	416.34	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 142.4

INPUT
Description: cross section at river station 80+45
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5714	9.75	5713	14.21	5712	17.98	5711	21.74	5710
38.75	5709	43.05	5708	47.24	5707	79.27	5706	101.96	5705
105.75	5704	110.16	5703	148.06	5703	216.15	5704	220.3	5705
227.08	5706	281.52	5707	285.91	5708	290.22	5709	306.09	5710
311.12	5711	315.38	5712	319.26	5713	323.1	5714	327.01	5715
330.16	5716	334.17	5717	335.92	5717	337.17	5716		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	79.27	.04	227.08	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9.75	319.26	400.94	540.66	774.84	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 141.6

INPUT
Description: cross section at river station 75+58
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5711	3.38	5710	6.78	5709	10.17	5708	26.43	5707
30.71	5706	34.87	5705	53.33	5704	90.54	5703	94.71	5702
99.22	5701	207.92	5701	211.66	5702	215.33	5703	239.27	5704
267.72	5705	272.93	5706	278.2	5707	293.62	5708	300.33	5709
304.25	5710	308.57	5711	313.38	5712	318.09	5713	322.86	5714
327.6	5715	335.03	5716	335.39	5716				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	90.54	.04	215.33	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	308.57	569.21	474	372.73	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 140.8

INPUT
Description: Top of 3rd Drop Structure. Cross section at river station 70+87
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5709.71	15.74	5706.13	33.76	5704.68	45.12	5702.07	94.59	5700.81
106.86	5698.38	214.96	5698.74	227.98	5701.17	277.07	5701.71	289.78	5704.27
304.79	5705.01	323.04	5709.96						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	94.59	.1	227.98	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	323.04	37.27	37.5	38.21	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 140

```
INPUT
Description: Bottom of 3rd Drop Structure.  Cross section at river station 70+47
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5709.67   19.68 5705.11   35.76 5704.62   48.07 5701.53   98.94 5700.59
  112.45 5696.02  215.55 5696.15  227.77 5700.59  281.25 5701.46  291.45 5703.26
  307.69 5704.53  329.15 5708.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   98.94      .1  227.77     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  329.15            34.13   42.09   62.78             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 139.7

INPUT
Description: Added X-Sec from As-built 8/21/06 50' Downstream of 3rd Drop
             Structure at JCC river station 70+02
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5707.35   31.19 5705.41   49.24 5700.69    63.5  5700.6  101.94 5698.97
  115.74 5695.16  219.18  5695.3  233.57 5699.21   282.8 5700.03  296.27 5702.85
  316.11 5705.51  336.37 5708.32  367.23 5716.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  101.94      .1  233.57     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  336.37           114.06     102    90.9             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 139.3

INPUT
Description: cross section upstream of bridge at river station 69+00
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0    5706    3.93    5705    8.51    5704    14.8    5703   24.27    5702
   30.09    5701   35.61    5700   44.14    5699   45.74    5698   81.98    5697
   89.02    5696  170.69    5695  193.31    5695  199.85    5696  204.31    5697
  214.16    5698  230.52    5699  244.39    5700  255.68    5701  263.36    5702
  274.05    5703   289.2    5704  298.65    5705  306.61    5706  310.46    5707
  314.36    5708  318.18    5709  322.03    5710  325.96    5711  329.81    5712
  333.69    5713  337.57    5714  342.66    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   81.98     .04  204.31     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.93  298.65           181.15  181.15  181.15             .1       .3

BRIDGE


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 138.8

INPUT
Description: DBCO Proposed Bridge
Distance from Upstream XS =       1
Deck/Roadway Width        =      94
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 5719.15 5708.33     400 5719.09  5708.3

Upstream Bridge Cross Section Data
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5706    3.93    5705    8.51    5704    14.8    5703   24.27    5702
   30.09    5701   35.61    5700   44.14    5699   45.74    5698   81.98    5697
   89.02    5696  170.69    5695  193.31    5695  199.85    5696  204.31    5697
  214.16    5698  230.52    5699  244.39    5700  255.68    5701  263.36    5702
  274.05    5703   289.2    5704  298.65    5705  306.61    5706  310.46    5707
  314.36    5708  318.18    5709  322.03    5710  325.96    5711  329.81    5712
  333.69    5713  337.57    5714  342.66    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   81.98     .04  204.31     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
          3.93  298.65             .1       .3
```

```
Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 5718.03 5708.55     400 5717.93  5708.4

Downstream Bridge Cross Section Data
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5706    3.71    5705    7.44    5704   11.15    5703   15.15    5702
   23.39    5701   32.85    5700   41.83    5699   51.22    5698   73.28    5697
   92.72    5696   98.08    5695  101.37    5694  207.42    5694  211.31    5695
  215.26    5696  231.22    5697  257.69    5698  266.41    5699  275.19    5700
  284.89    5701  294.93    5702  304.62    5703  309.18    5704  313.02    5705
  316.92    5706  320.76    5707  324.64    5708   328.5    5709  332.33    5710
  336.22    5711  340.07    5712  343.92    5713  347.81    5714  351.68    5715
  363.53    5716  368.34    5716

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   92.72     .04  215.26     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
          3.71  313.02             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =  5713.6
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  1

Pier Data
Pier Station     Upstream=     152    Downstream=     152
Upstream     num=       2
    Width   Elev    Width   Elev
       3    5690       3  5711.8
Downstream     num=       2
    Width   Elev    Width   Elev
       3    5690       3  5711.8

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
```

```
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #FEMA 100-Year


  E.G. US. (ft)               5704.22    Element                 Inside BR US
Inside BR DS
  W.S. US. (ft)               5702.81    E.G. Elev (ft)              5704.20
5703.49
  Q Total (cfs)              12900.00    W.S. Elev (ft)              5702.64
5702.53
  Q Bridge (cfs)             12900.00    Crit W.S. (ft)              5701.73
5700.44
  Q Weir (cfs)                           Max Chl Dpth (ft)              7.63
 8.53
  Weir Sta Lft (ft)                      Vel Total (ft/s)              10.02
 7.83
  Weir Sta Rgt (ft)                      Flow Area (sq ft)           1286.80
1646.49
  Weir Submerg                           Froude # Chl                   0.78
 0.57
  Weir Max Depth (ft)                    Specif Force (cu ft)        7986.08
8896.81
  Min El Weir Flow (ft)       5719.11    Hydr Depth (ft)                5.17
 5.80
  Min El Prs (ft)             5708.33    W.P. Total (ft)              264.79
302.24
  Delta EG (ft)                  1.14    Conv. Total (cfs)          144597.6
199580.1
  Delta WS (ft)                  0.87    Top Width (ft)               248.89
284.05
  BR Open Area (sq ft)        2942.56    Frctn Loss (ft)                0.53
 0.39
  BR Open Vel (ft/s)            10.02    C & E Loss (ft)                0.18
 0.02
  BR Sluice Coef                         Shear Total (lb/sq ft)         2.41
 1.42
  BR Sel Method           Energy only    Power Total (lb/ft s)         24.21
```

11.13

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.

BRIDGE OUTPUT Profile #DBPS-2015_100

E.G. US. (ft)	5708.19	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5706.03	E.G. Elev (ft)	5708.16	5707.37
Q Total (cfs)	26734.00	W.S. Elev (ft)	5705.78	5705.73
Q Bridge (cfs)	26734.00	Crit W.S. (ft)	5704.79	5703.33
Q Weir (cfs)		Max Chl Dpth (ft)	10.78	11.73
Weir Sta Lft (ft)		Vel Total (ft/s)	12.37	10.26
Weir Sta Rgt (ft)		Flow Area (sq ft)	2160.50	2604.81
Weir Submerg		Froude # Chl	0.80	0.62
Weir Max Depth (ft)		Specif Force (cu ft)	19631.43	21071.77
Min El Weir Flow (ft)	5719.11	Hydr Depth (ft)	7.18	8.35
Min El Prs (ft)	5708.33	W.P. Total (ft)	323.57	337.25
Delta EG (ft)	1.27	Conv. Total (cfs)	299456.4	390523.5
Delta WS (ft)	1.00	Top Width (ft)	300.94	311.89
BR Open Area (sq ft)	2942.56	Frctn Loss (ft)	0.56	0.42
BR Open Vel (ft/s)	12.37	C & E Loss (ft)	0.22	0.03
BR Sluice Coef		Shear Total (lb/sq ft)	3.32	2.26
BR Sel Method	Energy only	Power Total (lb/ft s)	41.11	23.19

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 138.3

INPUT
Description: cross section downstream of bridge at river station 67+19
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5706	3.71	5705	7.44	5704	11.15	5703	15.15	5702
23.39	5701	32.85	5700	41.83	5699	51.22	5698	73.28	5697
92.72	5696	98.08	5695	101.37	5694	207.42	5694	211.31	5695
215.26	5696	231.22	5697	257.69	5698	266.41	5699	275.19	5700
284.89	5701	294.93	5702	304.62	5703	309.18	5704	313.02	5705
316.92	5706	320.76	5707	324.64	5708	328.5	5709	332.33	5710
336.22	5711	340.07	5712	343.92	5713	347.81	5714	351.68	5715
363.53	5716	368.34	5716						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	92.72	.04	215.26	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
3.71	313.02	298.68	310.69	324.82	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 138

INPUT
Description: cross section after full expansion at river station 64+80
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
34.98	5704.99	36.27	5704.99	38.94	5705.08	46.64	5704.4	52.78	5702.77
62.12	5700.09	72.51	5699.38	76.19	5699.35	80.17	5698.49	88.15	5696.62
121.84	5696.16	139.35	5695.71	147.94	5693.81	153.46	5692.55	218.45	5692.18
257.21	5692.34	263.25	5694.21	268.24	5695.52	298.9	5696.55	320.61	5696.93
326.55	5698.35	331.82	5699.36	338.71	5699.58	348.43	5699.78	367.96	5705.27
377.33	5707.9	404.67	5714.84	408.93	5715.12	416.88	5714.99	420.28	5714.76

```
  432.53 5715.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   34.98     .04  139.35     .04  268.24     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         36.27  367.96           341.96  348.12  366.74             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 137.6

INPUT
Description: Top of 2nd Drop Structure.  Cross section at river station 60+65
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.77   22.71  5697.1   45.39 5694.52    96.1  5693.4  112.46 5690.52
  118.47 5688.97  160.79  5689.4  174.84 5690.55  219.38 5690.87  232.43 5693.37
  275.82 5694.34  308.89 5697.97  332.35 5703.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04    96.1     .04  232.43     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  332.35            45.37   48.07   45.37             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 136.8

INPUT
Description: Bottom of 2nd Drop Structure.  Cross section at river station 60+27
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.52   33.87 5694.74   52.23 5693.64   99.58 5693.44  116.16 5688.25
  162.53  5687.6     173 5688.07  215.57 5688.59  234.22  5693.3  284.58 5694.24
  315.47 5698.34  330.99 5701.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   99.58      .1  234.22     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  330.99           365.58   322.7  292.78             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 136

INPUT
Description: cross section at river station 56+89
Station Elevation Data    num=      47
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5703     4.1    5702    8.19    5701    12.3    5700   16.32    5699
   20.45    5698   24.48    5697   29.02    5696   33.79    5695   50.42    5694
    54.9    5693   59.67    5692   78.36    5691  112.72    5690  117.01    5689
  121.25    5688  215.23    5687  230.97    5687  235.28    5688  239.65    5689
  246.22    5690  291.75    5691  298.68    5692  302.61    5693  321.48    5694
  325.35    5695  329.15    5696  332.89    5697  336.73    5698   340.5    5699
  344.29    5700  348.13    5701  351.87    5702  355.68    5703  359.48    5704
  363.21    5705   367.1    5706  370.87    5707  374.67    5708  378.43    5709
   382.2    5710  386.02    5711  389.82    5712  393.61    5713   397.4    5714
  473.92    5715  478.23    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  112.72     .04  246.22     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.45  336.73           332.63  332.63  332.63             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.6

INPUT
Description: cross section at river station 53+55
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.97    4.73  5699.9    7.76 5700.17   21.72 5696.79   37.46 5692.89
   45.77 5692.66   55.52 5690.98    61.6 5690.98   67.16 5689.69   89.58 5689.23
  114.62 5688.67  121.56 5687.02  127.94 5685.38  174.27 5685.57  232.68 5685.66
  238.04 5686.99  244.64 5688.74  273.26 5689.28  293.72 5689.49  299.28 5690.79
  306.82 5692.35  315.62 5692.55  320.43 5692.84  348.73 5700.21  373.68  5706.7
  404.92 5714.31  408.47 5714.38  416.37 5714.69  417.55 5714.73  420.14 5714.71
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  114.62     .04  244.64     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.72  348.73             62.7   55.42   47.48             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.55

INPUT
Description: Cross Section: Sta. 53+00.00
Station Elevation Data    num=     219
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.14.5899658 5702.1310.40002 5702.0518.48999    570226.20996 5701.99
26.40002 5701.9837.76001 5701.9638.32996 5701.9638.69995 5701.9582.72998 5701.94
83.58997 5701.9383.81995 5701.93   84.69 5701.92   96.37 5701.92   97.13 5701.91
  108.12 5701.93  109.14 5701.92  119.39 5701.95  120.04 5701.95  129.68    5702
  129.72    5702  134.89 5701.86138.8199 5701.76158.2599 5701.91  159.84 5701.93
  160.45 5701.94  163.22 5701.94  165.09 5701.93  170.03    5702  176.65 5702.35
  179.52  5702.4  179.98 5702.39  180.47 5702.37186.3199 5702.49  191.97 5702.29
  201.69    5702  229.03 5701.85   238.3 5701.66  238.55 5701.66  244.09 5701.31
  246.12 5701.14  249.09 5701.12  252.97 5701.06  253.29 5701.06254.0699    5701
   254.2    5701   260.8 5700.65  266.34 5700.29  269.65 5700.05  270.94 5700.06
  275.14 5700.02   277.2    5700   277.8    5700287.5699 5699.48   291.1 5699.31
294.7599 5699.14  306.15 5699.16  317.75 5698.98  322.18 5698.97  322.84 5698.97
  377.77 5698.96  378.38 5698.96  379.12 5698.95  381.21 5698.95   382.1 5698.94
  396.28 5698.93  405.56 5698.93  406.86 5698.92  408.72  5698.9  410.71 5698.88
  418.77 5698.75  459.58 5698.03  468.37 5698.03  475.45 5698.04   476.7 5698.04
  485.02 5698.01  487.77 5698.01  490.65    5698  495.48 5697.94  497.03 5697.93
  503.03 5697.78524.5099 5697.27  527.44 5697.22  529.79  5697.1   531.4 5697.02
  532.02    5697  534.17 5696.46  536.02    5696   538.7 5695.33  540.02    5695
  543.83 5694.05  544.02    5694  544.33 5693.92  548.02    5693  553.27 5692.71
565.8199    5692  567.35 5691.62569.8199    5691  572.89 5690.23  573.81    5690
  583.54 5689.56596.4299    5689  608.63 5688.62629.3199    5688  632.14  5687.3
633.3199    5687  635.23 5686.52637.3199    5686  641.72 5685.85  662.62 5685.22
  668.74 5685.04  670.04    5685  679.24 5684.92  681.48 5684.91  685.92 5684.95
  692.35    5685  692.36    5685  727.64 5685.63  747.33    5686750.6899 5686.84
  751.33    5687  752.23 5687.22  755.33    5688  787.22 5688.97  788.22    5689
  788.37 5689.01  788.71 5689.02  810.84    5690  814.16 5690.83  814.84    5691
  815.36 5691.13  818.83    5692829.8099 5692.62  833.46 5692.82  836.63    5693
838.9399 5693.58  840.63    5694  842.33 5694.42  844.63    5695  846.16 5695.38
  848.63    5696  851.47 5696.75  851.97 5696.88  852.14 5696.93  852.23 5696.95
  852.41    5697  852.63    5697  855.71 5697.79  856.29 5697.94  856.36 5697.96
  856.51    5698  856.59 5698.02  860.51    5699  860.79 5699.07  864.51    5700
```

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  868.27 5700.94  868.52    5701  868.58 5701.02  872.52    5702  872.58 5702.02
  876.52    5703876.5699 5703.01  880.52    5704880.5699 5704.01  884.52    5705
  887.67 5705.79  891.11 5706.65  893.23 5707.18  896.52    5708899.6899 5708.79
  900.52    5709  903.09 5709.64  904.52    5710  906.11  5710.4  908.52    5711
  911.85 5711.83  912.53    5712  915.91 5712.85  916.53    5713  920.04 5713.88
  920.53    5714  936.91 5714.37  964.97    5715   975.5    5715  977.54  5714.5
  979.54    5714  980.28 5713.81  983.54    5713  986.18 5712.34  987.54    5712
  991.01 5711.13  991.54    5711995.3199 5710.06  995.54    5710  997.04 5709.63
  999.55    5709  999.83 5708.93 1003.55    5708 1003.99 5707.89 1007.55    5707
 1010.68 5706.22 1011.55    5706 1011.75 5705.95 1015.55    5705 1015.77 5704.94
 1019.55    5704  1019.9 5703.91 1023.55    5703    1024 5702.89 1027.55    5702
 1028.07 5701.87 1031.55    5701 1035.11 5700.11 1035.55    5700 1036.02 5699.88
 1039.55    5699 1041.02 5698.63 1043.56    5698 1092.35 5697.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   531.4     .04  848.63     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         531.4  848.63            29.38   29.37    9.53             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.50

INPUT
Description: Cross Section: Sta. 52+70.63
Station Elevation Data    num=     212
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.7451.02991 5702.6654.07996 5702.6371.78992  5702.676.99994  5702.6
  119.55 5702.53  125.65 5702.55   131.2 5702.58  135.77 5702.62139.5099 5702.03
  139.53 5702.04139.8699 5702.04   144.8 5702.26  159.14  5702.9159.5099 5702.92
   159.6 5702.92163.1799    5703  166.29 5703.05166.7599 5703.06175.8699  5703.4
  182.24 5703.49189.1199 5703.58  194.53 5703.65194.8099 5703.64  207.99 5703.37
   212.3 5703.01  213.16 5703.01  213.27    5703214.0599 5702.94  214.46 5702.92
  216.28 5702.83232.1199 5702.01  232.79 5702.01232.9299    5702  233.05    5702
  237.15 5701.84  237.73 5701.81   245.2 5701.29  248.53 5701.04   249.1    5701
   249.3    5701  250.16 5700.95259.2499 5700.48  266.53  5700.1  267.36 5700.05
   268.1 5700.01  268.74    5700  268.79    5700   269.9 5699.94281.1899 5699.44
   288.6 5699.46  320.91 5698.93  326.04 5698.93326.9299 5698.92  379.08 5698.91
  380.46 5698.91  382.15 5698.89383.9999 5698.88385.1799 5698.88387.1799 5698.86
   400.2 5698.86  404.45 5698.85   408.7 5698.86  411.52 5698.83  415.53 5698.79
419.8199 5698.74   437.2 5698.47461.0699 5698.05  467.05 5698.06  467.59 5698.06
  470.89 5698.05  472.05 5698.05  482.73 5698.02  487.39    5698490.5699 5697.98
  508.59 5697.53533.1199 5697.02  533.89    5697  536.95 5696.25537.9999    5696
  541.55 5695.14  542.11    5695  544.78 5694.35  546.22    5694  546.49 5693.93
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  550.33    5693  563.34 5692.29  568.61    5692  569.35 5691.82  572.72    5691
576.1899 5690.15  576.83    5690583.6199  5689.6  594.46    5689602.2599 5688.79
  615.13 5688.47  633.36    5688  635.98 5687.34  637.36    5687  641.13 5686.06
  641.36    5686  642.71 5685.94651.2999 5685.62  667.74    5685  677.75 5684.91
  680.47 5684.89686.2999 5684.94  692.97    5685  696.96 5685.07  717.75 5685.42
  752.52    5686753.7999 5686.32  756.52    5687  759.47 5687.74  760.52    5688
  786.86 5688.68  800.03    5689  811.38 5689.68  816.02    5690817.2999 5690.32
  820.02    5691  822.52 5691.63  824.02    5692  836.11 5692.68839.1699 5692.85
841.8199    5693  844.35 5693.63845.8199    5694   847.1 5694.32849.8199    5695
   852.2  5695.6853.8199    5696854.5599  5696.2  857.61    5697857.8199    5697
  859.21 5697.36861.7499    5698  863.22 5698.37865.7499    5699   868.9 5699.79
869.7499    5700   870.6 5700.21873.7499    5701  875.23 5701.37877.7599    5702
  879.24 5702.37881.7599    5703  883.24 5703.37885.7599    5704888.1299 5704.59
889.7599    5705892.4999 5705.68  892.97  5705.8893.7599    5706894.5499  5706.2
  897.77    5707901.0699 5707.83901.7599    5708  902.09 5708.08905.7599    5709
906.5099 5709.19  906.89 5709.28909.7599    5710   912.4 5710.66  912.83 5710.77
913.7599    5711914.3199 5711.14917.7599    5712   918.4 5712.16  921.77    5713
922.5099 5713.19  925.77    5714  962.33 5714.82970.5099    5715980.6799    5715
983.6899 5714.26  984.78    5714  988.39  5713.1  988.78    5713  992.78    5712
  994.45 5711.58  996.78    5711  998.72 5710.52 1000.78    5710 1003.33 5709.36
  1004.7    5709 1007.47 5708.31 1008.74    5708 1011.77 5707.24 1012.78    5707
 1013.89 5706.72 1016.79    5706 1018.58 5705.55 1020.79    5705 1022.69 5704.52
 1024.79    5704 1026.85 5703.48 1028.79    5703 1030.96 5702.46 1032.79    5702
 1035.04 5701.44 1036.79    5701 1038.58 5700.55 1040.79    5700 1043.14 5699.41
 1044.79    5699 1047.75 5698.26 1048.79    5698 1049.33 5697.87 1052.43 5697.85
 1065.35 5697.79 1096.96 5697.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  533.89     .04853.8199     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        533.89853.8199            55.38   35.02   20.44             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.47

