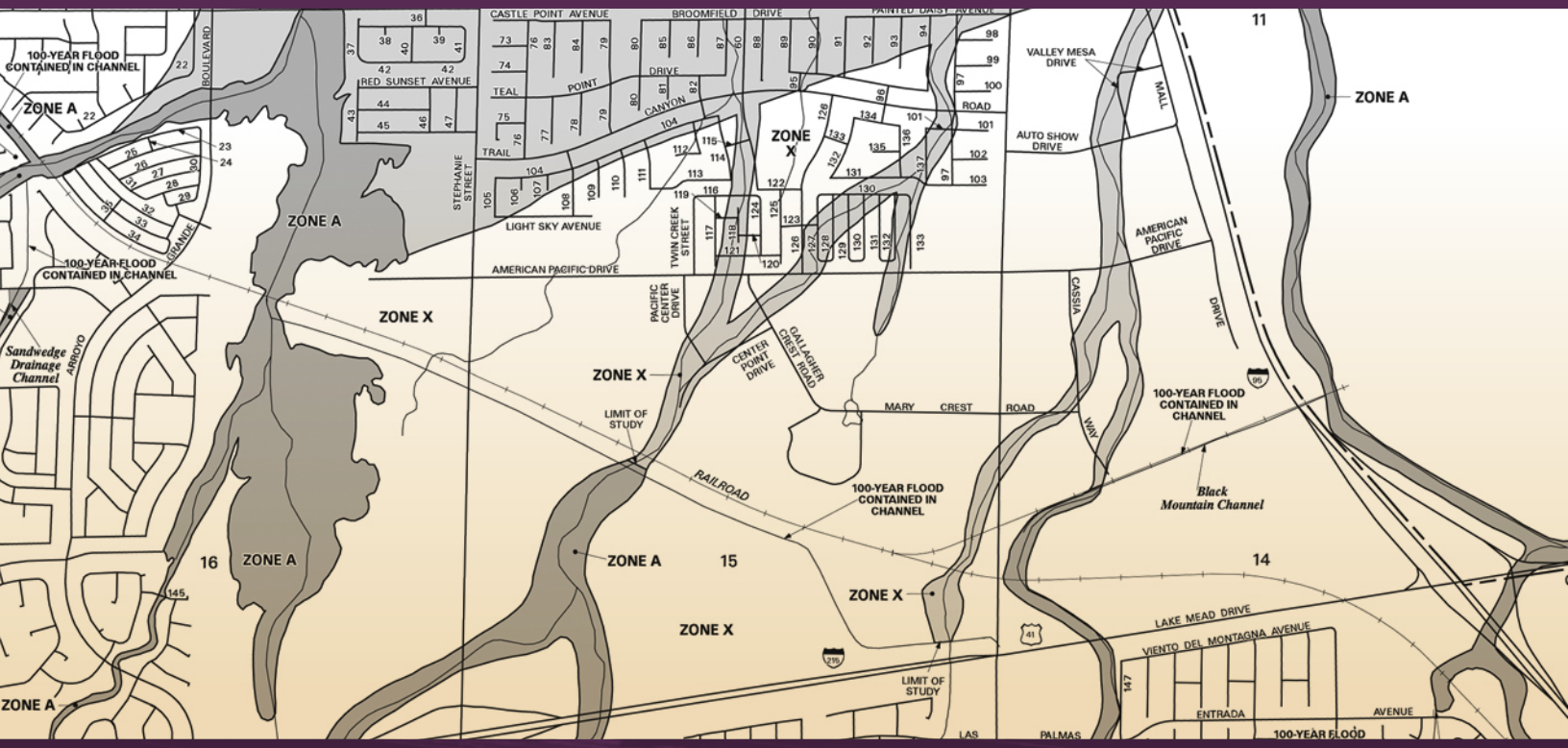
Conditional Letter of Map Revision

Railroad East Outfall Channel



November 2007

prepared for THE CITY OF HENDERSON

prepared by vtn

FEMA

REQUEST FOR CONDITIONAL LETTER OF MAP REVISION

RAILROAD EAST OUTFALL CHANNEL

PREPARED FOR:

CITY OF HENDERSON

240 Water Street

Henderson, NV 89009

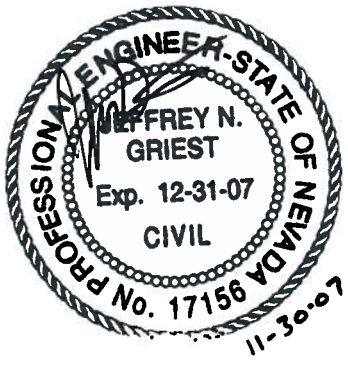
PREPARED BY:

VTN NEVADA

2727 S. Rainbow Boulevard

Las Vegas, NV 89146

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November 2007

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1.0 INTRODUCTION

The purpose of this request for Condition Letter of Map Revision (CLOMR) is to analyze and address a needed revision to the current flood zone within the Pittman Watershed in the City of Henderson, Nevada, Clark County. This CLOMR is provided to address the modification of the existing Zone A flood zone on the east side of Arroyo Grande Boulevard between the Union Pacific Railroad and the Pittman Wash. This analysis provides documentation to demonstrate that the proposed channel improvements will contain the 100 year flood flow and the post-improvement condition will no longer warrant a portion of the flood zone delineations shown on the existing FIRM Panel 2595 dated September 10, 2007.

In the existing condition, the storm runoff from an approximately 15.79 square mile tributary area (per LOMR 06-09-BE64P hydrology, see Appendix D) is conveyed to the existing gravel pit that is located west of Stephanie Street, between Wigwam Parkway and the UPRR tracks. The outflow from the gravel pit location is conveyed through the existing railroad bridge at the north end of the site and flows northerly for approximately 1,600 feet to the Pittman Wash. According to the 06-09-BE64P LOMR, the outflow is conveyed to the south side of the Pittman Park Detention Basin. However, according to the LOMR for the Pittman Wash area (LOMR 99-09-211P, refer to Appendix D), the gravel pit outflow combines with the flow in the Pittman Wash just upstream of the existing Pittman Park Detention Basin on the downstream side of the existing Arroyo Grande Boulevard bridge, with a resulting tributary area of 95.68 square miles.

The analysis presented in this CLOMR request shows that the Railroad East Outfall Channel will collect the 100 year flood outflow from the existing gravel pit at the railroad bridge and convey the flow in a reinforced concrete box channel to the existing concrete trapezoidal transition structure located on the downstream side of the existing Arroyo Grande Boulevard bridge at the Pittman Wash. The reinforced concrete box channel facility between the gravel pit and the Pittman Wash ranges in size from a 24'x8' RCB to a 3-20'x9' RCB. Refer to the Railroad East Outfall Channel plans located in Appendix D.

The hydrologic characteristics and flow patterns of the study area have changed considerably in the past several years based on the ongoing development in the area and the construction of CCRFCD Master Plan drainage facilities. The Flood Insurance Study Restudy for Pittman Wash was completed by Nimbus Engineers, Inc. and submitted to FEMA in July 1995 (original Case number 95-09-793P). An addendum to address FEMA comments on the Restudy was submitted to FEMA by Nimbus Engineers, Inc. in August 1996. Following further FEMA comments and discussion between FEMA, CCRFCD, and Nimbus, additional data was compiled and additional analysis was performed for the study. A second addendum dated September 1998 was prepared by Nimbus Engineers, Inc. to address the additional comments and submitted to FEMA. In December 1998, CCRFCD submitted a request for Letter of Map Revision for the Pittman Wash area to FEMA. After addressing further FEMA hydrologic and hydraulic comments, an additional request for Letter of Map Revision for the Pittman Wash area was made. The LOMR for the Pittman Wash area was issued by FEMA on March 21, 2000 (final case number 99-09-211P).

A Letter of Map Revision request, case number 06-09-BE64P, was submitted to FEMA in late 2006 by CVL Consultants, Inc. for the Quest Apartment site (Cornerstone Parcel 1). This LOMR request contained hydrologic and hydraulic analysis of the 1% annual chance flood discharge inundation limits between the existing gravel pit located south of the UPRR tracks and the Pittman Wash approximately 1,600 feet to the north. The flood zone analysis for this LOMR became effective on September 10, 2007

Refer to Figure 1.0 Vicinity Map, Appendix B, for an overall view of the project area and where it is in relation to the Las Vegas Valley. This CLOMR request will analyze and show that the proposed Railroad East Outfall Channel improvements will contain the 100 year flood, and that post-project conditions no longer require certain flood zone delineations that are shown on the current effective FEMA FIRM Panel 2595 dated September 10, 2007.

2.0 HYDROLOGY

The FEMA approved flowrate from the hydrologic analysis provided in LOMR case number 99-09-211P for the Pittman Wash area was used for the hydraulic analysis of the Pittman Wash

performed for this CLOMR request. The FEMA approved flowrate from the hydrologic analysis approved for the Quest Apartment Site (Cornerstone Parcel 1) LOMR case number 06-09-BE64P was used for the hydraulic analysis of the proposed Railroad East Outfall Channel performed for this CLOMR request. Excerpts from the two LOMR studies have been included in Appendix D for reference. The applicable flowrates used for this CLOMR analysis are shown in Table 1 below.

TABLE 1 – FEMA 100 YEAR FLOOD FLOWRATE SUMMARY

FEMA LOMR Case Number[1)]	Hydrologic Model Concentration Point	Location	Tributary Area (sq. mi.)	1% Annual Chance Flood Discharge (cfs)
06-09-BE64P	CPRE130	Inflow to Existing Gravel Pit	15.79	5,880
	PTRE0035	Outflow from Existing Gravel Pit	15.79	2,865
99-09-211P	AGSC	Pittman Wash, just downstream of the Arroyo Grande Blvd bridge	95.68	9,638
	PARK	Sideweir Overflow to the Pittman Park Detention Basin	95.68	988
	PARKDE	Outflow from the Pittman Park Detention Basin	95.68	744
	DETCOM	Pittman Wash, at the Santiago Drive bridge	95.68	9081

[1)] Refer to reference material for each LOMR located in Appendix D.

3.0 HYDRAULICS

Two different hydraulic models were used for this CLOMR analysis. The study area was analyzed as two separate reaches: 1) Pittman Wash between the Arroyo Grande Boulevard bridge and the Santiago Drive bridge; and 2) the Unnamed Tributary to the Pittman Wash between the UPRR bridge and the Pittman Wash. The approved hydraulic model for the reach of the Pittman Wash between the Arroyo Grande Boulevard bridge and the Santiago Drive bridge was performed with the HEC-2 model. A HEC-RAS analysis was performed for this CLOMR request to reanalyze and verify the flood limits within the Pittman Wash between the two

existing bridges. This HEC-RAS model serves as both the Pre-Project Condition and Post-Project Condition models for this request. This is possible because the approved HEC-2 hydraulic analysis for this reach of the Pittman Wash analyzes the flowrate for this reach of the Pittman Wash (hydrologic combination point AGSC) from the upstream end of the reach, at the downstream side of the Arroyo Grande Boulevard bridge, and the proposed Railroad East Outfall Channel will convey the outfall from the existing gravel pit to the existing concrete transition structure on the downstream side of the Arroyo Grande Boulevard bridge. CIVILDESIGN, Corp. WSPGW software, Version 14.05 was used to establish the Post-Project Conditions water surface elevations in the concrete-lined Railroad East Outfall Channel.

3.1 Pre-Project Conditions / Post-Project Conditions – Pittman Wash - HEC-RAS

As discussed above, the proposed channel improvements will convey the outflow from the existing gravel pit to the existing concrete transition structure in the Pittman Wash located on the east side of the Arroyo Grande Boulevard bridge. This flow routing conforms to the current FEMA approved hydrologic and hydraulic analysis that was performed for the Pittman Wash area LOMR (case number 99-09-793P). For this CLOMR request, HEC-RAS was used to reanalyze this reach of the Pittman Wash to verify the flood zone limits through the currently Zone A designated area between the Arroyo Grande Boulevard and Santiago Drive bridges. The HEC-RAS analysis closely reflects the approved HEC-2 model results. Cross sections for the HEC-RAS analysis were taken along the existing earthen channel alignment at spacing between 10 ft and 100 ft based on the available 1-foot contour information. The HEC-RAS model (Pittman.prj) can be found in Appendix C.

3.2 Pre-Project Conditions – Unnamed Tributary to the Pittman Wash - HEC-RAS

The HEC-RAS analysis performed for the recent Quest Apartment site (Cornerstone Parcel 1) LOMR by CVL Consultants, Inc. was referenced as the Pre-Project Conditions analysis for the Unnamed Tributary to the Pittman Wash in this CLOMR request. The flood zone limits and cross-section locations featured in the Quest Apartment site LOMR analysis have been provided on the Pre-Project Conditions Work Map for reference. The FEMA

approved HEC-RAS analysis and HEC-1 model for the Unnamed Tributary to the Pittman Wash is included as a reference in Appendix D.

3.3 Post-Project Conditions – Unnamed Tributary to the Pittman Wash - WSPGW

The Railroad East Outfall Channel facility, from the existing UPRR bridge to the confluence with the Pittman Wash on the east side of Arroyo Grande Boulevard, was modeled using WSPGW (CRRE13.wsw), in conformance with local standards in CCRFCD *Hydrologic Criteria and Drainage Design Manual*. The FEMA 100 year flood flow used in the analysis was 2,865 cfs for the entire reach of the improved channel based on the approved HEC-1 model analysis provided in the recent LOMR for the Quest Apartment Site (Cornerstone Parcel 1), case number 06-09-BE64P. Since the Railroad East Outfall Channel follows a slightly different alignment than the current flood zone in the Unnamed Tributary to the Pittman Wash, a comparison of the Pre-Project and Post-Project Conditions water surface elevation was performed by extending the Pre-Project cross-sections perpendicularly to the flow until they crossed the alignment of the proposed Railroad East Outfall Channel. Using this technique, a comparison of the Pre-Project and Post-Project Conditions water surface elevations through the Unnamed Tributary to the Pittman Wash showed that the water surface elevations were mostly decreased as a result of the improvements. A reach of approximately 300 feet, about 300 feet from the downstream end of the channel improvements did show increased water surface elevations of up to 3.5 feet using this comparison technique. This is a result of the different Pre- and Post-Project Conditions flow alignments, and would not result in an adverse effect on the flood zone since the Post-Project Conditions flow is contained completely within the reinforced concrete box structure. Appendix C contains the Post-Project WSPGW analysis for the Railroad East Outfall Channel and a comparison table with Pre-Project and Post-Project Conditions water surface elevations. The storm drain plan and profile sheets for the Railroad East Outfall Channel are provided in Appendix D.

3.4 Post-Project Conditions – Pittman Park Detention Basin

The Unnamed Tributary to the Pittman Wash is shown in the Quest Apartment site LOMR to convey runoff into the south end of the Pittman Park Detention Basin through the Arroyo

Grande Sports Park. There is currently no separate designation for the flood Zone A resulting from the natural channel flood stage in the Unnamed Tributary to the Pittman Wash and the flood Zone A resulting from the 100-yr flood stage in the existing detention basin, refer to the existing flood zone exhibit in Appendix B. The design model/FEMA approved hydraulic model from LOMR 99-09-211P combines the runoff from the tributary area to the south of the Pittman Wash with the flow already in the Wash at the upstream end of this reach, on the east side of Arroyo Grande Boulevard. This hydrologic and hydraulic analysis was used in the design of the existing Pittman Park Detention Basin. With the flow through the UPRR bridge diverted slightly from the existing natural flow path in the unnamed tributary and conveyed in the Railroad East Outfall Channel, the limit of the flood zone between the Pittman Park Detention Basin and the removed flood zone from the Unnamed Tributary to the Pittman Wash would be the 100-yr stage within the Pittman Park Detention Basin. According to the hydrologic analysis from the Pittman Wash area LOMR, the 100-yr stage in the Pittman Park Detention Basin is 1834.20. The southern limit of the flood zone within the Pittman Park Detention Basin has been modified accordingly for this CLOMR request to reflect a stage in the detention basin of 1834.20 based on 1-ft contour information.

4.0 RESULTS

The post-project analysis discussed above and presented in the Appendix shows that the channel improvements will collect the 1% annual chance flood discharge that is conveyed through the UPRR bridge at the outfall of the existing gravel pit and convey the flow northerly to the existing concrete transition structure on the east side of the existing Arroyo Grande Boulevard bridge in the Pittman Wash. The FEMA approved hydraulic model for this reach of the Pittman Wash analyzed this reach of the Pittman Wash, from Arroyo Grande Boulevard to Santiago Drive, using the flowrate from the hydrologic combination point at the downstream end of the reach (HEC-1 point AGSC at the Pittman Wash / Santiago Drive intersection). The current base flood elevations in the Pittman Wash will not be affected by these channel improvements, since the improvements are in compliance with the routing used in the approved analysis. This Pittman Wash reach was analyzed with HEC-RAS for this CLOMR request to verify the current flood

inundation limits. The HEC-RAS model serves as the Pre-Project and Post-Project Conditions analysis for this reach of the Pittman Wash, and the results of the HEC-RAS analysis are presented on the Pre-Project Conditions and Post-Project Conditions Work Maps (Figures 3.2 and 3.3) located in Appendix B. The HEC-RAS and CHECK-RAS analysis is included in Appendix C.

The 100-yr stage within the Pittman Park Detention that was calculated in the FEMA approved hydrologic analysis was used to determine the resulting flood zone limits after the removal of the flood zone from the Unnamed Tributary to the Pittman Wash. The limit of the flood zone for the 100-yr stage elevation of 1834.20 was delineated on the Post-Project Condition Work Map using 1-foot contour information. As shown on the Post-Project Condition Work Map, mapping the Zone A limit to the 1834.20 contour resulted in delineation of three small areas (approximately 0.537 acres total) of new Zone A flood zone within the footprint of the existing CCRFCD Master Plan Pittman Park Detention Basin. Since the current Zone A flood zone delineation does not appear to follow the existing topography in this location, the revised flood zone limits within the detention basin based on the approved hydrologic analysis and 1-foot contour information would be a better representation of the Zone A limit.

A summary comparison table of the Pre-Project Conditions analysis for the Unnamed Tributary to the Pittman Wash performed by CVL Consultants, Inc. and Post-Project Condition water surface elevations in the Railroad East Outfall Channel analyzed with WSPGW has been provided in Appendix C. The approved HEC-1 models for the Pittman Wash Area LOMR (Pittman Wash and Pittman Park Detention Basin) and the Quest Apartment Site LOMR (Unnamed Tributary to the Pittman Wash) have been provided in Appendix D for reference.

5.0 CONCLUSION

The data and calculations provided in this CLOMR request show that the 100 year flood flow will be contained in the proposed concrete box channel improvements and that the existing FEMA FIRM Panel 2595 dated, September 10, 2007, should be revised to reflect the conveyance of the 1% annual chance flood discharge within the flood control facility. See Figure 3.1,

Appendix B, to view the annotated FEMA flood zone map. Figure 3.2 is the Pre-Project Conditions Work Map and Figure 3.3 is the Post-Project Conditions Work Map.

6.0 REFERENCES

1. Clark County Regional Flood Control District, *Hydrologic Criteria and Drainage Design Manual*, August 1999.

2. Clark County Regional Flood Control District, *Flood Control Master Plan Update of the Las Vegas Valley*, 2002 – by PBS&J, G.C. Wallace, and Louis Berger Group.

3. 90% Design Report for the Railroad East Detention Basin, December 2002, by VTN Nevada.

4. Pittman Wash Flood Insurance Study Restudy, by Nimbus Engineers, Inc., June 1995, August Addendum,

5. Letter of Map Revision – Case Number 99-09-211P – Pittman Wash Area - including Pittman Channel, the Warm Springs Road and Santiago Road bridges, and Pittman Park Detention Basin along Pittman Wash, effective date March 21, 2000.

6. Letter of Map Revision – Case Number 06-09-BE64P – Unnamed Tributary to Pittman Wash – from approximately 1,300 feet upstream to approximately 2,900 feet upstream of Santiago Drive, effective date September 10, 2007.

7. Water Surface and Pressure Gradient Hydraulic Analysis System (WSPG) User Manual, April 1979.

Conditional Letter of Map Revision **Railroad East Outfall Channel**

Appendix A
FEMA Forms



FEMA ‘OVERVIEW & CONCURRENCE FORM’
– MT-2 FORM 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☒ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
320005	CITY OF HENDERSON CLARK COUNTY, UNINCORPORATED AREAS	NV	32003C	2595E	09/27/02
320003	CITY OF HENDERSON CLARK COUNTY, UNINCORPORATED AREAS	NV	32003C	2595E	09/10/07

2. Flooding Source: Unnamed Tributary to Pittman Wash

3. Project Name/Identifier: Railroad East Outfall Channel

4. FEMA zone designations affected: A AND X (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data

☐ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☒ Channelization	☐ Levee/Floodwall	☒ Bridge/Culvert
	☐ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included?	☒ Yes	Fee amount: $4,400
	☐ No, Attach Explanation	

Please see the FEMA Web site at http://www.fema.gov/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Jeffrey Griest, P.E.	Company: VTN Nevada	
Mailing Address: 2727 S. Rainbow Blvd. Las Vegas, Nevada 89146	Daytime Telephone No.: 702 253-2373	Fax No.: 702 247-4262
	E-Mail Address: jeffg@vtnnv.com	
Signature of Requester (required):		Date: 11/27/07

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: JOSEPH DAMIANI, P.E. PROJECT MANAGER		Telephone No.: 702 267-3050
Community Name: City of Henderson	Community Official's Signature (required): Joseph V. Damiani	Date: 11/27/07

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Jeffrey Griest, P.E.	License No.: NV 17156	Expiration Date: 12-31-07
Company Name: VTN Nevada	Telephone No.: 702 253-2373	Fax No.: 702 247-4262
Signature:		Date: 11/27/07

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (Optional)

FEMA ‘RIVERINE HYDROLOGY & HYDRAULICS FORM’

– MT-2 FORM 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Unnamed Tributary to the Pittman Wash
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	Pittman Wash	1700 (32+50.00)	1851.67	N/A
Upstream Limit	Outfall of Existing Gravel Pit	HEC-RAS sta 3200	1893.96	1893.96

2. Hydraulic Method Used

Hydraulic Analysis WSPGW & HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name: N/A	Floodway File Name: N/A
Corrected Effective Model*	Natural File Name: N/A	Floodway File Name: N/A
Existing or Pre-Project Conditions Model	Natural File Name: quest apartment.prj	Floodway File Name: N/A
Revised or Post-Project Conditions Model	Natural File Name: CRRE13.wsw	Floodway File Name: N/A
Other - (attach description)	Natural File Name: N/A	Floodway File Name: N/A

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☒ Yes ☐ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Pittman Wash
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☒ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	Santiago Drive	-3400	1830.12	1830.12
Upstream Limit	Arroyo Grande Boulevard	-2100	1851.88	1851.88

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name: N/A	Floodway File Name: N/A
Corrected Effective Model*	Natural File Name: N/A	Floodway File Name: N/A
Existing or Pre-Project Conditions Model	Natural File Name: Pittman.prj	Floodway File Name: N/A
Revised or Post-Project Conditions Model	Natural File Name: Pittman.prj	Floodway File Name: N/A
Other - (attach description)	Natural File Name: N/A	Floodway File Name: N/A

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEMA ‘RIVERINE STRUCTURES FORM’
– MT-2 FORM 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

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Flooding Source: Unnamed Tributary to Pittman Wash
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. Name of Structure: 85' x 7' Rectangular Channel

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Upstream end of the proposed improvements, approx. 600 ft south of Arroyo Grande Park

Downstream Limit/Cross Section: WSPGW sta 10+45.37

Upstream Limit/Cross Section: WSPGW sta 10+30.00

2. Name of Structure: Transition Structure

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Approx. at U.P.R.R. Bridge, 1000' SE of Arroyo Grande and American Pacific intersection

Downstream Limit/Cross Section: WSPGW sta 11+58.20

Upstream Limit/Cross Section: WSPGW sta 10+45.37

3. Name of Structure: 3-20'x9' RCB

Type (check one) ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: NW of U.P.R.R. Bridge, 900' SE of Arroyo Grande and American Pacific intersection

Downstream Limit/Cross Section: WSPGW sta 12+08.20

Upstream Limit/Cross Section: WSPGW sta 11+58.20

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: 85' x 7' Rectangular Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Open Channel
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☐ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: Transition Structure

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Open Concrete Transition Structure With Piers
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: 3-20'x9' RCB

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Box
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

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Flooding Source: Unnamed Tributary to Pittman Wash
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

4. Name of Structure: RCB Transition Structure #1

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Approx. 850' SE of Arroyo Grande and American Pacific intersection

Downstream Limit/Cross Section: WSPGW sta 13+88.20

Upstream Limit/Cross Section: WSPGW sta 12+08.20

5. Name of Structure: 2-18'x8' RCB

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Just east of Arroyo Grande Blvd. and American Pacific Dr. intersection

Downstream Limit/Cross Section: WSPGW sta 26+17.59

Upstream Limit/Cross Section: WSPGW sta 13+88.20

6. Name of Structure: RCB Transition Structure #2

Type (check one) ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Approx. 550' north of Arroyo Grande Blvd. and American Pacific Dr. intersection

Downstream Limit/Cross Section: WSPGW sta 27+22.59

Upstream Limit/Cross Section: WSPGW sta 26+17.59

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: RCB Transistion #1

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Box Channel
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: 2-18'x8' RCB

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Box Channel
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: RCB Transition Structure #2

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Box Channel
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 7 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Unnamed Tributary to Pittman Wash
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

7. Name of Structure: 24'x8' RCB

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Approx. 650' north of Arroyo Grande Blvd. and American Pacific Dr. intersection

Downstream Limit/Cross Section: WSPGW sta 32+50.00

Upstream Limit/Cross Section: WSPGW sta 27+22.59

8. Name of Structure: RCB Outlet Structure

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Pittman Wash and Arroyo Grande Blvd. bridge outlet transition

Downstream Limit/Cross Section: WSPGW sta 32+92.92

Upstream Limit/Cross Section: WSPGW sta 32+50.00

9. Name of Structure:

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: 24'x8' RCB

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Box Channel
- ☐ Drop structures
- ☐ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Tributary to Pittman Wash

Name of Structure: RCB Outlet Structure

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Trapezoidal Channel
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2865 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