INPUT
Description: Cross Section: Sta. 52+35.61
Station Elevation Data    num=     205
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.065.160034 5702.11   10.12 5702.2414.41003 5702.3617.69006 5702.45
20.91003 5702.4787.32001  5702.9   87.87 5702.9188.52002 5702.9290.52002 5702.92
  139.18  5702.9  139.75 5702.89  140.22 5702.88  140.89 5702.88  141.56 5702.86
  169.38 5702.56  171.57  5702.5  174.33 5702.43  196.57  5702.2  200.01  5702.1
```

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  205.91 5701.71  207.48 5701.67  208.13 5701.67  210.62  5701.6  216.36 5701.42
  231.41 5700.82  237.55 5700.58  242.55 5700.38  244.83 5700.22  249.03    5700
  262.71  5699.9  329.93  5698.8  333.59  5698.8  336.12 5698.79  338.61 5698.78
  382.82 5698.77  386.42 5698.75   390.8 5698.73   395.6 5698.68  396.52 5698.68
  401.72 5698.64   417.7 5698.64  424.83 5698.56  434.97 5698.46  445.86 5698.35
  465.34 5698.05  476.95 5698.01  477.89    5698  479.08    5698  489.89 5697.81
  538.62    5697   539.8 5696.71  541.37 5696.33  542.73    5696  544.45 5695.58
  546.84    5695   548.5  5694.6  550.95    5694  553.96 5693.27  555.06    5693
   566.3 5692.39  573.35    5692  576.05 5691.34  577.46    5691  577.72 5690.94
  581.56    5690  585.72 5689.72   594.7    5689  609.14 5688.66   638.6    5688
  639.49 5687.78  642.71    5687  645.52 5686.31   646.6 5686.05  646.79    5686
  649.72 5685.86668.6801    5685681.8101 5684.87  682.76 5684.86  687.84 5684.91
   696.4 5684.94  696.97    5685  703.47 5685.02  706.04 5685.03  725.17 5685.11
  734.02 5685.08  754.63 5685.21756.4301 5685.46  758.13 5685.44  760.42    5686
  764.37 5686.97  764.47    5687  764.61 5687.03  768.52    5688  776.74 5688.17
   792.2 5688.47  807.05 5688.75  820.23    5689  821.79 5689.27  824.73    5690
  826.92 5690.54  828.78    5691  830.49 5691.42  834.21    5692  837.92  5692.2
  847.45 5692.79  848.89 5692.88  850.11 5692.95  850.85    5693  852.67 5693.45
   854.9    5694  858.89 5694.98  858.95    5695     859 5695.01  859.97 5695.25
  862.84 5695.96     863    5696  864.93  5696.5  865.58 5696.67  865.92 5696.75
  866.89    5697  867.05    5697  868.98 5697.47  869.67 5697.64  871.16    5698
  871.59 5698.11  875.21    5699  875.67 5699.11  879.27    5700  879.75 5700.12
  883.32    5701  883.83 5701.13  887.37    5702  887.91 5702.13  891.43    5703
  894.89 5703.85  895.48    5704   897.1  5704.4  899.55    5705  901.59  5705.5
  903.61    5706   905.6 5706.49  907.66    5707  909.68 5707.51  911.67    5708
  914.78 5708.77  915.72    5709  917.65 5709.47  919.78    5710  922.29 5710.62
  923.83    5711  927.38 5711.88  927.88    5712  931.58 5712.91  931.93    5713
  935.96 5713.99  935.99    5714  936.34 5714.01  937.33 5714.03  948.27 5714.21
     986 5714.43  988.53 5714.37  991.64  5714.3  994.56 5714.28  994.67 5714.25
  995.11 5714.15  995.76    5714  996.09 5713.92  999.81    5713 1000.63  5712.8
 1003.86    5712 1004.97 5711.73 1007.92    5711 1010.07 5710.47 1011.97    5710
 1013.34 5709.62 1015.67    5709 1017.78 5708.49 1019.83    5708 1022.21 5707.43
 1024.08    5707 1025.92 5706.55 1028.18    5706 1030.63  5705.4 1032.23    5705
 1034.07 5704.55 1036.28    5704    1039 5703.33 1040.34    5703 1043.27 5702.28
 1044.39    5702 1047.51 5701.23 1048.44    5701 1049.75 5700.68 1052.49    5700
  1055.7 5699.21 1056.55    5699 1060.27 5698.08  1060.6    5698 1061.27 5697.83
 1061.28 5697.83 1064.65    5697  1064.9    5697 1067.23 5697.01 1103.89 5697.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  538.62     .04  866.89     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        538.62  866.89             32.05   14.97    8.17              .1       .3

CROSS SECTION
```

```
RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.34

INPUT
Description: Cross Section: Sta. 52+20.64 US Lorson Bridge
Station Elevation Data    num=     163
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5701.373.630005 5701.4712.30005 5701.7218.90002 5701.8825.40002 5701.93
77.28003 5702.2781.33008 5702.32 86.1001 5702.38 87.8501 5702.4188.65002 5702.41
91.93005 5702.4593.05005 5702.4594.34009 5702.44134.9501 5702.42  138.25 5702.36
140.9401  5702.3141.4701  5702.3145.2101 5702.22  166.78 5701.98171.8101 5701.85
  178.14 5701.69  193.61 5701.53199.9401 5701.34  203.72  5701.1208.6301 5700.97
209.0001 5700.97216.8201 5700.75234.8301 5700.19236.8801 5700.11  237.71 5700.08
  239.65    5700245.6401 5699.97  245.91 5699.96  247.03 5699.96270.5601 5699.78
  333.54 5698.75  336.96 5698.75  340.15 5698.74  343.28 5698.73384.3201 5698.72
   388.8 5698.69394.2501 5698.66400.2401 5698.61  401.05 5698.61  407.53 5698.55
  421.29 5698.55  430.15 5698.46442.7501 5698.33456.2601 5698.19  467.04 5698.03
474.6901    5698508.0101 5697.54  540.52    5697  541.34  5696.8  543.98 5696.16
544.6301    5696  547.46 5695.31548.7401    5695  550.46 5694.58  552.85    5694
  555.04 5693.47  556.96    5693  573.73 5692.08575.2401    5692  575.54 5691.93
  579.35    5691  581.34 5690.52  583.46    5690  591.55 5689.33  594.79    5689
   616.3 5688.51640.4901    5688643.4501 5687.28   644.6    5687  646.59 5686.51
  648.71    5686651.5701 5685.87662.6401 5685.22  669.84    5685676.0701 5684.38
  684.29 5684.28  688.66 5684.19  691.52 5684.19697.3101 5684.75698.4401 5684.86
  699.29 5684.94  699.48 5684.96706.8401 5684.94716.0901 5684.92732.3201 5684.86
  734.77 5684.86  760.78 5684.99  761.36    5685762.5701 5685.29  765.51    5686
  769.13 5686.87  769.66    5687770.3301  5687.1774.2401 5687.52777.8101 5687.93
778.6801    5688   798.8 5688.39  814.35 5688.72  821.11 5688.86  827.27    5689
  829.89 5689.63  831.42    5690833.2201 5690.43835.5701    5691844.1901 5691.64
  848.64    5692850.0001 5692.11  851.77  5692.3  857.42 5692.92858.1901    5693
  860.28  5693.5862.3401    5694  866.36 5694.97866.4901    5695  866.67 5695.04
  870.64    5696  871.05  5696.1874.7101    5697  874.79    5697   875.9 5697.24
879.1201    5698   881.1 5698.48  883.28    5699885.3101 5699.49887.4301    5700
  889.51  5700.5891.5901    5701893.7201 5701.51895.7401    5702  897.92 5702.52
   899.9    5703901.8301 5703.46904.0601    5704  907.03 5704.72908.2101    5705
909.2101 5705.24912.3701    5706913.1801  5706.2  916.52    5707  919.77 5707.79
962.9401 5707.83 1010.17 5707.87 1018.81 5707.97 1023.15 5707.94 1030.18 5707.88
 1032.18 5707.75 1044.11    5707 1104.56    5707  1109.4 5706.89 1118.84  5706.7
  1153.1    5706 1154.53    5706  1166.8 5705.67 1182.84 5705.29 1194.54    5705
 1196.21    5705 1197.26 5704.98 1211.05 5704.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  541.34     .04  871.05     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        541.34  871.05            82.01   82.61   81.81             .1       .3
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CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 135.29

INPUT
Description: Cross Section: Sta. 51+38.03 - DS Lorson Bridge
Station Elevation Data num= 153

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     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.571.630005 5699.58   15.12 5699.6130.30005 5699.6242.43005 5699.64
59.78003 5699.6767.31006 5699.6888.30005 5699.6890.76001 5699.67  105.02  5699.7
110.1901  5699.7  112.79 5699.69118.4501 5699.69   121.3 5699.68136.8101 5699.65
  143.17 5699.65146.1801 5699.64149.3101 5699.63160.4401 5699.61  164.55  5699.6
174.6101 5699.54188.1201 5699.46200.9901 5699.42207.9401 5699.36220.6401 5699.32
232.3701 5699.29   242.4 5699.26250.9901 5699.19  258.52 5699.17  266.98 5699.14
276.3201 5699.07286.5101 5699.03294.8201 5698.98299.0801 5698.95307.4901  5698.9
314.7601 5698.85329.3801 5698.73  341.36 5698.64  349.05 5698.58369.6301 5698.25
370.7501 5698.25380.4501  5698.2  389.97 5698.16  399.28 5698.16  412.61 5698.09
   425.8    5698  426.61    5698  438.92 5697.92  444.65 5697.88  464.27 5697.73
529.7501 5697.25  558.29 5697.01  559.46    5697  561.77 5696.44563.5701    5696
566.0701 5695.39567.6801    5695568.8701 5694.71  571.79    5694574.3101 5693.38
   575.9    5693  582.47 5692.03  582.77    5692  583.03 5691.98  583.86 5691.93
  598.29    5691602.1201 5690.07   602.4    5690602.7401 5689.92606.5001    5689
621.9501 5688.61  644.42    5688650.2601 5687.66  663.54    5687  664.61 5686.74
  667.65    5686  670.54  5685.3671.7601    5685  684.17 5684.37  691.54    5684
  693.46 5683.99  700.41 5683.95  702.35 5683.96  709.38    5684721.1901 5684.16
727.4401 5684.24727.9901 5684.25749.5701 5684.54  783.63    5685  784.38 5685.18
787.4701 5685.92  787.79    5686  788.26 5686.11791.9401    5687803.7001 5687.43
821.5801    5688822.8701 5688.04  824.48  5688.1839.8101 5688.62  849.55    5689
851.3701 5689.44853.6901    5690  856.15 5690.59857.8401    5691859.9701 5691.12
863.6901 5691.32  871.55 5691.74  874.38  5691.9876.3101    5692  878.86 5692.61
880.4701    5693884.3101 5693.93884.6201    5694  885.28 5694.16  888.77    5695
  891.61 5695.68  892.92    5696  893.65 5696.17  897.16    5697  899.48 5697.52
  901.67    5698  903.14 5698.35905.8201    5699907.3401 5699.37  909.98    5700
  911.55 5700.38  914.13    5701  915.76 5701.39  918.29    5702919.9601  5702.4
922.4501    5703924.8701 5703.58   926.6    5704929.8301 5704.78  930.76    5705
931.9501 5705.29  934.91    5706936.7001 5706.43939.0701    5707  942.89 5707.48
944.4901 5707.49949.5801 5707.48  983.23 5707.89 1013.55 5707.88 1031.59 5707.71
 1067.65 5707.39  1081.5    5707 1096.42 5706.69  1130.1    5706  1138.7 5705.79
    1172    5705  1175.8 5704.91 1211.05 5704.09
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  561.77     .04  893.65     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        561.77  893.65             10.4   25.15   44.27             .1       .3
```

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 135.25

INPUT
Description: Cross Section: Sta. 5112.888
Station Elevation Data num= 125

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5698.334.279968  5698.36.029968 5698.298.029968 5698.2925.29999 5698.18
26.88995 5698.1741.46997 5698.0941.83997 5698.0956.03998 5698.0158.18994    5698
74.46997 5697.9175.38995  5697.976.68994 5697.8979.56995 5697.86  120.08 5697.58
  126.79 5697.51  149.28 5697.35  166.86 5697.23  179.16 5697.15  196.83 5696.93
  210.17 5696.84225.1899 5696.64  242.81  5696.4  267.97 5696.47   270.3 5696.47
  272.21    5696  273.04 5695.79  276.24    5695  280.12 5694.04280.2599    5694
280.4399 5693.96  284.29    5693  287.91  5692.1288.3199    5692  303.97 5691.13
  306.24    5691  308.81 5690.36  310.27    5690  311.67 5689.65  314.29    5689
  335.39  5688.3343.8799    5688  351.87 5687.71370.1899    5687  370.92 5686.82
  374.22    5686  375.85  5685.6  378.25    5685390.9399 5684.25394.8799    5684
  398.28 5683.98  405.04 5683.93  411.57 5683.98  415.15    5684  417.47 5684.03
  419.99 5684.07  433.32 5684.25   459.9 5684.61  485.63 5684.96  486.89 5684.98
  488.65    5685     489 5685.09   492.7    5686  496.56 5686.95  496.75    5687
   497.2 5687.02  498.29 5687.05   518.2 5687.68   529.1    5688  541.89 5688.49
  552.96    5689554.8099 5689.46  557.01    5690  561.04    5691561.0699    5691
  561.15 5691.01  561.38 5691.02   574.2 5691.71  577.87 5691.91  579.52    5692
  583.15 5692.87  583.67    5693  586.34 5693.64587.8199    5694  588.14 5694.08
  591.97    5695  592.85 5695.21  596.13    5696  597.12 5696.23   597.9 5696.41
  600.39    5697  602.03 5697.37   604.9    5698  606.84 5698.47609.0599    5699
  611.04 5699.48  613.22    5700  615.25 5700.49  617.37    5701  619.46  5701.5
  621.53    5702  623.66 5702.51625.6799    5703  627.66 5703.48  629.84    5704
  632.45 5704.63  633.99    5705  635.98 5705.48  638.15    5706  640.59 5706.59
642.3099    5707  647.46 5707.65  649.62 5707.66  656.49 5707.65   679.2 5707.92
  720.13 5707.91733.0699  5707.8  758.91 5707.56  779.02    5707  800.68 5706.54
  827.41    5706   841.8 5705.66   869.3    5705  878.79 5704.78  911.47 5704.01
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  272.21     .04  592.85     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        272.21  592.85             10.4   27.38   51.05             .1       .3
```

CROSS SECTION

RIVER: Jimmy Camp Creek

```
REACH: Lorson Ranch       RS: 135.14

INPUT
Description: Cross Section: Sta. 50+85.05
Station Elevation Data    num=     109
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5697.8338.39996 5697.6481.22998 5697.45   112.1 5697.27  174.61 5696.88
  184.56 5696.78  190.67 5696.76200.8799 5696.66214.4399 5696.53  241.79 5696.26
     246 5696.24  266.27 5696.02  266.93 5696.02268.5699    5696  269.03 5695.88
  269.23 5695.83272.5699    5695273.7599  5694.7276.5699    5694  278.09 5693.62
280.5699    5693  283.42 5692.29284.5699    5692     300 5691.13  302.37    5691
305.8799 5690.12  306.37    5690  306.98 5689.85  310.37    5689  319.02  5688.6
  330.67    5688  359.31 5687.19  365.87    5687369.3199 5686.14  369.87    5686
  370.36 5685.88  373.87    5685  387.12 5684.18  389.84    5684  394.58 5683.96
   401.5 5683.91  405.62 5683.94  413.38    5684   429.1 5684.22  441.59 5684.39
  484.29    5685  485.38 5685.27  488.29    5686  492.12 5686.96  492.29    5687
  493.22 5687.03  527.49    5688  543.66 5688.81  547.79    5689  548.87 5689.27
  551.79    5690  554.65 5690.71  555.77 5690.99  555.83    5691  569.65 5691.75
  570.09 5691.77574.2999    5692  577.12 5692.68  578.45    5693  579.08 5693.15
  582.61    5694     584 5694.34  586.76    5695  587.95 5695.29  590.91    5696
  592.42 5696.35  593.27 5696.55  593.73 5696.65   595.2    5697  596.16 5697.22
  599.72    5698  602.12 5698.58  603.88    5699  606.33 5699.59  608.03    5700
  610.53  5700.6612.1899    5701  614.74 5701.61  616.35    5702618.9399 5702.62
   620.5    5703  622.02 5703.37  624.66    5704  626.66 5704.48628.8099    5705
  631.59 5705.67  632.97    5706636.0599 5706.74  637.12    5707  643.61 5707.82
  646.33 5707.83  654.98 5707.82  666.75 5707.96   718.3 5707.95  726.12 5707.88
741.7599 5707.73  768.12    5707  796.53  5706.4   816.3    5706  836.49 5705.52
858.1899    5705  873.35 5704.64  900.78    5704  903.47 5703.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04272.5699     .04     584     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      272.5699     584             65.5   70.05    70.3             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.89

INPUT
Description: Cross Section: Sta. 50+15.00
Station Elevation Data    num=     134
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5697.383.109985 5697.3611.16998 5697.2837.52002 5697.2775.27002 5697.08
  103.58 5696.96  161.74 5696.62  260.63    5696  267.21    5696  267.69 5695.88
```

```
  271.21    5695   274.7 5694.13  275.21    5694  276.25 5693.74   276.3 5693.73
  279.21    5693  281.24 5692.49  283.21    5692  296.45  5691.2  300.14    5691
  301.17 5690.72  305.01    5690  307.18 5689.46     309    5689  312.18 5688.21
  313.51    5688  337.19 5687.53  363.64    5687  366.39 5686.53  368.51    5686
  371.81 5685.18  372.51    5685  373.44 5684.77  376.51    5684  381.94 5683.94
  391.87 5683.94   399.8 5683.74  407.27    5683  417.41    5683  424.81 5683.75
  425.93 5683.87  429.11  5683.9  435.77 5683.97  441.22 5683.95  454.45 5683.92
  469.03 5683.96  481.66    5684  483.48 5684.45  485.66    5685  489.19 5685.88
  489.66    5686  490.59 5686.23  494.53    5687  521.74 5687.54  544.66    5688
  548.41 5688.88  549.17    5689  549.63 5689.12  553.16    5690  554.09 5690.23
  558.03    5691   565.3 5691.43572.9301 5691.87   574.2 5691.95  574.96    5692
  575.17 5692.05  578.96    5693  581.86 5693.73  582.96    5694583.4301 5694.12
  586.96    5695  587.64 5695.17  590.96    5696  591.55 5696.14  595.22    5697
  598.15 5697.67  599.61    5698  600.95 5698.34  603.61    5699606.4301  5699.7
  607.61    5700  608.79 5700.29  611.61    5701  612.98 5701.34  615.61    5702
  616.99 5702.34  619.62    5703  620.99 5703.34  623.62    5704  625.97 5704.58
  625.99 5704.59  627.71    5705  628.14  5705.1  631.86    5706  633.98 5706.51
  636.02    5707  638.23 5707.53  640.21    5708  642.32 5708.51  644.37    5709
  648.29 5709.94  648.52    5710  648.77 5710.06  652.68    5711  655.28 5711.62
  656.84    5712  659.69 5712.69  660.99    5713  664.19 5713.77  665.15    5714
  730.92    5714  741.88  5713.2  744.17    5713  744.39 5712.98  755.28    5712
   767.4 5711.15  769.22    5711   772.4 5710.73  779.83    5710  786.64 5709.48
  791.99    5709  796.68 5708.64  803.92    5708  807.11  5707.8  818.84    5707
  822.88 5706.68   833.9    5706   842.6 5705.48  847.62    5705  869.49 5704.21
  871.03    5704  872.41 5703.98  877.65 5703.77  888.26 5703.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  276.25     .04572.9301     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        276.25572.9301           139.22  155.06  171.54             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.8

INPUT
Description: cross section at river station 48+60
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   14.23 5694.36   16.34  5694.3   19.99 5694.16   27.07 5692.41   38.81 5690.46
    42.1  5689.1   46.56 5688.84   57.83 5687.47   68.56 5686.56   94.05 5686.09
  109.58 5685.69  117.25 5684.06  125.03 5683.03  189.73 5683.42  227.03 5683.66
   240.5 5685.63  249.25    5686  250.63 5686.23   279.1 5687.16  303.64 5689.69
  306.83 5689.94  309.41 5690.32  322.07  5691.1  328.47  5691.8  344.19  5694.5
```

```
  364.83    5698

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   14.23     .04  109.58     .04   240.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         14.23  344.19            293.5   293.5   293.5             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.4

INPUT
Description: cross section at river station 45+66
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5693    3.79    5692    7.73    5691   11.95    5690    24.2    5689
   32.15    5688   36.95    5687   41.69    5686   73.46    5685   95.45    5684
  100.01    5683  104.28    5682   211.8    5682  216.04    5683  219.98    5684
  223.96    5685  274.24    5686  277.81    5687  281.45    5688  285.28    5689
  301.94    5690  306.63    5691  311.47    5692  316.12    5693  321.08    5694
  325.51    5694

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   73.46     .04  223.96     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.51           355.07  354.08  353.89             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 133.6

INPUT
Description: Top of 1st Drop structure.  Cross section at river station 42+23
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5   11.64 5688.01   26.63 5687.04   38.33 5683.84   87.05 5683.82
  104.97 5680.06  214.45 5680.55  227.02 5682.94  273.26 5683.65  287.07 5686.42
   302.1  5691.5

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   87.05     .04  227.02     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   302.1             26.2   33.79   40.65             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 132.8

INPUT
Description: Bottom of 1st Drop Structure
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5   29.68 5687.37    44.6 5684.28   96.87 5682.41  107.54 5678.12
  211.01 5677.64  230.76 5683.01  271.29 5683.46  287.43 5685.45  304.33  5691.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   96.87      .1  230.76     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  304.33            62.43   46.96   42.48             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 132.2

INPUT
Description: 50' Downstream of 1st Drop Structure
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5    86.2 5686.17  147.01 5684.19  167.37 5677.39  226.83 5675.48
  250.88 5681.85  295.86 5683.09   324.1 5686.54  344.03    5690

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  147.01      .1  250.88     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  344.03           116.68   93.22   58.58             .1       .3

CROSS SECTION
```

```
RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 132

INPUT
Description: FEMA cross section AI
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.4      35  5692.2      99  5686.8     141  5684.4     158    5682
     178  5679.4     225  5679.4     247  5679.4     281  5680.4     365  5683.6
     508  5682.8     527  5684.2     616  5686.2     728  5687.8     850    5691
     910  5691.8     919  5690.8     934  5692.2    1169  5691.8    1312  5692.4
    1446  5692.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     141     .04     281     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           141     281             1660    1780    1850             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 128

INPUT
Description: FEMA cross section AH
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5683     156    5681     213  5680.2     340  5679.2     354  5678.2
     520    5675     549    5672     599  5670.6     643  5672.6     671  5676.6
     708  5675.2     758  5679.8     816  5681.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     549     .04     643     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           549     643             1041    1030    1010             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 124
```

INPUT
Description: FEMA cross section AG
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	5676	1058	5670.7	1145	5673.4	1183	5671.9	1283	5670.6
1408	5670	1503	5669.5	1581	5671.4	1673	5671.3	1748	5664.1
1833	5664.2	1923	5671.6	1973	5674.6	2121	5674.8	2229	5675.5
2281	5680.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.045	1673	.045	1923	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1673	1923	90	90	90	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 120.4

INPUT
Description: Intermediate station downstream of FEMA cross section AG
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	5676	1058	5670.7	1145	5673.4	1183	5671.9	1283	5670.6
1408	5670	1503	5669.5	1581	5671.4	1673	5671.3	1748	5664.1
1833	5664.2	1923	5671.6	1973	5674.6	2121	5674.8	2229	5675.5
2281	5680.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.045	1673	.045	1923	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1673	1923	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Jimmy Camp Creek

Reach	River Sta.	n1	n2	n3	n4
Lorson Ranch	160	.06	.04	.06	
Lorson Ranch	156	.06	.04	.06	

Lorson Ranch	155.2*	.06	.04	.04	.06
Lorson Ranch	154.4*	.06	.04	.06	
Lorson Ranch	153.6*	.06	.04	.06	
Lorson Ranch	152.8*	.06	.04	.06	
Lorson Ranch	152	.06	.04	.06	
Lorson Ranch	151.333*	.06	.03	.06	
Lorson Ranch	150.666*	.06	.03	.06	
Lorson Ranch	150.*	.06	.03	.06	
Lorson Ranch	149.333*	.06	.03	.06	
Lorson Ranch	148.666*	.06	.03	.06	
Lorson Ranch	148	.06	.167	.06	
Lorson Ranch	147.992*	.06	.167	.06	
Lorson Ranch	147.985*	.06	.167	.06	
Lorson Ranch	147.978*	.06	.167	.06	
Lorson Ranch	147.971*	.06	.167	.06	
Lorson Ranch	147.964*	.06	.167	.06	
Lorson Ranch	147.957*	.06	.167	.06	
Lorson Ranch	147.95*	.06	.167	.06	
Lorson Ranch	147.942*	.06	.167	.06	
Lorson Ranch	147.935*	.06	.167	.06	
Lorson Ranch	147.928*	.06	.167	.06	
Lorson Ranch	147.921*	.06	.167	.06	
Lorson Ranch	147.914*	.06	.167	.06	
Lorson Ranch	147.907*	.06	.167	.06	
Lorson Ranch	147.9	.06	.167	.06	
Lorson Ranch	147.8	.04	.1	.04	
Lorson Ranch	147.7	.04	.1	.04	
Lorson Ranch	147.6	.04	.1	.04	
Lorson Ranch	147.2	.04	.1	.04	
Lorson Ranch	146.3	.04	.06	.04	
Lorson Ranch	146.1	.04	.04	.04	
Lorson Ranch	145.6	.04	.06	.04	
Lorson Ranch	144.7	.04	.06	.04	
Lorson Ranch	144.6	.04	.06	.04	
Lorson Ranch	144.4	.04	.04	.04	
Lorson Ranch	144	.045	.04	.045	
Lorson Ranch	143.2	.04	.1	.04	
Lorson Ranch	142.4	.04	.04	.04	
Lorson Ranch	141.6	.04	.04	.04	
Lorson Ranch	140.8	.04	.1	.04	
Lorson Ranch	140	.04	.1	.04	
Lorson Ranch	139.7	.04	.1	.04	
Lorson Ranch	139.3	.04	.04	.04	
Lorson Ranch	138.8	Bridge			
Lorson Ranch	138.3	.04	.04	.04	
Lorson Ranch	138	.04	.04	.04	
Lorson Ranch	137.6	.04	.04	.04	
Lorson Ranch	136.8	.04	.1	.04	

Lorson Ranch	136	.04	.04	.04
Lorson Ranch	135.6	.04	.04	.04
Lorson Ranch	135.55	.04	.04	.04
Lorson Ranch	135.50	.04	.04	.04
Lorson Ranch	135.47	.04	.04	.04
Lorson Ranch	135.34	.04	.04	.04
Lorson Ranch	135.29	.04	.04	.04
Lorson Ranch	135.25	.04	.04	.04
Lorson Ranch	135.14	.04	.04	.04
Lorson Ranch	134.89	.04	.04	.04
Lorson Ranch	134.8	.04	.04	.04
Lorson Ranch	134.4	.04	.04	.04
Lorson Ranch	133.6	.04	.04	.04
Lorson Ranch	132.8	.04	.1	.04
Lorson Ranch	132.2	.04	.1	.04
Lorson Ranch	132	.06	.04	.06
Lorson Ranch	128	.06	.04	.06
Lorson Ranch	124	.045	.045	.045
Lorson Ranch	120.4	.045	.045	.045

SUMMARY OF REACH LENGTHS

River: Jimmy Camp Creek

Reach	River Sta.	Left	Channel	Right
Lorson Ranch	160	1119.96	1140	1160.04
Lorson Ranch	156	275.98	331.97	360
Lorson Ranch	155.2*	275.98	331.97	360
Lorson Ranch	154.4*	275.98	331.97	360
Lorson Ranch	153.6*	275.98	331.97	360
Lorson Ranch	152.8*	275.98	331.97	360
Lorson Ranch	152	358.33	344.96	306.81
Lorson Ranch	151.333*	358.33	344.96	306.81
Lorson Ranch	150.666*	358.33	344.96	306.81
Lorson Ranch	150.*	358.33	344.96	306.81
Lorson Ranch	149.333*	358.33	344.96	306.81
Lorson Ranch	148.666*	358.33	344.96	306.81
Lorson Ranch	148	6.5	9.85	13.43
Lorson Ranch	147.992*	6.5	9.85	13.43
Lorson Ranch	147.985*	6.5	9.85	13.43
Lorson Ranch	147.978*	6.5	9.85	13.43
Lorson Ranch	147.971*	6.5	9.85	13.43
Lorson Ranch	147.964*	6.5	9.85	13.43
Lorson Ranch	147.957*	6.5	9.85	13.43

Lorson Ranch	147.95*	6.5	9.85	13.43
Lorson Ranch	147.942*	6.5	9.85	13.43
Lorson Ranch	147.935*	6.5	9.85	13.43
Lorson Ranch	147.928*	6.5	9.85	13.43
Lorson Ranch	147.921*	6.5	9.85	13.43
Lorson Ranch	147.914*	6.5	9.85	13.43
Lorson Ranch	147.907*	6.5	9.85	13.43
Lorson Ranch	147.9	44.6	56.43	10.77
Lorson Ranch	147.8	51.82	39.16	664.1
Lorson Ranch	147.7	103.99	99.4	95.42
Lorson Ranch	147.6	173.91	186.52	199.66
Lorson Ranch	147.2	50.74	63.56	56.41
Lorson Ranch	146.3	47.58	47.58	47.58
Lorson Ranch	146.1	90.06	120.53	150.87
Lorson Ranch	145.6	55.82	58.14	60.59
Lorson Ranch	144.7	70.87	70.87	70.87
Lorson Ranch	144.6	138.02	138.02	138.02
Lorson Ranch	144.4	174.49	178.55	183.34
Lorson Ranch	144	46.66	45.83	45.03
Lorson Ranch	143.2	415.26	415.73	416.34
Lorson Ranch	142.4	400.94	540.66	774.84
Lorson Ranch	141.6	569.21	474	372.73
Lorson Ranch	140.8	37.27	37.5	38.21
Lorson Ranch	140	34.13	42.09	62.78
Lorson Ranch	139.7	114.06	102	90.9
Lorson Ranch	139.3	181.15	181.15	181.15
Lorson Ranch	138.8	Bridge		
Lorson Ranch	138.3	298.68	310.69	324.82
Lorson Ranch	138	341.96	348.12	366.74
Lorson Ranch	137.6	45.37	48.07	45.37
Lorson Ranch	136.8	365.58	322.7	292.78
Lorson Ranch	136	332.63	332.63	332.63
Lorson Ranch	135.6	62.7	55.42	47.48
Lorson Ranch	135.55	29.38	29.37	9.53
Lorson Ranch	135.50	55.38	35.02	20.44
Lorson Ranch	135.47	32.05	14.97	8.17
Lorson Ranch	135.34	82.01	82.61	81.81
Lorson Ranch	135.29	10.4	25.15	44.27
Lorson Ranch	135.25	10.4	27.38	51.05
Lorson Ranch	135.14	65.5	70.05	70.3
Lorson Ranch	134.89	139.22	155.06	171.54
Lorson Ranch	134.8	293.5	293.5	293.5
Lorson Ranch	134.4	355.07	354.08	353.89
Lorson Ranch	133.6	26.2	33.79	40.65
Lorson Ranch	132.8	62.43	46.96	42.48
Lorson Ranch	132.2	116.68	93.22	58.58
Lorson Ranch	132	1660	1780	1850
Lorson Ranch	128	1041	1030	1010

Lorson Ranch	124	90	90	90
Lorson Ranch	120.4	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Jimmy Camp Creek

Reach	River Sta.	Contr.	Expan.
Lorson Ranch	160	.1	.3
Lorson Ranch	156	.1	.3
Lorson Ranch	155.2*	.1	.3
Lorson Ranch	154.4*	.1	.3
Lorson Ranch	153.6*	.1	.3
Lorson Ranch	152.8*	.1	.3
Lorson Ranch	152	.1	.3
Lorson Ranch	151.333*	.1	.3
Lorson Ranch	150.666*	.1	.3
Lorson Ranch	150.*	.1	.3
Lorson Ranch	149.333*	.1	.3
Lorson Ranch	148.666*	.1	.3
Lorson Ranch	148	.1	.3
Lorson Ranch	147.992*	.1	.3
Lorson Ranch	147.985*	.1	.3
Lorson Ranch	147.978*	.1	.3
Lorson Ranch	147.971*	.1	.3
Lorson Ranch	147.964*	.1	.3
Lorson Ranch	147.957*	.1	.3
Lorson Ranch	147.95*	.1	.3
Lorson Ranch	147.942*	.1	.3
Lorson Ranch	147.935*	.1	.3
Lorson Ranch	147.928*	.1	.3
Lorson Ranch	147.921*	.1	.3
Lorson Ranch	147.914*	.1	.3
Lorson Ranch	147.907*	.1	.3
Lorson Ranch	147.9	.1	.3
Lorson Ranch	147.8	.1	.3
Lorson Ranch	147.7	.1	.3
Lorson Ranch	147.6	.1	.3
Lorson Ranch	147.2	.1	.3
Lorson Ranch	146.3	.1	.3
Lorson Ranch	146.1	.1	.3
Lorson Ranch	145.6	.1	.3
Lorson Ranch	144.7	.1	.3
Lorson Ranch	144.6	.1	.3

Lorson Ranch	144.4		.1	.3
Lorson Ranch	144		.1	.3
Lorson Ranch	143.2		.1	.3
Lorson Ranch	142.4		.1	.3
Lorson Ranch	141.6		.1	.3
Lorson Ranch	140.8		.1	.3
Lorson Ranch	140		.1	.3
Lorson Ranch	139.7		.1	.3
Lorson Ranch	139.3		.1	.3
Lorson Ranch	138.8	Bridge		
Lorson Ranch	138.3		.1	.3
Lorson Ranch	138		.1	.3
Lorson Ranch	137.6		.1	.3
Lorson Ranch	136.8		.1	.3
Lorson Ranch	136		.1	.3
Lorson Ranch	135.6		.1	.3
Lorson Ranch	135.55		.1	.3
Lorson Ranch	135.50		.1	.3
Lorson Ranch	135.47		.1	.3
Lorson Ranch	135.34		.1	.3
Lorson Ranch	135.29		.1	.3
Lorson Ranch	135.25		.1	.3
Lorson Ranch	135.14		.1	.3
Lorson Ranch	134.89		.1	.3
Lorson Ranch	134.8		.1	.3
Lorson Ranch	134.4		.1	.3
Lorson Ranch	133.6		.1	.3
Lorson Ranch	132.8		.1	.3
Lorson Ranch	132.2		.1	.3
Lorson Ranch	132		.1	.3
Lorson Ranch	128		.1	.3
Lorson Ranch	124		.1	.3
Lorson Ranch	120.4		.1	.3

Profile Output Table - Bridge Only

Reach	River Sta	Profile	E.G. US.	Min El Prs	BR Open Area
Prs O WS	Q Total	Min El Weir Flow	Q Weir	Delta EG	BR Sluice Coef
(ft)	(cfs)	(ft)	(cfs)	(ft)	(ft)	(sq ft)
Lorson Ranch	138.8	FEMA 100-Year	5704.22	5708.33	2942.56
12900.00	5719.11	1.14			
Lorson Ranch	138.8	DBPS-2015_100	5708.19	5708.33	2942.56
26734.00	5719.11	1.27			

HEC-RAS HEC-RAS 5.0.3 September 2016
U.S. Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: LOMR w/ Lorson Bridge
Project File : lomr.prj
Run Date and Time: 9/24/2017 1:17:16 PM

Project in English units

Project Description:
8/21/06 JCB: Pentacor Engineering added a new geometry file based on as-built information on drop structures given by RMLS.

8/2/06 JCB: Pentacor
Engineering added a new geometry file based on as-built information on drop structures.

7/12/06 ALB: Pentacor Engineering added a new geometry file
based on as-built information (received from Rocky Mountain Land Services).
This file will be used to support the LOMR application for the main channel of Jimmy Camp Creek

6/16/06 ALB: Pentacor Engineering added a new geometry
file to simulate the proposed Lorson Boulevard Bridge. Results of the analysis with the bridge were used to perform scour and stable particle size analysis for the channel in the vicinity of the bridge.

02/13/06 JDH: Revisions to
account for moving of northernmost drop structure and regrading of northern channel taper by PentaCorp. Correct problem with starting water surface elevation boundary condition and reinsert floodway profile (but not

encroachment information). Main solution was to adjust Manning's n upward to 0.167 to force WSEL at Station 148 to increase to a point where effects of hydraulic jump in channel transition does not carry upstream and provide erroneous water surface elevations.

11/10/05 JDH: Cross-section data from original CLOMR submittal was revised to include an additional bench and low flow channel based on USACE comments regarding balancing of sediment transport. Once project is constructed a LOMR will need to be submitted which will require modifications to this model to include Floodway modeling for comparison with Duplicate Effective Floodway model results.

08/02/05 JDH: Base model copied from CLOMR submittal's proposed conditions model. Modified to include wing wall configuration at bridge for purpose of modeling abutment scour.

04/12/17 CJB: Added Flows to LOMR Steady Flow Data from DBPS 2015 for freeboard and scour computation of Lorson Bridge

04/12/17 CJB: LOMR model copied for inclusion of Lorson Bridge. Modified to include additional sections for bridge hydraulics analysis channel grading for freeboard and scour calculations.

09/25/17 CJB: Final Model revised for Final Report. Manning's n revised at Lorson Bridge for armament limits and n values for depth of flow.

PLAN DATA

Plan Title: Lorson Bridge (Proposed)
Plan File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.p04

Geometry Title: Lorson Bridge - From LOMR (Final)
Geometry File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.g06

Flow Title : FIS Flows for LOMR
Flow File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.f01

Plan Description:
Lorson Bridge Analysis (Proposed) (09/25/17) - Final

Spill thru abutments w/
bike trail shifted around bridge abutment

Plan Summary Information:

Number of:	Cross Sections	= 68	Multiple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 2	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options

Critical depth computed at all cross sections
Conveyance Calculation Method: Between every coordinate point (HEC2 Style)
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: FIS Flows for LOMR
Flow File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.f01

Flow Data (cfs)

River	Reach	RS	FEMA 100-Year	FEMA 10-Year	FEMA 50-Year	FEMA 100-Year_FW	FEMA 500-Year	DBPS-2015_10	DBPS-2015_100	DBPS-2015_500
Jimmy Camp Creek	Lorson Ranch	160	11800	6100	9800	11800	15000	13402	26734	32081
Jimmy Camp Creek	Lorson Ranch	152	12600	6600	10500	12600	16100	13402	26734	32081
Jimmy Camp Creek	Lorson Ranch	141.6	12900	6800	10700	12900	16400	13402	26734	32081

River	Reach	RS	DBPS_EX_100	DBPS_EX_500
Jimmy Camp Creek	Lorson Ranch	160	17709	21251
Jimmy Camp Creek	Lorson Ranch	152	17709	21251
Jimmy Camp Creek	Lorson Ranch	141.6	17709	21251

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Jimmy Camp Creek	Lorson Ranch	FEMA 100-Year	Critical	Known WS = 5675.33
Jimmy Camp Creek	Lorson Ranch	FEMA 10-Year	Critical	Known WS = 5673.5
Jimmy Camp Creek	Lorson Ranch	FEMA 50-Year	Critical	Known WS = 5674.91
Jimmy Camp Creek	Lorson Ranch	FEMA 100-Year_FW	Critical	Known WS = 5675.7
Jimmy Camp Creek	Lorson Ranch	FEMA 500-Year	Critical	Known WS = 5676.21
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_10	Critical	Known WS = 5675.85
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_100	Critical	Known WS = 5678.22
Jimmy Camp Creek	Lorson Ranch	DBPS-2015_500	Critical	Known WS = 5678.85
Jimmy Camp Creek	Lorson Ranch	DBPS_EX_100	Critical	Known WS = 5676.81
Jimmy Camp Creek	Lorson Ranch	DBPS_EX_500	Critical	Known WS = 5677.43

Observed Water Surface Marks

River	Reach	RS	FEMA 100-Year	FEMA 10-Year	FEMA 50-Year	FEMA 100-Year_FW	FEMA 500-Year	DBPS-2015_10	DBPS-2015_100	DBPS-2015_500
Jimmy Camp Creek	Lorson Ranch	160	5762.42	5760.95						

Jimmy Camp Creek	Lorson Ranch	156	5753.93	
Jimmy Camp Creek	Lorson Ranch	152	5741.68	5739.8

River	Reach	RS	DBPS_EX_100	DBPS_EX_500
Jimmy Camp Creek	Lorson Ranch	160		
Jimmy Camp Creek	Lorson Ranch	156		
Jimmy Camp Creek	Lorson Ranch	152		

GEOMETRY DATA

Geometry Title: Lorson Bridge - From LOMR (Final)
Geometry File : g:\Engineering\Projects\JimmyCamp\20.6 Models\Lorson Bridge-Final\lomr.g06

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 160

INPUT
Description: FEMA cross section AP
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5773	23	5771	74	5769.7	116	5769	126	5768
143	5772	163	5767	185	5763.7	227	5763	343	5764.2
401	5765.2	460	5763.7	499	5762.5	600	5760	625	5760.7
641	5767	893	5768.2	996	5769.2	1078	5768.7	1148	5765
1215	5764.2	1316	5764.7	1349	5759.5	1394	5757.7	1523	5757.7
1560	5756.7	1618	5757.2	1659	5758.7	1673	5764	1680	5762.5
1691	5765.2	1731	5765.5	1752	5765.5	1774	5768.2	1812	5770.2
1985	5769.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	1523	.04	1691	.06

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1523    1691          1119.96    1140 1160.04             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 156

INPUT
Description: FEMA cross section AO
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
     551  5761.2     751  5760.5     817  5759.2     920  5760.2     957  5759.2
     981  5761.2    1002  5757.7    1043    5757    1139    5758    1214  5756.5
    1236    5758    1269  5759.7    1300    5758    1404    5756    1450  5758.2
    1580  5759.7    1630  5751.7    1696  5750.2    1765  5750.5    1792    5752
    1828  5750.7    1863    5750    1945    5749    1988  5748.7    2031  5749.7
    2067  5750.4    2079  5754.7    2218  5753.7    2264  5755.4    2285  5759.4
    2297  5758.2    2344  5758.2    2355  5760.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
     551     .06    1792     .04    2079     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          1792    2079           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 155.2*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   840.8 5757.16 1007.09 5756.53 1061.96 5755.46  1147.6 5756.22 1178.36 5755.41
 1198.31    5757 1215.77 5754.19 1249.86 5753.62 1290.56 5754.01 1329.68 5754.28
 1392.04 5752.88 1410.33 5754.02 1437.76  5755.3 1463.54 5753.85 1481.05 5753.48
 1550.01 5752.39 1588.25 5754.25 1696.34 5755.74 1719.15 5752.29 1737.91 5749.35
 1792.78 5747.99 1850.15 5748.06  1872.6  5749.2 1903.38 5748.05 1933.31 5747.38
 2003.43 5746.33  2040.2 5745.96  2058.6 5745.96  2062.6 5745.96  2098.7 5747.61
 2128.93 5748.88    2139 5752.56 2161.29 5753.44 2185.29  5753.3    2205  5753.8
 2284.04 5756.23 2293.29 5756.82 2306.14 5757.99 2332.04 5759.56 2353.96 5763.48
 2366.48 5762.92 2379.86 5763.36 2415.52 5763.97    2427 5765.92
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Manning's n Values        num=       4
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
   840.8     .06 1850.15     .04  1872.6     .04    2139     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1872.6  2098.7           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 154.4*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1130.6 5753.12 1263.17 5752.55 1306.92 5751.72 1375.19 5752.25 1399.72 5751.62
 1415.63  5752.8 1429.55 5750.69 1456.72 5750.24 1489.17 5750.51 1520.36 5750.55
 1570.07 5749.26 1584.65 5750.05 1606.53 5750.89 1627.08 5749.71 1641.03 5749.36
 1696.01 5748.77  1726.5  5750.3 1812.68 5751.78 1830.86 5749.27 1845.82 5746.99
 1889.57 5745.78  1935.3 5745.63  1953.2  5746.4 1978.77  5745.4 2003.62 5744.77
 2061.86 5743.66  2092.4 5743.22  2129.2 5743.22  2137.2 5743.22  2166.4 5745.52
 2190.85 5747.37    2199 5750.42 2222.21 5752.33 2247.21 5752.23 2267.75 5753.35
 2350.09 5758.75 2359.71 5759.62 2373.11 5761.49 2400.09 5763.73 2422.91 5767.55
 2435.96 5767.65 2449.89 5768.52 2487.04 5769.73    2499 5771.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1130.6     .06  1953.2     .04    2199     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1953.2    2199           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 153.6*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1420.4 5749.08 1519.26 5748.58 1551.88 5747.98 1602.79 5748.27 1621.08 5747.83
 1632.94  5748.6 1643.32 5747.18 1663.59 5746.85 1687.78    5747 1711.04 5746.83
 1748.11 5745.64 1758.98 5746.07 1775.29 5746.49 1790.61 5745.57 1801.02 5745.24
 1842.02 5745.16 1864.76 5746.34 1929.01 5747.82 1942.58 5746.24 1953.73 5744.64
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 1986.35 5743.57 2020.45 5743.19  2033.8  5743.6 2054.15 5742.75 2073.94 5742.15
 2120.29    5741  2144.6 5740.48  2199.8 5740.48  2211.8 5740.48  2234.1 5743.43
 2252.78 5745.85    2259 5748.28 2283.14 5751.22 2309.14 5751.15  2330.5  5752.9
 2416.13 5761.28 2426.14 5762.41 2440.07 5764.99 2468.13 5767.89 2491.87 5771.63
 2505.43 5772.37 2519.93 5773.68 2558.57  5775.5    2571 5776.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1420.4     .06  2033.8     .04    2259     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        2033.8    2259           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 152.8*

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  1710.2 5745.04 1775.34  5744.6 1796.84 5744.25 1830.39 5744.29 1842.44 5744.04
 1850.25  5744.4 1857.09 5743.67 1870.45 5743.47 1886.39  5743.5 1901.71 5743.11
 1926.14 5742.02 1933.31 5742.09 1944.06 5742.09 1954.15 5741.42 1961.01 5741.12
 1988.03 5741.54 2003.01 5742.39 2045.35 5743.85 2054.29 5743.22 2061.64 5742.29
 2083.13 5741.36 2105.61 5740.76  2114.4  5740.8 2129.53  5740.1 2144.25 5739.53
 2178.72 5738.33  2196.8 5737.74  2270.4 5737.74  2286.4 5737.74  2301.8 5741.34
  2314.7 5744.33    2319 5746.14 2344.07 5750.11 2371.07 5750.08 2393.25 5752.45
 2482.17  5763.8 2492.57 5765.21 2507.04  5768.5 2536.17 5772.05 2560.83 5775.71
 2574.91  5777.1 2589.96 5778.84 2630.09 5781.26    2643 5782.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  1710.2     .06  2114.4     .04    2319     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        2114.4    2319           275.98  331.97     360             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 152

INPUT
Description: FEMA cross section AN
```

```
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    2000    5741    2085    5740    2121    5737    2166  5740.2    2195    5738
    2249    5735    2341    5735    2361    5735    2379    5744    2405    5749
    2433    5749    2456    5752    2559    5768    2574    5772    2660    5784
    2715    5788

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    2000     .06    2195     .04    2379     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          2195    2379           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 151.333*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1666.67    5739 1698.16 5738.97 1739.67 5738.71 1795.13 5738.36 1799.25 5738.33
 1855.41 5735.83  1900.7 5737.55  1925.6  5738.5 1970.83 5736.67 2029.83 5733.17
 2076.12 5733.17 2122.52 5733.17 2142.67 5733.17 2161.33    5741 2178.43 5742.25
 2194.37  5743.1  2222.1 5744.51 2239.09 5745.48 2245.67  5745.5 2316.83 5745.83
 2322.82 5746.07 2363.27 5749.14  2370.9 5749.41 2373.21 5749.66 2377.13 5750.14
 2391.61  5751.4 2403.47 5752.51 2443.21  5755.9 2699.64 5767.12  2744.5 5770.47
 3001.69 5780.59 3166.17    5784

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1666.67     .06  1925.6     .03 2161.33     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1925.6 2161.33           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 150.666*

INPUT
Description:
Station Elevation Data    num=      32
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 1333.33    5737 1376.13 5737.18 1432.53 5736.97 1507.91 5736.69  1513.5 5736.67
 1589.81 5734.67 1651.36 5736.04  1685.2  5736.8 1746.67 5735.33 1810.67 5731.33
  1857.3 5731.33 1904.04 5731.33 1924.33 5731.33 1943.67    5738 1972.14  5739.4
  1998.7 5740.08 2044.88  5741.1 2073.18 5741.95 2084.13    5742 2202.66 5742.67
 2212.65 5743.14 2280.02 5747.51 2292.72 5747.73 2296.56 5748.13 2303.11 5748.91
 2327.22  5750.8 2346.98 5752.41 2413.17 5757.12 2840.27 5766.24 2914.99 5768.94
 3343.37 5777.18 3617.33    5780

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
 1333.33     .06 1746.67     .03 1943.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1746.67 1943.67           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 150.*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    1000    5735 1054.09 5735.38  1125.4 5735.22 1220.68 5735.02 1227.76    5735
 1324.22  5733.5 1402.02 5734.53 1444.79  5735.1  1522.5    5734  1591.5  5729.5
 1638.47  5729.5 1685.55  5729.5    1706  5729.5    1726    5735 1765.86 5736.55
 1803.02 5737.06 1867.66  5737.7 1907.26 5738.43  1922.6  5738.5  2088.5  5739.5
 2102.47 5740.21 2196.76 5745.88 2214.54 5746.05 2219.92  5746.6 2229.08 5747.68
 2262.82  5750.2 2290.48 5752.31 2383.13 5758.34 2980.91 5765.35 3085.49 5767.42
 3685.06 5773.77  4068.5    5776

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    1000     .06  1522.5     .03    1726     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        1522.5    1726           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 149.333*

INPUT
```

```
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  666.67    5733  732.06 5733.59  818.27 5733.48  933.45 5733.34  942.01 5733.33
 1058.62 5732.33 1152.68 5733.02 1204.39  5733.4 1298.33 5732.67 1372.33 5727.67
 1419.65 5727.67 1467.07 5727.67 1487.67 5727.67 1508.33    5732 1559.57  5733.7
 1607.35 5734.04 1690.44  5734.3 1741.35 5734.91 1761.07    5735 1974.33 5736.33
  1992.3 5737.28 2113.51 5744.25 2136.36 5744.37 2143.28 5745.07 2155.05 5746.46
 2198.43  5749.6 2233.99 5752.21 2353.09 5759.56 3121.55 5764.47 3255.98 5765.89
 4026.74 5770.36 4519.67    5772

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  666.67     .06 1298.33     .03 1508.33     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1298.33 1508.33           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 148.666*

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  333.33    5731  410.03 5731.79  511.13 5731.74  646.23 5731.67  656.26 5731.67
  793.03 5731.17  903.34 5731.51  963.99  5731.7 1074.17 5731.33 1153.17 5725.83
 1200.82 5725.83 1248.59 5725.83 1269.33 5725.83 1290.67    5729 1353.29 5730.85
 1411.67 5731.02 1513.22  5730.9 1575.44 5731.38 1599.53  5731.5 1860.17 5733.17
 1882.12 5734.35 2030.25 5742.63 2058.18 5742.68 2066.64 5743.53 2081.03 5745.23
 2134.04    5749 2177.49  5752.1 2323.04 5760.78 3262.18 5763.59 3426.48 5764.36
 4368.43 5766.95 4970.83    5768

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  333.33     .06 1074.17     .03 1290.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       1074.17 1290.67           358.33  344.96  306.81             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 148
```

```
INPUT
Description: FEMA Cross Section AM
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5729      88    5730     204    5730     359    5730     654    5730
     850    5730     934    5724     982    5724    1051    5724    1073    5726
    1147    5728    1216    5728    1336  5727.5    1438    5728    1746    5730
    1947    5741    1980    5741    1990    5742    2007    5744    2121    5752
    2293    5762    5422    5764

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     850    .167    1073     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           850    1073              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.992*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.06   82.42 5729.82  156.51 5729.68  191.07 5729.67  256.88 5729.66
  336.24 5729.53  366.07 5729.48  612.54 5729.42  796.11 5729.38  802.96 5728.74
  845.68 5726.01  882.61 5723.54  927.18 5723.54  991.25 5723.54 1012.67 5725.67
 1082.33 5727.55 1147.28 5727.58 1260.24 5727.16 1326.49  5727.5 1356.25 5727.67
    1523  5728.9 1646.17 5729.71 1835.37 5739.95 1866.44 5739.95 1875.85 5740.88
 1883.86 5741.81 1891.85 5742.74 1999.16 5750.25 2117.27 5757.11 2161.07 5759.62
 2411.92 5759.77 2726.37 5759.94 3024.67 5760.12 3322.76 5760.35 3616.51 5760.55
  3927.9 5760.78 4228.58 5760.98 4534.16 5761.26 4832.19 5761.56 5106.41 5761.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  796.11    .167 1012.67     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        796.11 1012.67              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
```

REACH: Lorson Ranch RS: 147.985*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.12	76.84	5729.65	145.91	5729.35	178.13	5729.34	239.49	5729.32
313.48	5729.06	341.29	5728.97	571.08	5728.84	742.23	5728.75	749.27	5727.96
793.23	5725.45	831.22	5723.08	872.36	5723.08	931.5	5723.08	952.34	5725.33
1017.66	5727.1	1078.56	5727.15	1184.47	5726.81	1246.6	5727.16	1274.5	5727.35
1430.85	5728.65	1546.34	5729.41	1723.75	5738.89	1752.87	5738.9	1761.7	5739.76
1769.21	5740.62	1776.7	5741.49	1877.32	5748.5	1988.07	5754.92	2029.13	5757.24
2264.35	5757.37	2559.19	5757.49	2838.89	5757.66	3118.39	5757.92	3393.83	5758.11
3685.8	5758.36	3967.73	5758.55	4254.26	5758.91	4533.71	5759.3	4790.83	5759.66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	742.23	.167	952.34	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
742.23	952.34	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.978*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.18	71.26	5729.47	135.32	5729.03	165.2	5729.01	222.1	5728.98
290.72	5728.59	316.51	5728.45	529.62	5728.26	688.34	5728.12	695.58	5727.18
740.77	5724.89	779.83	5722.62	817.54	5722.62	871.76	5722.62	892.02	5725
952.99	5726.65	1009.84	5726.73	1108.71	5726.47	1166.7	5726.82	1192.75	5727.02
1338.7	5728.4	1446.51	5729.12	1612.12	5737.84	1639.31	5737.85	1647.55	5738.64
1654.56	5739.43	1661.56	5740.23	1755.48	5746.75	1858.86	5752.74	1897.2	5754.86
2116.77	5754.98	2392.01	5755.04	2653.11	5755.2	2914.02	5755.48	3171.14	5755.67
3443.7	5755.93	3706.88	5756.12	3974.35	5756.55	4235.22	5757.04	4475.24	5757.49

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	688.34	.167	892.02	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
688.34	892.02	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.971*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.24	65.68	5729.3	124.73	5728.71	152.27	5728.68	204.71	5728.64
267.96	5728.13	291.74	5727.93	488.15	5727.69	634.45	5727.5	641.89	5726.4
688.31	5724.34	728.44	5722.16	762.72	5722.16	812.01	5722.16	831.69	5724.66
888.32	5726.2	941.12	5726.3	1032.94	5726.12	1086.8	5726.48	1111	5726.7
1246.55	5728.15	1346.69	5728.82	1500.5	5736.78	1525.75	5736.8	1533.4	5737.52
1539.91	5738.24	1546.41	5738.98	1633.65	5745	1729.66	5750.55	1765.26	5752.48
1969.2	5752.58	2224.83	5752.6	2467.32	5752.73	2709.65	5753.04	2948.46	5753.23
3201.6	5753.51	3446.03	5753.69	3694.45	5754.2	3936.73	5754.79	4159.66	5755.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	634.45	.167	831.69	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
634.45	831.69	6.5	9.85	13.43	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.964*

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.3	60.11	5729.12	114.13	5728.38	139.34	5728.35	187.33	5728.3
245.2	5727.66	266.96	5727.42	446.69	5727.11	580.56	5726.88	588.2	5725.62
635.86	5723.78	677.05	5721.7	707.9	5721.7	752.26	5721.7	771.36	5724.33
823.64	5725.75	872.39	5725.88	957.18	5725.78	1006.91	5726.13	1029.25	5726.37
1154.4	5727.9	1246.86	5728.53	1388.87	5735.73	1412.19	5735.75	1419.25	5736.4
1425.26	5737.05	1431.26	5737.72	1511.81	5743.25	1600.46	5748.36	1633.33	5750.1
1821.62	5750.18	2057.64	5750.15	2281.54	5750.27	2505.28	5750.61	2725.77	5750.79
2959.5	5751.09	3185.18	5751.27	3414.54	5751.85	3638.24	5752.53	3844.07	5753.14