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Flooding Source: Pittman Wash
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. Name of Structure: Transition Structure

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: Just east of the Arroyo Grande Blvd. bridge

Downstream Limit/Cross Section: HEC-RAS sta 2233.54

Upstream Limit/Cross Section: HEC-RAS sta 2100

2. Name of Structure:

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

3. Name of Structure:

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Pittman Wash

Name of Structure: Transition Structure

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): Reinforced Concrete Trapezoidal Channel
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 9638 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☒ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☒ At Drop Structures ☒ At Transitions
☐ Other locations (specify):

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

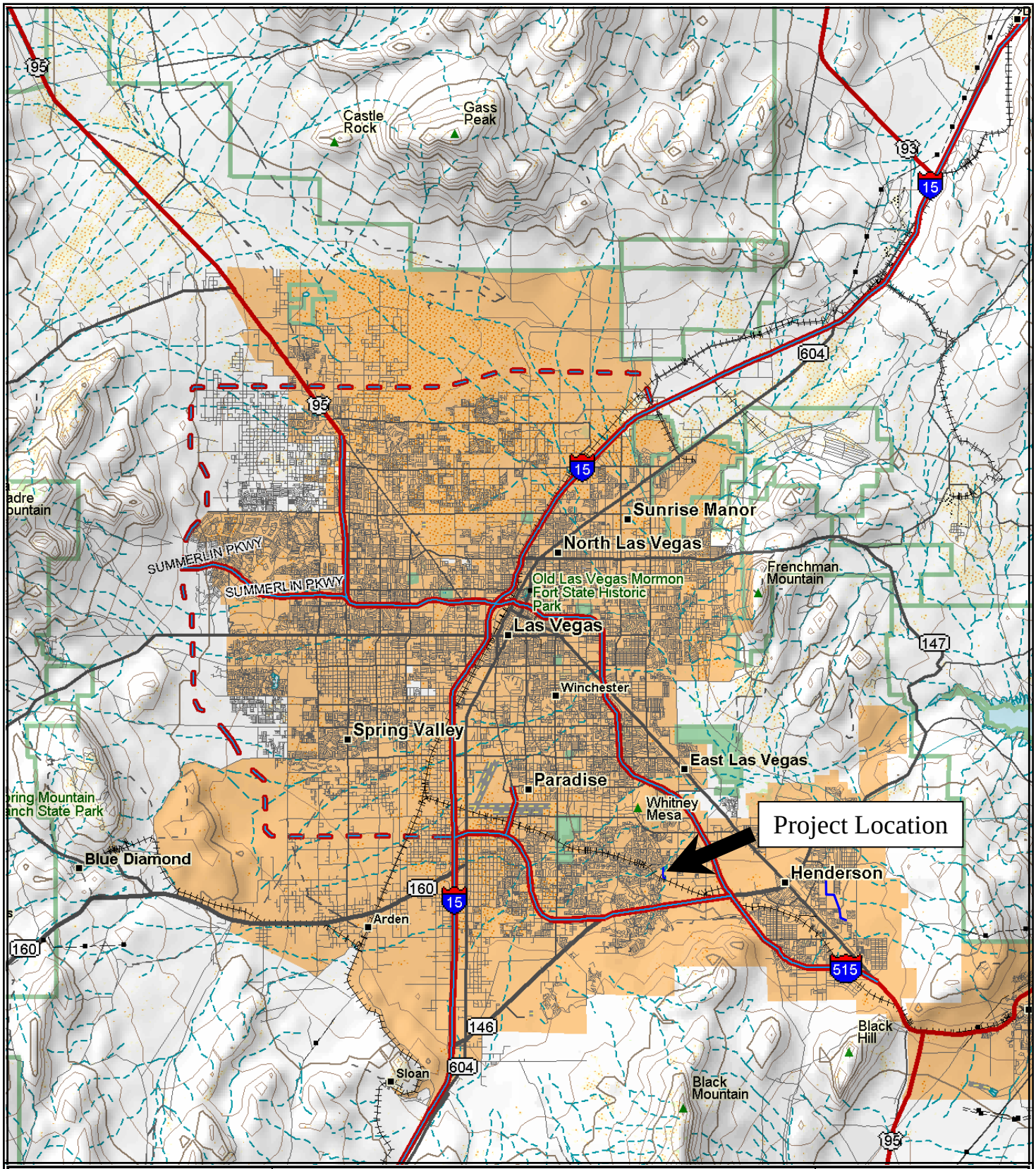
Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

Conditional Letter of Map Revision **Railroad East Outfall Channel**

Appendix B
Figures



RAILROAD EAST OUTFALL CHANNEL
VICINITY MAP
-FIGURE 1.0



	Vicinity Map Railroad East Outfall Channel	Figure 1 11/29/07

2002 CCRFCD MASTER PLAN UPDATE FACILITIES MAP

- FIGURE F-21



2002 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert
- Bridge
- Pipeline
- Lined Channel
- Unlined Channel
- Dike
- Natural Wash
- ID-Mile Separator

N, W, E, S

0 1,000 2,000 3,000 4,000 5,000 Feet

SCALE: 1 inch = 3000 feet

US95 I-15 I-215

1	2			
3	4	5	6	
7	8	9	10	
11	12	13	14	
15	16	17	18	
19	20	21	22	
23	24	25	26	
27	28	29		

FLOOD CONTROL FACILITIES

FIGURE F-21

PBS&J

G. C. WALLACE, INC.

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BDBE		BLUE DIAMOND AT BELTWAY						
0000	E	Conc Chnl 20'W 6'D 2:1 SS	860	969	CDCC140	DUCK3	3.70	0.77
0015	E	2: 10' X 4' RCBC @ Robindale	140	969	CDCC140	DUCK3	3.70	0.60
0018	E	Conc Chnl 20'W 6'D 2:1 SS	2760	969	CDCC140	DUCK3	3.70	0.77
0068	E	2: 7' X 3' RCBC @ Paradise/Warm Springs	350	785	CDCC135	DUCK3	3.35	0.77
0074	E	Conc Chnl 15'W 3'D 2:1 SS	510	565	CDCC135N	DUCK3	2.96	0.77
0084	E	10' X 4' RCB	1050	565	CDCC135N	DUCK3	2.96	0.77
0104	E	Conc Chnl 10'W 3'D 2:1 SS	1430	518	CDCACDB	DUCK3	2.76	0.77
0134	E	2: 60" RCP @ Airport Connector	290	518	CDCACDB	DUCK3	2.76	1.48
BDWA		BLUE DIAMOND WASH						
0000	E	Conc Chnl 20'W 6'D 0:1 SS	1520	1331	CDCC070W	DUCK3	2.52	1.00
0030	E	3: 10' X 5.5' RCBC @ Paradise	150	1331	CDCC070W	DUCK3	2.52	1.30
0031	E	Conc Chnl 10'W 8'D 0-1:1 SS	2725	1331	CDCC070W	DUCK3	2.52	0.63
0059	E	3: 8' X 4' RCBC @ Robindale	150	1331	CDCC070W	DUCK3	2.52	1.40
0060	E	Conc Chnl 20'W 8'D 0:1 SS	380	1331	CDCC070W	DUCK3	2.52	2.72
0085	E	2: 10' X 4' RCBC @ Amigo	50	1073	CBUB310	DUCK3	2.12	1.80
0086	E	Natural Wash	1570	1073	CBUB310	DUCK3	2.12	
0086	P1	10' X 5' RCB	1570	1073	CBUB310	DUCK3	2.12	3.00
0111	E	36" CMP @ Bermuda	50	1073	CBUB310	DUCK3	2.12	1.60
0111	P1	Replace with 10' X 6' RCB	50	1073	CBUB310	DUCK3	2.12	1.60
0112	E	Natural Wash	1310	1073	CBUB310	DUCK3	2.12	
0112	P1	10' X 5' RCB	1310	1073	CBUB310	DUCK3	2.12	3.00
0137	E	24", 36", and 54" CMP @ Placid	50	1073	CBUB310	DUCK3	2.12	1.40
0137	P1	Replace with 10' X 6' RCB	50	1073	CBUB310	DUCK3	2.12	1.40
0138	E	Natural Wash	1880	881	CBUB300	DUCK3	1.64	
0138	P1	10' X 5' RCB	1880	881	CBUB300	DUCK3	1.64	2.50
DCBD		DUCK CREEK / BLUE DIAMOND						
0000	E	Conc Chnl 10'W 5'D 1.6:1 SS	770	1976	CBUB360W	DUCK4	11.11	1.73
0016	E	Single Span Bridge 26'W 8.5'D @ Vision	60	1976	CBUB360W	DUCK4	11.11	2.10
0017	E	Conc Chnl 10'W 5'D 1.6:1 SS	1015	1976	CBUB360W	DUCK4	11.11	1.73
0032	E	Single Span Bridge 26'W 8.5'D @ Vista Twilight	40	1976	CBUB360W	DUCK4	11.11	1.80
0033	E	Conc Chnl 10'W 5'D 1.6:1 SS	615	1976	CBUB360W	DUCK4	11.11	1.73
0046	E	Single Span Bridge 26'W 8.5'D @ Amigo	50	1976	CBUB360W	DUCK4	11.11	2.20
0047	E	12' X 10' RCB	1160	1976	CBUB360W	DUCK4	11.11	2.50
0065	E	1: 12' X 10' RCBC @ Bermuda	310	1892	CBUB350	DUCK4	10.85	2.23
0073	E	Natural Wash	630	1892	CBUB350	DUCK4	10.85	
0073	P1	Conc Chnl 25'W 5'D 2:1 SS	630	1892	CBUB350	DUCK4	10.85	1.40
0082	E	4: 48" RCP @ Fairfield	80	1892	CBUB350	DUCK4	10.85	1.10
0082	P0	Replace with 2: 14' X 6' RCBC @ Fairfield	80	1892	CBUB350	DUCK4	10.85	
0083	E	Natural Wash	4750	1892	CBUB350	DUCK4	10.85	
0083	P1	Conc Chnl 20'W 5.5'D 2:1 SS	4750	1892	CBUB350	DUCK4	10.85	1.10
DCEA		DUCK CREEK - EASTERN BRANCH						
0000	P1	12' X 5.5' RCB	2000	645	CDCC280S	DUCK3	1.01	1.50
DCGL		DUCK CREEK GILESPIE CHANNEL						
0000	E	Natural Wash	1900	1811	CDLD460	DUCK3	2.56	
0000	P2	Conc Chnl 32'W 6'D 0:1 SS	1900	1811	CDLD460	DUCK3	2.56	0.80
0035	P2	2: 16' X 4' RCBC @ Silverado Ranch	60	1811	CDLD460	DUCK3	2.56	0.90
0036	E	Natural Wash	1111	1811	CDLD460	DUCK3	2.56	
0036	P1	Conc Chnl 35'W 4'D 0:1 SS	1111	1811	CDLD460	DUCK3	2.56	0.80
0057	E	Conc Chnl 32'W 9.0'D 3:1 SS	1580	841	CDLD460S	DUCK3	1.10	0.20
0086	E	4: 8' X 5' RCBC @ E Pyle Ave	60	841	CDLD460S	DUCK3	1.10	1.20
0087	E	Natural Wash	1080	841	CDLD460S	DUCK3	1.10	
0087	P1	Conc Chnl 32'W 3.5'D 3:1 SS	1080	841	CDLD460S	DUCK3	1.10	0.90
0106	E	3: 8' X 4' RCBC @ La Cienega	80	841	CDLD460S	DUCK3	1.10	0.50
0107	E	Conc Chnl 12'W 7'D 2:1 SS	310	567	CDLD450	DUCK3	0.75	1.30
0112	E	2: 10' X 4' RCBC @ E Frias Ave	60	567	CDLD450	DUCK3	0.75	0.50
0113	E	Conc Chnl 12'W 7'D 2:1 SS	490	567	CDLD450	DUCK3	0.75	2.40
DCPA		DUCK CREEK - PATRICK COLLECTOR						
0000	E	Parallel 78" & 66" RCP	450	1333	CDCC340W	DUCK3	1.57	1.50
0001	P0	Add 1: 66" RCP	450	1333	CDCC340W	DUCK3	1.57	1.50
0008	P0	Add 1: 11' X 6' RCB	2210	1333	CDCC340W	DUCK3	1.57	1.00
0009	E	Parallel 54" & 66" RCP	2210	1333	CDCC340W	DUCK3	1.57	1.00
0050	P0	Add 1: 14' X 5' RCB	2860	1333	CDCC340W	DUCK3	1.57	0.80
0051	E	66" RCP	2860	1333	CDCC340W	DUCK3	1.57	0.80
0104	P0	Add 1: 8' X 5' RCB	2650	406	DCC370	DUCK3	0.53	0.40
0105	E	60" RCP	2650	406	DCC370	DUCK3	0.53	0.40
0106	E	48" RCP	1360	449	DCC330	DUCK3	0.51	0.50
0107	P0	Add 1: 9' X 4' RCB	1360	449	DCC330	DUCK3	0.51	0.50
DCPI		DUCK CREEK PINE STREET						
0000	E	1: 12' X 4' RCB	1360	785	CDCC310S	DUCK3	1.21	0.60
DCRH		DUCK CREEK - RAWHIDE CHANNEL						
0306	E	Earth Chnl 15'W 4.6'D 1:1 SS	1090	535	CDMC060	DUCK3SC	0.60	0.70
0306	P1	Conc Chnl 12'W 4.5'D 1.5:1 SS	1090	535	CDMC060	DUCK3SC	0.60	0.70
0329	E	2: 36" RCP @ Oquendo Rd	60	535	CDMC060	DUCK3SC	0.60	0.60
0329	P0	Replace with 3: 7' X 5' RCBC @ Oquendo Rd	60	535	CDMC060	DUCK3SC	0.60	0.60
0330	E	Earth Chnl 4.6'D 15'W 1:1 SS	860	535	CDMC060	DUCK3SC	0.60	0.70
0330	P1	Conc Chnl 12'W 4.5'D 1.5:1 SS	860	535	CDMC060	DUCK3SC	0.60	0.70
0346	E	3: 18" RCP @ Burnham Rd	60	535	CDMC060	DUCK3SC	0.60	0.60
0346	P0	Replace with 1: 10' X 7' RCBC @ Burnham Rd	60	535	CDMC060	DUCK3SC	0.60	0.60
DCSP		DUCK CREEK - SUNSET PARK						
0000	P1	1: 11' X 6' RCB	8200	784	CDCC230	DUCK3	1.47	0.70
DCWA		DUCK CREEK WASH						
0520	E	Natural Wash	3660	5826	CDCC360	DUCK5SC	21.47	
0520	P1	Gabion Chnl 75'W 6.5'D 2:1 SS	3660	5826	CDCC360	DUCK5SC	21.47	1.80
0580	P1	Conc Chnl 50'W 6.5'D 2:1 SS	230	5743	CDCC190*	DUCK5SC	19.15	0.76
0594	E	2 Span Bridge 130'W 15'D @ GVP/Patrick	70	5743	CDCC190*	DUCK5SC	19.15	1.40
0597	E	Natural Wash	2500	5743	CDCC190*	DUCK5SC	19.15	
0597	P1	Gabion Chnl 65'W 7'D 2:1 SS	2500	5743	CDCC190*	DUCK5SC	19.15	1.60
0646	E	3 Span Bridge 45'W 15'D @ Sunset	100	5743	CDCC190	DUCK5SC	19.15	1.70
0647	E	Earth Chnl 50'W 15'D 2:1 SS	600	5743	CDCC190	DUCK5SC	19.15	1.00
0647	P1	Conc Chnl 50'W 6.5'D 2:1 SS	600	5743	CDCC190	DUCK5SC	19.15	1.00
0654	E	Free Span Bridge 40'W 15'D 3:1 SS	50	5743	CDCC190	DUCK5SC	19.15	1.00
0655	E	Earth Chnl 50'W 15'D 2:1 SS	790	5743	CDCC190	DUCK5SC	19.15	0.60
0655	P1	Conc Chnl 50'W 7.5'D 2:1 SS	790	5743	CDCC190	DUCK5SC	19.15	0.60
0668	E	Free Span Bridge 40'W 15'D 3:1 SS @ Sunfire	40	5743	CDCC190	DUCK5SC	19.15	1.00
0669	E	Natural Wash	1120	5743	CDCC190	DUCK5SC	19.15	
0669	P1	Conc Chnl 28'W 8'D 2:1 SS	1120	5743	CDCC190	DUCK5SC	19.15	1.29
0695	E	Drop Structure		5416	CDCC240	DUCK5SC	17.96	
0696	E	Conc Chnl 28'W 8'D 2:1 SS	150	5416	CDCC240	DUCK5SC	17.96	1.29
0698	E	Drop Structure		5416	CDCC240	DUCK5SC	17.96	
0699	E	Conc Chnl 28'W 8'D 2:1 SS	150	5416	CDCC240	DUCK5SC	17.96	1.29
0701	E	Drop Structure		4982	CDCC240S	DUCK5SC	16.49	
0702	E	Conc Chnl 28'W 8'D 2:1 SS	3340	4982	CDCC240S	DUCK5SC	16.49	1.20
0762	E	Single Span Bridge 42'W 8'D @ Pecos	100	4923	CDCC310	DUCK5SC	16.09	1.10
0763	E	Earth/Conc Chnl 32'W 8'D 0:1 SS	220	4923	CDCC310	DUCK5SC	16.09	1.10
0763	P1	Conc Chnl 32'W 8'D 0:1 SS	220	4923	CDCC310	DUCK5SC	16.09	1.10
0767	E	2 Span Bridge 32'W 7.0'D	20	4923	CDCC310	DUCK5SC	16.09	1.98
0768	E	Conc Chnl 32'W 10'D 0:1 SS	200	4923	CDCC310	DUCK5SC	16.09	1.50
0772	E	Conc Chnl 30'W 6.5'D 0:1 SS	800	4831	CDCC285	DUCK5SC	14.88	2.00

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
DCWA		DUCK CREEK WASH -- continued						
0785	E	2 Span Bridge 50'W 8'D @ Tomiyasu	60	4831	CDCC285	DUCK5SC	14.88	1.30
0786	E	Conc Chnl 50'W 7.0'D 0:1 SS	1150	4831	CDCC285	DUCK5SC	14.88	0.80
0814	E	Single Span Bridge 50'W 7.5'D @ Miravista	50	4831	CDCC285	DUCK5SC	14.88	1.30
0815	E	Conc Chnl 50'W 7.0'D 0:1 SS	480	4831	CDCC285	DUCK5SC	14.88	1.15
0824	E	Single Span Bridge 50'W 7.5'D @ La Casita	50	4831	CDCC285	DUCK5SC	14.88	1.30
0825	E	Conc Chnl 50'W 7.0'D 0:1 SS	780	4831	CDCC285	DUCK5SC	14.88	0.60
0840	E	2 Span Bridge 50'W 8.0'D	50	4831	CDCC285	DUCK5SC	14.88	1.20
0841	E	Conc Chnl 50'W 7.0'D 0:1 SS	230	4831	CDCC285	DUCK5SC	14.88	1.90
0845	E	3 Span Bridge 90'W 7'D @ UPRR	20	4831	CDCC285	DUCK5SC	14.88	1.50
0846		Natural Wash	130	4831	CDCC285	DUCK5SC	14.88	
0846	P1	Gabion Chnl 70'W 8'D 2:1 SS	130	4831	CDCC285	DUCK5SC	14.88	0.80
0847	E	4: 14.5' X 9.5' RCBC @ Warm Springs	100	4831	CDCC285	DUCK5SC	14.88	0.60
0848	E	Natural Wash	300	4831	CDCC285	DUCK5SC	14.88	
0848	P1	Gabion Chnl 60'W 9'D 2:1 SS	300	4831	CDCC285	DUCK5SC	14.88	0.70
0849	E	Dip Section @ Topaz	60	4831	CDCC285	DUCK5SC	14.88	
0849	P1	2 Span Bridge 100'W 7.5'D @ Topaz	60	4831	CDCC285	DUCK5SC	14.88	0.60
0850	P1	Gabion Chnl 65'W 8.5'D 2:1 SS	1320	4831	CDCC285	DUCK5SC	14.88	0.70
0883	E	4: 14' X 10' RCBC @ Eastern	100	4800	CDCC280	DUCK5SC	14.69	0.70
0884	E	Earth Chnl 65'W 5'D 2:1 SS	720	4800	CDCC280	DUCK5SC	14.69	0.68
0884	P1	Gabion Chnl 60'W 9'D 2:1 SS	720	4800	CDCC280	DUCK5SC	14.69	0.68
0898	E	Conc Chnl 100'W 10'D 0:1 SS	710	4467	CDCC280W	DUCK5SC	13.68	0.60
0912	E	Earth Chnl 55'W 5'D 4:1 SS	700	4467	CDCC280W	DUCK5SC	13.68	0.70
0912	P1	Gabion Chnl 60'W 8.5'D 2:1 SS	700	4467	CDCC280W	DUCK5SC	13.68	0.65
0925	E	4: 14' X 7' RCBC @ Eldorado Lane	70	4467	CDCC280W	DUCK5SC	13.68	0.65
0926	E	Earth Chnl 45'W 5'D 4:1 SS	815	4467	CDCC280W	DUCK5SC	13.68	0.68
0926	P1	Gabion Chnl 60'W 8.5'D 2:1 SS	815	4467	CDCC280W	DUCK5SC	13.68	0.65
0941	P1	4: 14' X 8' RCBC @ Sur Este Ave	70	4445	CDCC270	DUCK5SC	13.57	0.60
0942	E	Earth Chnl 45'W 5'D 4:1 SS	300	4445	CDCC270	DUCK5SC	13.57	0.68
0942	P1	Conc Chnl 45'W 6.5'D 2:1 SS	300	4445	CDCC270	DUCK5SC	13.57	0.60
0948	E	7: 10' X 6' RCBC @ Spencer	80	4445	CDCC270	DUCK5SC	13.57	0.60
0949	E	Earth/Conc Chnl 70'W 6'D 2:1 SS	650	4445	CDCC270	DUCK5SC	13.57	0.68
0949	P1	Conc Chnl 70'W 5.5'D 2:1 SS with Concrete Bottom	650	4445	CDCC270	DUCK5SC	13.57	0.68
0965	E	6: 14' X 6' RCBC @ Robindale	80	4445	CDCC270	DUCK5SC	13.57	1.00
0966	E	Earth/Conc Chnl 70'W 6'D 2:1 SS	820	4445	CDCC270	DUCK5SC	13.57	0.53
0966	P1	Conc Chnl 70'W 5.5'D 2:1 SS with Concrete Bottom	820	4445	CDCC270	DUCK5SC	13.57	0.53
0979	E	Conc Chnl 70'W 6'D 2:1 SS	880	4445	CDCC270	DUCK5SC	13.57	1.00
0994	E	Single Span Bridge @ Beltway	170	4375	CDCC070S*	DUCK3SC	7.03	1.30
0997	E	Conc Chnl 70'W 6'D 2:1 SS	80	4375	CDCC070S*	DUCK3SC	7.03	1.00
0999	E	Conc Chnl 70'W 6'D 2:1 SS	140	4375	CDCC070S*	DUCK3SC	7.03	1.00
1003	E	Conc Chnl 70'W 6'D 2:1 SS	1140	4375	CDCC070S*	DUCK3SC	7.03	1.00
1021	E	3 Span Bridge 80'W 8'D @ Paradise/Marvland Pkwy	100	4375	CDCC070S	DUCK3SC	7.03	1.40
1023	E	Conc Chnl 70'W 6'D 2:1 SS	1130	4375	CDCC070S	DUCK3SC	7.03	1.10
1045	E	Conc Chnl 70'W 6'D 2:1 SS	30	4375	CDCC070S	DUCK3SC	7.03	1.10
1047	E	Single Span Bridge 45'W 10'D @ Windmill	120	4196	CBUB360	DUCK3SC	6.51	1.20
1049	E	Conc Chnl 12'W 15'D 1:1 SS	2150	2015	CBUB360S	DUCK3SC	3.07	1.51
1090	E	2 Span Bridge 80'W 25'D @ Pollock	80	2015	CBUB360S	DUCK3SC	3.07	2.10
1091	E	Conc Chnl 12'W 15'D 3:1 SS; 3.5' d/s	200	2015	CBUB360S	DUCK3SC	3.07	1.51
1102	E	Drop Structure		2015	CBUB360S	DUCK3SC	3.07	
1103	E	Conc Chnl 12'W 15'D 3:1 SS	200	2015	CBUB360S	DUCK3SC	3.07	1.51
1106	E	Drop Structure		2015	CBUB360S	DUCK3SC	3.07	
1107	E	Conc Chnl 12'W 15'D 3:1 SS	590	2015	CBUB360S	DUCK3SC	3.07	1.51
1121	E	Drop Structure		1833	CDCC050	DUCK3SC	2.74	
1122	E	Conc Chnl 20'W 20'D 3:1 SS	480	1833	CDCC050	DUCK3SC	2.74	0.50
1136	E	Conc Chnl 20'W 20'D 3:1 SS	2400	1833	CDCC050	DUCK3SC	2.74	1.51
1144	E	2 Span Bridge 100'W 9'D @ Pebble	100	1247	CDCC030	DUCK3SC	1.83	0.70
1165	E	Conc Chnl 30'W 8'D 2:1 SS	180	1247	CDCC030	DUCK3SC	1.83	1.51
1169	E	Conc Chnl 46'W 10'D 1.5:1 SS	2680	1247	CDCC030	DUCK3SC	1.83	0.90
1210	E	5: 15' X 8.5' RCBC @ Bermuda	100	725	CDCC02B	DUCK3SC	1.00	0.52
1212	E	Conc Chnl 80'W 8'D 0:1 SS	300	725	CDCC02B	DUCK3SC	1.00	0.86
1214	E	121.300 cfs PMF Spillway		121300	CLDLCDB	DUCK5SC	16.16	
1215	E	54" RCP Outlet	20	355	LDCDB	DUCK5SC	16.16	
1216	E	1,235 ac-ft Lower Duck Creek Detention Basin		5259	CDLDCDB	DUCK5SC	16.16	
1241	E	Natural Wash	540	4271	CDLD37B*	DUCK3SC	6.41	
1241	P2	2: 20' X 7' RCB	540	4271	CDLD37B*	DUCK3SC	6.41	1.94
MCE2		MCCARRAN - EAST BRANCH 2						
0000	E	48" RCP Outlet	3560	75	CDMCDB	DUCK3	1.78	0.70
0056	E	100-ac ft McCarran Detention Basin		1190	CDMC050	DUCK3	1.78	
PTAP		PITTMAN ANTHEM PARKWAY						
0000	P1	Conc Chnl 20'W 4.5'D 2:1 SS	100	1901	CPPE140	PIT3	2.18	5.00
0002	E	2: 8' X 8' RCBC @ St. Rose Pkwy	150	1901	CPPE140	PIT3	2.18	1.50
0005	E	Rip Rap Chnl 30'W 5'D 3:1 SS	525	1901	CPPE140	PIT3	2.18	1.30
0005	P1	Conc Chnl 20'W 5'D 2:1 SS	525	1901	CPPE140	PIT3	2.18	1.90
PTBL		PITTMAN WASH - BELTWAY						
0000	P1	Conc Chnl 50'W 6.5'D 2:1 SS	1000	5519	CPWA090	PIT3SC	7.93	0.70
0026	E	4: 12' X 8' RCBC @ I-215	360	5519	CPWA090	PIT3SC	7.93	1.00
0028	E	6: 12' X 8' and 1: 8' X 8' RCBC @ I-215	160	2224	CPWA085	PIT3SC	5.15	1.00
0034	E	Conc Chnl 12'W 6'D 2:1 SS	730	2224	CPWA085	PIT3SC	5.15	1.00
0053	E	12' X 6' RCB	860	2224	CPWA085	PIT3SC	5.15	1.70
0069	E	2: 13' X 6' RCB	1400	2224	CPWA085	PIT3SC	5.15	1.00
0095	P1	2: 13' X 6' RCB	590	1979	CPPE195	PIT3SC	5.39	1.00
0107	E	4: 72" RCP @ Silverado Ranch	600	1979	CPPE195	PIT3SC	5.39	2.00
0118	E	2: 11' X 6.2' Concrete Arch	1380	1979	CPPE195	PIT3SC	5.39	1.10
0144	E	Conc Chnl 25'W 6'D 0:1 SS	100	1979	CPPE195	PIT3SC	5.39	1.00
0146	E	2: 12' X 8' RCB	240	1768	NORTH	PIT3SC	5.15	1.00
0150	E	Conc Chnl 25'W 5.5'D 0:1 SS	40	1768	NORTH	PIT3SC	5.15	1.00
0151	E	2: 14' X 6' RCBC @ St. Rose Pkwy	40	1768	NORTH	PIT3SC	5.15	1.00
0157	E	Conc Chnl 25'W 5.5'D 0:1 SS	310	1768	NORTH	PIT3SC	5.15	1.00
PTBM		PITTMAN WASH - BLACK MOUNTAIN						
0000	E	2: 10' X 8' RCBC @ I-215	290	1589	CPRE060	PIT3	1.38	1.70
0005	E	Conc Chnl 20'W 4.5'D 2:1 SS	570	1589	CPRE060	PIT3	1.38	3.70
0018	E	2: 8' X 6' RCBC @ Las Palmas	50	1589	CPRE060	PIT3	1.38	3.70
0019	E	Conc. Chnl. 20'W 6'D 2:1 SS	1330	1589	CPRE060	PIT3	1.38	3.70
0044	E	2: 8' X 6' RCBC @ Paseo Verde	80	1166	CPRE050	PIT3	0.85	2.00
0045	P1	14' X 4' RCB	5700	1166	CPRE040	PIT3SC	0.85	4.00
PTDC		PITTMAN WASH - DUCK CREEK						
0027	E	Conc Chnl 60'W 7.9'D 0:1 SS	2000	6774	CPDC160	PIT5SC	23.80	0.85
0074	P0	Add 3: 10' X 8' RCBC @ I-515	160	6724	CPDC150	PIT5SC	23.54	0.80
0075	E	4: 10' X 8' RCBC @ I-515	160	6724	CPDC150	PIT5SC	23.54	0.80
0076	E	Conc Chnl 25'W 9'D 2:1 SS	960	6724	CPDC150	PIT5SC	23.54	1.20
0095	E	Single Span Bridge 75'W 8'D @ Stephanie	170	6299	CPDC120	PIT5SC	22.45	0.80
0096	E	Conc Chnl 30'W 8'D 2:1 SS	1150	6299	CPDC120	PIT5SC	22.45	0.80
0104	E	Conc Chnl 30'W 8'D 2:1 SS	520	5945	CPDC100	PIT5SC	19.63	0.80
0118	E	4 Span Bridge 60'W 8'D	70	5945	CPDC100	PIT5SC	19.63	1.30
0119	E	Conc. Chnl 30'W 8'D 2:1 SS	3430	5945	CPDC100	PIT5SC	19.63	0.80
0187	E	2 Span Bridge 42'W 8'D @ Sunset Road	100	5945	CPDC100	PIT5SC	19.63	1.40
0188	E	Conc Chnl 30'W 8'D 2:1 SS	2630	5777	CPDC030	PIT5SC	19.12	3.00
0237	E	2 Span Bridge 42'W 8'D @ Warm Springs	100	5777	CPDC030	PIT5SC	19.12	1.30