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.06	580.56	.167	771.36	.06

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        580.56  771.36              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.957*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.36   54.53 5728.95  103.54 5728.06   126.4 5728.02  169.94 5727.96
  222.44 5727.19  242.18  5726.9  405.23 5726.53  526.68 5726.25  534.51 5724.83
   583.4 5723.23  625.66 5721.24  653.08 5721.24  692.51 5721.24  711.03 5723.99
  758.97  5725.3  803.67 5725.45  881.41 5725.44  927.01 5725.79  947.49 5726.05
 1062.26 5727.65 1147.03 5728.24 1277.24 5734.68 1298.62  5734.7  1305.1 5735.28
 1310.61 5735.86 1316.11 5736.47 1389.97  5741.5 1471.25 5746.18  1501.4 5747.72
 1674.04 5747.78 1890.46  5747.7 2095.76 5747.81 2300.91 5748.17 2503.09 5748.35
 2717.39 5748.67 2924.33 5748.84 3134.64 5749.49 3339.76 5750.27 3528.49 5750.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  526.68    .167  711.03     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        526.68  711.03              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.95*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.42   48.95 5728.77   92.95 5727.74  113.47 5727.69  152.55 5727.62
  199.68 5726.72   217.4 5726.38  363.77 5725.95  472.79 5725.62  480.82 5724.05
  530.95 5722.67  574.27 5720.78  598.27 5720.78  632.77 5720.78  650.71 5723.66
   694.3 5724.85  734.95 5725.03  805.65 5725.09  847.12 5725.45  865.74 5725.72
  970.11  5727.4  1047.2 5727.94 1165.62 5733.62 1185.06 5733.65 1190.95 5734.16
 1195.96 5734.67 1200.97 5735.21 1268.13 5739.75 1342.05 5743.99 1369.46 5745.34
 1526.47 5745.39 1723.28 5745.26 1909.98 5745.34 2096.54 5745.73  2280.4 5745.91
 2475.29 5746.25 2663.48 5746.41 2854.74 5747.14 3041.27 5748.02  3212.9  5748.8
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  472.79    .167  650.71     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        472.79  650.71              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.942*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.49   43.37  5728.6   82.35 5727.41  100.54 5727.36  135.16 5727.27
  176.92 5726.25  192.62 5725.87  322.31 5725.37   418.9    5725  427.13 5723.27
  478.49 5722.11  522.87 5720.32  543.45 5720.32  573.02 5720.32  590.38 5723.32
  629.63  5724.4  666.23  5724.6  729.89 5724.75  767.22  5725.1  783.99  5725.4
  877.96 5727.15  947.37 5727.65 1053.99 5732.57  1071.5  5732.6  1076.8 5733.04
 1081.31 5733.48 1085.82 5733.95 1146.29    5738 1212.85 5741.81 1237.53 5742.96
 1378.89 5742.99  1556.1 5742.81 1724.19 5742.88 1892.17  5743.3 2057.71 5743.47
 2233.19 5743.82 2402.63 5743.98 2574.83 5744.79 2742.78 5745.76 2897.31 5746.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   418.9    .167  590.38     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         418.9  590.38              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.935*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.55   37.79 5728.42   71.76 5727.09    87.6 5727.04  117.78 5726.93
  154.17 5725.78  167.84 5725.35  280.85 5724.79  365.02 5724.38  373.44 5722.49
  426.03 5721.56  471.48 5719.86  488.63 5719.86  513.27 5719.86  530.05 5722.98
  564.96 5723.95  597.51 5724.18  654.12  5724.4  687.33 5724.76  702.24 5725.07
```

```
  785.81  5726.9  847.54 5727.35  942.37 5731.52  957.93 5731.55  962.65 5731.92
  966.67 5732.29  970.67  5732.7 1024.45 5736.25 1083.64 5739.62  1105.6 5740.58
 1231.32 5740.59 1388.91 5740.36 1538.41 5740.42 1687.81 5740.86 1835.03 5741.03
 1991.09  5741.4 2141.78 5741.56 2294.93 5742.43  2444.3  5743.5 2581.73 5744.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  365.02    .167  530.05     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        365.02  530.05              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.928*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.61   32.21 5728.25   61.16 5726.76   74.67 5726.71  100.39 5726.59
  131.41 5725.32  143.06 5724.84  239.39 5724.21  311.13 5723.75  319.75 5721.71
  373.58    5721  420.09  5719.4  433.81  5719.4  453.52  5719.4  469.72 5722.65
  500.29  5723.5  528.79 5723.75  578.36 5724.06  607.43 5724.42  620.49 5724.75
  693.66 5726.65  747.71 5727.06  830.74 5730.46  844.37  5730.5   848.5  5730.8
  852.02  5731.1  855.52 5731.44  902.61  5734.5  954.44 5737.43  973.66  5738.2
 1083.74 5738.19 1221.73 5737.92 1352.63 5737.95 1483.44 5738.43 1612.34 5738.59
 1748.99 5738.98 1880.93 5739.13 2015.03 5740.08 2145.81 5741.25 2266.14 5742.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  311.13    .167  469.72     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        311.13  469.72              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.921*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0 5729.67   26.63 5728.07   50.57 5726.44   61.74 5726.38      83 5726.25
  108.65 5724.85  118.29 5724.32  197.92 5723.63  257.24 5723.12  266.06 5720.93
  321.12 5720.45   368.7 5718.94  378.99 5718.94  393.77 5718.94  409.39 5722.31
  435.62 5723.05  460.07 5723.33  502.59 5723.71  527.54 5724.08  538.74 5724.42
  601.51  5726.4  647.89 5726.77  719.11 5729.41  730.81 5729.46  734.35 5729.68
  737.37 5729.91  740.38 5730.19  780.78 5732.75  825.24 5735.25  841.73 5735.82
  936.17 5735.79 1054.55 5735.47 1166.85 5735.49 1279.07 5735.99 1389.66 5736.15
 1506.89 5736.56 1620.08  5736.7 1735.12 5737.73 1847.32 5738.99 1950.56 5740.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  257.24    .167  409.39     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        257.24  409.39              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.914*

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.73   21.05 5727.89   39.98 5726.12   48.81 5726.05   65.61 5725.91
   85.89 5724.38   93.51  5723.8  156.46 5723.06  203.35  5722.5  212.37 5720.14
  268.66 5719.89  317.31 5718.48  324.17 5718.48  334.03 5718.48  349.07 5721.98
  370.95  5722.6  391.35 5722.91  426.83 5723.37  447.64 5723.73  456.99 5724.09
  509.37 5726.15  548.06 5726.47  607.49 5728.35  617.25 5728.41   620.2 5728.56
  622.72 5728.72  625.23 5728.93  658.94    5731  696.04 5733.06  709.79 5733.44
  788.59  5733.4  887.37 5733.02  981.06 5733.03  1074.7 5733.55 1166.97 5733.71
 1264.78 5734.13 1359.23 5734.27 1455.22 5735.38 1548.83 5736.73 1634.97 5737.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  203.35    .167  349.07     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        203.35  349.07              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.907*
```

```
INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.79   15.47 5727.72   29.38 5725.79   35.87 5725.72   48.23 5725.57
   63.13 5723.91   68.73 5723.29     115 5722.48  149.47 5721.88  149.675721.825
  158.68 5719.36  216.21 5719.34  265.92 5718.02  269.35 5718.02  274.28 5718.02
  288.74 5721.65  306.27 5722.15  322.63 5722.48  351.06 5723.03  367.75 5723.39
  375.24 5723.77  417.22  5725.9  448.23 5726.18  495.86  5727.3  503.68 5727.36
  506.05 5727.44  508.07 5727.53  510.08 5727.68   537.1 5729.25  566.83 5730.88
  577.86 5731.06  641.02    5731  720.18 5730.58  795.28 5730.56  870.33 5731.12
  944.29 5731.27 1022.68 5731.71 1098.38 5731.85 1175.31 5733.02 1250.35 5734.48
 1319.39 5735.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06  149.47    .167  288.74     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        149.47  288.74              6.5    9.85   13.43             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.9

INPUT
Description: Top of 7th Drop Structure and Bottom of Berm.  Cross section at
             upper most part of newly constructed channel at river station
             95+56.08
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5729.85   18.79 5725.47   30.84 5725.23   43.95 5722.77   95.58 5721.25
  104.99 5718.58  163.75 5718.78  214.53 5717.56  228.41 5721.31  287.85 5723.05
  325.07 5725.65  393.42 5726.34  437.63 5728.69  493.44  5728.6     553 5728.13
   609.5  5728.1  665.96 5728.68   721.6 5728.83  780.58 5729.29  837.53 5729.42
  895.41 5730.67  951.86 5732.22  1003.8  5733.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06   95.58    .167  228.41     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  437.63             44.6   56.43   10.77             .1       .3

CROSS SECTION
```

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.8

INPUT
Description: Bottom of 7th Drop Structure and Top of Berm. Cross section at river station 95+14.03
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.42	16.94	5724.89	33.65	5724.12	46.35	5722.15	93.18	5720.64
111.9	5715.7	214.97	5715.88	231.42	5721.28	277.5	5721.82	291.81	5724.13
305.72	5724.87	319.71	5726.01	329.2	5727.82	381.88	5729.2	437.63	5728.69
493.44	5728.6	553	5728.13	609.5	5728.1	665.96	5728.68	721.6	5728.83
780.58	5729.29	837.53	5729.42	895.41	5730.67	951.86	5732.22	1003.8	5733.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	93.18	.1	231.42	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	381.88	51.82	39.16	664.1	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 147.7

INPUT
Description: 50' Downstream of 7th Drop Structure. Added X-Sec from As Built 8/21/06
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5729.35	18.48	5724.73	29.39	5724.45	44.98	5721.08	87.77	5719.35
105.63	5715.61	203.7	5715.6	225.46	5718.68	274.6	5719.55	290.14	5722.45
301.55	5723.03	324.29	5728.3						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	87.77	.1	225.46	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	324.29	103.99	99.4	95.42	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek

```
REACH: Lorson Ranch       RS: 147.6

INPUT
Description: cross section at river station 93+55
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5726    2.76    5725       6    5724    9.48    5723   22.22    5722
   32.57    5721   39.82    5720   47.67    5719   87.75    5718    93.7    5717
   98.61    5716  102.64    5715  162.58    5715  210.64    5716  216.64    5717
  232.04    5718  264.94    5719  270.81    5720  276.55    5721  281.68    5722
  283.65    5722  291.46    5722  299.16    5723  303.72    5724  308.14    5725
  312.29    5726  316.42    5727  325.34    5728  464.22 5728.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   87.75      .1  232.04     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.34           173.91  186.52  199.66             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 147.2

INPUT
Description: Top of 6th Drop Structure.  Cross section at river station 91+69
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5723.75   20.14 5720.51    22.1 5719.65   35.95 5717.04   84.49  5716.7
   96.26 5713.34  201.62 5713.78  216.75 5717.14  265.99 5717.76  278.35 5719.97
  293.53 5720.96  316.12 5726.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   84.49      .1  216.75     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  316.12            50.74   63.56   56.41             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 146.3

INPUT
```

```
Description: Bottom of 6th Drop Structure
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5724.71   17.48 5720.46    36.6 5719.79   48.92 5717.33   98.86 5716.54
  114.07  5712.9  216.97 5712.29  231.25 5716.45  278.82 5717.49  294.46 5719.52
  313.21 5720.28  330.57 5725.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   98.86     .06  231.25     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  330.57            47.58   47.58   47.58             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 146.1

INPUT
Description: 50' Downstream of 6th Drop Structure
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5723.32   19.57 5718.52   33.63 5718.19   49.46 5715.46    93.7 5714.97
  114.11 5711.71  210.32 5711.74  229.41 5714.94  279.25  5715.6  294.35 5718.75
  305.76 5719.45  325.54 5724.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04    93.7     .04  229.41     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.54            90.06  120.53  150.87             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 145.6

INPUT
Description: Top of 5th Drop Structure.  Cross section at river station 89+48
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5722.65   17.01 5718.69   35.76 5717.07   47.05 5714.82   95.08  5714.1
  111.15 5710.99   217.5 5711.14  230.16 5713.87  280.45 5715.13  291.43 5716.86
  306.75 5718.42  323.21 5722.37
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   95.08     .06  230.16     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  323.21            55.82   58.14   60.59             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.7

INPUT
Description: Bottom of 5th Drop Structure.  DCBO Jimmy Camp Creek River Station
             88+90
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5721.66    16.1  5717.5   33.78 5715.97   45.78 5713.57      75 5712.29
  109.26  5709.3     213 5708.87  228.22 5712.53   277.2 5712.81  292.62 5716.45
  306.79 5716.86  325.43 5721.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04      75     .06  228.22     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.43            70.87   70.87   70.87             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.6

INPUT
Description: 50' Downstream of 5th Drop Structure.  DCBO Jimmy Camp Creek River
             Station 88+21
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5721.97    29.4 5716.05   44.44 5714.92   56.89 5712.57  108.47 5711.68
  124.18 5709.58  222.63 5709.16  238.48 5711.98  292.05 5712.93  303.99 5715.39
  319.58 5715.69  338.15 5721.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  108.47     .06  238.48     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  338.15           138.02  138.02  138.02             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144.4

INPUT
Description: cross section at river station 86+85
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5720.77    7.74 5720.79    7.89 5720.75    8.74 5720.75   10.87 5720.16
    28.9 5715.44   43.83  5714.9    45.6 5714.87   46.89 5714.55   57.38 5712.02
  102.45 5711.01  108.95 5710.93  120.93  5708.9  122.51 5708.59  210.79  5707.4
  225.66  5707.2  228.13 5707.72  241.38 5711.48  248.52 5711.62  288.16 5711.82
  291.82 5712.46  305.29 5714.91  307.59 5715.05  316.82 5715.61  320.36 5716.46
  334.28 5719.89  335.58 5719.91  344.73 5719.91  348.72 5719.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  108.95     .04  241.38     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          7.74  335.58           174.49  178.55  183.34             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 144

INPUT
Description: Top of 4th Drop Structure.  Cross section at river station 85+12
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5718.59   18.13 5714.39   35.51 5712.82   46.68 5710.97   97.69 5710.11
     110 5708.24  214.33 5706.95  230.63 5709.81  279.68 5710.31  291.31 5712.54
  306.09 5713.31  325.93 5718.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0    .045   97.69     .04  230.63    .045

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.93            46.66   45.83   45.03             .1       .3
```

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 143.2

INPUT
Description: Bottom of 4th Drop Structure. Cross section at river station 84+71
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5717.86	17.92	5713.18	33.62	5712.22	45.7	5710.12	96.03	5709.26
113.89	5704.54	210.75	5704.58	226.65	5709.07	276.73	5708.79	291.09	5712.54
305.41	5712.62	323.55	5717.13						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	96.03	.1	226.65	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	323.55	415.26	415.73	416.34	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 142.4

INPUT
Description: cross section at river station 80+45
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5714	9.75	5713	14.21	5712	17.98	5711	21.74	5710
38.75	5709	43.05	5708	47.24	5707	79.27	5706	101.96	5705
105.75	5704	110.16	5703	148.06	5703	216.15	5704	220.3	5705
227.08	5706	281.52	5707	285.91	5708	290.22	5709	306.09	5710
311.12	5711	315.38	5712	319.26	5713	323.1	5714	327.01	5715
330.16	5716	334.17	5717	335.92	5717	337.17	5716		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	79.27	.04	227.08	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9.75	319.26	400.94	540.66	774.84	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 141.6

INPUT
Description: cross section at river station 75+58
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5711	3.38	5710	6.78	5709	10.17	5708	26.43	5707
30.71	5706	34.87	5705	53.33	5704	90.54	5703	94.71	5702
99.22	5701	207.92	5701	211.66	5702	215.33	5703	239.27	5704
267.72	5705	272.93	5706	278.2	5707	293.62	5708	300.33	5709
304.25	5710	308.57	5711	313.38	5712	318.09	5713	322.86	5714
327.6	5715	335.03	5716	335.39	5716				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	90.54	.04	215.33	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	308.57	569.21	474	372.73	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 140.8

INPUT
Description: Top of 3rd Drop Structure. Cross section at river station 70+87
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5709.71	15.74	5706.13	33.76	5704.68	45.12	5702.07	94.59	5700.81
106.86	5698.38	214.96	5698.74	227.98	5701.17	277.07	5701.71	289.78	5704.27
304.79	5705.01	323.04	5709.96						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	94.59	.1	227.98	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
0	323.04	37.27	37.5	38.21	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 140

```
INPUT
Description: Bottom of 3rd Drop Structure.  Cross section at river station 70+47
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5709.67   19.68 5705.11   35.76 5704.62   48.07 5701.53   98.94 5700.59
  112.45 5696.02  215.55 5696.15  227.77 5700.59  281.25 5701.46  291.45 5703.26
  307.69 5704.53  329.15 5708.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   98.94      .1  227.77     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  329.15            34.13   42.09   62.78             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 139.7

INPUT
Description: Added X-Sec from As-built 8/21/06 50' Downstream of 3rd Drop
             Structure at JCC river station 70+02
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5707.35   31.19 5705.41   49.24 5700.69    63.5  5700.6  101.94 5698.97
  115.74 5695.16  219.18  5695.3  233.57 5699.21   282.8 5700.03  296.27 5702.85
  316.11 5705.51  336.37 5708.32  367.23 5716.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  101.94      .1  233.57     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  336.37           114.06     102    90.9             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 139.3

INPUT
Description: cross section upstream of bridge at river station 69+00
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
       0    5706    3.93    5705    8.51    5704    14.8    5703   24.27    5702
   30.09    5701   35.61    5700   44.14    5699   45.74    5698   81.98    5697
   89.02    5696  170.69    5695  193.31    5695  199.85    5696  204.31    5697
  214.16    5698  230.52    5699  244.39    5700  255.68    5701  263.36    5702
  274.05    5703   289.2    5704  298.65    5705  306.61    5706  310.46    5707
  314.36    5708  318.18    5709  322.03    5710  325.96    5711  329.81    5712
  333.69    5713  337.57    5714  342.66    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   81.98     .04  204.31     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          3.93  298.65           181.15  181.15  181.15             .1       .3

BRIDGE


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 138.8

INPUT
Description: DBCO Proposed Bridge
Distance from Upstream XS =       1
Deck/Roadway Width        =      94
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 5719.15 5708.33     400 5719.09  5708.3

Upstream Bridge Cross Section Data
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5706    3.93    5705    8.51    5704    14.8    5703   24.27    5702
   30.09    5701   35.61    5700   44.14    5699   45.74    5698   81.98    5697
   89.02    5696  170.69    5695  193.31    5695  199.85    5696  204.31    5697
  214.16    5698  230.52    5699  244.39    5700  255.68    5701  263.36    5702
  274.05    5703   289.2    5704  298.65    5705  306.61    5706  310.46    5707
  314.36    5708  318.18    5709  322.03    5710  325.96    5711  329.81    5712
  333.69    5713  337.57    5714  342.66    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   81.98     .04  204.31     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
          3.93  298.65             .1       .3
```

```
Downstream  Deck/Roadway Coordinates
    num=       2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 5718.03 5708.55     400 5717.93  5708.4

Downstream Bridge Cross Section Data
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5706    3.71    5705    7.44    5704   11.15    5703   15.15    5702
   23.39    5701   32.85    5700   41.83    5699   51.22    5698   73.28    5697
   92.72    5696   98.08    5695  101.37    5694  207.42    5694  211.31    5695
  215.26    5696  231.22    5697  257.69    5698  266.41    5699  275.19    5700
  284.89    5701  294.93    5702  304.62    5703  309.18    5704  313.02    5705
  316.92    5706  320.76    5707  324.64    5708   328.5    5709  332.33    5710
  336.22    5711  340.07    5712  343.92    5713  347.81    5714  351.68    5715
  363.53    5716  368.34    5716

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   92.72     .04  215.26     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
          3.71  313.02             .1       .3

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =  5713.6
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  1

Pier Data
Pier Station     Upstream=     152    Downstream=     152
Upstream     num=       2
    Width   Elev    Width   Elev
       3    5690       3  5711.8
Downstream     num=       2
    Width   Elev    Width   Elev
       3    5690       3  5711.8

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
```

Selected Low Flow Methods = Highest Energy Answer

High Flow Method
Energy Only

Additional Bridge Parameters
Add Friction component to Momentum
Do not add Weight component to Momentum
Class B flow critical depth computations use critical depth
inside the bridge at the upstream end
Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT Profile #FEMA 100-Year

E.G. US. (ft)	5704.22	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5702.81	E.G. Elev (ft)	5704.20	5703.49
Q Total (cfs)	12900.00	W.S. Elev (ft)	5702.64	5702.53
Q Bridge (cfs)	12900.00	Crit W.S. (ft)	5701.73	5700.44
Q Weir (cfs)		Max Chl Dpth (ft)	7.63	8.53
Weir Sta Lft (ft)		Vel Total (ft/s)	10.02	7.83
Weir Sta Rgt (ft)		Flow Area (sq ft)	1286.80	1646.63
Weir Submerg		Froude # Chl	0.78	0.57
Weir Max Depth (ft)		Specif Force (cu ft)	7986.08	8897.35
Min El Weir Flow (ft)	5719.11	Hydr Depth (ft)	5.17	5.80
Min El Prs (ft)	5708.33	W.P. Total (ft)	264.79	302.24
Delta EG (ft)	1.14	Conv. Total (cfs)	144597.6	199603.7
Delta WS (ft)	0.87	Top Width (ft)	248.89	284.06
BR Open Area (sq ft)	2942.56	Frctn Loss (ft)	0.53	0.39
BR Open Vel (ft/s)	10.02	C & E Loss (ft)	0.18	0.02
BR Sluice Coef		Shear Total (lb/sq ft)	2.41	1.42
BR Sel Method	Energy only	Power Total (lb/ft s)	24.21	

11.13

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.

BRIDGE OUTPUT Profile #DBPS-2015_100

E.G. US. (ft)	5708.19	Element	Inside BR US	Inside BR DS
W.S. US. (ft)	5706.03	E.G. Elev (ft)	5708.16	5707.37
Q Total (cfs)	26734.00	W.S. Elev (ft)	5705.77	5705.73
Q Bridge (cfs)	26734.00	Crit W.S. (ft)	5704.79	5703.33
Q Weir (cfs)		Max Chl Dpth (ft)	10.77	11.73
Weir Sta Lft (ft)		Vel Total (ft/s)	12.38	10.27
Weir Sta Rgt (ft)		Flow Area (sq ft)	2159.76	2604.05
Weir Submerg		Froude # Chl	0.80	0.62
Weir Max Depth (ft)		Specif Force (cu ft)	19629.59	21067.88
Min El Weir Flow (ft)	5719.11	Hydr Depth (ft)	7.18	8.35
Min El Prs (ft)	5708.33	W.P. Total (ft)	323.54	337.22
Delta EG (ft)	1.27	Conv. Total (cfs)	299304.2	390348.4
Delta WS (ft)	1.01	Top Width (ft)	300.91	311.87
BR Open Area (sq ft)	2942.56	Frctn Loss (ft)	0.57	0.42
BR Open Vel (ft/s)	12.38	C & E Loss (ft)	0.22	0.03
BR Sluice Coef		Shear Total (lb/sq ft)	3.32	2.26
BR Sel Method	Energy only	Power Total (lb/ft s)	41.16	23.21

Warning: Pier drag coefficient of 2.0 assumed for Class B flow.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross
sections.

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 138.3

INPUT
Description: cross section downstream of bridge at river station 67+19
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	5706	3.71	5705	7.44	5704	11.15	5703	15.15	5702
23.39	5701	32.85	5700	41.83	5699	51.22	5698	73.28	5697
92.72	5696	98.08	5695	101.37	5694	207.42	5694	211.31	5695
215.26	5696	231.22	5697	257.69	5698	266.41	5699	275.19	5700
284.89	5701	294.93	5702	304.62	5703	309.18	5704	313.02	5705
316.92	5706	320.76	5707	324.64	5708	328.5	5709	332.33	5710
336.22	5711	340.07	5712	343.92	5713	347.81	5714	351.68	5715
363.53	5716	368.34	5716						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.04	92.72	.04	215.26	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
3.71	313.02	298.68	310.69	324.82	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 138

INPUT
Description: cross section after full expansion at river station 64+80
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
34.98	5704.99	36.27	5704.99	38.94	5705.08	46.64	5704.4	52.78	5702.77
62.12	5700.09	72.51	5699.38	76.19	5699.35	80.17	5698.49	88.15	5696.62
121.84	5696.16	139.35	5695.71	147.94	5693.81	153.46	5692.55	218.45	5692.18
257.21	5692.34	263.25	5694.21	268.24	5695.52	298.9	5696.55	320.61	5696.93
326.55	5698.35	331.82	5699.36	338.71	5699.58	348.43	5699.78	367.96	5705.27
377.33	5707.9	404.67	5714.84	408.93	5715.12	416.88	5714.99	420.28	5714.76

```
  432.53 5715.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   34.98     .04  139.35     .04  268.24     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         36.27  367.96           341.96  348.12  366.74             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 137.6

INPUT
Description: Top of 2nd Drop Structure.  Cross section at river station 60+65
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.77   22.71  5697.1   45.39 5694.52    96.1  5693.4  112.46 5690.52
  118.47 5688.97  160.79  5689.4  174.84 5690.55  219.38 5690.87  232.43 5693.37
  275.82 5694.34  308.89 5697.97  332.35 5703.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04    96.1     .04  232.43     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  332.35            45.37   48.07   45.37             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 136.8

INPUT
Description: Bottom of 2nd Drop Structure.  Cross section at river station 60+27
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.52   33.87 5694.74   52.23 5693.64   99.58 5693.44  116.16 5688.25
  162.53  5687.6     173 5688.07  215.57 5688.59  234.22  5693.3  284.58 5694.24
  315.47 5698.34  330.99 5701.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   99.58      .1  234.22     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  330.99           365.58   322.7  292.78             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 136

INPUT
Description: cross section at river station 56+89
Station Elevation Data    num=      47
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5703     4.1    5702    8.19    5701    12.3    5700   16.32    5699
   20.45    5698   24.48    5697   29.02    5696   33.79    5695   50.42    5694
    54.9    5693   59.67    5692   78.36    5691  112.72    5690  117.01    5689
  121.25    5688  215.23    5687  230.97    5687  235.28    5688  239.65    5689
  246.22    5690  291.75    5691  298.68    5692  302.61    5693  321.48    5694
  325.35    5695  329.15    5696  332.89    5697  336.73    5698   340.5    5699
  344.29    5700  348.13    5701  351.87    5702  355.68    5703  359.48    5704
  363.21    5705   367.1    5706  370.87    5707  374.67    5708  378.43    5709
   382.2    5710  386.02    5711  389.82    5712  393.61    5713   397.4    5714
  473.92    5715  478.23    5715

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  112.72     .04  246.22     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         20.45  336.73           332.63  332.63  332.63             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.6

INPUT
Description: Cross Section: Sta. 53+55
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.97    4.73  5699.9    7.76 5700.17   21.72 5696.79   37.46 5692.89
   45.77 5692.66   55.52 5690.98    61.6 5690.98   67.16 5689.69   89.58 5689.23
  114.62 5688.67  121.56 5687.02  127.94 5685.38  174.27 5685.57  232.68 5685.66
  238.04 5686.99  244.64 5688.74  273.26 5689.28  293.72 5689.49  299.28 5690.79
  306.82 5692.35  315.62 5692.55  320.43 5692.84  348.73 5700.21  373.68  5706.7
  404.92 5714.31  408.47 5714.38  416.37 5714.69  417.55 5714.73  420.14 5714.71
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  114.62     .04  244.64     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         21.72  348.73             62.7   55.42   47.48             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.55