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
PTDW		PITTMAN DESERT WILLOW						
0000	E	Conc Chnl 29'W 5.5' D 2:1 SS	1550	1121	CPMR090	PIT3	2.19	2.20
0029	E	72" RCP	2140	568	DETB	PIT3	1.42	3.20
0069	E	78" RCP with 66" Orifice Plate Outlet	840	568	DETB	PIT3	1.42	1.40
0085	E	15 ac-ft Desert Willows Golf Course Detention Basin		1143	CPMR070	PIT3	1.42	
0088	E	Grass Chnl 100'W 5:1 SS	2090	1143	CPMR070	PIT3	1.42	2.20
PTEA		PITTMAN WASH - EASTERN						
0000	P2	Conc Chnl 24'W 8'D 0:1 SS	1000	3225	CPPE200	PIT3SC	6.71	1.60
0019	P2	2: 12' X 8' RCBC @ Serene	50	3225	CPPE200	PIT3SC	6.71	1.60
0020	P2	Conc Chnl 24'W 8'D 0:1 SS	2350	3225	CPPE200	PIT3SC	6.71	1.60
0054	P2	Conc Chnl 24'W 8'D 0:1 SS	1500	2284	CPPE205	PIT3SC	5.38	1.60
0090	E	3: 12' X 6' RCBC @ Eastern	200	2099	EAST	PIT3SC	5.15	1.70
0092	E	3: 10' X 6' RCB	820	2099	EAST	PIT3SC	5.15	2.40
0119	E	Conc Chnl 22'W 5'D 0:1 SS	200	2099	EAST	PIT3SC	5.15	2.00
0124	E	Splitter Structure		3892	CPPE155	PIT3SC	5.15	
0125	E	Conc Chnl 30'W 8'D 0:1 SS	740	3892	CPPE155	PIT3SC	5.15	1.20
0139	E	Earth Chnl 50'W 3:1 SS	800	3892	CPPE155	PIT3SC	5.15	1.20
0139	P3	Conc Chnl 30'W 8'D 0:1 SS	800	3892	CPPE155	PIT3SC	5.15	1.20
0145	E	3: 12' X 10' RCBC @ St. Rose Pkwy	80	2152	CPPE130	PIT3SC	2.97	0.90
0146	P3	Conc Chnl 20'W 6'D 2:1 SS	2100	2152	CPPE130	PIT3SC	2.97	1.00
PTFD		PITTMAN FOOTHILLS DRIVE						
0000	P1	Conc Chnl 15'W 4.5'D 2:1 SS	1330	1114	CPMR120	PIT3SC	1.32	3.00
0025	E	5: 12' X 4' RCBC @ Horizon Ridge Pkwy	70	1114	CPMR120	PIT3SC	1.32	10.00
0026	E	Conc Chnl 20'W 8'D 0:1 SS	1350	1114	CPMR120	PIT3SC	1.32	2.60
0056	E	20' X 10' RCAC @ Amador Ln	60	1114	CPMR120	PIT3SC	1.32	1.20
0051	E	Conc Chnl 13'W 6'D 1:1 SS	680	1114	CPMR120	PIT3SC	1.32	1.30
0063	E	16' X 6' RCAC @ Foothills Village Dr	550	1114	CPMR120	PIT3SC	1.32	2.60
0068	E	Natural Wash	2250	1114	CPMR120	PIT3SC	1.32	
0110	E	2: 14' X 10' RCBC @ MacDonald Ranch Dr	50	865	CPMR110	PIT3SC	1.00	3.10
0111	E	Natural Wash	2300	865	CPMR110	PIT3SC	1.00	
PTGB		PITTMAN WASH - GIBSON						
0058	P1	Conc Chnl 15'W 5.5'D 2:1 SS	1560	1532	CPBR080	PIT3SC	1.76	1.50
0087	P3	2: 10' X 6' RCB	660	1532	CPBR080	PIT3SC	1.76	0.50
0093	E	Earth/Conc Chnl 8'W 5'D 2:1 SS	550	1532	CPBR080	PIT3SC	1.76	1.50
0093	P1	Conc Chnl 30'W 5'D 0:1 SS	550	1532	CPBR080	PIT3SC	1.76	1.50
0133	E	3: 9' X 5' RCBC @

CURRENT FEMA FIRM MAP

- FIGURE 2.0

NOTES TO USERS

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. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevation** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevation (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum (NAVD). Users of this FIRM should be aware that coastal flood elevations may also be provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this community. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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 National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map is Universal Tranverse Mercator (UTM) Zone 11. The **horizontal** datum is NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Vertical Network Branch, N/CG13
National Geodetic Survey, NOAA
Silver Spring Metro Center 3
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242,** or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Clark County Regional Flood Control District. This information was converted using Orthophotography, dated 1999 or newer, and GBF/DIME data. Segments were digitized off of the orthophotography based on center of pavement.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

An accompanying Flood Insurance Study report, Letters of Map Revision or Letters of Map Amendment revising portions of this panel, and digital versions of this PANEL may be available. Contact the **FEMA Map Service Center** at the following phone numbers and Internet address for infomation on all related products available from FEMA;

Phone: 800-358-9616
FAX: 800-358-9620
www.fema.gov/msc

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.

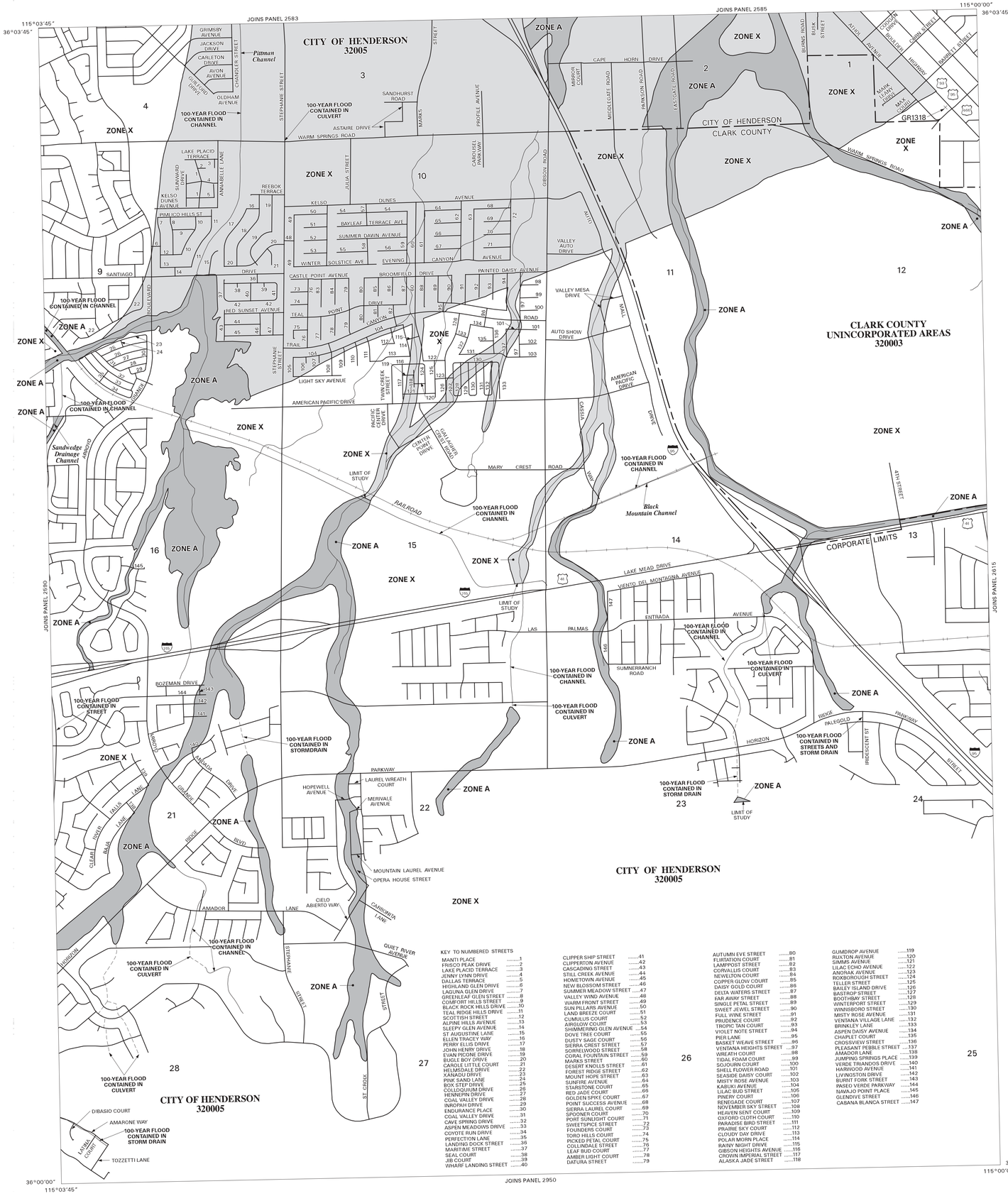
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on this map.

This Digital Flood Insurance Rate Map (DFIRM) was produced through a unique partnership between Clark County and the Federal Emergency Management Agency (FEMA). Clark County has developed a long-term approach of floodplain management to decrease the costs associated with flooding. This is demonstrated by the Clark County commitment to share and maintain floodplain layers within their Geographic Information System Management Office (GISMO).

This DFIRM reflects several innovative features. These include:
+ Southern Nevada GIS -- Cooperation among local governmental agencies throughout Clark County. The foundation of cooperation is the GIS Interlocal Agreements formed between fourteen regional participants. In part, the agreements specify that the Clark County GIS Management Office (GISMO) will be responsible for maintaining a GIS data warehouse and associated Southern Nevada GIS Metadata.

+ The GISMO's responsibilities go beyond maintaining the GIS data warehouse. GISMO also maintains the Street Centerline Database used by 911 dispatch services. This centerline database serves as the base map for this DFIRM.

DIGITAL DATA AVAILABILITY: http://www.co.clark.nv.us/ceit/gismo/gismo.htm



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water surface elevation of the 1% annual chance 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 AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood event.

ZONE A99 Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no base flood elevations determined.

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

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

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Coastal Barrier Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross Section Line
- 23 — 23 — Transect Line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4276000M — 1000-meter Universal Transverse Mercator grid values, zone 11
- 600000 FT — 5000-foot grid ticks
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel).
- M1.5 — River Mile

MAP REPOSITORY
Refer to Repository Listing on Index Map

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
AUGUST 16, 1995

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

September 27, 2002: to update corporate limits, to change base flood elevations, to add base flood elevations, to add special flood hazard areas, to change special flood hazard areas, to delete special flood hazard areas, to change zone designations, to add roads and road names, to incorporate previously issued letters of map revision, to incorporate previously issued letters of map amendment, and to change floodway.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2595 E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2595 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENDERSON, CITY OF	320005	2595	E
CLARK COUNTY, UNINCORPORATED AREAS	320003	2595	E

Figure 2.0

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

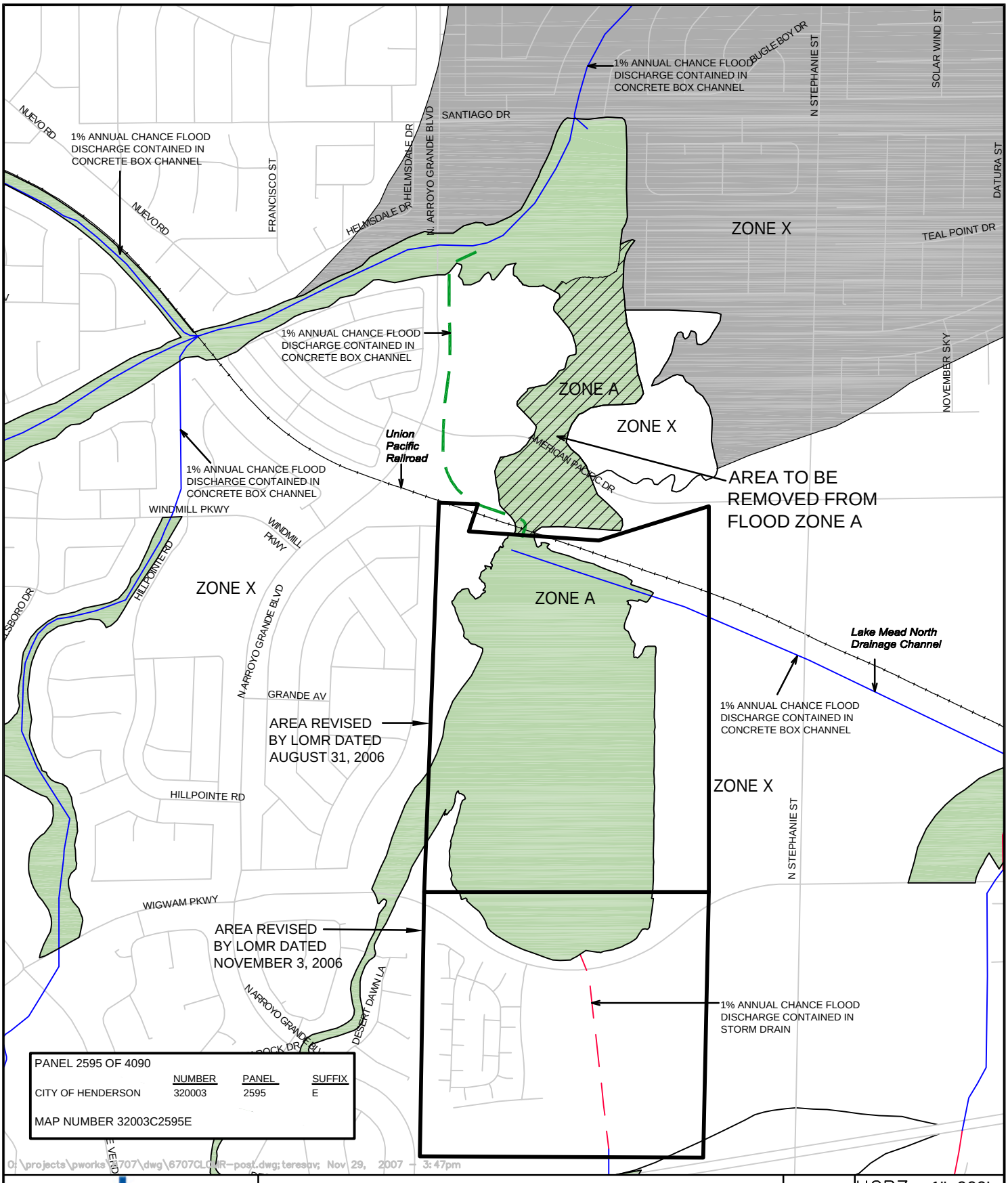
MAP NUMBER
32003C2595 E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

EXISTING FLOOD ZONE EXHIBIT

- FIGURE 3.0



O:\projects\pworks\6707\dwg\6707CLOMR-post.dwg; teresav; Nov 29, 2007 - 3:47pm

www.vtnnv.com

FEMA ANNOTATED FLOOD ZONE MAP

SCALE	HORZ. 1"=900'
	VERT.
W.O. NO.	6707
DRAWN BY:	
DATE:	11/18/07

FIGURE 3.1

FEMA ANNOTATED FLOOD ZONE MAP

- FIGURE 3.1

Legend

- Proposed Railroad East Outfall Channel CL
- CCRFCD Conveyance - Completed
- Flood Zone A
- Flood Zone X

ZONE A

ZONE X

ZONE X

ZONE A

PITTMAN WASH

PITTMAN RAILROAD WEST

PITTMAN RAILROAD EAST

PITTMAN SANDWEDGE CHANNEL

PITTMAN PARK DETENTION BASIN

AERIAL PHOTOGRAPHY
FLIGHT DATE: SPRING 2007

W.O.#: 6707

N W E S

0 250 500 1,000

Feet

RAILROAD EAST OUTFALL CHANNEL CLOMR
EXISTING FLOOD ZONE EXHIBIT

Figure 3.0

www.vtnnv.com

This map is for planning purposes only.
No representation is made concerning the accuracy of the data delineated herein.

DATE: 11/27/2007;File: \\phoenix\dfs\gisroot\projects\pworks\6707\mxd\6707CLOMR.mxd;By: teresav

RAILROAD EAST OUTFALL CHANNEL CLOMR
PRE-PROJECT CONDITIONS WORK MAP
- FIGURE 3.2

LEGEND

- EXISTING FEMA FLOOD ZONE A
- POST-PROJECT 100-YEAR FLOOD ZONE
- POST-PROJECT FLOOD ZONE OUTSIDE OF EXISTING ZONE A LIMITS
- FEMA APPROVED 100-YEAR FLOW
- PRE-PROJECT HEC-RAS STATION

GRAPHIC SCALE
150 0 75 150 300
(IN FEET)
1 inch = 150 ft.

NORTH

MARITIRNE ST
CASCADING ST
AMERICAN PACIFIC DR
SANTIAGO DR
ARROYO GRANDE BLVD
ENDURANCE PT
HELMSDALE DR
MERRLCK WAY
MERRICK WAY
HARWICK ST
XANADU DR
BOX STEP DR
COLLOQUIUM DR
HENNEPIN DR
GOAL VALLEY DR
INROPAH DR

PITTMAN PARK DETENTION BASIN
100-YR STAGE
1834.25

UNNAMED TRIBUTARY TO THE PITTMAN WASH - LIMIT OF STUDY

Q=2865 CFS

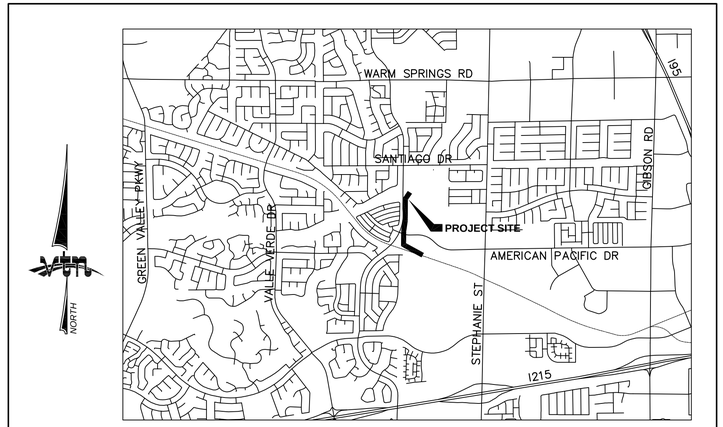
Q=1000 CFS

33+53.00
34+00
33+34.30
33+00
32+00
31+00
30+00
29+61.61
29+00
28+00
27+00
26+04.73
25+78.87
25+34.35
25+09.72
24+83.80
24+63.97
24+00
23+60.86
23+00
22+33.54
22+00
21+00
17+50
18+00
19+00
20+01
20+80
21+62
22+25
23+01
24+01
24+51
25+01
26+00
27+00
28+00
29+00
29+51
30+00
31+00
32+00

JEFFREY N. GRIEST
EXP. 12-31-07
CIVIL
No. 17156
PROFESSIONAL ENGINEER-STATE OF NEVADA

RAILROAD EAST OUTFALL CHANNEL
PITTMAN WASH/UNNAMED TRIBUTARY TO THE PITTMAN WASH
PRE-PROJECT CONDITIONS WORK MAP

FIGURE 3.2



VICINITY MAP

RAILROAD EAST OUTFALL CHANNEL CLOMR
POST-PROJECT CONDITIONS WORK MAP
- FIGURE 3.3

LEGEND

- EXISTING FEMA FLOOD ZONE A
- POST-PROJECT 100-YEAR FLOOD ZONE
- POST-PROJECT FLOOD ZONE OUTSIDE OF EXISTING ZONE A LIMITS
- PROPOSED CONCRETE CHANNEL STRUCTURE
- EXISTING FEMA FLOOD ZONE A TO BE REMOVED
- FEMA APPROVED 100-YEAR FLOW
- POST-PROJECT HEC-RAS STATION
- POST-PROJECT WSPGW STATION

GRAPHIC SCALE

150 0 75 150 300

(IN FEET)

1 inch = 150 ft.

NORTH

PITTMAN PARK DETENTION BASIN
100-YR STAGE
1834.20

AMERICAN PACIFIC DR

CONCRETE TRANSITION STRUCTURE

18'X8' RCB

24' X 8' RCB

1% ANNUAL CHANGE FLOOD DISCHARGE CONTAINED IN CONCRETE BOX CHANNEL

SANTIAGO DR

ARROYO GRANDE BLVD

ENDURANCE PT

HELMSDALE DR

MERRLCK WAY

MERRICK WAY

HARWICK ST

XANADU DR

BOX STEP DR

COLLOQUIUM DR

HENNEPIN DR

GOAL VALLEY DR

INROPAH DR

VICINITY MAP

WARM SPRINGS RD

SANTIAGO DR

GREEN VALLEY PKWY

GIBSON RD

PROJECT SITE

AMERICAN PACIFIC DR

STEPHANIE ST

I215

PROFESSIONAL ENGINEER-STATE OF NEVADA
JEFFREY N. GRIEST
EXP. 12-31-07
CIVIL
No. 17156

RAILROAD EAST OUTFALL CHANNEL
PITTMAN WASH/UNNAMED TRIBUTARY TO THE PITTMAN WASH
POST-PROJECT CONDITIONS WORK MAP

FIGURE 3.3

Conditional Letter of Map Revision **Railroad East Outfall Channel**

Appendix C
Hydraulic Analysis



vtn

RAILROAD EAST OUTFALL CHANNEL CLOMR
POST-PROJECT CONDITIONS: WSPGW OUTPUT

CRRE13.wsw

Railroad East Outfall Channel
Water Surface Comparison

11/30/2007

Pre-Project HEC-RAS		Post-Project WSPGW		Δ WSE	Check
River Sta	WSE	WSPGW Sta	WSE		
ft	ft	ft	ft		
3200	1893.96	10+30.00	1890.57	-3.39	ok
3100	1893.73	10+65.96	1889.86	-3.87	ok
		11+58.20	1883.24		
		12+08.20	1882.99		
		13+88.20	1880.57		
		14+18.07	1880.35		
3000	1888.81				
2951	1888.30				
2900	1886.14				
2800	1881.64	19+19.25	1876.56	-5.08	ok
2700	1879.14				
2600	1878.44	20+63.20	1875.44	-3.00	ok
2501	1876.83	21+62.20	1872.96	-3.87	ok
2451	1876.14				
2401	1874.89	23+95.92	1867.75	-7.14	ok
2301	1873.17				
2225	1871.64				
2152	1870.70				
2080	1869.29	25+62.28	1864.18	-5.11	ok
2001	1860.80	26+17.59	1863.01	2.21	fix
1901	1855.49	27+22.59	1859.08	3.59	fix
1800	1853.97	28+19.73	1857.11	3.14	fix
1750	1852.96	29+16.87	1855.32	2.36	fix
1700	1851.87	31+37.49	1843.37	-8.50	ok
		32+50.00	1837.48		
		32+92.92	1834.57		

VTN 29 NOV 2007

Values in English Units

HYDRAULICS SUMMARY - RAILROAD EAST OUTFALL CHANNEL CLOMF

Filename: CRRE13.wsw (Manning's n=0.013)

CHANNEL STATION	REMARKS	DESIGN FLOW Q	DEPTH OF FLOW y	DEPTH W/AIR[1] y*	INVERT ELEV SLOPE (%)	VELOCITY V	H.G.L.	E.G.L.	CHANNEL TYPE	BASE WIDTH/DIA.	SIDE SLOPE	FLOW AREA A	WETTED PERIMETER P	TOP WIDTH T	FROUDE NUMBER	CURVE RADIUS R	SUPER ELEV	CCRFCD MIN FB[2]	MIN WALL HT	DESIGN WALL HT	ACTUAL FB	FB CHECK
10+30.00	Begin 85'x7' Rectangular Channel	2,865	3.569	3.569	1887.00	9.44	1890.57	1891.95	Rect	85	0	303.50	92.14	85.00	0.88			1.88	5.45	7.00	3.43	OK
					0.50%																	
10+45.37		2,865	3.779	3.779	1886.92	8.92	1890.70	1891.94	Rect	85	0	321.19	92.56	85.00	0.81			1.74	5.51	7.00	3.22	OK
10+45.37	Begin 2 Center Piers	2,865	3.332	3.332	1886.92	10.36	1890.26	1891.92	Rect	85	0	276.54	91.66	85.00	1.01			1.39	4.72	7.00	3.67	OK
					0.50%																	
10+65.96	End 85'x7' Rectangular Channel, GB	2,865	3.035	3.035	1886.82	11.37	1889.86	1891.86	Rect	85	0	251.98	91.07	85.00	1.16			1.41	4.45	7.00	3.97	OK
10+65.96	Begin Transition Structure, PC	2,865	3.035	3.035	1886.82	11.37	1889.86	1891.86	Rect	85	0	251.98	91.07	85.00	1.16	50	2.150	1.41	6.60	7.00	1.82	OK
					6.31%																	
11+58.20	End Transition Structure, GB, PT	2,865	2.238	2.373	1881.00	21.34	1883.24	1890.31	Rect	62	0	134.25	66.48	62.00	2.56	50	5.657	1.70	9.59	13.00	5.10	OK
11+58.20	Begin 3-20'x9' RCB	2,865	2.238	2.373	1881.00	21.34	1883.24	1890.31	RCB	62	0	134.25	66.48	62.00	2.56			1.70	3.94	8.00	5.76	OK
					0.66%																	
12+08.20	End 3-20'x9' RCB, GB	2,865	2.320	2.439	1880.67	20.58	1882.99	1889.57	RCB	62	0	139.21	66.64	62.00	2.42			1.68	4.00	8.00	5.68	OK
12+08.20	Begin Transition Structure	2,865	2.320	2.439	1880.67	20.58	1882.99	1889.57	RCB	62	0	139.21	66.64	62.00	2.42			1.68	4.00	8.00	5.68	OK
					2.18%																	
13+73.20	End 2-1' Piers	2,865	3.733	3.813	1877.08	20.78	1880.81	1887.51	RCB	38.93	0	137.87	46.39	38.93	1.95			1.81	5.54	8.00	4.27	OK
13+73.20	Continue Transition Structure	2,865	3.478	3.563	1877.08	21.16	1880.55	1887.51	RCB	38.93	0	135.40	45.88	38.93	2.00			1.80	5.28	8.00	4.52	OK
					2.18%																	
13+83.20		2,865	3.605	3.687	1876.86	21.18	1880.46	1887.43	RCB	37.53	0	135.27	44.74	37.53	1.97			1.81	5.42	8.00	4.40	OK
13+83.20	Begin 10" Pier, Continue Transition Structure	2,865	3.739	3.812	1876.86	20.88	1880.60	1887.37	RCB	37.53	0	137.21	45.01	37.53	1.92			1.81	5.55	8.00	4.26	OK
					2.18%																	
13+88.20	End Transition Structure, GB	2,865	3.816	3.886	1876.75	20.86	1880.57	1887.32	RCB	36.83	0	137.34	44.46	36.83	1.90			1.81	5.63	8.00	4.18	OK
13+88.20	Begin 2-18'x8' RCB	2,865	3.816	3.886	1876.75	20.86	1880.57	1887.32	RCB	36.83	0	137.34	44.46	36.83	1.90			1.81	5.63	8.00	4.18	OK
					0.78%																	
14+18.07		2,865	3.830	3.898	1876.52	20.78	1880.35	1887.05	RCB	36.83	0	137.87	44.49	36.83	1.89			1.81	5.64	8.00	4.17	OK
14+18.07	PC	2,865	3.830	3.898	1876.52	20.78	1880.35	1887.05	RCB	36.83	0	137.87	44.49	36.83	1.89	400	1.235	1.81	6.88	8.00	2.94	OK
					0.78%																	
19+19.25	PT	2,865	3.961	4.009	1872.60	20.09	1876.56	1882.82	RCB	36.83	0	142.61	44.75	36.83	1.80	400	1.154	1.79	6.91	8.00	2.88	OK
19+19.25		2,865	3.961	4.009	1872.60	20.09	1876.56	1882.82	RCB	36.83	0	142.61	44.75	36.83	1.80			1.79	5.76	8.00	4.04	OK
					0.78%																	
20+63.20	GB	2,865	3.971	4.016	1871.47	20.04	1875.44	1881.68	RCB	36.83	0	142.96	44.77	36.83	1.79			1.79	5.76	8.00	4.03	OK
20+63.20	PC	2,865	3.971	4.016	1871.47	20.04	1875.44	1881.68	RCB	36.83	0	142.96	44.77	36.83	1.79	2,000	0.230	1.79	5.99	8.00	3.80	OK
					2.07%																	
21+63.20		2,865	3.559	3.671	1869.40	22.36	1872.96	1880.72	RCB	36.83	0	128.13	43.95	36.83	2.11	2,000	0.286	1.85	5.70	8.00	4.16	OK
21+63.20		2,865	3.559	3.671	1869.40	22.36	1872.96	1880.72	RCB	36.83	0	128.13	43.95	36.83	2.11	2,000	0.286	1.85	5.70	8.00	4.16	OK
					2.07%																	
23+95.92	PRC	2,865	3.163	3.346	1864.59	25.16	1867.75	1877.58	RCB	36.83	0	113.87	43.16	36.83	2.52	2,000	0.362	1.92	5.45	8.00	4.47	OK
23+95.92		2,865	3.163	3.346	1864.59	25.16	1867.75	1877.58	RCB	36.83	0	113.87	43.16	36.83	2.52	1,000	0.724	1.92	5.81	8.00	4.11	OK
					2.07%																	
25+62.28	PT	2,865	3.040	3.248	1861.14	26.18	1864.18	1874.83	RCB	36.83	0	109.43	42.91	36.83	2.68	1,000	0.784	1.95	5.77	8.00	4.18	OK
25+62.28		2,865	3.040	3.248	1861.14	26.18	1864.18	1874.83	RCB	36.83	0	109.43	42.91	36.83	2.68			1.95	4.99	8.00	4.96	OK
					2.07%																	
26+17.59	End 2-18'x8' RCB, GB	2,865	3.014	3.226	1860.00	26.40	1863.01	1873.84	RCB	36.83	0	108.52	42.86	36.83	2.71			1.95	4.97	8.00	4.99	OK
26+17.59	Begin Transition Structure	2,865	3.014	3.226	1860.00	26.40	1863.01	1873.84	RCB	36.83	0	108.52	42.86	36.83	2.71			1.95	4.97	8.00	4.99	OK
					5.00%																	
27+22.59	End Transition Structure, GB	2,865	4.332	4.566	1854.75	28.54	1859.08	1871.73	RCB	24	0	100.39	32.66	24.00	2.46			2.16	6.50	8.00	3.67	OK
27+22.59	Begin 24'x8' RCB, PC	2,865	4.154	4.386	1854.75	28.74	1858.90	1871.73	RCB	24	0	99.69	32.31	24.00	2.49	1,000	0.616	2.16	6.92	8.00	3.23	OK
					1.79%																	
28+19.73	PRC	2,865	4.092	4.334	1853.02	29.17	1857.11	1870.32	RCB	24	0	98.22	32.18	24.00	2.54	1,000	0.634	2.17	6.89	8.00	3.27	OK

CHANNEL STATION	REMARKS	DESIGN FLOW Q	DEPTH OF FLOW y	DEPTH W/AIR[1] y*	INVERT ELEV SLOPE (%)	VELOCITY V	H.G.L.	E.G.L.	CHANNEL TYPE	BASE WIDTH/DIA.	SIDE SLOPE	FLOW AREA A	WETTED PERIMETER P	TOP WIDTH T	FROUDE NUMBER	CURVE RADIUS R	SUPER ELEV	CCRFCD MIN FB[2]	MIN WALL HT	DESIGN WALL HT	ACTUAL FB	FB CHECK
28+19.73		2,865	4.092	4.334	1853.02	29.17	1857.11	1870.32	RCB	24	0	98.22	32.18	24.00	2.54	1,000	0.634	2.17	6.89	8.00	3.27	OK
					1.79%																	
29+16.87	PT, GB	2,865	4.041	4.293	1851.28	29.54	1855.32	1868.87	RCB	24	0	96.99	32.08	24.00	2.59	1,000	0.650	2.18	6.87	8.00	3.31	OK
29+16.87		2,865	4.041	4.293	1851.28	29.54	1855.32	1868.87	RCB	24	0	96.99	32.08	24.00	2.59			2.18	6.22	8.00	3.96	OK
					5.07%																	
31+37.49		2,865	3.280	3.694	1840.09	36.39	1843.37	1863.93	RCB	24	0	78.73	30.56	24.00	3.54			2.35	5.63	8.00	4.72	OK
31+37.49	PC	2,865	3.280	3.694	1840.09	36.39	1843.37	1863.93	RCB	24	0	78.73	30.56	24.00	3.54	100	9.870	2.35	15.50	8.00	-5.15	OK, RCB
					5.07%																	
32+50.00	End 24'x8' RCB, PT	2,865	3.107	3.565	1834.38	38.42	1837.48	1860.41	RCB	24	0	74.57	30.21	24.00	3.84	100	11.002	2.40	16.51	8.00	-6.11	OK, RCB
32+50.00	Begin Outlet Structure	2,865	2.377	2.913	1834.38	38.72	1836.75	1860.03	Trap	24	3	73.99	39.03	38.26	4.91			2.29	4.67	8.00	5.62	OK
					5.07%																	
32+92.92	Tie-in to Existing Wash	2,865	2.374	2.911	1832.20	38.77	1834.57	1857.91	Trap	24	3	73.90	39.01	38.24	4.92			2.29	4.67	8.00	5.63	OK

Note:

(1) Depth with air entrainment, y*/y = 0.906(e)$^{0.0615}$ (Fr >= 1.60; y* = y, Fr < 1.60). See *WASURO User's Manual (Draft), US Army Corps of Engineers Los Angeles District, July 1985.*

(2) For supercritical flow, FB = 1+0.025V(Y1/3); for subcritical flow, FB = 0.5+V2/2g. See Hydrologic Criteria and Drainage Design Manual, CCRFCD, 1999.

```
T1  WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR                                0
T2  Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=0.013"
T3  WSPG FILE: CRRE13.WSW, BY: VTN 11/2007
SO  -3294.57 1832.130  3                          1838.300
R   -3250.00 1834.380  3      .013
WX  -3250.00 1834.380  6
R   -3137.49 1840.090  6      .013                                 -64.46
R   -2916.87 1851.280  6      .013
R   -2819.73 1853.020  6      .013                                  -5.57
R   -2722.59 1854.750  6      .013                                   5.57
BX  -2722.59 1854.750  7
TS  -2617.59 1860.000  4      .013
R   -2562.28 1861.140  4      .013
R   -2395.92 1864.590  4      .013                                   9.53
R   -2163.20 1869.400  4      .013                                  -6.67
R   -2063.20 1871.470  4      .013                                  -2.86
R   -1919.25 1872.600  4      .013
R   -1418.07 1876.520  4      .013                                 -71.79
R   -1388.20 1876.750  4      .013
TS  -1383.20 1876.860 13      .013
BE  -1383.20 1876.860 14       .20
TS  -1373.20 1877.080 12      .013
BX  -1373.20 1877.080 11
TS  -1208.20 1880.670  2      .013
R   -1158.20 1881.000  2      .013
TS  -1065.96 1886.820 10      .013                                 105.70
R   -1045.37 1886.920 10      .013
BE  -1045.37 1886.920  1       .20
R   -1030.00 1887.000  1      .013
SH  -1030.00 1887.000  1                          1893.96
CD   1  2   0   0.000   7.00    85.00
CD   2  3   2   1.000   9.00    62.00
CD   3  1   0   0.000   8.00    24.00  3.00  3.00
CD   4  3   1   0.830   8.00    36.83
CD   5  2   0   0.000  11.00    62.00
CD   6  3   0   0.000   8.00    24.00
CD   7  3   1   0.830   8.00    24.00
CD   8  1   0   0.000   9.00    80.00  2.00  2.00
CD   9  2   3   1.000   6.00    85.00
CD  10  2   2   1.000   7.00    85.00
CD  11  3   2   1.000   8.00    38.93
CD  12  3   0   0.000   8.00    38.93
CD  13  3   1   0.830   8.00    37.53
CD  14  3   0   0.000   8.00    37.53
Q          2865.000   .0
```

Program Package Serial Number: 1513

WATER SURFACE PROFILE LISTING Date:11-30-2007 Time: 1:38:39

WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR

Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=

0. WSPG FILE: CRRE13.WSW, BY: VTN 11/2007

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-3294.570	1832.130	2.374	1834.504	2865.00	38.77	23.34	1857.85	.00	5.93	38.25	8.000	24.000	3.00	0 .0
44.570	.0505					.0490	2.18	2.37	4.92	2.36	.013	.00	3.00	TRAP
-3250.000	1834.380	2.377	1836.757	2865.00	38.72	23.28	1860.03	23.16	5.93	38.26	8.000	24.000	3.00	0 .0
WALL	EXIT													
-3250.000	1834.380	3.107	1837.487	2865.00	38.42	22.92	1860.41	8.00	7.62	24.00	8.000	24.000	.00	0 .0
16.360	.0508					.0335	.55	8.00	3.84	2.72	.013	.00	.00	BOX
-3233.640	1835.210	3.128	1838.338	2865.00	38.17	22.62	1860.96	8.00	7.62	24.00	8.000	24.000	.00	0 .0
96.150	.0508					.0309	2.98	8.00	3.80	2.72	.013	.00	.00	BOX
-3137.490	1840.090	3.280	1843.370	2865.00	36.39	20.57	1863.94	.00	7.62	24.00	8.000	24.000	.00	0 .0
29.634	.0507					.0279	.83	3.28	3.54	2.72	.013	.00	.00	BOX
-3107.856	1841.593	3.340	1844.933	2865.00	35.74	19.84	1864.77	.00	7.62	24.00	8.000	24.000	.00	0 .0
64.623	.0507					.0253	1.64	3.34	3.45	2.72	.013	.00	.00	BOX
-3043.233	1844.871	3.503	1848.374	2865.00	34.08	18.03	1866.41	.00	7.62	24.00	8.000	24.000	.00	0 .0
51.000	.0507					.0219	1.12	3.50	3.21	2.72	.013	.00	.00	BOX
-2992.233	1847.458	3.674	1851.131	2865.00	32.49	16.39	1867.53	.00	7.62	24.00	8.000	24.000	.00	0 .0
41.315	.0507					.0190	.78	3.67	2.99	2.72	.013	.00	.00	BOX
-2950.917	1849.553	3.853	1853.406	2865.00	30.98	14.90	1868.31	.00	7.62	24.00	8.000	24.000	.00	0 .0
34.047	.0507					.0165	.56	3.85	2.78	2.72	.013	.00	.00	BOX

Program Package Serial Number: 1513

WATER SURFACE PROFILE LISTING Date:11-30-2007 Time: 1:38:39

WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR

Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=

0. WSPG FILE: CRRE13.WSW, BY: VTN 11/2007

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-2916.870	1851.280	4.041	1855.321	2865.00	29.54	13.55	1868.87	.65	7.62	24.00	8.000	24.000	.00	0 .0
97.140	.0179					.0150	1.46	4.69	2.59	3.83	.013	.00	.00	BOX
-2819.730	1853.020	4.092	1857.112	2865.00	29.17	13.22	1870.33	.63	7.62	24.00	8.000	24.000	.00	0 .0
97.140	.0178					.0144	1.40	4.73	2.54	3.84	.013	.00	.00	BOX
-2722.590	1854.750	4.154	1858.904	2865.00	28.74	12.82	1871.73	.00	7.62	24.00	8.000	24.000	.00	0 .0
BRIDGE	EXIT													
-2722.590	1854.750	4.332	1859.082	2865.00	28.54	12.65	1871.73	.00	7.80	24.00	8.000	24.000	.00	1 .8
TRANS STR	.0500					.0183	1.92	4.33	2.46		.013	.00	.00	BOX
-2617.590	1860.000	3.014	1863.014	2865.00	26.40	10.83	1873.84	.00	5.82	36.83	8.000	36.830	.00	1 .8
55.310	.0206					.0178	.98	3.01	2.71	2.88	.013	.00	.00	BOX
-2562.280	1861.140	3.040	1864.180	2865.00	26.18	10.64	1874.82	.77	5.82	36.83	8.000	36.830	.00	1 .8
166.360	.0207					.0166	2.76	3.81	2.68	2.88	.013	.00	.00	BOX
-2395.920	1864.590	3.163	1867.753	2865.00	25.16	9.83	1877.58	.35	5.82	36.83	8.000	36.830	.00	1 .8
65.176	.0207					.0151	.98	3.52	2.52	2.88	.013	.00	.00	BOX
-2330.745	1865.937	3.236	1869.173	2865.00	24.60	9.39	1878.57	.34	5.82	36.83	8.000	36.830	.00	1 .8
98.583	.0207					.0136	1.34	3.57	2.44	2.88	.013	.00	.00	BOX
-2232.162	1867.975	3.394	1871.368	2865.00	23.45	8.54	1879.91	.31	5.82	36.83	8.000	36.830	.00	1 .8
68.962	.0207					.0118	.81	3.70	2.27	2.88	.013	.00	.00	BOX

WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR
Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=
0. WSPG FILE: CRRE13.WSW, BY: VTN 11/2007

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-2163.200	1869.400	3.559	1872.959	2865.00	22.36	7.76	1880.72	.28	5.82	36.83	8.000	36.830	.00	1 .8
16.868	.0207					.0108	.18	3.84	2.11	2.88	.013	.00	.00	BOX
-2146.332	1869.749	3.610	1873.359	2865.00	22.05	7.55	1880.91	.27	5.82	36.83	8.000	36.830	.00	1 .8
46.977	.0207					.0098	.46	3.88	2.07	2.88	.013	.00	.00	BOX
-2099.355	1870.722	3.786	1874.507	2865.00	21.02	6.86	1881.37	.25	5.82	36.83	8.000	36.830	.00	1 .8
36.155	.0207					.0086	.31	4.03	1.93	2.88	.013	.00	.00	BOX
-2063.200	1871.470	3.971	1875.441	2865.00	20.04	6.24	1881.68	.00	5.82	36.83	8.000	36.830	.00	1 .8
143.950	.0078					.0080	1.15	3.97	1.79	3.99	.013	.00	.00	BOX
-1919.250	1872.600	3.961	1876.561	2865.00	20.09	6.27	1882.83	1.13	5.82	36.83	8.000	36.830	.00	1 .8
501.180	.0078					.0084	4.23	5.09	1.80	3.99	.013	.00	.00	BOX
-1418.070	1876.520	3.830	1880.350	2865.00	20.78	6.70	1887.05	.00	5.82	36.83	8.000	36.830	.00	1 .8
29.870	.0077					.0089	.27	3.83	1.89	4.02	.013	.00	.00	BOX
-1388.200	1876.750	3.816	1880.566	2865.00	20.86	6.75	1887.32	.00	5.82	36.83	8.000	36.830	.00	1 .8
TRANS STR	.0220					.0090	.05	3.82	1.90		.013	.00	.00	BOX
-1383.200	1876.860	3.739	1880.599	2865.00	20.88	6.77	1887.37	.00	5.74	37.53	8.000	37.530	.00	1 .8
BRIDGE ENTRANCE														
-1383.200	1876.860	3.605	1880.465	2865.00	21.18	6.96	1887.43	.00	5.66	37.53	8.000	37.530	.00	0 .0
TRANS STR	.0220					.0080	.08	3.60	1.97		.013	.00	.00	BOX

WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR
Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=
0. WSPG FILE: CRRE13.WSW, BY: VTN 11/2007

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-1373.200	1877.080	3.478	1880.558	2865.00	21.16	6.95	1887.51	.00	5.52	38.93	8.000	38.930	.00	0 .0
BRIDGE EXIT														
-1373.200	1877.080	3.733	1880.813	2865.00	20.78	6.71	1887.52	.00	5.72	38.93	8.000	38.930	.00	2 1.0
TRANS STR	.0218					.0123	2.04	3.73	1.95		.013	.00	.00	BOX
-1208.200	1880.670	2.320	1882.990	2865.00	20.58	6.58	1889.57	.00	4.14	62.00	9.000	62.000	.00	2 1.0
50.000	.0066					.0148	.74	2.32	2.42	2.96	.013	.00	.00	BOX
-1158.200	1881.000	2.238	1883.238	2865.00	21.34	7.07	1890.31	9.00	4.14	62.00	9.000	62.000	.00	2 1.0
TRANS STR	.0631					.0093	.85	9.00	2.56		.013	.00	.00	BOX
-1065.960	1886.820	3.035	1889.855	2865.00	11.37	2.01	1891.86	.00	3.33	85.00	7.000	85.000	.00	2 1.0
15.871	.0049					.0027	.04	3.03	1.16	2.58	.013	.00	.00	RECTANG
-1050.089	1886.897	3.176	1890.073	2865.00	10.87	1.83	1891.91	.00	3.33	85.00	7.000	85.000	.00	2 1.0
4.719	.0049					.0024	.01	3.18	1.09	2.58	.013	.00	.00	RECTANG
-1045.370	1886.920	3.332	1890.252	2865.00	10.36	1.67	1891.92	.00	3.33	85.00	7.000	85.000	.00	2 1.0
BRIDGE ENTRANCE														
-1045.370	1886.920	3.779	1890.699	2865.00	8.92	1.24	1891.93	.00	3.28	85.00	7.000	85.000	.00	0 .0
13.260	.0052					.0013	.02	3.78	.81	2.38	.013	.00	.00	RECTANG
-1032.110	1886.989	3.603	1890.592	2865.00	9.35	1.36	1891.95	.00	3.28	85.00	7.000	85.000	.00	0 .0
2.110	.0052					.0014	.00	3.60	.87	2.38	.013	.00	.00	RECTANG

Program Package Serial Number: 1513

WATER SURFACE PROFILE LISTING Date:11-30-2007 Time: 1:38:39

WO#6707 RAILROAD EAST OUTFALL CHANNEL CLOMR

Q = 2865 CFS, START @ WSE = 1893.96, END @ WSE = 1838.30, "MANNING'S n=

0. WSPG FILE: CRRE13.WSW, BY: VTN 11/2007

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
-1030.000	1887.000	3.569	1890.569	2865.00	9.44	1.39	1891.95	.00	3.28	85.00	7.000	85.000	.00	0 .0