INPUT
Description: Cross Section: Sta. 53+00.00
Station Elevation Data    num=     279
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.14.5899658 5702.1310.40002 5702.0518.48999    570226.20996 5701.99
26.40002 5701.9837.76001 5701.9638.32996 5701.9638.69995 5701.9582.72998 5701.94
83.58997 5701.9383.81995 5701.93   84.69 5701.92   96.37 5701.92   97.12 5701.91
  108.12 5701.93  109.14 5701.92  119.39 5701.95  120.04 5701.95  129.68    5702
  129.72    5702  134.89 5701.86138.8199 5701.76158.2599 5701.91  159.84 5701.93
  160.45 5701.94  163.22 5701.94  165.09 5701.93  170.03    5702  176.65 5702.35
  179.52  5702.4  179.98 5702.39  180.47 5702.37186.3199 5702.49  191.97 5702.29
  201.69    5702  229.03 5701.85   238.3 5701.66  238.55 5701.66  244.09 5701.31
  246.12 5701.14  249.09 5701.12  252.97 5701.06  253.29 5701.06254.0699    5701
   254.2    5701   260.8 5700.65  266.34 5700.29  269.65 5700.05  270.94 5700.06
  275.14 5700.02   277.2    5700   277.8    5700287.5699 5699.48   291.1 5699.31
294.7599 5699.14  306.15 5699.16  317.75 5698.98  322.18 5698.97  322.84 5698.97
  377.77 5698.96  378.38 5698.96  379.12 5698.95  381.21 5698.95   382.1 5698.94
  396.28 5698.93  405.56 5698.93  406.86 5698.92  408.72  5698.9  410.71 5698.88
  418.77 5698.75  459.58 5698.03  468.37 5698.03  475.45 5698.04   476.7 5698.04
  485.02 5698.01  487.77 5698.01  490.65    5698  495.48 5697.94  497.03 5697.93
  500.95 5698.51  509.46 5699.91  510.19 5699.88  510.27 5699.88  510.37 5699.87
  510.47 5699.87  510.58 5699.86   510.7 5699.85  510.83 5699.85  510.98 5699.84
  511.15 5699.83  511.93 5699.79  512.15 5699.78  512.88 5699.74  513.15 5699.72
  513.83 5699.69  514.15 5699.67  514.78 5699.63  515.16 5699.61  515.74 5699.58
  516.17 5699.56   516.7 5699.53  517.19  5699.5  517.66 5699.48   518.2 5699.45
  518.83 5699.37   519.2 5699.35  519.95 5699.24  520.19 5699.23  521.08  5699.1
  521.73    5699  522.34 5698.96   522.4 5698.95   523.7 5698.85  523.93 5698.82
524.5099 5698.78  525.25  5698.7  525.96  5698.6  527.06 5698.47  528.31 5698.28
  528.83 5698.22  529.79 5698.07  530.19    5698  530.85 5697.87  532.14  5697.6
  534.06  5697.2  535.03    5697  537.53 5696.36  538.92    5696  541.71 5695.26
  542.68    5695  546.27 5694.05  546.45    5694  548.31 5693.35  549.38    5693
  551.18 5692.85  551.58 5692.81  555.37 5692.48  556.73 5692.36  559.59 5692.11
  561.95  5691.9  563.84 5691.73  567.22 5691.42  568.12 5691.34  571.86    5691
  572.33 5690.87  575.37    5690  576.86 5689.92  578.34 5689.83579.5699 5689.76
  580.62 5689.71  581.52 5689.66  582.29 5689.61  582.97 5689.57583.5699 5689.54
```

```
  584.11 5689.51  584.59 5689.48  585.02 5689.46  585.41 5689.44  592.11 5689.17
596.4299    5689  608.63 5688.62629.3199    5688  632.14  5687.3633.3199    5687
  635.23 5686.52637.3199    5686  641.72 5685.85  662.62 5685.22  668.74 5685.04
  670.04    5685  679.24 5684.92  681.48 5684.91  685.92 5684.95  692.35    5685
  692.36    5685  727.64 5685.63  747.33    5686750.6899 5686.84  751.33    5687
  752.23 5687.22  755.33    5688  787.22 5688.97  788.22    5689  788.37 5689.01
  788.71 5689.02  810.84    5690  814.16 5690.83  814.84    5691  815.36 5691.13
  818.83    5692829.8099 5692.62  833.46 5692.82  836.63    5693838.9399 5693.58
  840.63    5694  842.33 5694.42  844.63    5695  846.16 5695.38  848.63    5696
  851.47 5696.75  851.97 5696.88  852.14 5696.93  852.23 5696.95  852.41    5697
  852.63    5697  855.71 5697.79  856.29 5697.94  856.36 5697.96  856.51    5698
  856.59 5698.02  860.51    5699  860.79 5699.07864.1899 5699.92  864.51    5700
  868.27 5700.94  868.52    5701  868.58 5701.02  872.52    5702  872.58 5702.02
  876.52    5703876.5699 5703.01  880.52    5704880.5699 5704.01  884.52    5705
  887.77 5705.81  891.11 5706.65  893.23 5707.18  896.52    5708899.6899 5708.79
  900.52    5709  903.09 5709.64  904.52    5710  906.11  5710.4  908.52    5711
  911.85 5711.83  912.53    5712  915.91 5712.85  916.53    5713  920.04 5713.88
  920.53    5714  936.91 5714.37  964.97    5715   975.5    5715  977.54  5714.5
  979.54    5714  980.28 5713.81  983.54    5713  986.18 5712.34  987.54    5712
  991.01 5711.13  991.54    5711995.3199 5710.06  995.54    5710  997.04 5709.63
  999.55    5709  999.83 5708.93 1003.55    5708 1003.99 5707.89 1007.55    5707
 1010.68 5706.22 1011.55    5706 1011.75 5705.95 1015.55    5705 1015.77 5704.94
 1019.55    5704  1019.9 5703.91 1023.55    5703    1024 5702.89 1027.55    5702
 1028.07 5701.87 1031.55    5701 1035.11 5700.11 1035.55    5700 1036.02 5699.88
 1039.55    5699 1041.02 5698.63 1043.56    5698 1092.35 5697.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  538.92     .04  848.63     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        538.92  848.63            29.38   29.37    9.53             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.50

INPUT
Description: Cross Section: Sta. 52+70.63
Station Elevation Data    num=     390
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.7451.02991 5702.6654.07996 5702.6371.78992  5702.676.99994  5702.6
  119.55 5702.53  125.65 5702.55   131.2 5702.58  135.77 5702.62139.5099 5702.03
  139.53 5702.04139.8699 5702.04   144.8 5702.26  159.14  5702.9159.5099 5702.92
   159.6 5702.92163.1799    5703  166.29 5703.05166.7599 5703.06175.8699  5703.4
  182.24 5703.49189.1199 5703.58  194.53 5703.65194.8099 5703.64  207.99 5703.37
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   212.3 5703.01  213.16 5703.01  213.27    5703214.0599 5702.94  214.46 5702.92
  216.28 5702.83232.1199 5702.01  232.79 5702.01232.9299    5702  233.05    5702
  237.15 5701.84  237.73 5701.81   245.2 5701.29  248.53 5701.04   249.1    5701
   249.3    5701  250.16 5700.95259.2499 5700.48  266.53  5700.1  267.36 5700.05
   268.1 5700.01  268.74    5700  268.79    5700   269.9 5699.94281.1899 5699.44
   288.6 5699.46  320.91 5698.93  326.04 5698.93326.9299 5698.92  379.08 5698.91
  380.46 5698.91  382.15 5698.89383.9999 5698.88385.1799 5698.88387.1799 5698.86
   400.2 5698.86  404.45 5698.85   408.7 5698.86  411.52 5698.83  415.53 5698.79
419.8199 5698.74   437.2 5698.47461.0699 5698.05  467.05 5698.06  467.59 5698.06
  470.89 5698.05  472.05 5698.05  482.73 5698.02  487.39    5698490.5699 5697.98
  496.65 5698.87496.6799 5698.88  496.71 5698.88496.7499 5698.89  496.83 5698.89
496.8799  5698.9496.9299 5698.91  496.98 5698.91  497.04 5698.92  515.29 5700.83
515.4399 5700.82515.5699 5700.82  515.72 5700.81515.8799  5700.8  516.05  5700.8
  516.23 5700.79516.4299 5700.78  516.64 5700.77516.8699 5700.76  517.53 5700.73
   517.8 5700.72518.1199 5700.69  518.74 5700.67519.1299 5700.63   519.7  5700.6
  520.23 5700.58520.6899 5700.53  521.15 5700.51   521.7 5700.45522.0099 5700.44
  522.67 5700.36  523.04 5700.33  523.83 5700.23  524.08 5700.21524.9999  5700.1
   525.1 5700.09525.8699    5700  526.16 5699.95  526.23 5699.94527.3199 5699.77
  527.65 5699.71  528.47 5699.58  529.08 5699.47529.6299 5699.38  530.53 5699.22
  530.78 5699.18  531.73    5699  531.95 5698.96532.0099 5698.95533.1199 5698.75
533.1799 5698.74  533.58 5698.66  534.39 5698.51  535.17 5698.34  535.59 5698.26
536.7499    5698536.7599    5698   537.8 5697.76538.1299 5697.69  538.85 5697.53
  539.52 5697.38  539.91 5697.29  540.92 5697.06  540.99 5697.05  541.21    5697
  542.11 5696.84  542.33 5696.81  543.24 5696.65  543.73 5696.56  544.36 5696.45
545.1299 5696.32  545.49 5696.26  546.54 5696.07546.6199 5696.06  546.97    5696
547.6899 5695.82  547.95 5695.75  548.74 5695.56549.3699  5695.4  549.79 5695.29
  550.79 5695.04  550.84 5695.03  550.97    5695  551.89 5694.77  552.21 5694.69
552.9399 5694.51  553.64 5694.33  553.99 5694.25  554.97    5694  555.05 5693.98
  555.08 5693.98  556.29 5693.69  556.83 5693.57  557.54 5693.41558.5699 5693.18
  558.79 5693.13559.3699    5693  560.08 5692.95560.1199 5692.95  561.41 5692.87
561.5099 5692.86  562.74 5692.78   562.9 5692.77564.0699 5692.69  564.29 5692.67
   565.4  5692.6565.6799 5692.58571.9399 5691.68572.2599 5691.67572.6199 5691.65
573.0099 5691.63  573.45 5691.61573.9399 5691.59  574.49 5691.56  575.11 5691.54
575.8199  5691.5  576.64 5691.46  577.34 5691.43  578.28 5691.39  578.86 5691.36
579.9299 5691.31  580.39 5691.28  580.78 5691.27581.1299 5691.25  582.21  5691.2
  582.47 5691.19  582.71 5691.18  583.83 5691.13583.9999 5691.12   585.2 5691.07
585.2899 5691.07  586.58 5691.01  586.59 5691.01  586.78    5691  587.88 5690.65
  588.63 5690.41  589.15 5690.24  589.88    5690  590.61 5689.93  590.77 5689.91
  592.34 5689.75  592.88 5689.68594.0599 5689.56595.0499 5689.42  595.77 5689.34
597.2599 5689.12  597.46 5689.09598.0599    5689  598.66    5689  606.96 5688.77
613.0499 5688.59  615.13 5688.54  633.36    5688  635.98 5687.34  637.36    5687
  641.13 5686.06  641.36    5686  642.71 5685.94651.2999 5685.62  667.74    5685
  677.75 5684.91  680.47 5684.89686.2999 5684.94  692.97    5685  696.96 5685.07
  717.75 5685.42  752.52    5686753.7999 5686.32  756.52    5687  759.47 5687.74
  760.52    5688  786.86 5688.68  800.03    5689  811.38 5689.68  815.99    5690
  816.02 5690.01  816.09 5690.02   816.1 5690.02  816.12 5690.03  816.15 5690.03
816.9399 5690.23818.7599 5690.68  820.02    5691  821.09 5691.27  821.33 5691.33
   821.5 5691.37  821.58 5691.39  822.46 5691.61822.8199  5691.7823.2899 5691.82
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  823.96 5691.99  824.02    5692824.1799 5692.01  826.46 5692.14  828.22 5692.24
  829.62 5692.31  830.75 5692.38  833.45 5692.82839.1699 5693.12841.8199 5693.26
843.9299 5693.79  845.59 5693.94  845.78    5694845.8199 5694.01846.0599 5694.07
  846.23 5694.12  846.95  5694.3  847.61 5694.47  849.71    5695849.8199 5695.03
  850.48 5695.19  852.02 5695.58  852.35 5695.66  853.67    5696  853.71 5696.01
  853.73 5696.01853.8199 5696.04854.0699 5696.11  855.23 5696.41  856.03 5696.61
857.5599    5697  857.61 5697.01  857.62 5697.01857.8099 5697.06857.8199 5697.06
  857.99 5697.11  858.24 5697.17  858.27 5697.18  858.61 5697.27860.4999  5697.8
   861.2    5698  863.84 5698.62  865.45    5699  867.17 5699.48869.0699    5700
870.4999 5700.39   872.7    5701873.8199 5701.31876.3199    5702877.3099 5702.23
880.5099    5703880.9999 5703.16883.5599    5704  883.71 5704.04  883.86 5704.07
  887.99    5705  888.04 5705.01  891.35    5706  891.95 5706.13   893.7 5706.53
895.2999 5706.88895.8199    5707  898.42 5707.68  899.66    5708  901.79    5708
  901.84 5708.02901.8799 5708.03  901.92 5708.04  901.96 5708.05901.9999 5708.06
  902.04 5708.07  902.08 5708.08905.7599    5709906.5099 5709.19  906.89 5709.28
909.7599    5710   912.4 5710.66  912.83 5710.77913.7599    5711914.3199 5711.14
917.7599    5712   918.4 5712.16  921.77    5713922.5099 5713.19  925.77    5714
  962.33 5714.82970.5099    5715980.6799    5715983.6899 5714.26  984.78    5714
  988.39  5713.1  988.78    5713  992.78    5712  994.45 5711.58  996.78    5711
  998.72 5710.52 1000.78    5710 1003.33 5709.36  1004.7    5709 1007.47 5708.31
 1008.74    5708 1011.77 5707.24 1012.78    5707 1013.89 5706.72 1016.79    5706
 1018.58 5705.55 1020.79    5705 1022.69 5704.52 1024.79    5704 1026.85 5703.48
 1028.79    5703 1030.96 5702.46 1032.79    5702 1035.04 5701.44 1036.79    5701
 1038.58 5700.55 1040.79    5700 1043.14 5699.41 1044.79    5699 1047.75 5698.26
 1048.79    5698 1049.33 5697.87 1052.43 5697.85 1065.35 5697.79 1096.96 5697.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  546.54     .04853.8199     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        546.54853.8199            55.38   35.02   20.44             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.47

INPUT
Description: Cross Section: Sta. 52+35.61
Station Elevation Data    num=     467
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5702.065.160034 5702.11   10.12 5702.2414.41003 5702.3617.69006 5702.45
20.91003 5702.4787.32001  5702.9   87.87 5702.9188.52002 5702.9290.52002 5702.92
  139.18  5702.9  139.75 5702.89  140.22 5702.88  140.89 5702.88  141.56 5702.86
  169.38 5702.56  171.57  5702.5  174.33 5702.43  196.57  5702.2  200.01  5702.1
  205.91 5701.71  207.48 5701.67  208.13 5701.67  210.62  5701.6  216.36 5701.42
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231.41	5700.82	237.55	5700.58	242.55	5700.38	244.83	5700.22	249.03	5700
262.71	5699.9	329.93	5698.8	333.59	5698.8	336.12	5698.79	338.61	5698.78
382.82	5698.77	386.42	5698.75	390.8	5698.73	395.6	5698.68	396.52	5698.68
401.72	5698.64	417.7	5698.64	424.83	5698.56	434.97	5698.46	445.86	5698.35
465.34	5698.05	476.95	5698.01	477.89	5698	479.08	5698	480.22	5698.42
498.3	5705.37	499.04	5705.37	499.4	5705.38	500.38	5705.38	500.97	5705.39
501.35	5705.39	501.94	5705.4	502.91	5705.4	503.48	5705.41	504.44	5705.41
504.85	5705.42	505.82	5705.42	506.37	5705.43	506.79	5705.43	507.33	5705.44
508.29	5705.44	508.73	5705.45	509.7	5705.45	510.22	5705.46	510.67	5705.46
511.18	5705.47	512.14	5705.47	512.61	5705.48	513.58	5705.48	514.09	5705.47
514.54	5705.47	515.07	5705.46	515.51	5705.46	516.05	5705.44	516.48	5705.45
517.03	5705.43	517.45	5705.43	518.01	5705.42	518.41	5705.42	518.99	5705.4
519.38	5705.4	519.97	5705.38	520.34	5705.39	520.95	5705.36	521.31	5705.37
521.94	5705.34	522.27	5705.33	522.93	5705.3	523.22	5705.29	523.93	5705.26
524.18	5705.25	524.93	5705.22	525.14	5705.21	525.92	5705.18	526.1	5705.18
526.92	5705.14	527.05	5705.14	527.91	5705.1	528.01	5705.1	528.91	5705.06
528.97	5705.06	529.9	5705.02	529.92	5705.02	530.5	5705	530.9	5704.97
530.93	5704.97	531.88	5704.9	532	5704.88	532.83	5704.74	533.14	5704.69
533.8	5704.59	534.29	5704.5	534.77	5704.43	535.45	5704.31	535.76	5704.26
536.64	5704.12	536.75	5704.1	537.35	5704	537.72	5703.94	537.79	5703.93
538.63	5703.79	538.85	5703.75	539.53	5703.64	539.8	5703.6	539.9	5703.58
540.42	5703.5	540.95	5703.41	541.31	5703.35	541.98	5703.24	542.2	5703.2
543.02	5703.07	543.34	5703	544.02	5702.86	544.22	5702.81	545.05	5702.64
545.54	5702.53	546.09	5702.42	546.89	5702.25	547.15	5702.19	548.07	5702
548.21	5701.98	548.24	5701.97	549.17	5701.81	549.37	5701.77	550.1	5701.64
550.49	5701.55	551.01	5701.46	551.61	5701.32	551.9	5701.26	552.71	5701.07
552.99	5701	553.64	5700.84	553.82	5700.79	554.51	5700.61	554.94	5700.5
555.38	5700.39	556.07	5700.22	556.26	5700.17	556.93	5700	557.13	5699.95
557.19	5699.93	558	5699.73	558.31	5699.65	558.88	5699.5	559.43	5699.36
559.75	5699.28	560.56	5699.08	560.62	5699.06	560.86	5699	561.5	5698.84
561.68	5698.79	562.37	5698.62	562.8	5698.51	563.24	5698.4	563.92	5698.22
564.11	5698.17	564.79	5698	564.99	5697.95	565.04	5697.94	565.15	5697.9
566.1	5697.61	566.8	5697.39	567.23	5697.26	568.06	5697	568.4	5696.94
568.48	5696.93	569.54	5696.76	569.9	5696.69	570.7	5696.56	571.34	5696.45
571.86	5696.37	572.8	5696.21	573.04	5696.17	574.01	5696	574.18	5695.95
574.24	5695.92	574.4	5695.87	575.49	5695.51	576.41	5695.21	576.66	5695.12
577.03	5695	577.79	5694.75	578.25	5694.59	579.63	5694	579.98	5693.85
580.32	5693.7	581.09	5693.37	581.93	5693	582.45	5692.77	584.22	5692
584.43	5691.99	584.45	5691.99	586.37	5691.88	586.64	5691.86	588.32	5691.77
588.83	5691.74	590.27	5691.66	591.03	5691.61	592.23	5691.55	593.24	5691.49
594.2	5691.43	595.46	5691.36	596.17	5691.32	597.6801	5691.23	598.14	5691.21
599.92	5691.1	600.12	5691.09	601.72	5691	601.96	5690.89	602.28	5690.75
603.21	5690.33	603.9301	5690	604.5601	5689.74	605.53	5689.34	606.02	5689.13
606.34	5689	609.03	5688.92	611.9	5688.84	638.6	5688	639.49	5687.78
642.71	5687	645.52	5686.31	646.6	5686.05	646.79	5686	649.72	5685.86
668.6801	5685	681.8101	5684.87	682.76	5684.86	687.84	5684.91	696.4	5684.94
696.97	5685	703.47	5685.02	706.04	5685.03	725.17	5685.11	734.02	5685.08
754.63	5685.21	756.4301	5685.46	758.13	5685.44	760.42	5686	764.37	5686.97

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  764.47    5687  764.61 5687.03  768.52    5688  776.17 5688.29  800.05    5689
  802.94    5689  804.11 5689.53  805.15    5690  805.66 5690.23   806.9  5690.8
  807.22 5690.94  807.35    5691  808.77 5691.65  809.55    5692  809.61    5692
  810.94 5692.07   813.2 5692.19  813.74 5692.22  815.64 5692.32  816.54 5692.37
  818.07 5692.45  819.35 5692.52  820.51 5692.59   821.4 5692.63  822.11 5692.67
  823.51 5692.74  824.01 5692.77  825.61 5692.86  825.89 5692.87   827.7 5692.97
  827.76 5692.97  828.34    5693  829.45 5693.48  830.64    5694  831.07 5694.19
  832.11 5694.64  832.69 5694.89832.9301    5695834.3101  5695.6  835.23    5696
  835.87 5696.28  836.98 5696.76  837.33 5696.91  837.53    5697  838.91  5697.6
  839.83    5698  840.49 5698.15  840.84 5698.22842.0601 5698.49  843.24 5698.75
  843.63 5698.84  844.37    5699  845.23 5699.37  846.67    5700  846.85 5700.08
  847.29 5700.27  848.48 5700.78  848.89 5700.97  848.97    5701   850.1 5701.49
  851.27    5702  851.68 5702.18  852.38 5702.48  853.13 5702.81  853.57    5703
   854.7 5703.49  855.87    5704  856.32  5704.2   857.4 5704.66  857.94  5704.9
  858.17    5705  859.75  5705.7  860.45    5706  861.34 5706.38   862.7 5706.94
  862.78 5706.98  862.84    5707  864.08 5707.51  865.33    5708  911.76    5708
  911.86 5708.03  912.03 5708.07  912.18 5708.11  912.32 5708.14  912.45 5708.17
  912.56 5708.21  912.67 5708.23  912.78 5708.26  912.87 5708.28  912.96 5708.31
  913.05 5708.33  913.13 5708.35   913.2 5708.37  913.27 5708.38  913.34  5708.4
   913.4 5708.42  913.46 5708.43  913.52 5708.45  913.57 5708.46  913.62 5708.47
  913.67 5708.49  913.77 5708.51  913.81 5708.52  913.85 5708.53  913.89 5708.54
  913.92 5708.55  913.96 5708.56     914 5708.57  914.03 5708.58  914.06 5708.58
  914.09 5708.59  914.12  5708.6  914.15 5708.61  914.18 5708.61   914.2 5708.62
  914.23 5708.63  914.25 5708.63  914.28 5708.64   914.3 5708.65  914.32 5708.65
  914.34 5708.66  914.37 5708.66  914.39 5708.67  914.41 5708.67  914.43 5708.68
  914.44 5708.68  914.46 5708.69   914.5 5708.69  914.51  5708.7  914.53  5708.7
  914.55 5708.71  914.58 5708.71  914.59 5708.72   914.6 5708.72  914.62 5708.73
  914.64 5708.73  914.66 5708.74  914.68 5708.74  914.69 5708.75  914.73 5708.75
  914.74 5708.76  914.77 5708.76  914.78 5708.77  915.72    5709  917.65 5709.47
  919.78    5710  922.29 5710.62  923.83    5711  927.38 5711.88  927.88    5712
  931.58 5712.91  931.93    5713  935.96 5713.99  935.99    5714  936.34 5714.01
  937.33 5714.03  948.27 5714.21     986 5714.43  988.53 5714.37  991.64  5714.3
  994.56 5714.28  994.67 5714.25  995.11 5714.15  995.76    5714  996.09 5713.92
  999.81    5713 1000.63  5712.8 1003.86    5712 1004.97 5711.73 1007.92    5711
 1010.07 5710.47 1011.97    5710 1013.34 5709.62 1015.67    5709 1017.78 5708.49
 1019.83    5708 1022.21 5707.43 1024.08    5707 1025.92 5706.55 1028.18    5706
 1030.63  5705.4 1032.23    5705 1034.07 5704.55 1036.28    5704    1039 5703.33
 1040.34    5703 1043.27 5702.28 1044.39    5702 1047.51 5701.23 1048.44    5701
 1049.75 5700.68 1052.49    5700  1055.7 5699.21 1056.55    5699 1060.27 5698.08
  1060.6    5698 1061.27 5697.83 1061.28 5697.83 1064.65    5697  1064.9    5697
 1067.23 5697.01 1103.89 5697.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  574.24     .04  835.23     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        574.24  835.23            32.05   14.97    8.17             .1       .3
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CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 135.34

INPUT
Description: Cross Section: Sta. 52+20.64 US Lorson Bridge

Manning's n for
section based on Riprap and Depth
computed from
Blodgett/Limerinos

24" Riprap at 3.5' depth at Abutment Slope:
0.090
24" Riprap at 9' depth at Abutment Toe: 0.067
30" Riprap
at 13' depth at Pier: 0.067
24" Grouted Riprap at Bikepath at 6'
depth: 0.056
Station Elevation Data num= 252

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     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5701.373.630005 5701.4712.29004 5701.7218.90002 5701.8825.40002 5701.93
77.28003 5702.2781.33008 5702.32 86.1001 5702.38 87.8501 5702.4188.65002 5702.41
91.93005 5702.4593.05005 5702.4594.34009 5702.44134.9501 5702.42  138.25 5702.36
140.9401  5702.3141.4701  5702.3145.2101 5702.22  166.78 5701.98171.8101 5701.85
  178.14 5701.69  193.61 5701.53199.9401 5701.34  203.72  5701.1208.6201 5700.97
209.0001 5700.97216.8201 5700.75234.8301 5700.19236.8801 5700.11  237.71 5700.08
  239.65    5700245.6401 5699.97  245.91 5699.96  247.03 5699.96270.5601 5699.78
  333.54 5698.75  336.96 5698.75  340.15 5698.74  343.27 5698.73384.3201 5698.72
   388.8 5698.69394.2501 5698.66400.2401 5698.61  401.05 5698.61  407.53 5698.55
  421.29 5698.55  430.15 5698.46442.7501 5698.33456.2601 5698.19  467.04 5698.03
474.6901    5698  488.23 5701.46  488.77 5701.68489.3901 5701.94  490.11 5702.24
490.9401 5702.59  491.92 5702.99  493.09 5703.48  494.52 5704.08  496.29 5704.81
  498.55 5705.75499.1401    5706  541.34    5706   546.4    5706546.9501 5705.88
547.0801 5705.85547.8101  5705.7548.1401 5705.63548.6901 5705.52  549.23  5705.4
  550.15 5705.17  550.34 5705.12550.8101    5705551.4501 5704.84551.7001 5704.77
  552.55 5704.56553.2401 5704.38  553.66 5704.27554.7401    5704  554.77 5703.99
  554.78 5703.99555.8801 5703.71556.3301  5703.6556.9901 5703.43557.8701  5703.2
   558.1 5703.15  558.67    5703  559.21 5702.86  559.42 5702.81560.3101 5702.58
560.3901 5702.56561.2601 5702.22561.5101 5702.13561.8301    5702  562.79 5701.68
563.5601 5701.41   564.1 5701.23  564.73    5701565.4501 5700.74  566.29 5700.43
   566.9  5700.2567.4301    5700   568.3 5699.67  569.59 5699.16569.9901    5699
  571.02 5698.59  572.46    5698572.5601 5697.96572.6801 5697.91  573.86 5697.42
  574.86    5697  575.16 5696.93   575.3  5696.9   576.6 5696.61577.4401 5696.42
  578.05 5696.28  579.29    5696  579.46 5695.93  579.65 5695.84  580.66  5695.4
```