PITTMAN WASH CHANNEL
HEC-RAS MODEL

PITTMAN.prj

Railroad East Outfall Channel CLOMR
Pittman Wash HEC-RAS Summary

12/3/2007

HEC-RAS Plan: CLOMR River: MAIN Reach: WEST Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Hydr Depth	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)	(ft/s)	(sq ft)	(ft)	
WEST	-2100	PF 1	9638	1843.25	1851.88	6.57	1851.88	1855.18	0.001839	14.57	661.43	100.63	1
WEST	-2200	PF 1	9638	1833	1838.3	4.28	1837.88	1839.91	0.004258	10.19	946.09	221.28	0.87
WEST	-2233.54	PF 1	9638	1833	1838.81	4.95		1839.57	0.001654	7	1376.56	278.04	0.55
WEST	-2300	PF 1	9638	1833	1838.44	4.38		1839.42	0.002483	7.91	1218.71	278.3	0.67
WEST	-2360.86	PF 1	9638	1833	1838.42	4.6		1839.24	0.001965	7.27	1325.46	287.97	0.6
WEST	-2400	PF 1	9638	1833	1838.37	4.55		1839.15	0.001893	7.09	1359.71	298.59	0.59
WEST	-2463.97	PF 1	9638	1833	1838.07	4.17		1838.99	0.002528	7.73	1246.72	298.95	0.67
WEST	-2483.86	PF 1	9638	1832.37	1836.9	3.79	1836.9	1838.83	0.005965	11.12	866.57	228.43	1.01
WEST	-2500	PF 1	9638	1829.53	1835.04	5.05		1836.38	0.002884	9.28	1038.56	205.73	0.73
WEST	-2509.72	PF 1	9638	1827.88	1835.47	7.07		1836.17	0.000975	6.71	1437.1	203.38	0.44
WEST	-2534.35	PF 1	9638	1826.24	1835.29	6.95		1836.13	0.001187	7.35	1311.96	188.76	0.49
WEST	-2578.87	PF 1	9638	1826	1835.27	6.37		1836.05	0.001236	7.1	1357.61	213.23	0.5
WEST	-2604.73	PF 1	9638	1826	1835.17	6.42		1836.02	0.001314	7.37	1308.6	203.87	0.51
WEST	-2700	PF 1	9638	1826	1835.12	7.21		1835.88	0.00101	6.98	1381.1	191.66	0.46
WEST	-2800	PF 1	9638	1826	1835.06	7.49		1835.77	0.000895	6.74	1429.19	190.78	0.43
WEST	-2900	PF 1	9638	1826	1834.98	7.32		1835.68	0.000922	6.74	1430.94	195.54	0.44
WEST	-2981.61	PF 1	9638	1825.81	1834.98	7.61		1835.58	0.000749	6.22	1548.31	203.52	0.4
WEST	-3000	PF 1	9638	1825.78	1834.97	7.72		1835.56	0.00072	6.16	1565.17	202.86	0.39
WEST	-3090		Lat Struct										
WEST	-3100	PF 1	9607.66	1825.54	1834.74	7.39		1835.47	0.000952	6.86	1401.22	189.66	0.44
WEST	-3200	PF 1	9076.84	1825.31	1834.5	7.83		1835.36	0.001035	7.41	1225.71	156.46	0.47
WEST	-3300	PF 1	8674.86	1825.08	1834.13	6.95		1835.21	0.001524	8.34	1039.99	149.74	0.56
WEST	-3334.3	PF 1	8650.85	1825	1832.24	5.55	1832.24	1834.99	0.001416	13.32	649.3	116.91	1
WEST	-3353	PF 1	8650.85	1824.25	1831.76	5.73	1831.76	1834.63	0.001418	13.59	636.63	111.11	1
WEST	-3400	PF 1	8650.85	1822.37	1830.12	6.8	1830.12	1833.56	0.001447	14.87	581.72	85.57	1.01

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp 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: Pittman Wash at Pittman Park
Project File : Pittman.prj
Run Date and Time: 11/30/2007 10:49:47 AM

Project in English units

****

PLAN DATA

Plan Title: CLOMR
Plan File : C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.p01

Geometry Title: Pittman Wash
Geometry File : C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.g01

Flow Title : 100-yr Flow
Flow File : C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.f01

Plan Summary Information:
Number of: Cross Sections = 24 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 1

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 only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****

FLOW DATA

Flow Title: 100-yr Flow
Flow File : C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.f01

Flow Data (cfs)

River	Reach	RS	PF 1
MAIN	WEST	-2100	9638

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
MAIN	WEST	PF 1	Critical	Critical

****

GEOMETRY DATA

Geometry Title: Pittman Wash
Geometry File : C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.g01

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2100

INPUT
Description: Downstream section of Arroyo Grande Blvd. Bridge
Station Elevation Data num= 201

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-200	1863	-195.976	1863	-186.295	1863	-179.364	1863	-178.661	1863
-178.458	1863	-177.513	1863	-177.448	1863	-177.135	1863	-174.472	1863
-174.023	1863	-172.96	1863	-164.829	1863	-162.179	1863	-161.987	1862.971
-160.757	1862.872	-158.911	1862.711	-152.397	1862.139	-150.611	1862	-147.422	1861.681
-144.305	1861.538	-143.864	1861.497	-142.034	1861.439	-141.047	1861.444	-140.261	1861.467
-134.747	1861.339	-132.709	1861.25	-127.349	1861.24	-126.291	1861.227	-123.347	1861.162
-122.375	1861.12	-119.667	1861	-110.601	1860.574	-98.55	1860	-96.916	1859.894
-96.912	1859.894	-95.794	1859.791	-92.534	1859.455	-89.939	1859.177	-88.256	1859
-84.464	1858.431	-83.965	1858.382	-82.609	1858.244	-80.986	1858.152	-79.999	1858.131
-78.241	1858.135	-75.048	1858.292	-71.61	1858.221	-71.49	1858	-69.888	1858
-69.879	1858	-67.741	1857.646	-66.9	1857.48	-66.851	1857.474	-65.952	1857.459
-63.399	1857	-62.821	1856.911	-62.279	1856.813	-61.235	1856.694	-59.416	1856.472
-57.283	1856.318	-57.131	1856.387	-56.823	1856.534	-55.788	1856.325	-55.252	1856
-54.859	1855.791	-53.536	1855	-52.019	1854.216	-51.603	1854	-51.283	1853.837
-49.5	1853	-48.304	1852.412	-47.385	1852	-46.135	1851.406	-45.268	1851
-44.631	1850.671	-43.192	1850	-42.231	1849.551	-40.94	1849	-40.002	1848.58
-38.589	1848	-38.289	1847.858	-37.085	1847.274	-36.554	1847	-36.317	1846.896
-34.548	1846	-33.111	1845.41	-32.793	1845.356	-30.519	1845.241	-29.888	1845.253
-27.813	1845.34	-27.172	1845.279	-26.482	1845.266	-22.607	1845	-21.879	1844.913
-17.212	1844	-17.139	1843.988	-17.055	1843.984	-14.611	1843.806	-12.107	1843.717
-8.491	1843.621	-2.028	1843.394	01	843.333	2.118	1843.27	2.948	1843.263
4.091	1843.253	7.615	1843.362	12.515	1843.513	14.341	1843.607	16.598	1843.73
21.276	1844	24.231	1844.198	24.826	1844.287	25.061	1844.317	27.818	1844.614
29.911	1844.792	31.632	1845	34.876	1845.192	39.607	1845.58	40.551	1845.638
42.284	1845.674	42.573	1845.664	43.641	1845.65	43.853	1845.672	44.223	1845.798
44.531	1846	44.826	1846.194	45.938	1847	46.86	1847.62	47.415	1848
48.866	1848.942	48.954	1849	50.064	1849.719	50.511	1850	50.549	1850.021
52.122	1851	52.923	1851.533	53.684	1852	54.062	1852.255	55.425	1853
56.589	1853.712	57.121	1854	58.172	1854.638	58.848	1855	59.904	1855.701
60.478	1856	61.296	1856.426	62.302	1857	63.793	1857.845	64.063	1858
64.731	1858.353	65.353	1858.582	65.799	1858.76	66.737	1859	69.433	1859.49
71.974	1860	73.231	1860.17	76.671	1860.863	77.264	1860.981	77.38	1861
80.355	1861.548	83.676	1861.642	85.977	1861.695	86.318	1861.695	88.251	1861.632
89.861	1861.582	92.234	1861.567	96.617	1861.603	101.421	1861.713	113.292	1861.897
114.602	1861.92	117.084	1862	120.003	1862.096	125.019	1862.477	130.731	1862.913
132.486	1863	140.049	1863.314	145.474	1863.536	147.494	1863.651	148.141	1863.705
150.755	1863.897	151.024	1863.937	151.486	1864	155.086	1864.514	156.441	1864.684
158.469	1864.985	158.553	1864.995	158.591	1865	162.225	1865.447	166.329	1866
169.21	1866.43	172.974	1866.893	173.693	1867	174.957	1867.188	180.784	1868
182.941	1868.173	183.711	1868.206	188.451	1868.521	190.322	1868.562	198.818	1868.67
200	1868.676								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.015	-200	.015	200	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-200	200	100	100	100	.3	.5

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1855.18	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 3.30	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1851.88	* Reach Len. (ft)	* 100.00	* 100.00	* 100.00 *
* Crit W.S. (ft)	* 1851.88	* Flow Area (sq ft)	*	* 661.43	* *
* E.G. Slope (ft/ft)	*0.001839	* Area (sq ft)	*	* 661.43	* *
* Q Total (cfs)	* 9638.00	* Flow (cfs)	*	* 9638.00	* *
* Top Width (ft)	* 100.63	* Top Width (ft)	*	* 100.63	* *
* Vel Total (ft/s)	* 14.57	* Avg. Vel. (ft/s)	*	* 14.57	* *
* Max Chl Dpth (ft)	* 8.63	* Hydr. Depth (ft)	*	* 6.57	* *
* Conv. Total (cfs)	*224729.2	* Conv. (cfs)	*	*224729.2	* *
* Length Wtd. (ft)	* 100.00	* Wetted Per. (ft)	*	* 104.13	* *
* Min Ch El (ft)	* 1843.25	* Shear (lb/sq ft)	*	* 0.73	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 10.63	* *
* Frctn Loss (ft)	* 0.27	* Cum Volume (acre-ft)	*	* 37.44	* *
* C & E Loss (ft)	* 0.84	* Cum SA (acres)	*	* 6.05	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2200

INPUT
Description: Downstream section of concrete transition
Station Elevation Data num= 156

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2001853.019	-197.561	1853	-194.3831852.989	-191.2641852.948	-190.9461852.931				
-180.4081852.666	-173.1961852.385	-170.6941852.043	-156.8711850.958	-156.7091850.892					
-156.6561850.879	-156.6361850.878	-153.9711850.549	-151.443 1850.63	-148.4461850.657					
-148.1071850.651	-146.5491850.398	-145.5941850.294	-145.4691850.254	-144.936	1850				
-143.3081849.112	-143.066	1849	-142.7871848.866	-141.146	1848	-140.0441847.394			
-139.332	1847	-137.4661846.073	-137.315	1846	-137.0241845.846	-135.097	1845		
-133.7921844.644	-130.081	1844	-126.7071843.453	-123.964	1843	-123.6341842.941			
-123.073	1842.9	-118.5531842.778	-117.8371842.691	-117.0561842.693	-115.7351842.482				
-113.6381842.185	-112.7281842.073	-112.524	1842	-110.355 1841.07	-110.189	1841			
-109.2841840.557	-108.133	1840	-107.9341839.921	-107.5861839.796	-106.161839.348				
-105.483	1839	-103.6911838.309	-102.928	1838	-100.3591837.073	-100.181	1837		
-100.1011836.968	-100.0431836.963	-100.0131836.963	-99.91836.969	-99.7421836.967					
-99.5951836.957	-95.2991836.636	-91.3361836.582	-88.9481836.591	-85.06	1836				
-81.2221835.341	-79.143	1835	-76.3131834.598	-72.6951834.093	-71.896	1834			
-63.4951833.004	-63.421	1833	-61.001	1833	-60.475	1833	-49.132	1833	
-45.002	1833	-44.797	1833	-35.379	1833	-33.476	1833	-23.101	1833
-21.238	1833	-9.145	1833	-2.16	1833	0	1833	1.422	1833
14.956	1833	24.555	1833	26.727	1833	29.064	1833	40.983	1833
49.849	1833	56.566	1833	62.464	1833	75.45	1833	76.665	1833
79.885	1833.43	84.031	1834	86.0611834.295	89.659	1835	91.8531835.589		
93.458	1836	95.9941836.573	97.809	1837	99.6011837.194	99.7841837.189			
100.5091837.191	100.8991837.209	103.061837.334	106.6791837.376	109.198 1837.37					
114.743	1838	115.58 1838.09	118.6481838.406	122.5881838.802	123.5751838.875				
124.309	1839	126.445	1839	128.6271839.643	130.3	1840	131.5521840.373		
133.646	1841	135.1271841.415	137.021	1842	139.6151842.759	140.438	1843		
143.7931843.982	143.854	1844	144.121844.078	147.648	1845	148.5281845.218			
151.549	1846	153.896 1846.57	155.614	1847	157.0111847.327	159.503	1848		
160.3941848.212	163.519	1849	163.7021849.045	164.3271849.204	167.179	1850			
169.2341850.574	169.6381850.697	169.861850.764	170.725	1851	172.8761851.592				
174.481	1852	176.9081852.628	178.336	1853	179.0481853.179	182.494	1854		
185.5421854.504	187.749	1855	191.812 1855.63	194.103	1856	197.836 1856.58			
2001856.935									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.025	-200	.025	200	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-200	200	33.56	33.56	33.56	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1839.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.61	Wt. n-Val.		0.025	
W.S. Elev (ft)	1838.30	Reach Len. (ft)	33.56	33.56	33.56
Crit W.S. (ft)	1837.88	Flow Area (sq ft)		946.09	
E.G. Slope (ft/ft)	*0.004258	Area (sq ft)		946.09	
Q Total (cfs)	9638.00	Flow (cfs)		9638.00	
Top Width (ft)	221.28	Top Width (ft)		221.28	
Vel Total (ft/s)	10.19	Avg. Vel. (ft/s)		10.19	
Max Chl Dpth (ft)	5.30	Hydr. Depth (ft)		4.28	
Conv. Total (cfs)	*147699.6	Conv. (cfs)		*147699.6	
Length Wtd. (ft)	33.56	Wetted Per. (ft)		222.25	
Min Ch El (ft)	1833.00	Shear (lb/sq ft)		1.13	
Alpha	1.00	Stream Power (lb/ft s)		11.53	
Frctn Loss (ft)	0.08	Cum Volume (acre-ft)		35.59	
C & E Loss (ft)	0.26	Cum SA (acres)		5.68	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2233.54

INPUT
Description:
Station Elevation Data   num=   164
```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
    -2001851.017-174.1971849.386-160.0721848.797-157.467    1848-156.5251847.793
-152.465    1847-152.1841846.924-151.9491846.848-151.7821846.785-150.6761846.452
-149.6391846.175-149.494 1846.12-149.281    1846-149.1191845.887-147.6611845.036
-147.594    1845-147.5071844.954-145.786    1844-144.6811843.388-144.0681843.072
-143.921    1843-143.7531842.911-142.082    1842-141.326 1841.63-139.957    1841
-139.1681840.664-137.681    1840 -136.421839.461-135.443    1839-132.9811838.054
 -132.77    1838-131.0531837.372-130.4171837.154 -129.971837.028-129.847    1837
-129.539    1837-128.5011836.524-128.496 1836.52-128.4781836.511-128.4711836.508
 -127.71 1836.32-126.9771836.066 -126.65    1836-124.561    1836-123.255    1836
-121.182    1836-120.1521835.722-119.5191835.691-118.1531835.351-117.1331835.137
-116.5781835.069-116.308    1835-116.058    1835-115.502    1835 -115.17    1835
-113.2861834.721-112.6721834.674 -111.931834.571-111.3611834.484-109.7861834.312
-108.484    1834-106.781    1834-106.736    1834-105.539    1834  -104.1    1834
 -89.259    1834 -79.395    1834 -79.252    1834 -75.3851833.426 -75.3721833.427
 -73.4741833.405 -73.4211833.406 -72.1991833.404 -72.1861833.404 -64.097  1833.4
  -46.77    1833 -45.377    1833  -45.11    1833 -45.048    1833 -32.265    1833
  -31.22    1833  -31.12    1833 -24.153    1833       0    1833   1.073    1833
   7.326    1833  10.817    1833  24.3451833.119  34.9321833.119  35.1621833.122
  40.874 1833.19  44.1431833.238  76.2291833.239  76.7041833.253  82.0321833.254
  82.0831833.254  82.9181833.263  91.5511833.271  94.7741833.318  95.182 1833.32
  98.1511833.384   98.69 1833.39 108.134    1834 109.373    1834 110.972    1834
 112.6321834.167 112.6831834.173 115.5821834.487 116.0771834.543 118.9071834.897
 119.011 1834.91 119.751    1835 123.1391835.334 125.5651835.536   130.1    1836
 130.188    1836 130.212    1836 131.6311836.264 135.877    1837 136.4261837.155
 139.926    1838 143.7521838.978 143.835    1839 145.7121839.496 147.619    1840
 147.6771840.016  147.811840.054 147.9651840.101 149.135 1840.45 150.732    1841
 151.3711841.241 152.9921841.763 153.2721841.865 153.715    1842 155.5861842.749
  156.23    1843 158.6031843.953 158.709    1844 158.9541844.106 159.168 1844.19
  160.421844.685 161.283    1845 162.8571845.532 164.483    1846 166.0281846.499
 167.802    1847 169.5711847.524 171.254    1848 172.1591848.264 174.837    1849
 177.869 1849.75  178.76    1850 180.8051850.507 182.815    1851 184.9741851.533
 186.679    1852 187.5551852.225 190.591    1853 191.2641853.173 193.0591853.676
 194.288    1854 195.3761854.148 197.6871854.458     2001854.777
```

Manning's n Values   num=   3
```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    -200    .025    -200    .025     200    .025
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200     200            66.43   66.43   66.43             .1       .3
```

CROSS SECTION OUTPUT Profile #PF 1
```
*************************************************************************************************
* E.G. Elev (ft)         * 1839.57  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.76  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1838.81  * Reach Len. (ft)       *   66.43  *   66.43  *   66.43  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1376.56  *          *
* E.G. Slope (ft/ft)     *0.001654  * Area (sq ft)          *          * 1376.56  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  278.04  * Top Width (ft)        *          *  278.04  *          *
* Vel Total (ft/s)       *    7.00  * Avg. Vel. (ft/s)      *          *    7.00  *          *
* Max Chl Dpth (ft)      *    5.81  * Hydr. Depth (ft)      *          *    4.95  *          *
* Conv. Total (cfs)      *237004.0  * Conv. (cfs)           *          *237004.0  *          *
* Length Wtd. (ft)       *   66.43  * Wetted Per. (ft)      *          *  279.22  *          *
* Min Ch El (ft)         * 1833.00  * Shear (lb/sq ft)      *          *    0.51  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.56  *          *
* Frctn Loss (ft)        *    0.13  * Cum Volume (acre-ft)  *          *   34.70  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    5.48  *          *
*************************************************************************************************
```

CROSS SECTION

RIVER: MAIN
REACH: WEST   RS: -2300

INPUT
Description:
Station Elevation Data   num=   101
```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
    -2001850.844-186.7581849.904-159.053    1848-158.0951847.703-155.829    1847
-154.4511846.578-152.586    1846-150.3761845.292-149.432    1845-148.7671844.791
-146.289    1844-144.8781843.493-143.359    1843-140.9871842.238-140.169    1842
-139.9791841.944-136.673    1841-134.2481840.308-133.161    1840-130.2521839.171
-129.651    1839-126.6191838.136-126.148    1838-124.8011837.505-123.6651837.075
-123.469    1837-123.1891836.894-121.895  1836.4-120.867    1836-120.3011835.922
-114.452    1835-111.7411834.436-109.292    1834 -97.074    1834 -58.7471833.448
  -54.641833.315 -46.553 1833.01 -46.281    1833 -35.105    1833 -32.195    1833
```

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       01833.367  43.1451833.859   55.91    1834  55.965    1834   58.69    1834
  62.248    1834  63.809    1834  75.631    1834  75.729    1834  82.424    1834
  86.522    1834  87.633    1834  88.183    1834  92.013    1834 111.7111834.422
 113.5051834.485 114.1691834.505 115.3381834.523 118.4621834.609 121.8021834.678
 122.4991834.694 133.486    1835 133.904    1835 135.9381835.234  140.86    1836
 142.9271836.519 144.847    1837 148.2191837.836  148.87    1838 151.1211838.576
 152.872    1839 153.5951839.191  156.78    1840 159.3971840.679 160.579    1841
 161.6571841.293 164.413    1842 166.4541842.637 167.606    1843 168.5721843.321
 170.702    1844 171.8481844.381 173.773    1845 175.5811845.607 176.786    1846
 179.2351846.826 179.744    1847 179.9971847.089 182.677    1848 184.0341848.463
 185.587    1849  186.721849.377 188.482    1850 189.8991850.497 191.461    1851
 194.4421851.887 194.791    1852 195.2091852.127 197.975    1853  198.761853.217
     2001853.605

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025     200    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200     200            60.86   60.86   60.86             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1839.42  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.97  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1838.44  * Reach Len. (ft)       *   60.86  *   60.86  *   60.86  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1218.71  *          *
* E.G. Slope (ft/ft)     *0.002483  * Area (sq ft)          *          * 1218.71  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  278.30  * Top Width (ft)        *          *  278.30  *          *
* Vel Total (ft/s)       *    7.91  * Avg. Vel. (ft/s)      *          *    7.91  *          *
* Max Chl Dpth (ft)      *    5.44  * Hydr. Depth (ft)      *          *    4.38  *          *
* Conv. Total (cfs)      *193416.4  * Conv. (cfs)           *          *193416.4  *          *
* Length Wtd. (ft)       *   60.86  * Wetted Per. (ft)      *          *  279.31  *          *
* Min Ch El (ft)         * 1833.00  * Shear (lb/sq ft)      *          *    0.68  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.35  *          *
* Frctn Loss (ft)        *    0.13  * Cum Volume (acre-ft)  *          *   32.72  *          *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *          *    5.06  *          *
************************************************************************************************

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2360.86

INPUT
Description:
Station Elevation Data    num=     103
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************
    -2001851.495-196.0221851.761-193.1781851.694-192.6011851.724-190.4731851.803
 -190.131851.811-188.3451851.687-187.1321851.697-186.9231851.674-185.1081851.432
-184.1411851.279  -182.2    1851-175.9631850.129-175.172    1850-169.6261849.058
-169.5581849.046 -169.421849.023-169.387 1849.02-169.3331849.015-169.276    1849
-163.5651848.009-163.513    1848-163.2561847.943-158.849    1847-157.1881846.637
-154.542    1846-152.8521845.603-150.386    1845-148.0611844.477 -146.37    1844
-144.5421843.484-142.479    1843-139.8911842.247-139.168    1842-136.5311841.023
-136.463    1841-136.3821840.973-133.722    1840-133.2861839.851-130.965    1839
  -130.11838.704-128.208    1838-126.8281837.555  -125.3    1837-123.0111836.368
-122.025    1836-118.6811835.277-117.447    1835 -116.031834.751-111.572    1834
-106.127 1833.22-105.5761833.221-103.7121833.303  -101.91833.146 -93.985    1833
 -82.499    1833 -80.632    1833 -62.218    1833 -56.831    1833 -39.787    1833
 -16.8911833.228  -3.801 1833.36       01833.382 104.581    1834 110.117    1834
 110.217    1834 110.945    1834 123.977    1834 124.149    1834 124.508    1834
 143.6811834.879 146.403    1835 146.4891835.024 150.031    1836 151.9041836.525
 153.616    1837   156.41837.781 157.186    1838 159.6131838.692 160.729    1839
 161.2251839.131 164.513    1840 166.3291840.468 168.324    1841 171.0811841.716
 172.192    1842 173.203 1842.29 175.743    1843 176.8131843.338 178.927    1844
 180.3861844.462 182.085    1845 183.0461845.299 185.267    1846   186.31846.321
  188.45    1847 189.5561847.344 191.637    1848 194.3331848.891 194.683    1849
 194.9211849.074 197.827    1850     2001850.688

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025     200    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200     200              .1   39.14   78.15             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1839.24  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.82  * Wt. n-Val.            *          *   0.025  *          *
```

* W.S. Elev (ft)	* 1838.42	* Reach Len. (ft)	* 0.10	* 39.14	* 78.15 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1325.46	* *
* E.G. Slope (ft/ft)	*0.001965	* Area (sq ft)	*	* 1325.46	* *
* Q Total (cfs)	* 9638.00	* Flow (cfs)	*	* 9638.00	* *
* Top Width (ft)	* 287.97	* Top Width (ft)	*	* 287.97	* *
* Vel Total (ft/s)	* 7.27	* Avg. Vel. (ft/s)	*	* 7.27	* *
* Max Chl Dpth (ft)	* 5.42	* Hydr. Depth (ft)	*	* 4.60	* *
* Conv. Total (cfs)	*217413.8	* Conv. (cfs)	*	*217413.8	* *
* Length Wtd. (ft)	* 39.14	* Wetted Per. (ft)	*	* 289.11	* *
* Min Ch El (ft)	* 1833.00	* Shear (lb/sq ft)	*	* 0.56	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.09	* *
* Frctn Loss (ft)	* 0.08	* Cum Volume (acre-ft)	*	* 30.94	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.67	* *

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2400

INPUT
Description:
Station Elevation Data num= 96

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2001851.495	-196.4761851.713	-192.9491851.571	-192.4641851.587	-190.7981851.618					
-190.5451851.619	-186.3221851.227	-185.8821851.215	-185.2741851.134	-184.41	1851				
-181.671850.704	-176.914	1850	-173.9571849.471	-171.348	1849	-168.6181848.506			
-165.888	1848	-163.3911847.418	-161.597	1847	-158.6931846.275	-157.533	1846		
-156.5511845.772	-153.158	1845	-149.4241844.227	-148.446	1844	-147.3431843.745			
-143.45	1843	-140.3741842.248	-139.519	1842	-137.1981841.307	-137.0731841.267			
-136.278	1841	-135.6891840.779	-135.5491840.724	-133.566	1840	-129.9791839.071			
-129.661	1839	-128.6681838.719	-127.201	1838.3	-126.199	1838	-126.0591837.955		
-124.4091837.516	-123.1318	37.162	-122.548	1837	-118.7351836.062	-118.696	1836.05		
-118.565	1836	-118.2831835.889	-116.037	1835	-114.5671834.741	-108.584	1834		
-103.8421833.238	-102.557	1833	-96.798	1833	-92	1833	-85.924	1833	
-83.943	1833	-79.948	1833	-69.416	1833	-64.506	1833	-63.2	1833
-62.608	1833	-60.179	1833	-44.63	1833	-31.6561833.093		01833.288	
115.865	1834	116.091	1834	126.138	1834	128.036	1834	140.035	1834
140.041	1834	140.043	1834	140.119	1834	140.6061834.037		153.499	1835
158.3731835.634	161.644	1836	165.2571836.931	165.549	1837	165.915	1837.09		
169.701	1838	171.4961838.456	173.754	1839	176.1091839.568	177.864	1840		
181.0351840.784	181.938	1841	182.353	1841.1	186.216	1842	187.2071842.249		
190.385	1843	193.0291843.635	194.532	1844	195.8051844.319	198.569	1845		
2001845.353									

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.025	-200	.025	200	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-200	200	.11	64.02 127.38	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1839.15	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.78	* Wt. n-Val.	*	* 0.025	* *
* W.S. Elev (ft)	* 1838.37	* Reach Len. (ft)	* 0.11	* 64.02	* 127.38 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1359.71	* *
* E.G. Slope (ft/ft)	*0.001893	* Area (sq ft)	*	* 1359.71	* *
* Q Total (cfs)	* 9638.00	* Flow (cfs)	*	* 9638.00	* *
* Top Width (ft)	* 298.59	* Top Width (ft)	*	* 298.59	* *
* Vel Total (ft/s)	* 7.09	* Avg. Vel. (ft/s)	*	* 7.09	* *
* Max Chl Dpth (ft)	* 5.37	* Hydr. Depth (ft)	*	* 4.55	* *
* Conv. Total (cfs)	*221514.5	* Conv. (cfs)	*	*221514.5	* *
* Length Wtd. (ft)	* 64.02	* Wetted Per. (ft)	*	* 299.64	* *
* Min Ch El (ft)	* 1833.00	* Shear (lb/sq ft)	*	* 0.54	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.80	* *
* Frctn Loss (ft)	* 0.14	* Cum Volume (acre-ft)	*	* 29.74	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.40	* *

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2463.97

INPUT
Description:
Station Elevation Data num= 117

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2001851.495	-196.8051851.651	-191.8381851.334	-191.521851.334	-190.547	1851.32				

```
-190.4141851.317 -187.84    1851-178.5811850.049-178.143    1850 -178.011849.984
-176.0931849.724-172.097    1849-169.409  1848.5-166.853    1848 -163.471847.214
-162.457    1847-160.8071846.605 -158.33    1846-155.8011845.466-153.352    1845
-152.0331844.754-147.831    1844-141.6291843.002 -141.62    1843-141.6141842.999
-133.769    1842-132.5171841.559-130.261    1841-128.4871840.047-128.354    1840
-124.3041839.342-122.8521839.144-121.897    1839-119.5551838.602-118.3151838.413
-113.902  1837.3-112.741    1837 -111.651836.853 -111.551836.844-111.0721836.786
-105.419    1836-105.1411835.943-104.8641835.892-103.2211835.583-102.8141835.516
 -99.317    1835 -97.6391834.824 -97.0221834.748 -94.9461834.492 -94.714 1834.46
 -94.1841834.379 -91.433    1834 -86.323 1833.38 -82.688    1833 -80.645    1833
 -77.327    1833 -73.953    1833 -71.585    1833 -70.719    1833 -68.867    1833
  -68.71    1833 -59.696    1833 -52.713    1833 -51.097    1833 -49.895    1833
 -46.397    1833 -39.401    1833 -37.634    1833 -35.976    1833 -29.218    1833
 -20.854    1833 -14.489    1833  -8.927    1833  -5.097    1833       0    1833
   8.625    1833  67.8871833.536   68.341833.547  72.5981833.545  76.8761833.541
  77.6221833.563  77.7931833.567  82.4851833.557  82.9441833.571   84.621833.572
  84.7691833.576  85.7411833.602  86.0651833.609   91.731833.632  92.8171833.654
  96.3011833.662  97.4591833.681 100.1621833.725 100.3671833.728 103.6581833.734
 105.7161833.747 106.2451833.744  109.441833.752  110.76 1833.73 120.255    1834
  121.67    1834 123.628    1834 123.674    1834 127.699    1834  127.97    1834
 140.491    1834 145.7231834.481 146.1531834.516 151.966    1835  161.861835.939
   162.21835.975 162.456    1836 163.1721836.058 174.9861837.253 175.9051837.263
 177.6071837.206 182.012    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025 182.012    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 182.012            19.88   19.88   19.88             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 1838.99  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.93  * Wt. n-Val.             *          *   0.025  *          *
* W.S. Elev (ft)         * 1838.07  * Reach Len. (ft)        *   19.88  *   19.88  *   19.88  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1246.72  *          *
* E.G. Slope (ft/ft)     *0.002528  * Area (sq ft)           *          * 1246.72  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)             *          * 9638.00  *          *
* Top Width (ft)         *  298.95  * Top Width (ft)         *          *  298.95  *          *
* Vel Total (ft/s)       *    7.73  * Avg. Vel. (ft/s)       *          *    7.73  *          *
* Max Chl Dpth (ft)      *    5.07  * Hydr. Depth (ft)       *          *    4.17  *          *
* Conv. Total (cfs)      *191685.0  * Conv. (cfs)            *          *191685.0  *          *
* Length Wtd. (ft)       *   19.88  * Wetted Per. (ft)       *          *  299.66  *          *
* Min Ch El (ft)         * 1833.00  * Shear (lb/sq ft)       *          *    0.66  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    5.08  *          *
* Frctn Loss (ft)        *    0.07  * Cum Volume (acre-ft)   *          *   27.82  *          *
* C & E Loss (ft)        *    0.10  * Cum SA (acres)         *          *    3.96  *          *
*************************************************************************************************

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2483.86

INPUT
Description: Concrete Drop Structure
Station Elevation Data    num=      93
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -2001849.741-197.5331849.899-195.812    1850-195.0281850.098-193.899    1850
-191.193    1850-186.386    1850-180.0481849.208-179.8531849.181-178.669    1849
-176.4121848.795-175.6891848.732-166.638    1848 -164.461847.728-163.2141847.555
 -160.25    1847 -158.611846.678 -154.47    1846  -149.61845.136-148.748    1845
-144.6581844.443-141.472    1844-140.8831843.931-138.4431843.661-132.558    1843
-129.1481842.617-123.628    1842-121.2981841.643-117.028    1841-112.4091840.083
-112.016    1840-108.0331839.086-107.592    1839 -92.0341838.077 -90.795    1838
 -90.7261837.983 -90.6781837.967 -88.6921837.333 -85.6361836.383 -82.4751835.167
 -75.6381833.442 -71.901    1833 -67.4961832.561 -54.8291832.408 -54.1141832.446
 -47.3361832.452 -45.6531832.373 -45.2631832.398  -43.351832.384 -38.0281832.559
  -32.961832.569 -26.6481832.696  -22.931832.747 -18.1571832.911 -12.6921832.982
 -12.069    1833 -11.054    1833       0    1833   3.429    1833   14.07    1833
  15.2221832.977  15.4261832.977  17.628    1833  30.969    1833   34.811832.958
  35.1441832.955   44.261832.932  44.7861832.935  53.7071832.896  54.4321832.886
  55.2961832.885  65.2551832.792  66.5951832.808  69.6821832.818  70.9531832.816
  80.178    1833   83.551833.014  83.5731833.014   93.491833.037  93.5551833.038
  93.7071833.041  93.7181833.041 105.3181833.063 105.4941833.064 105.5391833.064
 117.2151833.095 117.3821833.092 122.6271833.241 128.0481833.251 128.9521833.357
```

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 133.582    1834 136.1981835.909 146.541    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
    -200    .025    -200    .025 146.541    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 146.541            16.12   16.12   16.12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1838.83  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.92  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1836.90  * Reach Len. (ft)       *   16.12  *   16.12  *   16.12  *
* Crit W.S. (ft)         * 1836.90  * Flow Area (sq ft)     *          *  866.57  *          *
* E.G. Slope (ft/ft)     *0.005965  * Area (sq ft)          *          *  866.57  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  228.43  * Top Width (ft)        *          *  228.43  *          *
* Vel Total (ft/s)       *   11.12  * Avg. Vel. (ft/s)      *          *   11.12  *          *
* Max Chl Dpth (ft)      *    4.53  * Hydr. Depth (ft)      *          *    3.79  *          *
* Conv. Total (cfs)      *124788.5  * Conv. (cfs)           *          *124788.5  *          *
* Length Wtd. (ft)       *   16.12  * Wetted Per. (ft)      *          *  229.79  *          *
* Min Ch El (ft)         * 1832.37  * Shear (lb/sq ft)      *          *    1.40  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   15.62  *          *
* Frctn Loss (ft)        *    0.06  * Cum Volume (acre-ft)  *          *   27.34  *          *
* C & E Loss (ft)        *    0.18  * Cum SA (acres)        *          *    3.84  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2500

INPUT
Description:
Station Elevation Data    num=      96
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -2001848.472-189.3811849.151-188.9871849.174-187.7891849.283 -187.721849.286
-182.473    1849-181.2291848.947-181.1651848.942-180.0491848.861-174.7761848.466
-170.9211848.168-169.3241848.032-168.971    1848-168.7851847.981-168.3411847.942
-166.0451847.723 -157.85    1847-150.8111846.049-150.382    1846-148.9051845.804
-143.253    1845-137.1691844.288-134.806    1844 -131.551843.635-129.6381843.417
-126.017    1843-120.297  1842.3-117.879    1842-113.658 1841.45-110.334    1841
-109.1051840.732-106.093    1840 -104.111839.625 -99.373    1839 -93.0051838.601
  -92.361838.552 -89.363 1838.36 -88.4071838.302 -83.558    1838 -82.7231837.755
 -82.233 1837.51 -80.873 1836.98 -76.8291835.326 -70.883 1832.06 -66.6351829.754
 -65.5041829.715 -60.2161829.668 -57.8941829.721 -49.0481829.851 -47.6751829.845
 -43.4621829.763 -40.791 1829.72 -35.0341829.715 -32.9631829.715 -21.8491829.805
 -20.162  1829.8 -13.8261829.723 -11.8991829.716  -9.0621829.703   -.8471829.691
       01829.688    2.351829.682   8.8321829.527   9.5911829.533  13.4611829.565
  16.5351829.762  18.5471829.668  22.088  1829.7  26.4631829.641  32.3321829.699
  35.7261829.696  41.2181829.631  42.2641829.665  45.1011829.641  45.2751829.657
  49.8481829.923  50.7261829.927  57.4781829.802  65.5991829.934  66.2251829.946
  68.656    1830  74.4771830.082  83.3531830.081  84.6931830.095  88.183    1830
   90.341829.905  91.4481829.915 104.7751829.917 105.6921829.925 109.779    1830
 114.0261830.069 114.6631830.068 125.0031830.074 125.4351830.086 130.3551836.187
 132.057    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025-187.789    .025 132.057    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      -187.789 132.057              9.7     9.7     9.7             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1836.38  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.34  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.04  * Reach Len. (ft)       *    9.70  *    9.70  *    9.70  *
```

```
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1038.56  *          *
* E.G. Slope (ft/ft)     *0.002884  * Area (sq ft)           *          * 1038.56  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  205.73  * Top Width (ft)         *          *  205.73  *          *
* Vel Total (ft/s)       *    9.28  * Avg. Vel. (ft/s)       *          *    9.28  *          *
* Max Chl Dpth (ft)      *    5.51  * Hydr. Depth (ft)       *          *    5.05  *          *
* Conv. Total (cfs)      *179476.6  * Conv. (cfs)            *          *179476.6  *          *
* Length Wtd. (ft)       *    9.70  * Wetted Per. (ft)       *          *  209.49  *          *
* Min Ch El (ft)         * 1829.53  * Shear (lb/sq ft)       *          *    0.89  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    8.28  *          *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)   *          *   26.99  *          *
* C & E Loss (ft)        *    0.19  * Cum SA (acres)         *          *    3.76  *          *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2509.72

INPUT
Description:
Station Elevation Data    num=      82
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
    -2001848.036-184.0361848.646-177.9081848.271-174.254    1848-173.937    1848
-168.0381847.663-160.274 1847.26-159.2421847.202-156.953    1847-155.622 1846.82
-148.409    1846-146.4861845.745-143.4871845.371-140.544    1845-136.9391844.602
-131.564    1844-127.1511843.506-122.648    1843-117.8031842.394-114.632    1842
-111.493 1841.63-106.645    1841 -104.841840.561-102.165    1840 -98.7531839.544
 -94.693    1839 -90.1551838.704 -80.145    1838 -75.0751835.234 -71.7391832.919
 -65.9851829.481 -63.9381829.521 -63.4551829.505 -59.3791829.531 -58.5081829.166
 -55.961    1828 -54.3691827.891 -41.4821827.895 -40.8411827.877 -32.1261827.881
 -32.0411827.881 -21.534 1827.88 -21.0081827.892 -20.3111827.905 -19.749    1828
  -8.535    1828  -6.927    1828  -6.335    1828       0    1828   6.154    1828
    14.9    1828  24.664    1828  25.745    1828  25.791    1828  26.969    1828
  37.687    1828  37.818    1828  37.925    1828  40.841    1828  51.734    1828
   51.75    1828  52.097    1828  62.432    1828  62.585    1828  62.621    1828
  62.963    1828  76.549    1828   77.14    1828  77.201    1828  92.023    1828
  92.035    1828  93.421    1828 102.636    1828 102.672    1828 103.048    1828
 103.145    1828 113.145    1828 113.554    1828 115.107 1829.15 115.7641829.558
 123.5371829.169 129.629    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -200    .025-184.036    .025 129.629    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
      -184.036 129.629            24.63   24.63   24.63             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 1836.17  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.70  * Wt. n-Val.             *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.47  * Reach Len. (ft)        *   24.63  *   24.63  *   24.63  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1437.10  *          *
* E.G. Slope (ft/ft)     *0.000975  * Area (sq ft)           *          * 1437.10  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  203.38  * Top Width (ft)         *          *  203.38  *          *
* Vel Total (ft/s)       *    6.71  * Avg. Vel. (ft/s)       *          *    6.71  *          *
* Max Chl Dpth (ft)      *    7.59  * Hydr. Depth (ft)       *          *    7.07  *          *
* Conv. Total (cfs)      *308600.7  * Conv. (cfs)            *          *308600.7  *          *
* Length Wtd. (ft)       *   24.63  * Wetted Per. (ft)       *          *  209.27  *          *
* Min Ch El (ft)         * 1827.88  * Shear (lb/sq ft)       *          *    0.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.80  *          *
* Frctn Loss (ft)        *    0.03  * Cum Volume (acre-ft)   *          *   26.71  *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *          *    3.72  *          *
*****************************************************************************************

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2534.35

INPUT
Description:
Station Elevation Data    num=      93
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
```

```
    -2001846.967-177.5261847.137-177.1831847.107-172.338 1847.35 -168.581847.295
-159.4781847.026-159.3371847.022 -158.91    1847 -158.391846.957-144.221    1846
-141.481 1845.67-136.7321845.102-135.869    1845-134.6981844.866-127.336    1844
-121.4181843.334-118.007    1843-111.7321842.232-109.829    1842-108.9421841.883
-104.7861841.356-102.033    1841-101.4521840.916-101.1241840.874 -94.729    1840
 -91.8071839.505 -89.033    1839 -84.2071838.689 -79.7191838.429 -77.8491838.315
 -72.955    1838 -71.2661836.436 -70.5651835.673  -69.261835.827 -67.3841835.636
 -50.698    1828  -37.751827.115 -36.894    1827 -36.2591826.574 -36.216 1826.55
 -36.189 1826.54 -35.9411826.477 -35.8441826.474 -35.5481826.561 -33.9341826.238
 -33.5421826.257 -31.9831826.373 -31.6651826.405 -30.6221826.503 -29.8271826.582
 -25.382    1827 -25.192    1827 -22.869    1827 -22.634    1827 -22.419    1827
 -21.3491827.019 -15.569    1828 -15.295    1828   -.433    1828       0    1828
   5.044    1828   5.366    1828   5.592    1828   5.845    1828  14.806    1828
  15.188    1828  24.953    1828  29.126    1828  30.287    1828  31.229    1828
  56.986    1828  60.347    1828  60.495    1828  63.749    1828  66.331    1828
  67.952    1828  68.339    1828  71.975    1828   74.28    1828  80.317    1828
  80.947    1828  81.855    1828  82.007    1828  99.169    1828  99.764    1828
 100.187    1828 104.594    1828 105.732    1828  106.28    1828 111.996    1828
 114.6011829.929 115.8511830.299 125.559    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025 125.559    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 125.559            44.52   44.52   44.52             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1836.13  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.84  * Wt. n-Val.             *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.29  * Reach Len. (ft)        *   44.52  *   44.52  *   44.52  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1311.96  *          *
* E.G. Slope (ft/ft)     *0.001187  * Area (sq ft)           *          * 1311.96  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)             *          * 9638.00  *          *
* Top Width (ft)         *  188.76  * Top Width (ft)         *          *  188.76  *          *
* Vel Total (ft/s)       *    7.35  * Avg. Vel. (ft/s)       *          *    7.35  *          *
* Max Chl Dpth (ft)      *    9.05  * Hydr. Depth (ft)       *          *    6.95  *          *
* Conv. Total (cfs)      *279706.2  * Conv. (cfs)            *          *279706.2  *          *
* Length Wtd. (ft)       *   44.52  * Wetted Per. (ft)       *          *  193.12  *          *
* Min Ch El (ft)         * 1826.24  * Shear (lb/sq ft)       *          *    0.50  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.70  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)   *          *   25.93  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *          *    3.61  *          *
************************************************************************************************

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2578.87

INPUT
Description:
Station Elevation Data    num=     126
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************************
    -2001846.149-195.3791846.083-187.336    1846 -175.74    1846 -152.881845.788
-151.9171845.806-151.1021845.782-149.4091845.709-147.1581845.743-144.0891845.534
-143.7631845.528-138.9821845.151-138.5791845.125 -137.14    1845 -134.231844.705
-127.234    1844-124.8161843.737  -118.3    1843-114.1471842.432  -110.9    1842
-105.2141841.044-104.968    1841-104.7041840.945 -100.26    1840 -98.4131839.513
 -96.504    1839 -94.9411838.568  -94.931838.565 -92.633    1838 -90.025 1837.04
 -86.2981835.828 -84.156    1835 -82.8021834.628  -82.571834.579 -79.979    1834
 -77.8771833.518 -75.589    1833  -73.041832.332 -71.587    1832 -69.974 1831.56
 -69.2171831.293 -68.269    1831 -65.9561830.334 -64.918    1830 -61.8511829.099
 -61.529    1829 -60.529    1829 -60.469    1829 -59.908    1829 -59.305    1829
 -57.373    1829 -57.1951829.098 -55.617    1830 -55.039    1830 -53.955    1830
 -52.9931829.521 -51.788    1829 -50.6211828.394 -50.0611828.099 -50.0351828.084
 -49.9241828.016 -49.875    1828 -49.8631827.994 -47.961    1827 -46.1711826.066
 -46.048    1826 -45.953    1826 -39.885    1826 -38.6161826.146 -30.332    1827
 -30.079 1827.06 -25.913    1828 -20.986    1828 -20.568    1828  -18.88    1828
 -18.624    1828 -18.534    1828 -18.381    1828 -14.373    1828  -12.43    1828
 -11.699    1828  -5.295    1828       0    1828  11.594    1828  12.686    1828
  14.648    1828  30.094    1828  31.396    1828  32.758    1828  32.953    1828
  43.661    1828  46.521    1828  50.581    1828  58.379    1828  59.4361828.495
  60.599    1829  63.553    1829  65.209    1829  78.834    1829  81.959 1828.56
  88.112    1828  94.735    1828 100.229    1828 100.377    1828 102.2591828.198
 108.765    1829 111.6111829.992 111.635    1830 114.3051830.929 114.512    1831
 115.5371831.356 117.391    1832 118.1161832.253 120.268    1833 123.0841833.805
 123.775    1834 123.9771834.055 127.364    1835 128.6551835.348 131.011    1836
 133.1081836.539 134.797    1837 139.715 1837.54 142.0021837.743 144.188    1838
 144.424    1838

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025 144.188    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 144.188            25.86   25.86   25.86             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1836.05  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.78  * Wt. n-Val.             *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.27  * Reach Len. (ft)        *   25.86  *   25.86  *   25.86  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1357.61  *          *
* E.G. Slope (ft/ft)     *0.001236  * Area (sq ft)           *          * 1357.61  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)             *          * 9638.00  *          *
* Top Width (ft)         *  213.23  * Top Width (ft)         *          *  213.23  *          *
* Vel Total (ft/s)       *    7.10  * Avg. Vel. (ft/s)       *          *    7.10  *          *
* Max Chl Dpth (ft)      *    9.27  * Hydr. Depth (ft)       *          *    6.37  *          *
* Conv. Total (cfs)      *274156.3  * Conv. (cfs)            *          *274156.3  *          *
* Length Wtd. (ft)       *   25.86  * Wetted Per. (ft)       *          *  216.78  *          *
* Min Ch El (ft)         * 1826.00  * Shear (lb/sq ft)       *          *    0.48  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.43  *          *
* Frctn Loss (ft)        *    0.03  * Cum Volume (acre-ft)   *          *   24.57  *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *          *    3.40  *          *
************************************************************************************************

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2604.73

INPUT
Description:
Station Elevation Data    num=     100
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -2001846.009-199.351    1846-192.0521845.855 -191.141845.837-189.9651845.809
-189.6221845.804-163.5221845.265-155.481 1845.09-150.778    1845-146.5261844.822
-141.2321844.628-140.0881844.581-130.824    1844-126.3951843.381 -123.54    1843
-119.4531842.422-116.388    1842-111.9471841.384  -109.7    1841-108.1761840.688
-105.222    1840-101.6551839.224-100.689    1839 -98.7531838.592 -96.9221838.234
 -96.3571838.129 -95.648    1838 -94.3711837.769 -90.246    1837 -87.1871836.245
 -86.231    1836 -85.9451835.858 -83.847    1835 -83.2441834.757 -81.191    1834
  -80.671833.791 -78.519    1833 -77.4851832.591  -75.82    1832 -73.5151831.156
 -73.043    1831 -66.8241830.145 -66.045    1830  -64.911829.516 -63.769    1829
 -60.7161828.521 -59.474 1828.32 -58.5271828.173 -57.239    1828 -55.8821827.333
 -55.188    1827 -54.9791826.889 -53.392    1826 -45.788    1826 -44.541    1826
 -44.2461826.055 -37.691    1827 -37.379 1827.09 -34.607    1828 -30.328    1828
 -29.243    1828 -23.871    1828 -21.467    1828  -4.555    1828       0    1828
   8.131    1828  12.161    1828  24.389    1828  26.534    1828  53.155    1828
  55.784    1828   58.221828.957  58.335    1829  76.464    1829  76.502    1829
   77.81    1829   78.511828.785  80.889    1828    91.9    1828   92.05    1828
  92.088    1828  92.1451828.006 100.796    1829 102.1031829.446 103.727    1830
 104.8311830.377 106.453    1831 107.9571831.534 109.294    1832 111.7571832.862
 112.152    1833 113.9511833.531 115.533    1834 116.2111834.196     119    1835
 120.8041835.522 122.459    1836 125.1721836.786 125.912    1837 134.652    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    -200    .025    -200    .025 125.912    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 125.912            57.07   95.27  133.17             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1836.02  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.84  * Wt. n-Val.             *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.17  * Reach Len. (ft)        *   57.07  *   95.27  *  133.17  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          * 1308.60  *          *
* E.G. Slope (ft/ft)     *0.001314  * Area (sq ft)           *          * 1308.60  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)             *          * 9638.00  *          *
* Top Width (ft)         *  203.87  * Top Width (ft)         *          *  203.87  *          *
* Vel Total (ft/s)       *    7.37  * Avg. Vel. (ft/s)       *          *    7.37  *          *
* Max Chl Dpth (ft)      *    9.17  * Hydr. Depth (ft)       *          *    6.42  *          *
* Conv. Total (cfs)      *265836.3  * Conv. (cfs)            *          *265836.3  *          *
* Length Wtd. (ft)       *   95.27  * Wetted Per. (ft)       *          *  207.10  *          *
* Min Ch El (ft)         * 1826.00  * Shear (lb/sq ft)       *          *    0.52  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.82  *          *
* Frctn Loss (ft)        *    0.11  * Cum Volume (acre-ft)   *          *   23.78  *          *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *          *    3.28  *          *
************************************************************************************************

CROSS SECTION
```

RIVER: MAIN
REACH: WEST RS: -2700

INPUT
Description:
Station Elevation Data num= 97

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2001845.173	-193.657	1845	-190.1841844.918	-157.932	1844	-157.7381843.961			
-151.628	1843	-150.151842.904	-149.1551842.862	-148.7871842.845	-145.471842.677				
-141.2131842.444	-136.3451842.211	-133.22	1842	-130.0881841.487	-126.945	1841			
-125.2221840.745	-120.42	1840	-115.2881839.053	-115.1871839.035	-115.011	1839			
-114.891838.973	-110.037	1838	-106.3671837.051	-106.196	1837	-105.3281836.669			
-103.599	1836	-103.3031835.887	-100.984	1835	-100.725	1834.9	-98.41	1834	
-96.3641833.158	-95.974	1833	-93.9361832.145	-93.586	1832	-93.441831.941			
-91.118	1831	-89.4781830.333	-88.693	1830	-87.3491829.512	-85.958	1829		
-82.5311828.007	-82.506	1828	-82.4871827.997	-82.121827.934	-76.8681827.038				
-76.643	1827	-75.919	1826.87	-71.111	1826	-59.269	1826	-58.024	1826
-56.9331826.262	-56.8761826.292	-56.211826.584	-55.006	1827	-54.738	1827			
-51.716	1827	-51.33	1827	-50.092	1827	-49.822	1827	-48.843	1827
-48.643	1827	-47.952	1827	-44.708	1827	-44.103	1827	-44.1	1827
-36.723	1827	0	1827	40.21	1827	40.473	1827	49.882	1827
50.363	1827	54.915	1827	55.646	1827	55.8	1827	58.3671827.278	
67.741	1828	68.1721828.074	71.42	1829	72.6341829.381	74.636	1830		
76.4971830.616	77.572	1831	79.8271831.714	80.716	1832	81.143	1832.14		
82.7021832.663	83.671	1833	84.6431833.343	86.516	1834	88.0431834.452			
89.911	1835	90.7331835.232	93.468	1836	94.7241836.355	97.016	1837		
99.3761837.653	100.612	1838							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.025	-200	.025	100.612	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-200 100.612 59.9 100 139.77 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1835.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.		0.025	
W.S. Elev (ft)	1835.12	Reach Len. (ft)	59.90	100.00	139.77
Crit W.S. (ft)		Flow Area (sq ft)		1381.10	
E.G. Slope (ft/ft)	0.001010	Area (sq ft)		1381.10	
Q Total (cfs)	9638.00	Flow (cfs)		9638.00	
Top Width (ft)	191.66	Top Width (ft)		191.66	
Vel Total (ft/s)	6.98	Avg. Vel. (ft/s)		6.98	
Max Chl Dpth (ft)	9.12	Hydr. Depth (ft)		7.21	
Conv. Total (cfs)	303292.4	Conv. (cfs)		303292.4	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		194.47	
Min Ch El (ft)	1826.00	Shear (lb/sq ft)		0.45	
Alpha	1.00	Stream Power (lb/ft s)		3.12	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)		20.84	
C & E Loss (ft)	0.02	Cum SA (acres)		2.84	