```
581.5601    5695  582.02  5694.8583.2501 5694.25  583.67 5694.07583.8201    5694
584.9301  5693.5586.0601    5693586.2401 5692.92586.6801 5692.72  587.85  5692.2
   588.3    5692589.7001 5691.92589.8801 5691.91  591.67 5691.81  592.11 5691.78
  593.65 5691.69  594.34 5691.65595.6301 5691.58  596.59 5691.52597.6201 5691.46
  598.84 5691.39  599.61 5691.35   601.1 5691.26  601.61 5691.23603.3701 5691.12
  605.48    5691605.5801 5690.95605.7501 5690.87606.9401 5690.33  607.65    5690
608.3301 5689.69609.5101 5689.15  609.73 5689.05  609.85    5689  613.46 5688.89
616.6201 5688.78619.1201  5688.7621.1401 5688.64622.8201 5688.58640.4901    5688
643.4501 5687.28   644.6    5687  646.59 5686.51  648.71    5686651.5701 5685.87
662.6401 5685.22  669.84    5685676.0701 5684.38  684.29 5684.28  688.66 5684.19
  691.52 5684.19697.3101 5684.75698.4401 5684.86  699.29 5684.94  699.48 5684.96
706.8401 5684.94716.0901 5684.92732.3201 5684.86  734.77 5684.86  760.78 5684.99
  761.36    5685762.5701 5685.29  765.51    5686  769.13 5686.87  769.66    5687
770.3301  5687.1774.2401 5687.52777.8101 5687.93778.6801    5688  797.23 5688.88
  799.03 5688.99  799.27    5689800.7401  5689.7  801.36    5690  801.48 5690.06
803.4401    5691  803.98 5691.26  805.57 5692.01  807.98 5692.14809.4701 5692.23
814.4601 5692.52  819.89 5692.84820.9401  5692.9  822.67    5693824.5001 5693.88
  824.76    5694826.0601 5694.62  826.85    5695827.0001 5695.07828.9301    5696
829.5001 5696.27  831.02    5697832.0001 5697.47  833.11    5698  836.51 5698.83
  837.23    5699838.7201 5699.72839.3101    5700839.4301 5700.06   841.4    5701
841.9301 5701.25843.4901    5702844.4601 5702.36846.1801    5703846.9701 5703.54
  847.66    5704849.3301 5704.61850.3701    5705   851.3 5705.61  851.91    5706
853.4301 5706.61  854.42    5707  854.98  5707.3856.3101    5708  857.42    5708
 1010.61    5708 1018.81 5707.97 1023.15 5707.94 1030.18 5707.88 1032.18 5707.75
 1044.11    5707 1104.56    5707  1109.4 5706.89 1118.84  5706.7  1153.1    5706
 1154.53    5706  1166.8 5705.67 1182.84 5705.29 1194.54    5705 1196.21    5705
 1197.26 5704.98 1211.05 5704.62

Manning's n Values        num=      11
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  569.59     .09   588.3    .056  599.61    .067  613.46     .04
697.3101    .067716.0901     .04778.6801    .067800.7401    .056814.4601     .09
  837.23     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        580.66827.0001               82   82.61   81.81             .3       .5

BRIDGE


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.3135

INPUT
Description:
Distance from Upstream XS =     8.5
Deck/Roadway Width        =      63
Weir Coefficient          =     2.6
```

Upstream Deck/Roadway Coordinates
num= 413

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	5702.44	0	1.31	5702.46	0	4.31	5702.48	0
7.31	5702.51	0	10.31	5702.53	0	13.31	5702.56	0
16.31	5702.58	0	19.31	5702.61	0	22.31	5702.63	0
25.31	5702.66	0	28.31	5702.68	0	31.31	5702.71	0
34.31	5702.73	0	37.31	5702.76	0	40.31	5702.79	0
43.31	5702.81	0	46.31	5702.84	0	49.31	5702.86	0
52.31	5702.89	0	55.31	5702.91	0	58.31	5702.94	0
61.31	5702.96	0	64.31	5702.99	0	67.31	5703.01	0
70.31	5703.04	0	73.31	5703.06	0	76.31	5703.09	0
79.31	5703.11	0	82.31	5703.14	0	85.31	5703.17	0
88.31	5703.19	0	91.31	5703.22	0	94.31	5703.24	0
97.31	5703.27	0	100.31	5703.29	0	103.31	5703.32	0
106.31	5703.34	0	109.31	5703.37	0	112.31	5703.39	0
115.31	5703.42	0	118.31	5703.44	0	121.31	5703.47	0
124.31	5703.49	0	127.31	5703.52	0	130.31	5703.55	0
133.31	5703.57	0	136.31	5703.6	0	139.31	5703.62	0
142.31	5703.65	0	145.31	5703.67	0	148.31	5703.7	0
151.31	5703.72	0	154.31	5703.75	0	157.31	5703.77	0
160.31	5703.8	0	163.31	5703.82	0	166.31	5703.85	0
169.31	5703.87	0	172.31	5703.9	0	175.31	5703.93	0
178.31	5703.95	0	181.31	5703.98	0	184.16	5704	0
184.31	5704	0	187.31	5704.03	0	190.31	5704.05	0
193.31	5704.08	0	196.31	5704.1	0	199.31	5704.13	0
202.31	5704.15	0	205.31	5704.18	0	208.31	5704.2	0
211.31	5704.23	0	214.31	5704.25	0	217.31	5704.28	0
220.31	5704.31	0	223.31	5704.33	0	226.31	5704.36	0
229.31	5704.38	0	232.31	5704.41	0	235.31	5704.43	0
238.31	5704.46	0	241.31	5704.48	0	244.31	5704.51	0
247.31	5704.53	0	250.31	5704.56	0	253.31	5704.58	0
256.31	5704.61	0	259.31	5704.63	0	262.31	5704.66	0
265.31	5704.69	0	268.31	5704.71	0	271.31	5704.74	0
274.31	5704.76	0	277.31	5704.79	0	280.31	5704.81	0
283.31	5704.84	0	286.31	5704.86	0	289.31	5704.89	0
292.31	5704.91	0	295.31	5704.94	0	298.31	5704.96	0
301.31	5704.99	0	302.6	5705	0	304.31	5705.01	0
307.31	5705.04	0	310.31	5705.07	0	313.31	5705.09	0
316.31	5705.12	0	319.31	5705.14	0	322.31	5705.16	0
325.31	5705.19	0	328.31	5705.21	0	331.31	5705.23	0
334.31	5705.25	0	337.31	5705.28	0	340.31	5705.3	0
343.31	5705.32	0	346.31	5705.35	0	349.31	5705.37	0
352.31	5705.39	0	355.31	5705.41	0	358.31	5705.44	0
361.31	5705.46	0	364.31	5705.48	0	367.31	5705.5	0
370.31	5705.53	0	373.31	5705.55	0	376.31	5705.57	0
379.31	5705.59	0	382.31	5705.62	0	385.31	5705.64	0
388.31	5705.66	0	391.31	5705.68	0	394.31	5705.71	0

397.31	5705.73	0	400.31	5705.75	0	403.31	5705.77	0
406.31	5705.8	0	409.31	5705.82	0	412.31	5705.84	0
415.31	5705.86	0	418.31	5705.89	0	421.31	5705.91	0
424.31	5705.93	0	427.31	5705.96	0	430.31	5705.98	0
433.28	5706	0	433.31	5706	0	436.31	5706.02	0
439.31	5706.05	0	442.31	5706.07	0	445.31	5706.09	0
448.31	5706.11	0	451.31	5706.14	0	454.31	5706.16	0
457.31	5706.18	0	460.31	5706.2	0	463.31	5706.23	0
466.31	5706.25	0	469.31	5706.27	0	472.31	5706.29	0
475.31	5706.32	0	478.31	5706.34	0	481.31	5706.36	0
484.31	5706.38	0	487.31	5706.41	0	490.31	5706.43	0
493.31	5706.45	0	496.31	5706.47	0	499.31	5706.5	0
502.31	5706.52	0	505.31	5706.54	0	508.31	5706.56	0
511.31	5706.59	0	514.31	5706.61	0	517.31	5706.63	0
520.31	5706.66	0	523.31	5706.68	0	526.31	5706.7	0
529.31	5706.72	0	532.31	5706.75	0	535.31	5706.77	0
538.31	5706.79	0	541.31	5706.81	0	544.31	5706.84	0
547.31	5706.86	0	550.31	5706.88	0	553.31	5706.9	0
556.31	5706.93	0	559.31	5706.95	0	562.31	5706.97	0
565.31	5706.99	0	568.31	5707.02	0	571.31	5707.04	0
574.31	5707.06	0	577.31	5707.08	0	580.31	5707.11	0
581.99	5707.12	0	582	5707.12	5699.57	583.31	5707.13	5699.58
586.31	5707.15	5699.6	589.31	5707.17	5699.62	592.31	5707.2	5699.65
595.31	5707.22	5699.67	598.31	5707.24	5699.69	601.31	5707.26	5699.71
604.31	5707.29	5699.74	607.31	5707.31	5699.76	610.31	5707.33	5699.78
613.31	5707.36	5699.81	616.31	5707.38	5699.83	619.31	5707.4	5699.85
622.31	5707.42	5699.87	625.31	5707.45	5699.9	628.31	5707.47	5699.92
631.31	5707.49	5699.94	634.31	5707.51	5699.96	637.31	5707.54	5699.99
640.31	5707.56	5700.01	643.31	5707.58	5700.03	646.31	5707.6	5700.05
649.31	5707.63	5700.08	652.31	5707.65	5700.1	655.31	5707.67	5700.12
658.31	5707.69	5700.14	661.31	5707.72	5700.17	664.31	5707.74	5700.19
667.31	5707.76	5700.21	670.31	5707.78	5700.23	673.31	5707.81	5700.26
676.31	5707.83	5700.28	679.31	5707.85	5700.3	682.31	5707.87	5700.32
685.31	5707.9	5700.35	688.31	5707.92	5700.37	691.31	5707.94	5700.39
694.31	5707.97	5700.42	697.31	5707.99	5700.44	700.31	5708.01	5700.46
703.31	5708.03	5700.48	706.31	5708.06	5700.51	709.31	5708.08	5700.53
712.31	5708.1	5700.55	715.31	5708.12	5700.57	718.31	5708.15	5700.6
721.31	5708.17	5700.62	724.31	5708.19	5700.64	727.31	5708.21	5700.66
730.31	5708.24	5700.69	733.31	5708.26	5700.71	736.31	5708.28	5700.73
739.31	5708.3	5700.75	742.31	5708.33	5700.78	745.31	5708.35	5700.8
748.31	5708.37	5700.82	751.31	5708.39	5700.84	754.31	5708.42	5700.87
757.31	5708.44	5700.89	760.31	5708.46	5700.91	763.31	5708.48	5700.93
766.31	5708.51	5700.96	769.31	5708.53	5700.98	772.31	5708.55	5701
775.31	5708.57	5701.02	778.31	5708.6	5701.05	781.31	5708.62	5701.07
784.31	5708.64	5701.09	787.31	5708.67	5701.12	790.31	5708.69	5701.14
793.31	5708.71	5701.16	796.31	5708.73	5701.18	799.31	5708.76	5701.21
802.31	5708.78	5701.23	805.31	5708.8	5701.25	808.31	5708.82	5701.27
811.31	5708.85	5701.3	814.31	5708.87	5701.32	817.31	5708.89	5701.34

820.31	5708.91	5701.36	823.31	5708.94	5701.39	826.31	5708.96	5701.41
829.31	5708.98	5701.43	832.31	5709	5701.45	835.31	5709.03	5701.48
836.01	5709.03	5701.49	836.02	5709.03	0	838.31	5709.05	0
841.31	5709.07	0	844.31	5709.09	0	847.31	5709.12	0
850.31	5709.14	0	853.31	5709.16	0	856.31	5709.18	0
859.31	5709.21	0	862.31	5709.23	0	865.31	5709.25	0
868.31	5709.27	0	871.31	5709.3	0	874.31	5709.32	0
877.31	5709.34	0	880.31	5709.36	0	883.31	5709.37	0
886.31	5709.39	0	889.31	5709.4	0	892.31	5709.42	0
895.31	5709.43	0	898.31	5709.44	0	901.31	5709.45	0
904.31	5709.45	0	907.31	5709.46	0	910.31	5709.46	0
913.31	5709.46	0	916.31	5709.46	0	919.31	5709.46	0
922.31	5709.46	0	925.31	5709.46	0	928.31	5709.45	0
931.31	5709.45	0	934.31	5709.44	0	937.31	5709.43	0
940.31	5709.42	0	943.31	5709.41	0	946.31	5709.39	0
949.31	5709.38	0	952.31	5709.36	0	955.31	5709.34	0
958.31	5709.32	0	961.31	5709.3	0	964.31	5709.28	0
967.31	5709.26	0	970.31	5709.23	0	973.31	5709.21	0
976.31	5709.18	0	979.31	5709.15	0	982.31	5709.12	0
985.31	5709.08	0	988.31	5709.05	0	991.31	5709.01	0
994.31	5708.98	0	997.31	5708.94	0	1000.31	5708.9	0
1003.31	5708.86	0	1006.31	5708.81	0	1009.31	5708.77	0
1012.31	5708.72	0	1015.31	5708.68	0	1018.31	5708.63	0
1021.31	5708.58	0	1024.31	5708.53	0	1027.31	5708.47	0
1030.31	5708.42	0	1033.31	5708.36	0	1036.31	5708.31	0
1039.31	5708.25	0	1042.31	5708.19	0	1045.31	5708.13	0
1048.31	5708.06	0	1051.31	5708	0	1054.31	5707.93	0
1057.31	5707.86	0	1060.31	5707.79	0	1063.31	5707.72	0
1066.31	5707.65	0	1069.31	5707.58	0	1072.31	5707.5	0
1075.31	5707.43	0	1078.31	5707.35	0	1081.31	5707.27	0
1084.31	5707.19	0	1087.31	5707.11	0	1090.31	5707.02	0
1093.31	5706.94	0	1096.31	5706.85	0	1099.31	5706.76	0
1102.31	5706.67	0	1105.31	5706.58	0	1108.31	5706.49	0
1111.31	5706.4	0	1114.31	5706.3	0	1117.31	5706.2	0
1120.31	5706.11	0	1123.31	5706.01	0	1126.31	5705.91	0
1129.31	5705.8	0	1132.31	5705.7	0	1135.31	5705.59	0
1138.31	5705.49	0	1141.31	5705.38	0	1144.31	5705.27	0
1147.31	5705.16	0	1150.31	5705.04	0	1153.31	5704.93	0
1156.31	5704.81	0	1159.31	5704.7	0	1162.31	5704.58	0
1165.31	5704.46	0	1168.31	5704.34	0	1171.31	5704.21	0
1174.31	5704.09	0	1177.31	5703.97	0	1180.31	5703.84	0
1183.31	5703.72	0	1186.31	5703.6	0	1189.31	5703.47	0
1192.31	5703.35	0	1195.31	5703.23	0	1198.31	5703.1	0
1201.31	5702.98	0	1204.31	5702.86	0	1207.31	5702.73	0
1210.31	5702.61	0	1211.05	5702.58	0			

Upstream Bridge Cross Section Data
Station Elevation Data num= 252

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5701.373.630005 5701.4712.29004 5701.7218.90002 5701.8825.40002 5701.93
77.28003 5702.2781.33008 5702.32 86.1001 5702.38 87.8501 5702.4188.65002 5702.41
91.93005 5702.4593.05005 5702.4594.34009 5702.44134.9501 5702.42  138.25 5702.36
140.9401  5702.3141.4701  5702.3145.2101 5702.22  166.78 5701.98171.8101 5701.85
  178.14 5701.69  193.61 5701.53199.9401 5701.34  203.72  5701.1208.6201 5700.97
209.0001 5700.97216.8201 5700.75234.8301 5700.19236.8801 5700.11  237.71 5700.08
  239.65    5700245.6401 5699.97  245.91 5699.96  247.03 5699.96270.5601 5699.78
  333.54 5698.75  336.96 5698.75  340.15 5698.74  343.27 5698.73384.3201 5698.72
   388.8 5698.69394.2501 5698.66400.2401 5698.61  401.05 5698.61  407.53 5698.55
  421.29 5698.55  430.15 5698.46442.7501 5698.33456.2601 5698.19  467.04 5698.03
474.6901    5698  488.23 5701.46  488.77 5701.68489.3901 5701.94  490.11 5702.24
490.9401 5702.59  491.92 5702.99  493.09 5703.48  494.52 5704.08  496.29 5704.81
  498.55 5705.75499.1401    5706  541.34    5706   546.4    5706546.9501 5705.88
547.0801 5705.85547.8101  5705.7548.1401 5705.63548.6901 5705.52  549.23  5705.4
  550.15 5705.17  550.34 5705.12550.8101    5705551.4501 5704.84551.7001 5704.77
  552.55 5704.56553.2401 5704.38  553.66 5704.27554.7401    5704  554.77 5703.99
  554.78 5703.99555.8801 5703.71556.3301  5703.6556.9901 5703.43557.8701  5703.2
   558.1 5703.15  558.67    5703  559.21 5702.86  559.42 5702.81560.3101 5702.58
560.3901 5702.56561.2601 5702.22561.5101 5702.13561.8301    5702  562.79 5701.68
563.5601 5701.41   564.1 5701.23  564.73    5701565.4501 5700.74  566.29 5700.43
   566.9  5700.2567.4301    5700   568.3 5699.67  569.59 5699.16569.9901    5699
  571.02 5698.59  572.46    5698572.5601 5697.96572.6801 5697.91  573.86 5697.42
  574.86    5697  575.16 5696.93   575.3  5696.9   576.6 5696.61577.4401 5696.42
  578.05 5696.28  579.29    5696  579.46 5695.93  579.65 5695.84  580.66  5695.4
581.5601    5695  582.02  5694.8583.2501 5694.25  583.67 5694.07583.8201    5694
584.9301  5693.5586.0601    5693586.2401 5692.92586.6801 5692.72  587.85  5692.2
   588.3    5692589.7001 5691.92589.8801 5691.91  591.67 5691.81  592.11 5691.78
  593.65 5691.69  594.34 5691.65595.6301 5691.58  596.59 5691.52597.6201 5691.46
  598.84 5691.39  599.61 5691.35   601.1 5691.26  601.61 5691.23603.3701 5691.12
  605.48    5691605.5801 5690.95605.7501 5690.87606.9401 5690.33  607.65    5690
608.3301 5689.69609.5101 5689.15  609.73 5689.05  609.85    5689  613.46 5688.89
616.6201 5688.78619.1201  5688.7621.1401 5688.64622.8201 5688.58640.4901    5688
643.4501 5687.28   644.6    5687  646.59 5686.51  648.71    5686651.5701 5685.87
662.6401 5685.22  669.84    5685676.0701 5684.38  684.29 5684.28  688.66 5684.19
  691.52 5684.19697.3101 5684.75698.4401 5684.86  699.29 5684.94  699.48 5684.96
706.8401 5684.94716.0901 5684.92732.3201 5684.86  734.77 5684.86  760.78 5684.99
  761.36    5685762.5701 5685.29  765.51    5686  769.13 5686.87  769.66    5687
770.3301  5687.1774.2401 5687.52777.8101 5687.93778.6801    5688  797.23 5688.88
  799.03 5688.99  799.27    5689800.7401  5689.7  801.36    5690  801.48 5690.06
803.4401    5691  803.98 5691.26  805.57 5692.01  807.98 5692.14809.4701 5692.23
814.4601 5692.52  819.89 5692.84820.9401  5692.9  822.67    5693824.5001 5693.88
  824.76    5694826.0601 5694.62  826.85    5695827.0001 5695.07828.9301    5696
829.5001 5696.27  831.02    5697832.0001 5697.47  833.11    5698  836.51 5698.83
  837.23    5699838.7201 5699.72839.3101    5700839.4301 5700.06   841.4    5701
841.9301 5701.25843.4901    5702844.4601 5702.36846.1801    5703846.9701 5703.54
  847.66    5704849.3301 5704.61850.3701    5705   851.3 5705.61  851.91    5706
853.4301 5706.61  854.42    5707  854.98  5707.3856.3101    5708  857.42    5708
```

```
 1010.61    5708 1018.81 5707.97 1023.15 5707.94 1030.18 5707.88 1032.18 5707.75
 1044.11    5707 1104.56    5707  1109.4 5706.89 1118.84  5706.7  1153.1    5706
 1154.53    5706  1166.8 5705.67 1182.84 5705.29 1194.54    5705 1196.21    5705
 1197.26 5704.98 1211.05 5704.62

Manning's n Values        num=      11
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  569.59     .09   588.3    .056  599.61    .067  613.46     .04
697.3101    .067716.0901     .04778.6801    .067800.7401    .056814.4601     .09
  837.23     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        580.66827.0001             .3       .5

Downstream  Deck/Roadway Coordinates
    num=     413
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
       0 5702.44       0    1.31 5702.46       0    4.31 5702.48       0
    7.31 5702.51       0   10.31 5702.53       0   13.31 5702.56       0
   16.31 5702.58       0   19.31 5702.61       0   22.31 5702.63       0
   25.31 5702.66       0   28.31 5702.68       0   31.31 5702.71       0
   34.31 5702.73       0   37.31 5702.76       0   40.31 5702.79       0
   43.31 5702.81       0   46.31 5702.84       0   49.31 5702.86       0
   52.31 5702.89       0   55.31 5702.91       0   58.31 5702.94       0
   61.31 5702.96       0   64.31 5702.99       0   67.31 5703.01       0
   70.31 5703.04       0   73.31 5703.06       0   76.31 5703.09       0
   79.31 5703.11       0   82.31 5703.14       0   85.31 5703.17       0
   88.31 5703.19       0   91.31 5703.22       0   94.31 5703.24       0
   97.31 5703.27       0  100.31 5703.29       0  103.31 5703.32       0
  106.31 5703.34       0  109.31 5703.37       0  112.31 5703.39       0
  115.31 5703.42       0  118.31 5703.44       0  121.31 5703.47       0
  124.31 5703.49       0  127.31 5703.52       0  130.31 5703.55       0
  133.31 5703.57       0  136.31  5703.6       0  139.31 5703.62       0
  142.31 5703.65       0  145.31 5703.67       0  148.31  5703.7       0
  151.31 5703.72       0  154.31 5703.75       0  157.31 5703.77       0
  160.31  5703.8       0  163.31 5703.82       0  166.31 5703.85       0
  169.31 5703.87       0  172.31  5703.9       0  175.31 5703.93       0
  178.31 5703.95       0  181.31 5703.98       0  184.16    5704       0
  184.31    5704       0  187.31 5704.03       0  190.31 5704.05       0
  193.31 5704.08       0  196.31  5704.1       0  199.31 5704.13       0
  202.31 5704.15       0  205.31 5704.18       0  208.31  5704.2       0
  211.31 5704.23       0  214.31 5704.25       0  217.31 5704.28       0
  220.31 5704.31       0  223.31 5704.33       0  226.31 5704.36       0
  229.31 5704.38       0  232.31 5704.41       0  235.31 5704.43       0
  238.31 5704.46       0  241.31 5704.48       0  244.31 5704.51       0
  247.31 5704.53       0  250.31 5704.56       0  253.31 5704.58       0
  256.31 5704.61       0  259.31 5704.63       0  262.31 5704.66       0
  265.31 5704.69       0  268.31 5704.71       0  271.31 5704.74       0
```

274.31	5704.76	0	277.31	5704.79	0	280.31	5704.81	0
283.31	5704.84	0	286.31	5704.86	0	289.31	5704.89	0
292.31	5704.91	0	295.31	5704.94	0	298.31	5704.96	0
301.31	5704.99	0	302.6	5705	0	304.31	5705.01	0
307.31	5705.04	0	310.31	5705.07	0	313.31	5705.09	0
316.31	5705.12	0	319.31	5705.14	0	322.31	5705.16	0
325.31	5705.19	0	328.31	5705.21	0	331.31	5705.23	0
334.31	5705.25	0	337.31	5705.28	0	340.31	5705.3	0
343.31	5705.32	0	346.31	5705.35	0	349.31	5705.37	0
352.31	5705.39	0	355.31	5705.41	0	358.31	5705.44	0
361.31	5705.46	0	364.31	5705.48	0	367.31	5705.5	0
370.31	5705.53	0	373.31	5705.55	0	376.31	5705.57	0
379.31	5705.59	0	382.31	5705.62	0	385.31	5705.64	0
388.31	5705.66	0	391.31	5705.68	0	394.31	5705.71	0
397.31	5705.73	0	400.31	5705.75	0	403.31	5705.77	0
406.31	5705.8	0	409.31	5705.82	0	412.31	5705.84	0
415.31	5705.86	0	418.31	5705.89	0	421.31	5705.91	0
424.31	5705.93	0	427.31	5705.96	0	430.31	5705.98	0
433.28	5706	0	433.31	5706	0	436.31	5706.02	0
439.31	5706.05	0	442.31	5706.07	0	445.31	5706.09	0
448.31	5706.11	0	451.31	5706.14	0	454.31	5706.16	0
457.31	5706.18	0	460.31	5706.2	0	463.31	5706.23	0
466.31	5706.25	0	469.31	5706.27	0	472.31	5706.29	0
475.31	5706.32	0	478.31	5706.34	0	481.31	5706.36	0
484.31	5706.38	0	487.31	5706.41	0	490.31	5706.43	0
493.31	5706.45	0	496.31	5706.47	0	499.31	5706.5	0
502.31	5706.52	0	505.31	5706.54	0	508.31	5706.56	0
511.31	5706.59	0	514.31	5706.61	0	517.31	5706.63	0
520.31	5706.66	0	523.31	5706.68	0	526.31	5706.7	0
529.31	5706.72	0	532.31	5706.75	0	535.31	5706.77	0
538.31	5706.79	0	541.31	5706.81	0	544.31	5706.84	0
547.31	5706.86	0	550.31	5706.88	0	553.31	5706.9	0
556.31	5706.93	0	559.31	5706.95	0	562.31	5706.97	0
565.31	5706.99	0	568.31	5707.02	0	571.31	5707.04	0
574.31	5707.06	0	577.31	5707.08	0	580.31	5707.11	0
583.31	5707.13	0	586.31	5707.15	0	589.31	5707.17	0
592.31	5707.2	0	595.31	5707.22	0	598.21	5707.24	0
598.22	5707.24	5699.69	598.31	5707.24	5699.69	601.31	5707.26	5699.71
604.31	5707.29	5699.74	607.31	5707.31	5699.76	610.31	5707.33	5699.78
613.31	5707.36	5699.81	616.31	5707.38	5699.83	619.31	5707.4	5699.85
622.31	5707.42	5699.87	625.31	5707.45	5699.9	628.31	5707.47	5699.92
631.31	5707.49	5699.94	634.31	5707.51	5699.96	637.31	5707.54	5699.99
640.31	5707.56	5700.01	643.31	5707.58	5700.03	646.31	5707.6	5700.05
649.31	5707.63	5700.08	652.31	5707.65	5700.1	655.31	5707.67	5700.12
658.31	5707.69	5700.14	661.31	5707.72	5700.17	664.31	5707.74	5700.19
667.31	5707.76	5700.21	670.31	5707.78	5700.23	673.31	5707.81	5700.26
676.31	5707.83	5700.28	679.31	5707.85	5700.3	682.31	5707.87	5700.32
685.31	5707.9	5700.35	688.31	5707.92	5700.37	691.31	5707.94	5700.39