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -2800

INPUT
Description:
Station Elevation Data num= 79

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2001844.134	-198.08	1844	-186.7131843.184	-184.179	1843	-184.166	1843		
-184.099	1843	-175.2631842.474	-169.3381842.126	-167.4051842.018	-167.226	1842			
-167.107	1842	-166.019	1842	-165.951	1842	-148.2421841.196	-144.569	1841	
-144.374	1841	-132.7351840.142	-132.2821840.114	-130.817	1840	-130.4091839.933			
-124.725	1839	-118.9181838.046	-118.635	1838	-112.7791837.038	-112.545	1837		
-112.3481836.952	-108.164	1836	-106.2041835.217	-105.683	1835	-105.363	1834.87		
-103.278	1834	-102.5161833.682	-100.907	1833	-98.828	1832.14	-98.479	1832	
-96.3021831.104	-96.046	1831	-94.3711830.295	-93.648	1830	-92.3221829.652			
-89.775	1829	-89.1851828.883	-84.67	1828	-80.4591827.048	-80.3	1827		
-79.692	1826.85	-76.489	1826	-65.856	1826	-62.343	1826	-43.4931826.155	
-23.5481826.319	01826.517	57.552	1827	59.472	1827	59.756	1827		
59.822	1827	61.7881827.533	62.7551827.744	63.915	1828	64.6271828.257			
66.72	1829	68.9231829.757	69.65	1830	71.0141830.465	72.578	1831		
73.1071831.177	74.0641831.496	75.581	1832	78.3631832.913	78.629	1833			
81.3691833.892	81.698	1834	82.0051834.101	84.745	1835	87.571835.932			
87.777	1836	88.0571836.093	90.796	1837	95.513	1838			

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
    -200    .025    -200    .025  90.796    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200  90.796             59.9     100  465.23             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 1835.77  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.71  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1835.06  * Reach Len. (ft)       *   59.90  *  100.00  *  465.23  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1429.19  *          *
* E.G. Slope (ft/ft)     *0.000895  * Area (sq ft)          *          * 1429.19  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  190.78  * Top Width (ft)        *          *  190.78  *          *
* Vel Total (ft/s)       *    6.74  * Avg. Vel. (ft/s)      *          *    6.74  *          *
* Max Chl Dpth (ft)      *    9.06  * Hydr. Depth (ft)      *          *    7.49  *          *
* Conv. Total (cfs)      *322129.8  * Conv. (cfs)           *          *322129.8  *          *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)      *          *  193.53  *          *
* Min Ch El (ft)         * 1826.00  * Shear (lb/sq ft)      *          *    0.41  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.78  *          *
* Frctn Loss (ft)        *    0.09  * Cum Volume (acre-ft)   *          *   17.61  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    2.40  *          *
*********************************************************************************************

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -2900

INPUT
Description:
Station Elevation Data    num=      81
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -2001845.149-193.292    1845-189.8841844.918-187.7641844.864-184.5391844.779
-165.6931844.305-155.008    1844-151.2931843.264-149.919    1843 -147.781842.617
-144.678    1842-135.2481841.375-133.3481841.254-132.5321841.213-129.595    1841
-125.5751840.093-125.146    1840-124.7721839.915-120.762    1839-120.6511838.974
-116.353    1838-112.9521837.199-112.091    1837 -111.351836.801-109.114    1836
 -107.141835.323-106.319    1835-104.0631834.084-103.863    1834-103.703 1833.91
-103.5651833.849-101.836    1833 -99.221 1832.06 -99.062    1832 -98.912 1831.94
 -96.513    1831 -94.501 1830.22 -93.911    1830 -92.3181829.401 -91.239    1829
 -90.6441828.822 -87.609    1828 -85.0821827.314 -83.918    1827  -79.921826.045
  -79.73    1826 -77.462    1826 -64.113    1826  -20.421826.975 -19.295    1827
 -16.713    1827  -2.245    1827      -2    1827  -1.554    1827  -1.479    1827
    -.91    1827       0    1827    4.97    1827  50.142    1827  66.022    1827
  67.3621827.339  69.934    1828   72.281828.659  73.401    1829  74.159 1829.28
  76.022    1830  78.4781830.953  78.603    1831  78.9561831.139  81.023    1832
  81.2411832.092  83.387    1833  83.9711833.193  86.372    1834  87.128 1834.25
  89.358    1835  90.1831835.272  92.346    1836  93.6651836.434  95.324    1837
 109.424    1838

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
    -200    .025    -200    .025  95.324    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200  95.324            48.91   81.61  184.24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 1835.68  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.70  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1834.98  * Reach Len. (ft)       *   48.91  *   81.61  *  184.24  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1430.94  *          *
* E.G. Slope (ft/ft)     *0.000922  * Area (sq ft)          *          * 1430.94  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  195.54  * Top Width (ft)        *          *  195.54  *          *
* Vel Total (ft/s)       *    6.74  * Avg. Vel. (ft/s)      *          *    6.74  *          *
* Max Chl Dpth (ft)      *    8.98  * Hydr. Depth (ft)      *          *    7.32  *          *
* Conv. Total (cfs)      *317428.9  * Conv. (cfs)           *          *317428.9  *          *
* Length Wtd. (ft)       *   81.61  * Wetted Per. (ft)      *          *  198.46  *          *
* Min Ch El (ft)         * 1826.00  * Shear (lb/sq ft)      *          *    0.41  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.80  *          *
* Frctn Loss (ft)        *    0.07  * Cum Volume (acre-ft)   *          *   14.33  *          *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *          *    1.96  *          *
*********************************************************************************************

CROSS SECTION
```

RIVER: MAIN
REACH: WEST RS: -2981.61

INPUT
Description:
Station Elevation Data num= 84

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-200	1845.19	-180.184	1844.81	-159.103	1844.14	-148.35	1843.81	-145.372	1843.35
-142.079	1842.81	-132.182	1842.32	-121.995	1841.81	-118.658	1841	-117.935	1840.81
-117.539	1840.72	-113.731	1839.81	-113.455	1839.75	-112.743	1839.56	-109.526	1838.81
-109.481	1838.8	-105.322	1837.81	-104.524	1837.51	-104.322	1837.42	-103.18	1836.81
-102.805	1836.57	-101.133	1835.81	-100.543	1835.36	-99.514	1834.81	-98.089	1834.12
-97.475	1833.81	-95.952	1833.1	-95.301	1832.81	-94.73	1832.56	-93.097	1831.81
-91.057	1830.84	-90.989	1830.81	-90.571	1830.62	-88.755	1829.81	-88.609	1829.75
-86.171	1828.81	-84.012	1828.23	-82.476	1827.81	-80.608	1827.3	-78.692	1826.81
-75.688	1826.05	-74.686	1825.81	-60.084	1825.81	-50.792	1825.81	-42.249	1826.03
-41.565	1826.05	-38.919	1826.09	-19.489	1826.55	-18.477	1826.55	-17.012	1826.58
-14.467	1826.63	-14.142	1826.64	-13.093	1826.66	-8.51	1826.63	-8.18	1826.64
0	1826.7	14.727	1826.81	18.202	1826.81	20.473	1826.81	33.236	1826.81
47.503	1826.81	81.105	1826.81	84.459	1827.54	85.772	1827.81	86.43	1828.09
88.001	1828.81	88.952	1829.23	90.269	1829.81	91.195	1830.22	92.533	1830.81
94.047	1831.46	94.833	1831.81	96.842	1832.64	97.235	1832.81	98.146	1833.14
100.123	1833.81	101.689	1834.33	103.113	1834.81	105.994	1835.66	106.552	1835.81
106.93	1835.96	109.099	1836.81	110.749	1837.57	111.269	1837.81		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.025	-200	.025	111.269	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-200 111.269 18.36 18.36 18.36 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1835.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.60	* Wt. n-Val.	*	* 0.025	* *
* W.S. Elev (ft)	* 1834.98	* Reach Len. (ft)	* 18.36	* 18.36	* 18.36 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 1548.31	* *
* E.G. Slope (ft/ft)	*0.000749	* Area (sq ft)	*	* 1548.31	* *
* Q Total (cfs)	* 9638.00	* Flow (cfs)	*	* 9638.00	* *
* Top Width (ft)	* 203.52	* Top Width (ft)	*	* 203.52	* *
* Vel Total (ft/s)	* 6.22	* Avg. Vel. (ft/s)	*	* 6.22	* *
* Max Chl Dpth (ft)	* 9.17	* Hydr. Depth (ft)	*	* 7.61	* *
* Conv. Total (cfs)	*352245.6	* Conv. (cfs)	*	*352245.6	* *
* Length Wtd. (ft)	* 18.36	* Wetted Per. (ft)	*	* 206.76	* *
* Min Ch El (ft)	* 1825.81	* Shear (lb/sq ft)	*	* 0.35	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.18	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 11.54	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.59	* *

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -3000

INPUT
Description:
Station Elevation Data num= 81

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-200	1845.17	-179.999	1844.78	-166.797	1844.4	-145.808	1843.78	-139.107	1843.38
-130.771	1842.78	-128.376	1842.66	-119.205	1841.78	-118.077	1841.54	-114.442	1840.78
-112.196	1840.29	-109.687	1839.78	-106.33	1839.04	-105.181	1838.78	-104.731	1838.51
-104.41	1838.36	-102.754	1837.78	-101.355	1837.1	-100.722	1836.78	-99.535	1836.18
-98.839	1835.78	-97.129	1834.9	-96.908	1834.78	-96.73	1834.67	-95.207	1833.78
-94.715	1833.51	-93.26	1832.78	-92.484	1832.43	-91.164	1831.78	-90.208	1831.35
-89.035	1830.78	-87.89	1830.28	-86.869	1829.78	-85.297	1829.14	-84.411	1828.78
-82.304	1828.27	-80.243	1827.78	-77.807	1827.18	-76.195	1826.78	-74.562	1826.34
-72.339	1825.78	-70.508	1825.78	-46.607	1825.78	-36.232	1826.02	-35.898	1826.03
-31.64	1826.12	-24.241	1826.27	-23.297	1826.28	-20.248	1826.34	-17.209	1826.33
-16.357	1826.34	0	1826.47	42.802	1826.78	51.775	1826.78	52.884	1826.78
84.248	1826.78	84.708	1826.78	84.828	1826.82	87.775	1827.78	89.84	1828.68
90.082	1828.78	90.199	1828.83	92.164	1829.68	92.385	1829.78	92.399	1829.79
94.682	1830.78	94.821	1830.84	96.979	1831.78	97.404	1831.95	99.392	1832.78
101.484	1833.52	102.22	1833.78	104.97	1834.75	105.046	1834.78	105.441	1834.92
107.785	1835.78	108.849	1836.15	110.533	1836.78	111.148	1837.01	113.306	1838
116.149	1838								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-200	.025	-200	.025	116.149	.025

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -200 116.149              100     100     100             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 1835.56  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.59  * Wt. n-Val.            *          *   0.025  *          *
* W.S. Elev (ft)         * 1834.97  * Reach Len. (ft)       *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          * 1565.17  *          *
* E.G. Slope (ft/ft)     *0.000720  * Area (sq ft)          *          * 1565.17  *          *
* Q Total (cfs)          * 9638.00  * Flow (cfs)            *          * 9638.00  *          *
* Top Width (ft)         *  202.86  * Top Width (ft)        *          *  202.86  *          *
* Vel Total (ft/s)       *    6.16  * Avg. Vel. (ft/s)      *          *    6.16  *          *
* Max Chl Dpth (ft)      *    9.19  * Hydr. Depth (ft)      *          *    7.72  *          *
* Conv. Total (cfs)      *359270.1  * Conv. (cfs)           *          *359270.1  *          *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)      *          *  206.23  *          *
* Min Ch El (ft)         * 1825.78  * Shear (lb/sq ft)      *          *    0.34  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.10  *          *
* Frctn Loss (ft)        *    0.08  * Cum Volume (acre-ft)  *          *   10.88  *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *          *    1.50  *          *
**********************************************************************************************

LATERAL STRUCTURE


RIVER: MAIN
REACH: WEST               RS: -3090

INPUT
Description:
Lateral structure position     = Next ot right bank station
Distance from Upstream XS =      12
Deck/Roadway Width        =    48.5
Weir Coefficient          =    2.65
Weir Flow Reference       = Water Surface
 Weir Embankment Coordinates    num =        4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************
       0    1838     100    1833     300    1833   339.1  1837.5

Weir crest shape                          = Broad Crested


LATERAL STRUCTURE OUTPUT  Profile #PF 1  Lat Struct
**********************************************************************
* E.G. US. (ft)          * 1835.55  * Weir Sta US (ft)       *   64.14  *
* W.S. US. (ft)          * 1834.95  * Weir Sta DS (ft)       *  302.73  *
* E.G. DS (ft)           * 1834.66  * Weir Max Depth (ft)    *    1.71  *
* W.S. DS (ft)           * 1831.81  * Weir Avg Depth (ft)    *    1.31  *
* Q US (cfs)             * 9638.00  * Weir Submerg           *    0.00  *
* Q Leaving Total (cfs)  *  984.64  * Min El Weir Flow (ft)  * 1833.00  *
* Q DS (cfs)             * 8650.85  * Wr Top Wdth (ft)       *  238.59  *
* Perc Q Leaving         *   10.24  * Q Gate Group (cfs)     *          *
* Q Weir (cfs)           *  984.64  * Gate Open Ht (ft)      *          *
* Q Gates (cfs)          *          * Gate #Open             *          *
* Q Culv (cfs)           *          * Gate Area (sq ft)      *          *
* Q Lat RC (cfs)         *          * Gate Submerg           *          *
* Weir Flow Area (sq ft) *  313.71  * Gate Invert (ft)       *          *
**********************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: MAIN
REACH: WEST               RS: -3100

INPUT
Description:
Station Elevation Data    num=      93
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
    -200 1844.54-189.226 1844.54-188.383 1844.54-187.046 1844.54-186.589 1844.54
-184.511 1844.54-184.426 1844.54 -183.75 1844.54-183.495 1844.54-182.655 1844.54
```

-182.428 1844.54-182.356 1844.54-182.063 1844.54-172.394 1844.39-165.333 1844.29
-163.867 1844.27-160.597 1844.22 -155.31 1844.13-151.907 1844.07-142.246 1843.92
-118.243 1843.54-117.939 1843.54-117.443 1843.54-117.303 1843.54-117.163 1843.54
 -116.55 1843.48-111.705 1842.54-110.008 1842.17-107.182 1841.54-103.942 1840.81
-102.705 1840.54 -101.44 1840.23 -98.485 1839.54 -96.829 1839.12 -94.615 1838.54
 -92.015 1837.79 -91.06 1837.54 -89.815 1837.19 -89.546 1837.13 -87.615 1836.54
 -85.134 1835.62 -84.88 1835.54 -84.623 1835.39 -82.841 1834.54 -81.751 1833.68
  -81.57 1833.54 -80.385 1832.62 -80.29 1832.54 -80.03 1832.43 -79.822 1832.37
 -79.455 1832.25 -79.269 1832.19 -77.637 1831.54 -75.832 1831.03 -75.397 1830.91
 -74.711 1830.76 -74.498 1830.71 -74.482 1830.71 -74.425 1830.69 -74.045 1830.54
 -73.493 1830.34 -73.216 1830.26 -70.632 1829.54 -69.436 1829.2 -66.822 1828.54
 -64.291 1827.9 -63.363 1827.54 -61.472 1826.85 -61.264 1826.76 -60.551 1826.54
  -60.31 1826.45 -58.496 1825.54 -44.595 1825.54 -30.542 1825.54   0 1825.83
  11.301 1825.94 71.589 1826.54 72.205 1826.66 76.446 1827.54   77.68 1827.96
  79.616 1828.54 81.805 1829.35 82.358 1829.54 83.523 1829.99 84.958 1830.54
   86.82 1831.12 88.149 1831.54 88.984 1831.8 91.372 1832.54 97.567 1832.9
  98.695 1832.91 101.3871833.504 106.411833.532

Manning's n Values   num=   3
     Sta   n Val   Sta   n Val   Sta   n Val
****
    -200   .025   -200   .025 106.41   .025

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
          -200 106.41   100   100   100   .1   .3

CROSS SECTION OUTPUT Profile #PF 1
****
* E.G. Elev (ft)   * 1835.47 * Element   * Left OB * Channel * Right OB *
* Vel Head (ft)   *   0.73 * Wt. n-Val.   *   *   0.025 *   *
* W.S. Elev (ft)   * 1834.74 * Reach Len. (ft)   * 100.00 * 100.00 * 100.00 *
* Crit W.S. (ft)   *   * Flow Area (sq ft)   *   * 1401.22 *   *
* E.G. Slope (ft/ft)   *0.000952 * Area (sq ft)   *   * 1401.22 *   *
* Q Total (cfs)   * 9607.66 * Flow (cfs)   *   * 9607.66 *   *
* Top Width (ft)   * 189.66 * Top Width (ft)   *   * 189.66 *   *
* Vel Total (ft/s)   *   6.86 * Avg. Vel. (ft/s)   *   *   6.86 *   *
* Max Chl Dpth (ft)   *   9.20 * Hydr. Depth (ft)   *   *   7.39 *   *
* Conv. Total (cfs)   *311453.5 * Conv. (cfs)   *   *311453.5 *   *
* Length Wtd. (ft)   * 100.00 * Wetted Per. (ft)   *   * 193.76 *   *
* Min Ch El (ft)   * 1825.54 * Shear (lb/sq ft)   *   *   0.43 *   *
* Alpha   *   1.00 * Stream Power (lb/ft s) *   *   2.95 *   *
* Frctn Loss (ft)   *   0.10 * Cum Volume (acre-ft) *   *   7.48 *   *
* C & E Loss (ft)   *   0.01 * Cum SA (acres)   *   *   1.05 *   *
****

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: MAIN
REACH: WEST   RS: -3200

INPUT
Description:
Station Elevation Data   num=   93
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev
****
    -250 1845.31-244.162 1845.31-243.965 1845.31-243.488 1845.31 -235.97 1844.97
-234.427 1844.93-228.657 1844.88-223.054 1844.9-219.333 1844.8 -218.56 1844.78
-212.844 1844.31-185.836 1843.61-172.338 1843.31 -165.48 1843.31 -148.49 1842.91
-136.801 1842.5-132.861 1842.31-132.815 1842.31-132.739 1842.3-131.898 1842.18
 -124.91 1841.31-124.835 1841.31 -123.75 1841.31-116.573 1841.31-115.905 1841.31
-115.702 1841.31-115.286 1841.3-105.508 1840.31-105.175 1840.26-98.8784 1839.31
 -91.963 1838.32-91.8937 1838.31-91.7552 1838.29-85.7751 1837.31-84.2155 1836.97
-80.8731 1836.31-79.5013 1835.87-77.5656 1835.31-76.0322 1834.82-74.4693 1834.31
-72.0647 1833.51-71.4318 1833.31-70.8996 1833.14-68.2893 1832.31-67.2493 1831.98
-65.1572 1831.31-63.4057 1830.76-61.9431 1830.31-60.3938 1829.87-58.3948 1829.31
-56.2836 1828.72-54.8824 1828.31-53.8475 1828.01-51.4045 1827.31-48.7139 1826.57
-47.8186 1826.31-46.6628 1825.83-45.4997 1825.31-36.0751 1825.31-22.1274 1825.31
-12.8247 1825.31-4.09753 1825.31-.288683 1825.31   0 1825.316.580898 1825.31
12.59558 1825.3115.24989 1825.31 19.8999 1825.31 20.0876 1825.3121.68323 1825.31
 21.9242 1825.3122.45788 1825.3122.46102 1825.3123.27764 1825.3123.92379 1825.31
24.71708 1825.3131.65775 1825.3137.42995 1825.3159.46086 1825.3161.88263 1826.3
61.89858 1826.3165.59943 1826.9966.94953 1827.3168.42482 1827.8869.52993 1828.31
69.91756 1828.4672.05483 1829.3173.60064 1829.86 74.7765 1830.3177.46496 1831.07
78.24727 1831.3179.36103 1831.65   81.4   1833

Manning's n Values   num=   3
     Sta   n Val   Sta   n Val   Sta   n Val
****
    -250   .025   -250   .025   81.4   .025

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.
          -250   81.4   100   100   100   .1   .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1835.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.		0.025	
W.S. Elev (ft)	1834.50	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)		Flow Area (sq ft)		1225.71	
E.G. Slope (ft/ft)	0.001035	Area (sq ft)		1225.71	
Q Total (cfs)	9076.84	Flow (cfs)		9076.84	
Top Width (ft)	156.46	Top Width (ft)		156.46	
Vel Total (ft/s)	7.41	Avg. Vel. (ft/s)		7.41	
Max Chl Dpth (ft)	9.19	Hydr. Depth (ft)		7.83	
Conv. Total (cfs)	282130.0	Conv. (cfs)		282130.0	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		160.83	
Min Ch El (ft)	1825.31	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		3.65	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)		4.46	
C & E Loss (ft)	0.02	Cum SA (acres)		0.65	

Warning: The cross-section end points had to be extended vertically for the computed water surface.

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -3300

INPUT
Description:
Station Elevation Data num= 126

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-237.392	1844.15	-235.838	1844.11	-234.935	1844.08	-234.026	1844.08	-233.759	1844.08
-232.035	1844.08	-215.506	1843.75	-215.493	1843.75	-214.03	1843.72	-201.811	1843.65
-200.407	1843.67	-197.919	1843.55	-196.48	1843.46	-195.578	1843.47	-194.43	1843.47
-193.038	1843.41	-192.069	1843.41	-190.075	1843.3	-189.417	1843.3	-187.106	1843.15
-185.967	1843.08	-184.751	1843.08	-184.696	1843.08	-184.603	1843.08	-182.615	1843.08
-182.402	1843.08	-175.805	1842.92	-170.957	1842.85	-170.333	1842.84	-166.183	1842.77
-162.679	1842.72	-159.681	1842.67	-157.086	1842.63	-154.996	1842.6	-152.535	1842.55
-149.594	1842.5	-149.54	1842.5	-149.443	1842.5	-147.369	1842.46	-145.18	1842.43
-143.526	1842.39	-142.164	1842.36	-141.024	1842.34	-139.42	1842.31	-127.165	1842.08
-125.321	1842.08	-123.375	1842.08	-123.071	1842.08	-122.455	1842.08	-120.56	1842.08
-119.176	1842.08	-116.17	1842.08	-115.76	1842.08	-114.323	1842.08	-112.53	1842.08
-112.296	1842.08	-111.636	1842.08	-111.115	1842.08	-110.925	1842.08	-108.837	1842.04
-108.789	1842.04	-105.827	1842.03	-105.62	1842.01	-102.62	1842.08	-101.6	1842.08
-100.667	1842.08	-99.813	1842.08	-97.025	1841.29	-96.255	1841.08	-93.427	1840.29
-92.639	1840.08	-89.572	1839.29	-88.86	1839.08	-87.895	1839.08	-87.589	1839.08
-80.159	1838.69	-69.514	1838.08	-64.473	1837.17	-63.987	1837.08	-59.92	1836.13
-59.705	1836.08	-59.375	1835.96	-56.924	1835.08	-55.105	1834.43	-54.139	1834.08
-52.677	1833.57	-51.253	1833.08	-49.825	1832.58	-48.418	1832.08	-47.069	1831.59
-45.585	1831.08	-42.987	1830.23	-42.545	1830.08	-41.862	1829.87	-39.304	1829.08
-37.603	1828.57	-35.937	1828.08	-33.759	1827.43	-32.546	1827.08	-30.343	1826.23
-29.985	1826.08	-28.879	1825.71	-26.959	1825.08	-25.126	1825.08	-19.699	1825.08
-13.541	1825.08	-11.46	1825.08	-10.872	1825.12	0	1825.22	17.275	1825.38
19.184	1825.29	19.86	1825.29	22.556	1825.14	22.638	1825.14	23.732	1825.08
24.191	1825.08	25.095	1825.08	30.28	1825.08	31.277	1825.08	33.136	1825.08
33.51	1825.08	34.309	1825.08	34.946	1825.08	35.548	1825.16	53.106	1825.25
95.464	1833.62								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-237.392	.025	-237.392	.025	95.464	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-237.392	95.464	34.28	34.28	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1835.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.		0.025	
W.S. Elev (ft)	1834.13	Reach Len. (ft)	34.28	34.28	34.28
Crit W.S. (ft)		Flow Area (sq ft)		1039.99	
E.G. Slope (ft/ft)	0.001524	Area (sq ft)		1039.99	
Q Total (cfs)	8674.86	Flow (cfs)		8674.86	
Top Width (ft)	149.74	Top Width (ft)		149.74	
Vel Total (ft/s)	8.34	Avg. Vel. (ft/s)		8.34	
Max Chl Dpth (ft)	9.05	Hydr. Depth (ft)		6.95	
Conv. Total (cfs)	222245.5	Conv. (cfs)		222245.5	
Length Wtd. (ft)	34.28	Wetted Per. (ft)		152.55	
Min Ch El (ft)	1825.08	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		5.41	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		1.86	
C & E Loss (ft)	0.17	Cum SA (acres)		0.30	

Warning: The cross-section end points had to be extended vertically for the computed water surface.
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: MAIN
REACH: WEST RS: -3334.30