694.31	5707.97	5700.42	697.31	5707.99	5700.44	700.31	5708.01	5700.46
703.31	5708.03	5700.48	706.31	5708.06	5700.51	709.31	5708.08	5700.53
712.31	5708.1	5700.55	715.31	5708.12	5700.57	718.31	5708.15	5700.6
721.31	5708.17	5700.62	724.31	5708.19	5700.64	727.31	5708.21	5700.66
730.31	5708.24	5700.69	733.31	5708.26	5700.71	736.31	5708.28	5700.73
739.31	5708.3	5700.75	742.31	5708.33	5700.78	745.31	5708.35	5700.8
748.31	5708.37	5700.82	751.31	5708.39	5700.84	754.31	5708.42	5700.87
757.31	5708.44	5700.89	760.31	5708.46	5700.91	763.31	5708.48	5700.93
766.31	5708.51	5700.96	769.31	5708.53	5700.98	772.31	5708.55	5701
775.31	5708.57	5701.02	778.31	5708.6	5701.05	781.31	5708.62	5701.07
784.31	5708.64	5701.09	787.31	5708.67	5701.12	790.31	5708.69	5701.14
793.31	5708.71	5701.16	796.31	5708.73	5701.18	799.31	5708.76	5701.21
802.31	5708.78	5701.23	805.31	5708.8	5701.25	808.31	5708.82	5701.27
811.31	5708.85	5701.3	814.31	5708.87	5701.32	817.31	5708.89	5701.34
820.31	5708.91	5701.36	823.31	5708.94	5701.39	826.31	5708.96	5701.41
829.31	5708.98	5701.43	832.31	5709	5701.45	835.31	5709.03	5701.48
838.31	5709.05	5701.5	841.31	5709.07	5701.52	844.31	5709.09	5701.54
847.31	5709.12	5701.57	850.31	5709.14	5701.59	852.23	5709.15	5701.6
852.24	5709.15	0	853.31	5709.16	0	856.31	5709.18	0
859.31	5709.21	0	862.31	5709.23	0	865.31	5709.25	0
868.31	5709.27	0	871.31	5709.3	0	874.31	5709.32	0
877.31	5709.34	0	880.31	5709.36	0	883.31	5709.37	0
886.31	5709.39	0	889.31	5709.4	0	892.31	5709.42	0
895.31	5709.43	0	898.31	5709.44	0	901.31	5709.45	0
904.31	5709.45	0	907.31	5709.46	0	910.31	5709.46	0
913.31	5709.46	0	916.31	5709.46	0	919.31	5709.46	0
922.31	5709.46	0	925.31	5709.46	0	928.31	5709.45	0
931.31	5709.45	0	934.31	5709.44	0	937.31	5709.43	0
940.31	5709.42	0	943.31	5709.41	0	946.31	5709.39	0
949.31	5709.38	0	952.31	5709.36	0	955.31	5709.34	0
958.31	5709.32	0	961.31	5709.3	0	964.31	5709.28	0
967.31	5709.26	0	970.31	5709.23	0	973.31	5709.21	0
976.31	5709.18	0	979.31	5709.15	0	982.31	5709.12	0
985.31	5709.08	0	988.31	5709.05	0	991.31	5709.01	0
994.31	5708.98	0	997.31	5708.94	0	1000.31	5708.9	0
1003.31	5708.86	0	1006.31	5708.81	0	1009.31	5708.77	0
1012.31	5708.72	0	1015.31	5708.68	0	1018.31	5708.63	0
1021.31	5708.58	0	1024.31	5708.53	0	1027.31	5708.47	0
1030.31	5708.42	0	1033.31	5708.36	0	1036.31	5708.31	0
1039.31	5708.25	0	1042.31	5708.19	0	1045.31	5708.13	0
1048.31	5708.06	0	1051.31	5708	0	1054.31	5707.93	0
1057.31	5707.86	0	1060.31	5707.79	0	1063.31	5707.72	0
1066.31	5707.65	0	1069.31	5707.58	0	1072.31	5707.5	0
1075.31	5707.43	0	1078.31	5707.35	0	1081.31	5707.27	0
1084.31	5707.19	0	1087.31	5707.11	0	1090.31	5707.02	0
1093.31	5706.94	0	1096.31	5706.85	0	1099.31	5706.76	0
1102.31	5706.67	0	1105.31	5706.58	0	1108.31	5706.49	0
1111.31	5706.4	0	1114.31	5706.3	0	1117.31	5706.2	0

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 1120.31 5706.11       0 1123.31 5706.01       0 1126.31 5705.91       0
 1129.31  5705.8       0 1132.31  5705.7       0 1135.31 5705.59       0
 1138.31 5705.49       0 1141.31 5705.38       0 1144.31 5705.27       0
 1147.31 5705.16       0 1150.31 5705.04       0 1153.31 5704.93       0
 1156.31 5704.81       0 1159.31  5704.7       0 1162.31 5704.58       0
 1165.31 5704.46       0 1168.31 5704.34       0 1171.31 5704.21       0
 1174.31 5704.09       0 1177.31 5703.97       0 1180.31 5703.84       0
 1183.31 5703.72       0 1186.31  5703.6       0 1189.31 5703.47       0
 1192.31 5703.35       0 1195.31 5703.23       0 1198.31  5703.1       0
 1201.31 5702.98       0 1204.31 5702.86       0 1207.31 5702.73       0
 1210.31 5702.61       0 1211.05 5702.58       0

Downstream Bridge Cross Section Data
Station Elevation Data    num=     277
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.571.630005 5699.58   15.12 5699.6130.30005 5699.6242.43005 5699.64
59.78003 5699.6767.31006 5699.6888.30005 5699.6890.76001 5699.67  105.02  5699.7
110.1901  5699.7  112.79 5699.69118.4501 5699.69   121.3 5699.68136.8101 5699.65
  143.17 5699.65146.1801 5699.64149.3101 5699.63160.4401 5699.61  164.55  5699.6
174.6101 5699.54188.1201 5699.46200.9901 5699.42207.9401 5699.36220.6401 5699.32
232.3701 5699.29   242.4 5699.26250.9901 5699.19  258.52 5699.17  266.98 5699.14
276.3201 5699.07286.5101 5699.03294.8201 5698.98299.0801 5698.95307.4901  5698.9
314.7601 5698.85329.3801 5698.73  341.36 5698.64  349.05 5698.58369.6301 5698.25
370.7501 5698.25380.4501  5698.2  389.97 5698.16  399.28 5698.16  412.61 5698.09
   425.8    5698  426.61    5698  438.96 5698.18  439.85 5698.31441.0101 5698.47
442.5801  5698.7  444.84 5699.02  448.36 5699.52454.5801 5700.41458.6201 5700.77
  464.11 5701.28  472.05 5702.01507.2401 5705.11  510.73 5705.48   514.6 5705.89
  515.65    5706  558.29    5706568.8201    5706  569.17 5705.99569.1801 5705.99
  570.16 5705.95  570.21 5705.94  571.05 5705.84  571.22 5705.81571.9301 5705.72
  572.23 5705.66572.8201 5705.58  573.27  5705.5  573.72 5705.44574.3201 5705.33
575.2401 5705.16  575.65    5705576.5601  5704.6  577.61 5704.13  577.78 5704.06
  577.91    5704  579.35 5703.49  580.72    5703581.1401 5702.85  582.05 5702.56
  583.22 5702.18   583.8    5702  585.03 5701.74585.6801 5701.58  587.92    5701
587.9401    5701  588.48 5700.81  590.73    5700  592.41 5699.39593.5101    5699
  595.09 5698.38  596.04    5698  596.23 5697.91596.6201 5697.72597.6301 5697.23
  598.11    5697600.2601 5696.46602.0801    5696  603.73  5695.2604.1201    5695
604.5801 5694.77  606.11    5694  607.46 5693.31608.0801    5693  608.72 5692.68
  610.05    5692  612.84 5691.82616.1301 5691.61  621.28 5691.28625.6401    5691
627.2601 5690.22  627.71    5690628.8201 5689.46  629.78    5689629.9901 5688.99
631.5101 5688.88632.7401  5688.8633.7501 5688.73   634.6 5688.67635.3301 5688.62
  644.42    5688650.2601 5687.66  663.54    5687  664.61 5686.74  667.65    5686
  670.54  5685.3671.7601    5685  684.17 5684.37  691.54    5684  693.46 5683.99
  700.41 5683.95  702.35 5683.96  709.38    5684  718.15    5684721.1901 5684.16
727.4401 5684.24727.9901 5684.25  736.73 5684.35749.5701 5684.54  783.63    5685
  784.38 5685.18787.4701 5685.92  787.79    5686  788.26 5686.11791.9401    5687
     799  5687.2  803.48 5687.45  804.28 5687.49805.2001 5687.52  806.28 5687.56
  807.54 5687.62809.0601 5687.68   810.9 5687.75813.1901 5687.84  816.11 5687.96
817.2101    5688819.2001 5688.96  819.28    5689  820.78 5689.73821.3401    5690
```

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823.2001  5690.9  823.41    5691   824.9 5691.72825.4701    5692827.0901  5692.1
827.3701 5692.11  829.65 5692.24  830.39 5692.28832.2401 5692.39  833.63 5692.47
834.7201 5692.52  835.91 5692.59836.7501 5692.63838.1901 5692.71  838.78 5692.74
840.4501 5692.83  840.79 5692.85842.7101 5692.96   842.8 5692.96843.4901    5693
  844.63 5693.53845.6201    5694846.2501 5694.25846.9701 5694.52847.6201 5694.78
  848.23    5695848.9301 5695.42849.8401    5696  850.17 5696.16850.7001 5696.41
851.4701 5696.77851.9401    5697852.7401 5697.38  853.98 5697.98  854.01 5697.99
  854.02    5698  855.27  5698.3  856.03 5698.44  856.61 5698.54857.1201 5698.63
857.9601 5698.77858.2001 5698.82859.2401    5699  859.28 5699.02   859.3 5699.02
  860.23 5699.35860.7401 5699.53861.1901 5699.69862.0701    5700  862.17 5700.04
  862.23 5700.06  863.16 5700.39  863.79 5700.62  864.17 5700.76864.8401    5701
865.2101 5701.14865.4401 5701.24866.2201 5701.55867.1201 5701.98  867.14 5701.99
  867.17    5702  868.38 5702.42869.3101 5702.72  869.67 5702.84870.2001    5703
  870.86 5703.26  871.35 5703.45871.9501 5703.69872.7501    5704  873.03 5704.11
873.2001 5704.15874.1801  5704.4  874.38 5704.45874.8301 5704.57875.3301 5704.69
876.4601 5704.98  876.48 5704.99  876.53    5705  877.63 5705.28878.0701 5705.39
  878.77 5705.57879.6801  5705.8  879.91 5705.86880.4701    5706880.9301 5706.12
881.0701 5706.15881.8301 5706.35882.2501 5706.45882.7401 5706.58883.4301 5706.75
  883.66 5706.81   884.4    5707884.6201 5707.06884.7101 5707.08  885.77 5707.35
886.3301 5707.49  886.91 5707.64887.9401  5707.9  888.05 5707.93888.3301    5708
949.6901    5708  983.23 5707.89 1013.55 5707.88 1031.59 5707.71 1067.65 5707.39
  1081.5    5707 1096.42 5706.69  1130.1    5706  1138.7 5705.79    1172    5705
  1175.8 5704.91 1211.05 5704.09

Manning's n Values        num=      11
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04593.5101     .09  610.05    .056625.6401    .067635.3301     .04
  718.15    .067  736.73     .04813.1901    .067  823.41    .056  835.91     .09
   859.3     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
      602.0801849.8401             .3       .5

Upstream Embankment side slope              =       2 horiz. to 1.0 vertical
Downstream Embankment side slope            =       2 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .98
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Abutments =  2

Abutment Data
Upstream     num=       2
     Sta    Elev     Sta    Elev
  581.56 5695.25   588.3 5692.25
Downstream     num=       3
```

```
     Sta    Elev     Sta    Elev     Sta    Elev
  598.11 5697.25  602.08 5696.25  610.05 5692.25

Abutment Data
Upstream     num=       3
     Sta    Elev     Sta    Elev     Sta    Elev
  822.67 5693.25  833.11 5698.25  836.51 5699.08
Downstream     num=       2
     Sta    Elev     Sta    Elev
  843.49 5693.25  852.74 5697.63

Number of Piers =  1

Pier Data
Pier Station     Upstream=  709.03    Downstream=  725.22
Upstream     num=       2
    Width   Elev    Width   Elev
       3    5680       3    5705
Downstream     num=       2
    Width   Elev    Width   Elev
       3    5680       3    5705

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
       Momentum               Cd   =     1.2
       Yarnell                KVal =     .95
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Energy Only

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

BRIDGE OUTPUT  Profile #FEMA 100-Year


  E.G. US. (ft)               5695.12    Element                 Inside BR US
Inside BR DS
  W.S. US. (ft)               5694.17    E.G. Elev (ft)              5695.05
5694.04
  Q Total (cfs)              12900.00    W.S. Elev (ft)              5694.01
```

```
5692.59
  Q Bridge (cfs)             12900.00    Crit W.S. (ft)              5691.56
5690.99
  Q Weir (cfs)                           Max Chl Dpth (ft)              9.82
 8.64
  Weir Sta Lft (ft)                      Vel Total (ft/s)               8.18
 9.64
  Weir Sta Rgt (ft)                      Flow Area (sq ft)           1577.19
1338.68
  Weir Submerg                           Froude # Chl                   0.56
 0.69
  Weir Max Depth (ft)                    Specif Force (cu ft)        9440.16
8637.34
  Min El Weir Flow (ft)       5702.45    Hydr Depth (ft)                6.66
 5.99
  Min El Prs (ft)             5701.49    W.P. Total (ft)              257.95
242.72
  Delta EG (ft)                  1.19    Conv. Total (cfs)          148267.5
127561.8
  Delta WS (ft)                  1.67    Top Width (ft)               236.91
223.60
  BR Open Area (sq ft)        3179.66    Frctn Loss (ft)

  BR Open Vel (ft/s)             9.64    C & E Loss (ft)

  BR Sluice Coef                         Shear Total (lb/sq ft)         2.89
 3.52
  BR Sel Method              Momentum    Power Total (lb/ft s)         23.63
33.93



Note:    Manning's n values were composited to a single value in the main channel.
Note:    Manning's n values were composited to a single value in the main channel.

BRIDGE OUTPUT  Profile #DBPS-2015_100


  E.G. US. (ft)               5699.46    Element                  Inside BR US
Inside BR DS
  W.S. US. (ft)               5697.71    E.G. Elev (ft)              5699.37
5698.23
  Q Total (cfs)              26734.00    W.S. Elev (ft)              5697.45
5695.55
  Q Bridge (cfs)             26734.00    Crit W.S. (ft)              5694.77
5694.36
  Q Weir (cfs)                           Max Chl Dpth (ft)             13.26
11.60
```

Weir Sta Lft (ft)		Vel Total (ft/s)	11.09	13.14
Weir Sta Rgt (ft)		Flow Area (sq ft)	2411.22	2034.20
Weir Submerg		Froude # Chl	0.62	0.80
Weir Max Depth (ft)		Specif Force (cu ft)	22237.14	20665.52
Min El Weir Flow (ft)	5702.45	Hydr Depth (ft)	9.78	8.41
Min El Prs (ft)	5701.49	W.P. Total (ft)	275.36	268.36
Delta EG (ft)	1.38	Conv. Total (cfs)	283790.0	221533.3
Delta WS (ft)	2.30	Top Width (ft)	246.44	241.86
BR Open Area (sq ft)	3179.66	Frctn Loss (ft)		
BR Open Vel (ft/s)	13.14	C & E Loss (ft)		
BR Sluice Coef		Shear Total (lb/sq ft)	4.85	6.89
BR Sel Method	Momentum	Power Total (lb/ft s)	53.79	90.57

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 135.29

INPUT
Description: Cross Section: Sta. 51+38.03 - DS Lorson Bridge

Manning's n for section based on Riprap and Depth computed from Blodgett/Limerinos

24" Riprap at 3.5' depth at Abutment Slope:

```
             0.090
24" Riprap at 9' depth at Abutment Toe: 0.067
30" Riprap
             at 13' depth at Pier: 0.067
24" Grouted Riprap at Bikepath at 6'
             depth: 0.056
Station Elevation Data    num=     277
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5699.571.630005 5699.58   15.12 5699.6130.30005 5699.6242.43005 5699.64
59.78003 5699.6767.31006 5699.6888.30005 5699.6890.76001 5699.67  105.02  5699.7
110.1901  5699.7  112.79 5699.69118.4501 5699.69   121.3 5699.68136.8101 5699.65
  143.17 5699.65146.1801 5699.64149.3101 5699.63160.4401 5699.61  164.55  5699.6
174.6101 5699.54188.1201 5699.46200.9901 5699.42207.9401 5699.36220.6401 5699.32
232.3701 5699.29   242.4 5699.26250.9901 5699.19  258.52 5699.17  266.98 5699.14
276.3201 5699.07286.5101 5699.03294.8201 5698.98299.0801 5698.95307.4901  5698.9
314.7601 5698.85329.3801 5698.73  341.36 5698.64  349.05 5698.58369.6301 5698.25
370.7501 5698.25380.4501  5698.2  389.97 5698.16  399.28 5698.16  412.61 5698.09
   425.8    5698  426.61    5698  438.96 5698.18  439.85 5698.31441.0101 5698.47
442.5801  5698.7  444.84 5699.02  448.36 5699.52454.5801 5700.41458.6201 5700.77
  464.11 5701.28  472.05 5702.01507.2401 5705.11  510.73 5705.48   514.6 5705.89
  515.65    5706  558.29    5706568.8201    5706  569.17 5705.99569.1801 5705.99
  570.16 5705.95  570.21 5705.94  571.05 5705.84  571.22 5705.81571.9301 5705.72
  572.23 5705.66572.8201 5705.58  573.27  5705.5  573.72 5705.44574.3201 5705.33
575.2401 5705.16  575.65    5705576.5601  5704.6  577.61 5704.13  577.78 5704.06
  577.91    5704  579.35 5703.49  580.72    5703581.1401 5702.85  582.05 5702.56
  583.22 5702.18   583.8    5702  585.03 5701.74585.6801 5701.58  587.92    5701
587.9401    5701  588.48 5700.81  590.73    5700  592.41 5699.39593.5101    5699
  595.09 5698.38  596.04    5698  596.23 5697.91596.6201 5697.72597.6301 5697.23
  598.11    5697600.2601 5696.46602.0801    5696  603.73  5695.2604.1201    5695
604.5801 5694.77  606.11    5694  607.46 5693.31608.0801    5693  608.72 5692.68
  610.05    5692  612.84 5691.82616.1301 5691.61  621.28 5691.28625.6401    5691
627.2601 5690.22  627.71    5690628.8201 5689.46  629.78    5689629.9901 5688.99
631.5101 5688.88632.7401  5688.8633.7501 5688.73   634.6 5688.67635.3301 5688.62
  644.42    5688650.2601 5687.66  663.54    5687  664.61 5686.74  667.65    5686
  670.54  5685.3671.7601    5685  684.17 5684.37  691.54    5684  693.46 5683.99
  700.41 5683.95  702.35 5683.96  709.38    5684  718.15    5684721.1901 5684.16
727.4401 5684.24727.9901 5684.25  736.73 5684.35749.5701 5684.54  783.63    5685
  784.38 5685.18787.4701 5685.92  787.79    5686  788.26 5686.11791.9401    5687
     799  5687.2  803.48 5687.45  804.28 5687.49805.2001 5687.52  806.28 5687.56
  807.54 5687.62809.0601 5687.68   810.9 5687.75813.1901 5687.84  816.11 5687.96
817.2101    5688819.2001 5688.96  819.28    5689  820.78 5689.73821.3401    5690
823.2001  5690.9  823.41    5691   824.9 5691.72825.4701    5692827.0901  5692.1
827.3701 5692.11  829.65 5692.24  830.39 5692.28832.2401 5692.39  833.63 5692.47
834.7201 5692.52  835.91 5692.59836.7501 5692.63838.1901 5692.71  838.78 5692.74
840.4501 5692.83  840.79 5692.85842.7101 5692.96   842.8 5692.96843.4901    5693
  844.63 5693.53845.6201    5694846.2501 5694.25846.9701 5694.52847.6201 5694.78
  848.23    5695848.9301 5695.42849.8401    5696  850.17 5696.16850.7001 5696.41
851.4701 5696.77851.9401    5697852.7401 5697.38  853.98 5697.98  854.01 5697.99
```

```
  854.02    5698  855.27  5698.3  856.03 5698.44  856.61 5698.54857.1201 5698.63
857.9601 5698.77858.2001 5698.82859.2401    5699  859.28 5699.02   859.3 5699.02
  860.23 5699.35860.7401 5699.53861.1901 5699.69862.0701    5700  862.17 5700.04
  862.23 5700.06  863.16 5700.39  863.79 5700.62  864.17 5700.76864.8401    5701
865.2101 5701.14865.4401 5701.24866.2201 5701.55867.1201 5701.98  867.14 5701.99
  867.17    5702  868.38 5702.42869.3101 5702.72  869.67 5702.84870.2001    5703
  870.86 5703.26  871.35 5703.45871.9501 5703.69872.7501    5704  873.03 5704.11
873.2001 5704.15874.1801  5704.4  874.38 5704.45874.8301 5704.57875.3301 5704.69
876.4601 5704.98  876.48 5704.99  876.53    5705  877.63 5705.28878.0701 5705.39
  878.77 5705.57879.6801  5705.8  879.91 5705.86880.4701    5706880.9301 5706.12
881.0701 5706.15881.8301 5706.35882.2501 5706.45882.7401 5706.58883.4301 5706.75
  883.66 5706.81   884.4    5707884.6201 5707.06884.7101 5707.08  885.77 5707.35
886.3301 5707.49  886.91 5707.64887.9401  5707.9  888.05 5707.93888.3301    5708
949.6901    5708  983.23 5707.89 1013.55 5707.88 1031.59 5707.71 1067.65 5707.39
  1081.5    5707 1096.42 5706.69  1130.1    5706  1138.7 5705.79    1172    5705
  1175.8 5704.91 1211.05 5704.09

Manning's n Values        num=      11
     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04593.5101     .09  610.05    .056625.6401    .067635.3301     .04
  718.15    .067  736.73     .04813.1901    .067  823.41    .056  835.91     .09
   859.3     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      602.0801849.8401             10.4   25.15   44.27             .3       .5

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.25

INPUT
Description: Cross Section: Sta. 51+12.888
Station Elevation Data    num=     305
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5698.334.279968  5698.36.029968 5698.298.029968 5698.2925.28998 5698.18
26.88995 5698.1741.46997 5698.0941.83997 5698.0956.03998 5698.0158.18994    5698
74.46997 5697.9175.38995  5697.976.68994 5697.8979.56995 5697.86  120.08 5697.58
  126.79 5697.51  149.28 5697.35  166.86 5697.23  179.16 5697.15  190.21 5697.01
  192.23 5697.02  194.29 5697.04  196.41 5697.05198.5699 5697.06  211.66 5696.98
   213.6    5697  214.72    5697  216.91 5697.01  219.12 5697.03  221.36 5697.05
  223.64 5697.06225.9399 5697.08  228.27  5697.1  232.53 5697.08  235.17 5697.09
  237.83 5697.11   240.5 5697.12243.1899 5697.14   267.4 5697.36  267.55 5697.35
   267.7 5697.34  267.97 5697.28  268.54 5697.16  268.77 5697.13269.0099 5697.11
  269.18 5697.09269.2599 5697.08  271.39  5696.6271.6899 5696.59  272.02 5696.58
  272.36 5696.57  272.73 5696.55  273.11 5696.54  273.52 5696.52  273.96 5696.51
  274.43 5696.49  274.89 5696.49275.3799 5696.47275.8199 5696.47276.3199 5696.45
```

276.75	5696.45	277.27	5696.43	277.68	5696.43	278.22	5696.41	278.6	5696.41
279.17	5696.39	279.53	5696.39	280.12	5696.36	280.45	5696.36	281.0699	5696.33
281.3799	5696.33	282.02	5696.3	282.3	5696.3	282.98	5696.26	283.22	5696.26
283.93	5696.22	284.14	5696.22	284.89	5696.18	285.4	5696.18	286.2	5696.13
286.3199	5696.13	287.17	5696.08	287.25	5696.08	288.15	5696.03	288.62	5696
289.37	5695.7	290.4	5695.29	290.8199	5695.12	291.12	5695	292.31	5694.6
293.61	5694.09	293.74	5694.04	293.83	5694	295.23	5693.52	296.6899	5693.03
296.74	5693.02	296.78	5693	298.24	5692.5	299.73	5692	299.75	5692
301.7599	5691.89	302.02	5691.87	303.78	5691.78	304.29	5691.75	305.81	5691.66
306.58	5691.62	307.84	5691.55	308.84	5691.5	309.66	5691.46	310.68	5691.4
311.33	5691.37	312.52	5691.3	313.02	5691.28	314.3799	5691.2	314.71	5691.19
316.25	5691.1	316.42	5691.09	317.4	5691.04	318.02	5691	318.43	5690.81
319.6	5690.28	320.06	5690.07	320.22	5690	321.6	5689.38	322.43	5689
323.17	5689	330.78	5688.68	343.8799	5688	351.87	5687.71	370.1899	5687
370.92	5686.82	374.22	5686	375.85	5685.6	378.25	5685	390.9399	5684.25
394.8799	5684	398.28	5683.98	405.04	5683.93	411.57	5683.98	415.15	5684
417.47	5684.03	419.99	5684.07	433.32	5684.25	459.9	5684.61	485.63	5684.96
486.89	5684.98	488.65	5685	489	5685.09	492.7	5686	496.56	5686.95
496.75	5687	497.17	5687.02	497.34	5687.02	497.41	5687.03	497.62	5687.03
497.78	5687.04	498	5687.05	498.35	5687.06	498.94	5687.08	517.2999	5687.79
519.26	5687.86	521.6	5687.95	523.03	5688	524	5688.46	525.15	5689
525.79	5689.3	526.99	5689.87	527.17	5689.96	527.27	5690	529.25	5690.93
529.39	5691	530.64	5691.58	531.54	5692	532.4299	5692.05	532.61	5692.06
535.41	5692.22	536.1799	5692.26	538.36	5692.39	539.91	5692.48	541.0699	5692.54
541.97	5692.59	543.3199	5692.67	544.27	5692.71	545.39	5692.76	545.74	5692.78
546.96	5692.83	547.21	5692.84	548.52	5692.9	548.67	5692.91	550.08	5692.97
550.13	5692.97	550.77	5693	551.33	5693.21	551.6799	5693.34	552.35	5693.59
553.37	5693.98	553.39	5693.99	553.42	5694	554.63	5694.68	555.22	5695
555.99	5695.21	556.5	5695.37	557.42	5695.63	558.66	5696	558.77	5696.04
558.86	5696.08	559.84	5696.46	560.71	5696.79	560.9299	5696.88	561.23	5697
561.38	5697.06	562.09	5697.31	562.6799	5697.52	563.24	5697.72	564.03	5698
564.42	5698.07	564.5499	5698.09	565.75	5698.31	566.2999	5698.42	567.0699	5698.56
567.54	5698.65	568.4	5698.76	568.6799	5698.79	569.74	5698.93	569.8199	5698.94
570.29	5699	570.96	5699.17	571.23	5699.24	572.09	5699.46	572.8099	5699.64
573.22	5699.75	574.22	5700	574.3199	5700.02	574.35	5700.03	575.22	5700.25
575.52	5700.33	576.13	5700.49	576.71	5700.63	577.0499	5700.72	577.87	5700.93
577.92	5700.94	577.97	5700.95	578.15	5701	579.0699	5701.23	579.4299	5701.32
580.2	5701.52	581.01	5701.73	581.3199	5701.81	582.09	5702	582.45	5702.09
582.59	5702.13	583.5699	5702.38	584.16	5702.53	584.6899	5702.66	585.72	5702.92
585.8099	5702.95	586.02	5703	586.78	5703.19	587.01	5703.25	587.71	5703.43
588.25	5703.57	588.65	5703.67	589.49	5703.88	589.6	5703.91	589.95	5704
590.67	5704.18	590.95	5704.25	591.79	5704.47	592.52	5704.65	592.91	5704.75
593.89	5705	594.03	5705.04	594.08	5705.05	595.14	5705.32	595.64	5705.45
596.26	5705.65	597.1899	5705.84	597.37	5705.89	597.8199	5706	598.39	5706.14
598.5699	5706.19	599.34	5706.39	599.83	5706.51	600.2999	5706.63	601.11	5706.84
601.27	5706.88	601.75	5707	602.3099	5707.14	602.54	5707.2	603.4399	5707.43
604.1	5707.6	604.5599	5707.71	605.67	5708	656.5599	5708	679.2	5707.92
720.13	5707.91	733.0699	5707.8	758.91	5707.56	779.02	5707	800.68	5706.54

```
  827.41    5706   841.8 5705.66   869.3    5705  878.79 5704.78  911.47 5704.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  288.15     .04   556.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        288.15   556.5             10.4   27.38   51.05             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 135.14

INPUT
Description: Cross Section: Sta. 50+85.05
Station Elevation Data    num=     225
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5697.8338.39996 5697.6481.22998 5697.45   112.1 5697.27  174.61 5696.88
  184.56 5696.78  190.67 5696.76200.8799 5696.66214.4399 5696.53  241.79 5696.26
     246 5696.24  266.27 5696.02  266.93 5696.02268.5699    5696  269.03 5695.88
  269.23 5695.83272.5699    5695273.7599  5694.7276.5699    5694  278.09 5693.62
280.5699    5693  283.42 5692.29284.5699    5692     300 5691.13  302.37    5691
305.8799 5690.12  306.37    5690  306.98 5689.85  310.37    5689  319.02  5688.6
  330.67    5688  359.31 5687.19  365.87    5687369.3199 5686.14  369.87    5686
  370.36 5685.88  373.87    5685  387.12 5684.18  389.84    5684  394.58 5683.96
   401.5 5683.91  405.62 5683.94  413.38    5684   429.1 5684.22  441.59 5684.39
  484.29    5685  485.38 5685.27  488.29    5686  492.12 5686.96  492.29    5687
  493.14 5687.03  493.34 5687.04  493.65 5687.05  494.19 5687.07   495.4 5687.11
  500.45 5687.27  522.27    5688  523.17 5688.35  524.87    5689  524.88    5689
  526.53 5689.71  527.22    5690  528.04 5690.34529.0699 5690.77  529.38  5690.9
  529.62    5691531.0499  5691.5   531.6 5691.69  532.54    5692  532.88 5692.02
  532.91 5692.02  534.65  5692.1  534.85 5692.11  536.41 5692.19  536.77 5692.21
  538.16 5692.28538.6799  5692.3  539.91 5692.36  540.59  5692.4  541.65 5692.45
  542.48 5692.49  543.38 5692.53  544.37 5692.58   545.1 5692.62  546.25 5692.68
546.8099  5692.7  548.12 5692.77  548.52 5692.79  549.98 5692.86  550.21 5692.87
  551.83 5692.95   551.9 5692.96  552.01 5692.96  552.74    5693  553.42 5693.29
  554.16 5693.55  554.65 5693.73  554.74 5693.75  555.73    5694555.8199 5694.02
  555.85 5694.03   556.7 5694.25  556.99 5694.32  557.59 5694.47  558.16 5694.62
   558.5  5694.7  559.35 5694.92  559.42 5694.94  559.66    5695   560.5 5695.21
  560.83  5695.3  561.62  5695.5   562.4  5695.7  562.74 5695.78  563.59    5696
563.7999 5696.05  563.86 5696.07564.6799 5696.28     565 5696.36565.5699  5696.5
  566.15 5696.65  566.46 5696.73567.2999 5696.94  567.35 5696.96  567.53    5697
  568.26 5697.19  568.48 5697.24  569.17 5697.42  569.67 5697.54  570.08 5697.65
  570.87 5697.85     571 5697.88  571.46    5698  572.03 5698.07  572.13 5698.09
  573.16 5698.22573.4399 5698.25  574.28 5698.36  574.75 5698.42   575.4 5698.51
576.0599 5698.59  576.51 5698.65  577.36 5698.76  577.63 5698.79  578.66 5698.93
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  578.74 5698.94  579.22    5699  579.84 5699.16  580.08 5699.22580.9399 5699.44
  581.59  5699.6  582.03 5699.71   583.1 5699.99  583.12 5699.99  583.16    5700
   584.1 5700.24  584.42 5700.32  585.09 5700.49  585.76 5700.66  586.09 5700.75
  587.09    5701  587.11    5701   588.2 5701.28  588.62 5701.39  589.29 5701.56
  590.14 5701.77  590.38 5701.84  591.02    5702  591.47 5702.11  591.64 5702.16
592.5599 5702.39  593.15 5702.54  593.65 5702.67  594.66 5702.92  594.74 5702.94
  594.96    5703  595.75  5703.2  596.03 5703.27  596.76 5703.46  597.38 5703.62
  597.77 5703.71  598.74 5703.96  598.78 5703.97  598.89    5704  599.87 5704.25
  600.25 5704.34  600.96 5704.53  601.76 5704.73602.0499  5704.8602.8199    5705
  603.14 5705.08  603.27 5705.11  604.23 5705.36  604.77  5705.5605.3199 5705.64
  606.27 5705.88  606.41 5705.91  606.76    5706607.4399 5706.17607.6799 5706.23
  608.45 5706.43  609.04 5706.58  609.46 5706.69  610.42 5706.93  610.49 5706.95
610.6899    5707611.5699 5707.22  611.92 5707.31  612.67  5707.5613.4399  5707.7
  613.77 5707.78  614.62    5708  655.02    5708  666.75 5707.96   718.3 5707.95
  726.12 5707.88741.7599 5707.73  768.12    5707  796.53  5706.4   816.3    5706
  836.49 5705.52858.1899    5705  873.35 5704.64  900.78    5704  903.47 5703.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04272.5699     .04  559.35     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      272.5699  559.35             65.5   70.05    70.3             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.89

INPUT
Description: Cross Section: Sta. 50+15.00
Station Elevation Data    num=     144
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0 5697.383.109985 5697.3611.16998 5697.2837.52002 5697.2775.27002 5697.08
  103.58 5696.96  161.74 5696.62  260.63    5696  267.21    5696  267.69 5695.88
  271.21    5695   274.7 5694.13  275.21    5694  276.25 5693.74   276.3 5693.73
  279.21    5693  281.24 5692.49  283.21    5692  296.45  5691.2  300.14    5691
  301.17 5690.72  305.01    5690  307.18 5689.46     309    5689  312.18 5688.21
  313.51    5688  337.19 5687.53  363.64    5687  366.39 5686.53  368.51    5686
  371.81 5685.18  372.51    5685  373.44 5684.77  376.51    5684  381.94 5683.94
  391.87 5683.94   399.8 5683.74  407.27    5683  417.41    5683  424.81 5683.75
  425.93 5683.87  429.11  5683.9  435.77 5683.97  441.22 5683.95  454.45 5683.92
  469.03 5683.96  481.66    5684  483.48 5684.45  485.66    5685  489.19 5685.88
  489.66    5686  490.59 5686.23  494.53    5687  521.74 5687.54  544.66    5688
  548.41 5688.88  549.17    5689  549.81 5689.16  553.16    5690  554.09 5690.23
  558.03    5691   565.3 5691.43572.9301 5691.87   574.2 5691.95  574.96    5692
  575.17 5692.05  578.96    5693  581.86 5693.73  582.96    5694583.4301 5694.12
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  586.96    5695  587.64 5695.17  590.96    5696  591.55 5696.14  595.16    5697
  595.22 5697.01   595.7 5697.13  598.15 5697.67  599.61    5698  600.95 5698.34
  603.04 5698.86  603.61    5699  606.41  5699.7  606.74 5699.78  607.44 5699.96
  607.61    5700  608.92 5700.33  611.61    5701  612.84 5701.31  613.87 5701.57
  615.61 5702.01  616.79  5702.3  617.98  5702.6  619.62 5703.01  620.74 5703.29
  622.16 5703.64  623.62    5704  625.59 5704.49  625.99 5704.59  627.71    5705
  628.14  5705.1  630.84 5705.76  631.86    5706     633 5706.28  635.44 5706.86
  636.02    5707   637.2 5707.28  640.21    5708  642.32 5708.51  644.37    5709
  648.29 5709.94  648.52    5710  648.77 5710.06  652.68    5711  655.28 5711.62
  656.84    5712  659.69 5712.69  660.99    5713  664.19 5713.77  665.15    5714
  730.92    5714  741.88  5713.2  744.17    5713  744.39 5712.98  755.28    5712
   767.4 5711.15  769.22    5711   772.4 5710.73  779.83    5710  786.64 5709.48
  791.99    5709  796.68 5708.64  803.92    5708  807.11  5707.8  818.84    5707
  822.88 5706.68   833.9    5706   842.6 5705.48  847.62    5705  869.49 5704.21
  871.03    5704  872.41 5703.98  877.65 5703.77  888.26 5703.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  276.25     .04572.9301     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        276.25572.9301           139.22  155.06  171.54             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.8

INPUT
Description: cross section at river station 48+60
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
   14.23 5694.36   16.34  5694.3   19.99 5694.16   27.07 5692.41   38.81 5690.46
    42.1  5689.1   46.56 5688.84   57.83 5687.47   68.56 5686.56   94.05 5686.09
  109.58 5685.69  117.25 5684.06  125.03 5683.03  189.73 5683.42  227.03 5683.66
   240.5 5685.63  249.25    5686  250.63 5686.23   279.1 5687.16  303.64 5689.69
  306.83 5689.94  309.41 5690.32  322.07  5691.1  328.47  5691.8  344.19  5694.5
  364.83    5698

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
   14.23     .04  109.58     .04   240.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         14.23  344.19            293.5   293.5   293.5             .1       .3

CROSS SECTION
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RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 134.4

INPUT
Description: cross section at river station 45+66
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5693    3.79    5692    7.73    5691   11.95    5690    24.2    5689
   32.15    5688   36.95    5687   41.69    5686   73.46    5685   95.45    5684
  100.01    5683  104.28    5682   211.8    5682  216.04    5683  219.98    5684
  223.96    5685  274.24    5686  277.81    5687  281.45    5688  285.28    5689
  301.94    5690  306.63    5691  311.47    5692  316.12    5693  321.08    5694
  325.51    5694

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   73.46     .04  223.96     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  325.51           355.07  354.08  353.89             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 133.6

INPUT
Description: Top of 1st Drop structure.  Cross section at river station 42+23
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5   11.64 5688.01   26.63 5687.04   38.33 5683.84   87.05 5683.82
  104.97 5680.06  214.45 5680.55  227.02 5682.94  273.26 5683.65  287.07 5686.42
   302.1  5691.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   87.05     .04  227.02     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0   302.1             26.2   33.79   40.65             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
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REACH: Lorson Ranch       RS: 132.8

INPUT
Description: Bottom of 1st Drop Structure
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5   29.68 5687.37    44.6 5684.28   96.87 5682.41  107.54 5678.12
  211.01 5677.64  230.76 5683.01  271.29 5683.46  287.43 5685.45  304.33  5691.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04   96.87      .1  230.76     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  304.33            62.43   46.96   42.48             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 132.2

INPUT
Description: 50' Downstream of 1st Drop Structure
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.5    86.2 5686.17  147.01 5684.19  167.37 5677.39  226.83 5675.48
  250.88 5681.85  295.86 5683.09   324.1 5686.54  344.03    5690

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .04  147.01      .1  250.88     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             0  344.03           116.68   93.22   58.58             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 132

INPUT
Description: FEMA cross section AI
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0  5691.4      35  5692.2      99  5686.8     141  5684.4     158    5682
     178  5679.4     225  5679.4     247  5679.4     281  5680.4     365  5683.6
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```
     508  5682.8     527  5684.2     616  5686.2     728  5687.8     850    5691
     910  5691.8     919  5690.8     934  5692.2    1169  5691.8    1312  5692.4
    1446  5692.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     141     .04     281     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           141     281             1660    1780    1850             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 128

INPUT
Description: FEMA cross section AH
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
       0    5683     156    5681     213  5680.2     340  5679.2     354  5678.2
     520    5675     549    5672     599  5670.6     643  5672.6     671  5676.6
     708  5675.2     758  5679.8     816  5681.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
       0     .06     549     .04     643     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           549     643             1041    1030    1010             .1       .3

CROSS SECTION


RIVER: Jimmy Camp Creek
REACH: Lorson Ranch       RS: 124

INPUT
Description: FEMA cross section AG
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    1000    5676    1058  5670.7    1145  5673.4    1183  5671.9    1283  5670.6
    1408    5670    1503  5669.5    1581  5671.4    1673  5671.3    1748  5664.1
    1833  5664.2    1923  5671.6    1973  5674.6    2121  5674.8    2229  5675.5
    2281  5680.1

Manning's n Values        num=       3
```

Sta	n Val	Sta	n Val	Sta	n Val
1000	.045	1673	.045	1923	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1673	1923	90	90	90	.1	.3

CROSS SECTION

RIVER: Jimmy Camp Creek
REACH: Lorson Ranch RS: 120.4

INPUT
Description: Intermediate station downstream of FEMA cross section AG
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	5676	1058	5670.7	1145	5673.4	1183	5671.9	1283	5670.6
1408	5670	1503	5669.5	1581	5671.4	1673	5671.3	1748	5664.1
1833	5664.2	1923	5671.6	1973	5674.6	2121	5674.8	2229	5675.5
2281	5680.1								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.045	1673	.045	1923	.045

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1673	1923	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Jimmy Camp Creek

Reach	River Sta.	n1	n2	n3	n4	n5	n6	n7	n8	n9	n10	n11
Lorson Ranch	160	.06	.04	.06								
Lorson Ranch	156	.06	.04	.06								
Lorson Ranch	155.2*	.06	.04	.04	.06							
Lorson Ranch	154.4*	.06	.04	.06								
Lorson Ranch	153.6*	.06	.04	.06								

Lorson Ranch	152.8*	.06	.04	.06
Lorson Ranch	152	.06	.04	.06
Lorson Ranch	151.333*	.06	.03	.06
Lorson Ranch	150.666*	.06	.03	.06
Lorson Ranch	150.*	.06	.03	.06
Lorson Ranch	149.333*	.06	.03	.06
Lorson Ranch	148.666*	.06	.03	.06
Lorson Ranch	148	.06	.167	.06
Lorson Ranch	147.992*	.06	.167	.06
Lorson Ranch	147.985*	.06	.167	.06
Lorson Ranch	147.978*	.06	.167	.06
Lorson Ranch	147.971*	.06	.167	.06
Lorson Ranch	147.964*	.06	.167	.06
Lorson Ranch	147.957*	.06	.167	.06
Lorson Ranch	147.95*	.06	.167	.06
Lorson Ranch	147.942*	.06	.167	.06
Lorson Ranch	147.935*	.06	.167	.06
Lorson Ranch	147.928*	.06	.167	.06
Lorson Ranch	147.921*	.06	.167	.06
Lorson Ranch	147.914*	.06	.167	.06
Lorson Ranch	147.907*	.06	.167	.06
Lorson Ranch	147.9	.06	.167	.06
Lorson Ranch	147.8	.04	.1	.04
Lorson Ranch	147.7	.04	.1	.04

Lorson Ranch	147.6		.04	.1	.04
Lorson Ranch	147.2		.04	.1	.04
Lorson Ranch	146.3		.04	.06	.04
Lorson Ranch	146.1		.04	.04	.04
Lorson Ranch	145.6		.04	.06	.04
Lorson Ranch	144.7		.04	.06	.04
Lorson Ranch	144.6		.04	.06	.04
Lorson Ranch	144.4		.04	.04	.04
Lorson Ranch	144		.045	.04	.045
Lorson Ranch	143.2		.04	.1	.04
Lorson Ranch	142.4		.04	.04	.04
Lorson Ranch	141.6		.04	.04	.04
Lorson Ranch	140.8		.04	.1	.04
Lorson Ranch	140		.04	.1	.04
Lorson Ranch	139.7		.04	.1	.04
Lorson Ranch	139.3		.04	.04	.04
Lorson Ranch	138.8	Bridge			
Lorson Ranch	138.3		.04	.04	.04
Lorson Ranch	138		.04	.04	.04
Lorson Ranch	137.6		.04	.04	.04
Lorson Ranch	136.8		.04	.1	.04
Lorson Ranch	136		.04	.04	.04
Lorson Ranch	135.6		.04	.04	.04
Lorson Ranch	135.55		.04	.04	.04

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 Lorson Ranch         135.50             .04       .04       .04

 Lorson Ranch         135.47             .04       .04       .04

 Lorson Ranch         135.34             .04       .09      .056      .067       .04
     .067       .04      .067      .056       .09       .04
 Lorson Ranch         135.3135     Bridge

 Lorson Ranch         135.29             .04       .09      .056      .067       .04
     .067       .04      .067      .056       .09       .04
 Lorson Ranch         135.25             .04       .04       .04

 Lorson Ranch         135.14             .04       .04       .04

 Lorson Ranch         134.89             .04       .04       .04

 Lorson Ranch         134.8              .04       .04       .04

 Lorson Ranch         134.4              .04       .04       .04

 Lorson Ranch         133.6              .04       .04       .04

 Lorson Ranch         132.8              .04        .1       .04

 Lorson Ranch         132.2              .04        .1       .04

 Lorson Ranch         132                .06       .04       .06

 Lorson Ranch         128                .06       .04       .06

 Lorson Ranch         124               .045      .045      .045

 Lorson Ranch         120.4             .045      .045      .045
```

SUMMARY OF REACH LENGTHS

River: Jimmy Camp Creek

Reach	River Sta.	Left	Channel	Right
Lorson Ranch	160	1119.96	1140	1160.04
Lorson Ranch	156	275.98	331.97	360

Lorson Ranch	155.2*	275.98	331.97	360
Lorson Ranch	154.4*	275.98	331.97	360
Lorson Ranch	153.6*	275.98	331.97	360
Lorson Ranch	152.8*	275.98	331.97	360
Lorson Ranch	152	358.33	344.96	306.81
Lorson Ranch	151.333*	358.33	344.96	306.81
Lorson Ranch	150.666*	358.33	344.96	306.81
Lorson Ranch	150.*	358.33	344.96	306.81
Lorson Ranch	149.333*	358.33	344.96	306.81
Lorson Ranch	148.666*	358.33	344.96	306.81
Lorson Ranch	148	6.5	9.85	13.43
Lorson Ranch	147.992*	6.5	9.85	13.43
Lorson Ranch	147.985*	6.5	9.85	13.43
Lorson Ranch	147.978*	6.5	9.85	13.43
Lorson Ranch	147.971*	6.5	9.85	13.43
Lorson Ranch	147.964*	6.5	9.85	13.43
Lorson Ranch	147.957*	6.5	9.85	13.43
Lorson Ranch	147.95*	6.5	9.85	13.43
Lorson Ranch	147.942*	6.5	9.85	13.43
Lorson Ranch	147.935*	6.5	9.85	13.43
Lorson Ranch	147.928*	6.5	9.85	13.43
Lorson Ranch	147.921*	6.5	9.85	13.43
Lorson Ranch	147.914*	6.5	9.85	13.43
Lorson Ranch	147.907*	6.5	9.85	13.43
Lorson Ranch	147.9	44.6	56.43	10.77
Lorson Ranch	147.8	51.82	39.16	664.1
Lorson Ranch	147.7	103.99	99.4	95.42
Lorson Ranch	147.6	173.91	186.52	199.66
Lorson Ranch	147.2	50.74	63.56	56.41
Lorson Ranch	146.3	47.58	47.58	47.58
Lorson Ranch	146.1	90.06	120.53	150.87
Lorson Ranch	145.6	55.82	58.14	60.59
Lorson Ranch	144.7	70.87	70.87	70.87
Lorson Ranch	144.6	138.02	138.02	138.02
Lorson Ranch	144.4	174.49	178.55	183.34
Lorson Ranch	144	46.66	45.83	45.03
Lorson Ranch	143.2	415.26	415.73	416.34
Lorson Ranch	142.4	400.94	540.66	774.84
Lorson Ranch	141.6	569.21	474	372.73
Lorson Ranch	140.8	37.27	37.5	38.21
Lorson Ranch	140	34.13	42.09	62.78
Lorson Ranch	139.7	114.06	102	90.9
Lorson Ranch	139.3	181.15	181.15	181.15
Lorson Ranch	138.8	Bridge		
Lorson Ranch	138.3	298.68	310.69	324.82
Lorson Ranch	138	341.96	348.12	366.74
Lorson Ranch	137.6	45.37	48.07	45.37
Lorson Ranch	136.8	365.58	322.7	292.78

Lorson Ranch	136	332.63	332.63	332.63
Lorson Ranch	135.6	62.7	55.42	47.48
Lorson Ranch	135.55	29.38	29.37	9.53
Lorson Ranch	135.50	55.38	35.02	20.44
Lorson Ranch	135.47	32.05	14.97	8.17
Lorson Ranch	135.34	82	82.61	81.81
Lorson Ranch	135.3135	Bridge		
Lorson Ranch	135.29	10.4	25.15	44.27
Lorson Ranch	135.25	10.4	27.38	51.05
Lorson Ranch	135.14	65.5	70.05	70.3
Lorson Ranch	134.89	139.22	155.06	171.54
Lorson Ranch	134.8	293.5	293.5	293.5
Lorson Ranch	134.4	355.07	354.08	353.89
Lorson Ranch	133.6	26.2	33.79	40.65
Lorson Ranch	132.8	62.43	46.96	42.48
Lorson Ranch	132.2	116.68	93.22	58.58
Lorson Ranch	132	1660	1780	1850
Lorson Ranch	128	1041	1030	1010
Lorson Ranch	124	90	90	90
Lorson Ranch	120.4	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Jimmy Camp Creek

Reach	River Sta.	Contr.	Expan.
Lorson Ranch	160	.1	.3
Lorson Ranch	156	.1	.3
Lorson Ranch	155.2*	.1	.3
Lorson Ranch	154.4*	.1	.3
Lorson Ranch	153.6*	.1	.3
Lorson Ranch	152.8*	.1	.3
Lorson Ranch	152	.1	.3
Lorson Ranch	151.333*	.1	.3
Lorson Ranch	150.666*	.1	.3
Lorson Ranch	150.*	.1	.3
Lorson Ranch	149.333*	.1	.3
Lorson Ranch	148.666*	.1	.3
Lorson Ranch	148	.1	.3
Lorson Ranch	147.992*	.1	.3
Lorson Ranch	147.985*	.1	.3
Lorson Ranch	147.978*	.1	.3
Lorson Ranch	147.971*	.1	.3
Lorson Ranch	147.964*	.1	.3

Lorson Ranch	147.957*		.1	.3
Lorson Ranch	147.95*		.1	.3
Lorson Ranch	147.942*		.1	.3
Lorson Ranch	147.935*		.1	.3
Lorson Ranch	147.928*		.1	.3
Lorson Ranch	147.921*		.1	.3
Lorson Ranch	147.914*		.1	.3
Lorson Ranch	147.907*		.1	.3
Lorson Ranch	147.9		.1	.3
Lorson Ranch	147.8		.1	.3
Lorson Ranch	147.7		.1	.3
Lorson Ranch	147.6		.1	.3
Lorson Ranch	147.2		.1	.3
Lorson Ranch	146.3		.1	.3
Lorson Ranch	146.1		.1	.3
Lorson Ranch	145.6		.1	.3
Lorson Ranch	144.7		.1	.3
Lorson Ranch	144.6		.1	.3
Lorson Ranch	144.4		.1	.3
Lorson Ranch	144		.1	.3
Lorson Ranch	143.2		.1	.3
Lorson Ranch	142.4		.1	.3
Lorson Ranch	141.6		.1	.3
Lorson Ranch	140.8		.1	.3
Lorson Ranch	140		.1	.3
Lorson Ranch	139.7		.1	.3
Lorson Ranch	139.3		.1	.3
Lorson Ranch	138.8	Bridge		
Lorson Ranch	138.3		.1	.3
Lorson Ranch	138		.1	.3
Lorson Ranch	137.6		.1	.3
Lorson Ranch	136.8		.1	.3
Lorson Ranch	136		.1	.3
Lorson Ranch	135.6		.1	.3
Lorson Ranch	135.55		.1	.3
Lorson Ranch	135.50		.1	.3
Lorson Ranch	135.47		.1	.3
Lorson Ranch	135.34		.3	.5
Lorson Ranch	135.3135	Bridge		
Lorson Ranch	135.29		.3	.5
Lorson Ranch	135.25		.1	.3
Lorson Ranch	135.14		.1	.3
Lorson Ranch	134.89		.1	.3
Lorson Ranch	134.8		.1	.3
Lorson Ranch	134.4		.1	.3
Lorson Ranch	133.6		.1	.3
Lorson Ranch	132.8		.1	.3
Lorson Ranch	132.2		.1	.3

Lorson Ranch	132	.1	.3
Lorson Ranch	128	.1	.3
Lorson Ranch	124	.1	.3
Lorson Ranch	120.4	.1	.3

Profile Output Table - Bridge Only

Reach	River Sta	Profile	E.G. US.	Min El Prs	BR Open Area
Prs O WS	Q Total	Min El Weir Flow	Q Weir	Delta EG	BR Sluice Coef
(ft)	(cfs)	(ft)	(cfs)	(ft)	(ft)	(sq ft)
Lorson Ranch	138.8	FEMA 100-Year	5704.22	5708.33	2942.56
12900.00	5719.11	1.14			
Lorson Ranch	138.8	DBPS-2015_100	5708.19	5708.33	2942.56
26734.00	5719.11	1.27			
Lorson Ranch	135.3135	FEMA 100-Year	5695.12	5701.49	3179.66
12900.00	5702.45	1.19			
Lorson Ranch	135.3135	DBPS-2015_100	5699.46	5701.49	3179.66
26734.00	5702.45	1.38			