INPUT
Description:
Station Elevation Data num= 158

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-250	1844.2	-249.645	1844.19	-248.566	1844.17	-247.536	1844.15	-246.551	1844.12
-245.611	1844.1	-244.708	1844.08	-243.844	1844.06	-243.015	1844.04	-242.219	1844.02
-241.454	1844.00	-241.096	1844	-240.382	1843.98	-239.698	1843.96	-207.05	1843.20
-206.245	1843.18	-205.472	1843.17	-204.728	1843.15	-204.013	1843.13	-203.324	1843.12
-202.66	1843.10	-188.431	1843.05	-188.08	1843.04	-184.975	1843.02	-184.755	1843.02
-181.517	1843.01	-181.435	1843.00	-179.504	1843	-176.508	1842.94	-170.461	1842.84
-165.617	1842.75	-161.651	1842.69	-158.344	1842.63	-155.543	1842.58	-144.64	1842.49
-144.608	1842.49	-143.855	1842.48	-142.154	1842.44	-141.966	1842.43	-139.942	1842.39
-138.622	1842.37	-136.381	1842.32	-135.899	1842.32	-133.328	1842.26	-125.526	1842
-124.994	1842	-124.272	1842	-124.059	1842	-118.611	1841.75	-115.262	1841.63
-105.667	1841.28	-98.176	1841	-98.084	1841	-97.926	1841	-97.77	1841
-89.933	1840.38	-86.2	1840	-83.426	1839.41	-82.915	1839.31	-81.473	1839
-77.141	1838.22	-76.045	1838	-70.85	1837.57	-68.445	1837.37	-61.77	1837
-61.144	1837	-60.807	1837	-58.426	1836.12	-58.098	1836	-57.977	1835.96
-57.643	1835.88	-55.236	1835.25	-53.981	1835	-53.296	1834.85	-50.239	1834
-48.871	1833.59	-46.988	1833	-42.924	1831.73	-42.088	1831.45	-41.571	1831.34
-40.029	1831	-38.083	1830.21	-37.54	1830	-37.162	1829.86	-34.806	1829
-34.337	1828.84	-31.86	1828	-29.448	1827.12	-29.144	1827	-28.929	1826.91
-28.741	1826.84	-26.659	1826	-25.183	1825.47	-23.947	1825	-12.343	1825
-3.709	1825	-1.946	1825.23	0	1825.42	4	1825.52	2.205	1825.53
3.543	1825.58	4.471	1825.58	6.245	1825.59	7.446	1825.60	9.266	1825.61
10.422	1825.61	12.286	1825.62	13.398	1825.63	14.338	1825.61	14.999	1825.61
16.149	1825.61	17.258	1825.57	18.834	1825.51	20.284	1825.51	21.711	1825.46
23.306	1825.46	24.906	1825.46	26.511	1825.46	26.747	1825.45	27.987	1825.38
28.922	1825.34	29.201	1825.35	31.001	1825.36	42.389	1825.49	44.071	1825.51
45.888	1825.64	47.069	1825.65	49.377	1825.87	50.484	1826	51.461	1826.31
53.786	1827	54.561	1827.22	57.033	1828	59.387	1828.63	60.814	1829
62.033	1829.36	64.329	1830	65.528	1830.33	68.078	1831	68.375	1831.07
70.872	1831.72	71.426	1831.87	71.835	1832	72.861	1832.44	74.116	1833
74.701	1833.21	76.945	1834	78.518	1834.53	78.883	1834.66	79.431	1834.63
81.471	1835.16	82.412	1835.12	83.601	1835.13	85.547	1835.47	89.91	1835.98
90.917	1836.02	91.105	1836.03	92.021	1836.07				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-250	.025	-53.296	.013	92.021	.025

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Contr.	Expan.
-53.296	92.021	18.78	18.78	18.78	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1834.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.76	Wt. n-Val.		0.013	
W.S. Elev (ft)	1832.24	Reach Len. (ft)	18.78	18.78	18.78
Crit W.S. (ft)	1832.24	Flow Area (sq ft)		649.30	
E.G. Slope (ft/ft)	0.001416	Area (sq ft)		649.30	
Q Total (cfs)	8650.85	Flow (cfs)		8650.85	
Top Width (ft)	116.91	Top Width (ft)		116.91	
Vel Total (ft/s)	13.32	Avg. Vel. (ft/s)		13.32	
Max Chl Dpth (ft)	7.24	Hydr. Depth (ft)		5.55	
Conv. Total (cfs)	229884.0	Conv. (cfs)		229884.0	
Length Wtd. (ft)	18.78	Wetted Per. (ft)		119.10	
Min Ch El (ft)	1825.00	Shear (lb/sq ft)		0.48	
Alpha	1.00	Stream Power (lb/ft s)		6.42	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		1.20	
C & E Loss (ft)	0.01	Cum SA (acres)		0.20	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -3353.0

INPUT
Description:
Station Elevation Data   num=   221

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-250	1844.29	-249.64	1844.28	-248.53	1844.26	-247.48	1844.23	-245.5	1844.19
-244.58	1844.16	-242.03	1844.1	-241.25	1844.09	-239.45	1844.04	-230.53	1843.83
-229.85	1843.82	-227.5	1843.78	-225.59	1843.75	-225.16	1843.75	-223.1	1843.71
-222.85	1843.71	-220.59	1843.67	-220.4	1843.67	-217.49	1843.6	-217.07	1843.58
-214.3	1843.52	-211.08	1843.44	-209.95	1843.41	-203.63	1843.25	-202.19	1843.21
-200.65	1843.19	-197	1843.14	-195.63	1843.13	-190.99	1843.07	-190.73	1843.07
-188.64	1843.04	-186.93	1843.02	-186.27	1843.01	-183.75	1842.98	-182.53	1842.96
-180.63	1842.94	-178.92	1842.92	-177.79	1842.9	-177.46	1842.89	-175.39	1842.85
-174.72	1842.84	-171.91	1842.78	-171.05	1842.76	-168.53	1842.71	-168.24	1842.7
-163.56	1842.6	-159.51	1842.51	-157.25	1842.47	-156.11	1842.44	-155.28	1842.43
-153.44	1842.39	-152.47	1842.39	-150.01	1842.4	-147.37	1842.4	-145.65	1842.41
-144.24	1842.41	-143.91	1842.39	-142.08	1842.33	-141.27	1842.3	-139.53	1842.23
-137.26	1842.24	-135.91	1842.26	-135.44	1842.26	-133.62	1842.23	-133.12	1842.23
-131.34	1842.2	-130.49	1842.19	-126.98	1842.1	-125.75	1842.08	-125.56	1842.07
-123.52	1842.02	-123.22	1842.02	-122.5	1841.98	-121.21	1841.96	-120.99	1841.95
-117.35	1841.76	-115.41	1841.65	-112.16	1841.5	-111.98	1841.49	-109.84	1841.4
-102.15	1841.2	-102.1	1841.2	-95.47	1840.91	-94.48	1840.85	-94.06	1840.84
-92.21	1840.69	-89.49	1840.46	-86.44	1840.3	-83.25	1840.07	-82.21	1840
-79.37	1839.58	-78.85	1839.51	-78.49	1839.45	-77.37	1839.25	-73.21	1838.61
-72.93	1838.57	-71.81	1838.38	-68.22	1838.07	-66.49	1837.83	-64.92	1837.6
-64.03	1837.46	-63.14	1837.33	-61	1837.03	-59.42	1836.8	-57.19	1836.48
-56.55	1836.42	-56.2	1836.38	-54.82	1835.87	-53.76	1835.49	-53.43	1835.36
-51.53	1834.8	-50.5	1833.93	-49.21	1832.89	-48.51	1832.31	-48.3	1832.16
-47.13	1831.74	-45.82	1831.21	-45.66	1831.13	-45.05	1830.72	-44.38	1830.56
-43.96	1830.45	-42.62	1830.11	-40.34	1829.54	-39.49	1829.34	-38.83	1829.17
-38.05	1828.96	-37.57	1828.88	-36.48	1828.68	-36.13	1828.62	-34.31	1828.04
-33.8	1827.88	-31.25	1827.15	-30.81	1827.04	-28.5	1826.43	-26.25	1825.79
-25.59	1825.58	-23.65	1824.97	-22.27	1824.59	-21.12	1824.25	-6.66	1824.25
-5.51	1824.36	-4.92	1824.42	-2.99	1824.56	-2	1824.64	-.81	1824.64
-.66	1824.65	.51	1824.68	1.14	1824.69	2.36	1824.69	3.83	1824.71
4.37	1824.71	5.18	1824.72	6.17	1824.74	7.05	1824.75	8.49	1824.75
9.16	1824.76	11.88	1824.76	12.98	1824.78	13.83	1824.76	14.16	1824.76
15.63	1824.74	17.06	1824.76	18.06	1824.75	18.37	1824.74	20.28	1824.74
23.22	1824.76	24.27	1824.72	24.68	1824.7	25.61	1824.68	27.66	1824.69
29.02	1824.7	30.88	1824.72	34.48	1824.75	37.62	1824.77	38.92	1824.78
40.59	1824.79	42.38	1824.89	43.55	1824.9	45.18	1825.01	45.84	1825.11
46.98	1825.31	47.89	1825.64	48.03	1825.68	49.64	1826.31	50.96	1826.85
51.1	1826.9	52.23	1827.45	52.67	1827.61	53.41	1827.9	54.06	1828.13
54.91	1828.55	55.26	1828.7	57.09	1829.52	57.15	1829.54	58.35	1830.08
59.8	1830.69	61.48	1831.14	61.81	1831.22	64.33	1831.86	64.83	1831.98
67.09	1832.54	67.96	1832.76	69.06	1833.17	69.21	1833.22	70.3	1833.64
70.88	1833.83	71.97	1834.17	73.76	1834.74	74.65	1835.01	75.01	1835.13
75.56	1835.15	75.73	1835.19	77.57	1835.67	77.91	1835.68	78.5	1835.67
79.68	1835.69	81.6	1835.95	85.92	1836.37	86.91	1836.42	87.1	1836.42
88.01	1836.45								

Manning's n Values   num=   3

Sta	n Val	Sta	n Val	Sta	n Val
-250	.025	-48.51	.013	88.01	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.51	88.01	65.73	65.73	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1834.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.87	Wt. n-Val.		0.013	
W.S. Elev (ft)	1831.76	Reach Len. (ft)	65.73	65.73	65.73
Crit W.S. (ft)	1831.76	Flow Area (sq ft)		636.63	
E.G. Slope (ft/ft)	0.001418	Area (sq ft)		636.63	
Q Total (cfs)	8650.85	Flow (cfs)		8650.85	
Top Width (ft)	111.11	Top Width (ft)		111.11	
Vel Total (ft/s)	13.59	Avg. Vel. (ft/s)		13.59	
Max Chl Dpth (ft)	7.51	Hydr. Depth (ft)		5.73	
Conv. Total (cfs)	229697.2	Conv. (cfs)		229697.2	
Length Wtd. (ft)	65.73	Wetted Per. (ft)		113.52	
Min Ch El (ft)	1824.25	Shear (lb/sq ft)		0.50	
Alpha	1.00	Stream Power (lb/ft s)		6.75	
Frctn Loss (ft)	0.09	Cum Volume (acre-ft)		0.92	
C & E Loss (ft)	0.06	Cum SA (acres)		0.15	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical

depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: MAIN
REACH: WEST RS: -3400

INPUT
Description: Upstream of Satiago Bridge
Station Elevation Data num= 177

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-2501844.509	-229.375	1844	-228.658	1844	-226.761	1844	-226.165	1844	
-224.138	1844	-223.689	1844	-221.502	1844	-221.239	1844	-218.847	1844
-218.825	1844	-218.643	1844	-215.5541843.914	-215.1191843.901	-212.1761843.818			
-211.3331843.794	-208.771843.722	-207.5721843.687	-203.051843.552	-200.21843.465					
-197.7221843.393	-193.8541843.273	-192.3971843.231	-187.4891843.078	-187.2051843.069					
-185	1843	-183.0681842.942	-182.4851842.925	-179.821842.845	-178.5271842.806				
-176.5071842.745	-174.7021842.691	-173.1521842.645	-170.9581842.579	-169.7681842.543					
-167.271842.468	-166.3641842.441	-163.6211842.359	-163.3871842.352	-160.4131842.262					
-154.1341842.069	-152.9071842.033	-152.3481842.016	-151.789	1842	-151.741	1842			
-150.2211841.956	-149.657 1841.94	-147.7081841.883	-146.816 1841.91	-146.6791841.912					
-144.0681841.988	-143.5641841.995	-141.2721842.058	-139.4481842.108	-137.9621842.148					
-137.6071842.094	-132.8511841.692	-128.638	1842	-126.52	1842	-124.288	1842		
-119.67	1842	-118.371	1842	-118.166	1842	-116.005	1842	-115.948	1842
-115.935	1842	-115.689	1842	-109.4711841.557	-103.9691841.167	-101.514	1841		
-93.312	1841	-86.2951840.586	-85.1591840.481	-82.841840.267	-79.956	1840			
-76.726	1840	-75.089	1840	-73.348	1840	-68.302	1840	-62.7051839.479	
-57.538	1839	-57.426 1838.97	-56.6731838.764	-53.925	1838	-52.0421837.356			
-50.996	1837	-49.7781836.583	-48.096	1836	-46.9821835.616	-45.179	1835		
-43.2261834.297	-42.398	1834	-40.1361833.155	-39.737	1833	-36.541825.972			
-36.3711825.579	-35.6561825.148	-35.41	1825	-34.3351824.112	-34.219	1824			
-33.7251823.046	-33.702	1823	-33.551822.992	-32.807 1822.95	-29.8281822.789				
-29.1351822.785	-26.6641822.669	-26.4681822.669	-26.2671822.659	-24.3371822.577					
-14.0441822.369	-12.9291822.371	-8.2091822.432	-6.4571822.436	-5.8891822.448					
-5.273 1822.45	-3.8441822.485	-2.5371822.516	-.712 1822.57	01822.574					
.6831822.578	2.6441822.577	3.9811822.627	5.8761822.714	6.191822.712					
6.7711822.741	9.243 1822.87	9.9841822.909	10.2851822.913	10.4251822.914					
10.6791822.919	11.0661822.923	11.258 1822.93	11.8951822.912	12.0961822.921					
12.1431822.923	15.23	1823	16.018	1823	20.637	1823	22.446	1823	
25.94	1823	28.996	1823	32.042	1823	33.417	1823	36.348	1823
36.371	1823	38.091823.561	39.112	1824	40.281824.743	40.675	1825		
40.9581825.194	42.099	1826	42.2961826.188	43.195	1827	43.6211827.239			
44.3241827.634	44.974	1828	45.6271828.708	45.6361828.717	45.8021828.896				
46.1411829.189	47.916 1830.85	50.556	1833	52.1871833.371	54.965	1834			
55.1021834.029	55.4471834.102	58.4811834.744	59.698	1835	62.3851835.592				
64.126	1836	65.121836.247	66.0361836.474	68.155	1837	76.9911837.385			
77.9681837.401	91.995	1837							

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-250	.025	-48.096	.013	76.991	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.096	76.991	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1833.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.43	Wt. n-Val.		0.013	
W.S. Elev (ft)	1830.12	Reach Len. (ft)			
Crit W.S. (ft)	1830.12	Flow Area (sq ft)		581.72	
E.G. Slope (ft/ft)	0.001447	Area (sq ft)		581.72	
Q Total (cfs)	8650.85	Flow (cfs)		8650.85	
Top Width (ft)	85.57	Top Width (ft)		85.57	
Vel Total (ft/s)	14.87	Avg. Vel. (ft/s)		14.87	
Max Chl Dpth (ft)	7.75	Hydr. Depth (ft)		6.80	
Conv. Total (cfs)	227415.5	Conv. (cfs)		227415.5	
Length Wtd. (ft)		Wetted Per. (ft)		91.97	
Min Ch El (ft)	1822.37	Shear (lb/sq ft)		0.57	
Alpha	1.00	Stream Power (lb/ft s)		8.50	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:MAIN

Reach	River Sta.	n1	n2	n3

*WEST	-2100	.015	.015	.015
*WEST	-2200	.025	.025	.025
*WEST	-2233.54	.025	.025	.025
*WEST	-2300	.025	.025	.025
*WEST	-2360.86	.025	.025	.025
*WEST	-2400	.025	.025	.025
*WEST	-2463.97	.025	.025	.025
*WEST	-2483.86	.025	.025	.025
*WEST	-2500	.025	.025	.025
*WEST	-2509.72	.025	.025	.025
*WEST	-2534.35	.025	.025	.025
*WEST	-2578.87	.025	.025	.025
*WEST	-2604.73	.025	.025	.025
*WEST	-2700	.025	.025	.025
*WEST	-2800	.025	.025	.025
*WEST	-2900	.025	.025	.025
*WEST	-2981.61	.025	.025	.025
*WEST	-3000	.025	.025	.025
*WEST	-3090	Lat Struct		
*WEST	-3100	.025	.025	.025
*WEST	-3200	.025	.025	.025
*WEST	-3300	.025	.025	.025
*WEST	-3334.30	.025	.013	.025
*WEST	-3353.0	.025	.013	.025
*WEST	-3400	.025	.013	.025

SUMMARY OF REACH LENGTHS

River: MAIN

Reach	River Sta.	Left	Channel	Right
*WEST	-2100	100	100	100
*WEST	-2200	33.56	33.56	33.56
*WEST	-2233.54	66.43	66.43	66.43
*WEST	-2300	60.86	60.86	60.86
*WEST	-2360.86	.1	39.14	78.15
*WEST	-2400	.11	64.02	127.38
*WEST	-2463.97	19.88	19.88	19.88
*WEST	-2483.86	16.12	16.12	16.12
*WEST	-2500	9.7	9.7	9.7
*WEST	-2509.72	24.63	24.63	24.63
*WEST	-2534.35	44.52	44.52	44.52
*WEST	-2578.87	25.86	25.86	25.86
*WEST	-2604.73	57.07	95.27	133.17
*WEST	-2700	59.9	100	139.77
*WEST	-2800	59.9	100	465.23
*WEST	-2900	48.91	81.61	184.24
*WEST	-2981.61	18.36	18.36	18.36
*WEST	-3000	100	100	100
*WEST	-3090	Lat Struct		
*WEST	-3100	100	100	100
*WEST	-3200	100	100	100
*WEST	-3300	34.28	34.28	34.28
*WEST	-3334.30	18.78	18.78	18.78
*WEST	-3353.0	65.73	65.73	65.73
*WEST	-3400	0	0	0

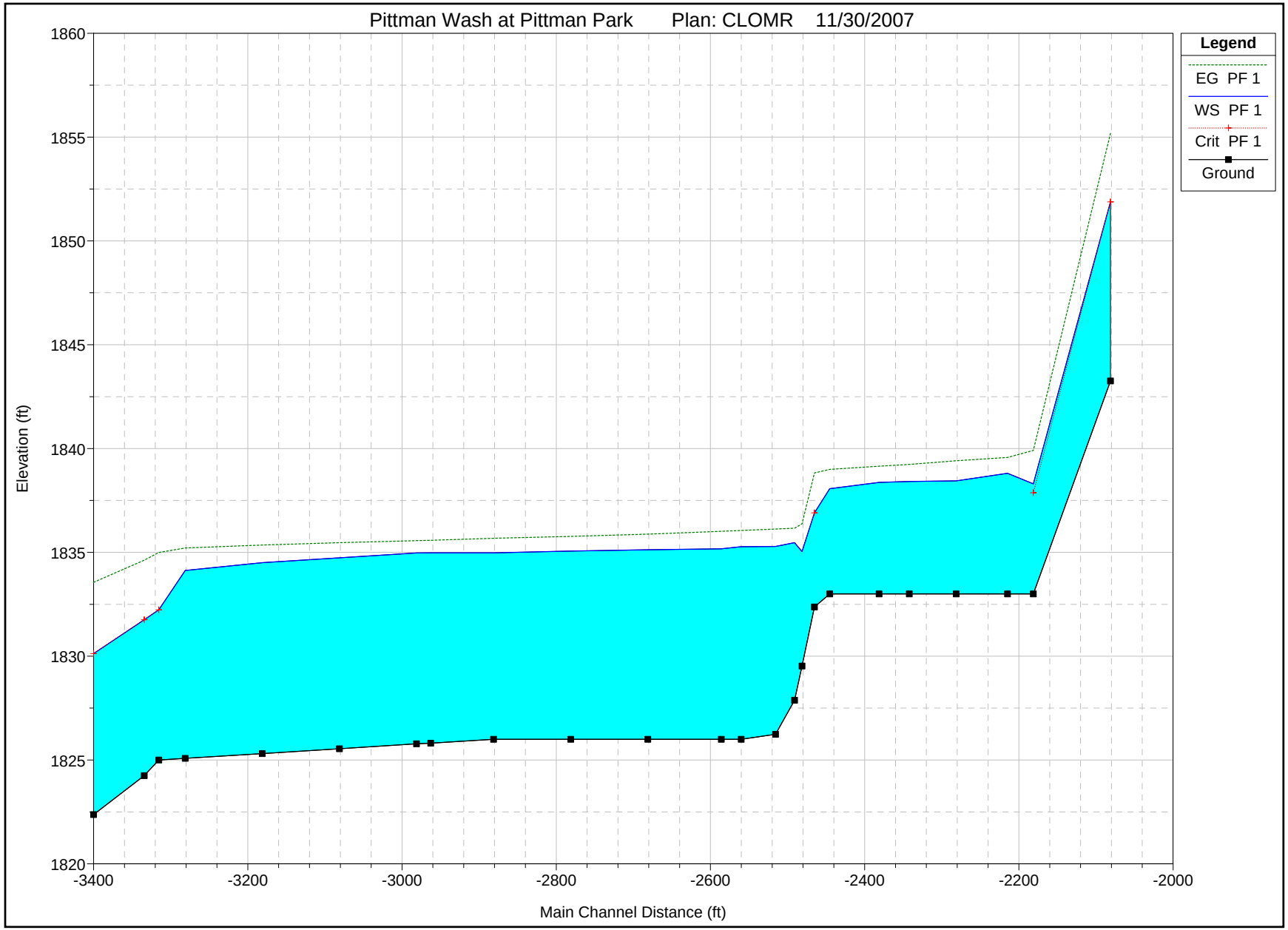
SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: MAIN

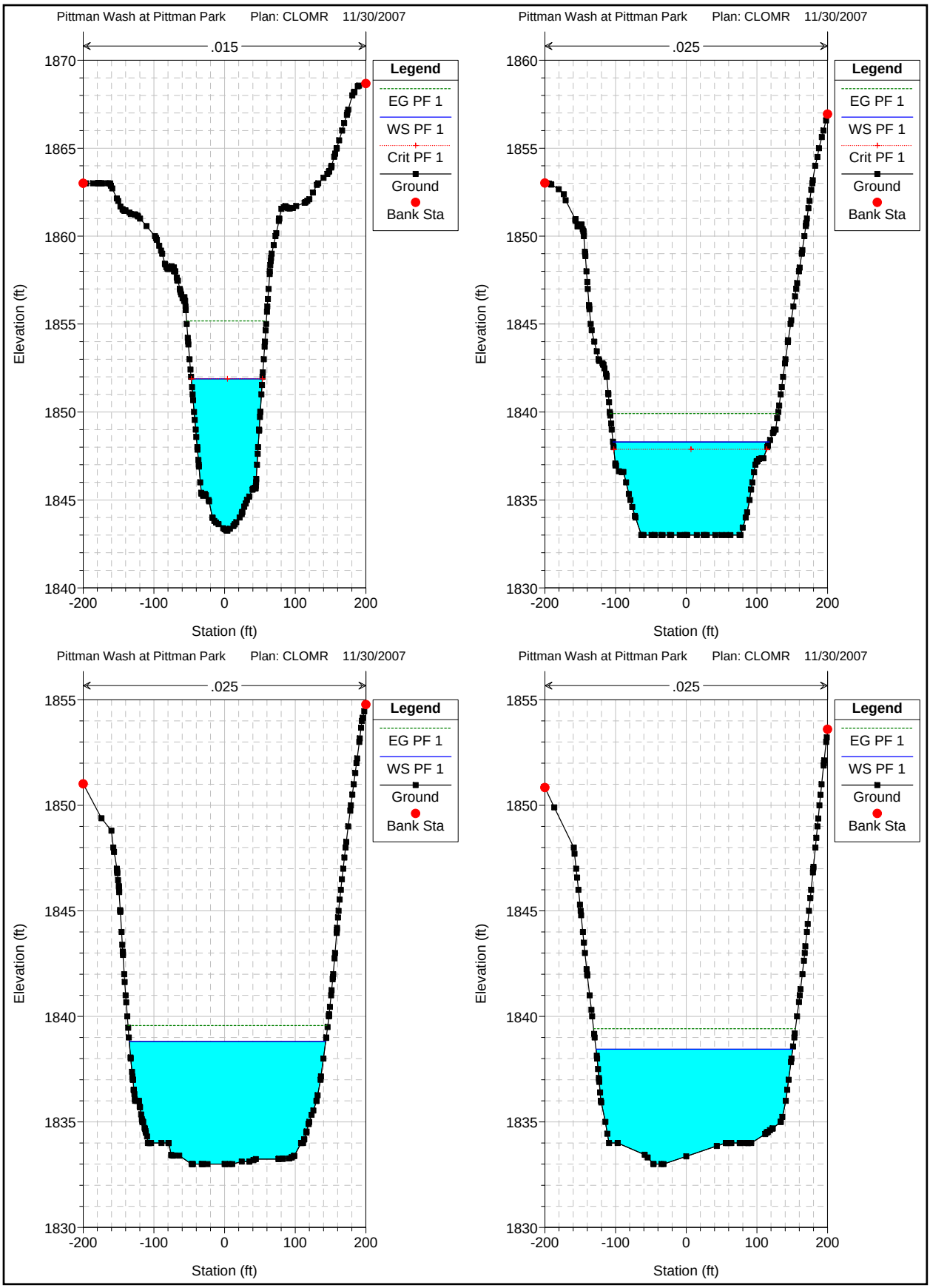
Reach	River Sta.	Contr.	Expan.
*WEST	-2100	.3	.5
*WEST	-2200	.1	.3
*WEST	-2233.54	.1	.3
*WEST	-2300	.1	.3
*WEST	-2360.86	.1	.3
*WEST	-2400	.1	.3
*WEST	-2463.97	.1	.3
*WEST	-2483.86	.1	.3
*WEST	-2500	.1	.3
*WEST	-2509.72	.1	.3
*WEST	-2534.35	.1	.3
*WEST	-2578.87	.1	.3
*WEST	-2604.73	.1	.3
*WEST	-2700	.1	.3
*WEST	-2800	.1	.3
*WEST	-2900	.1	.3

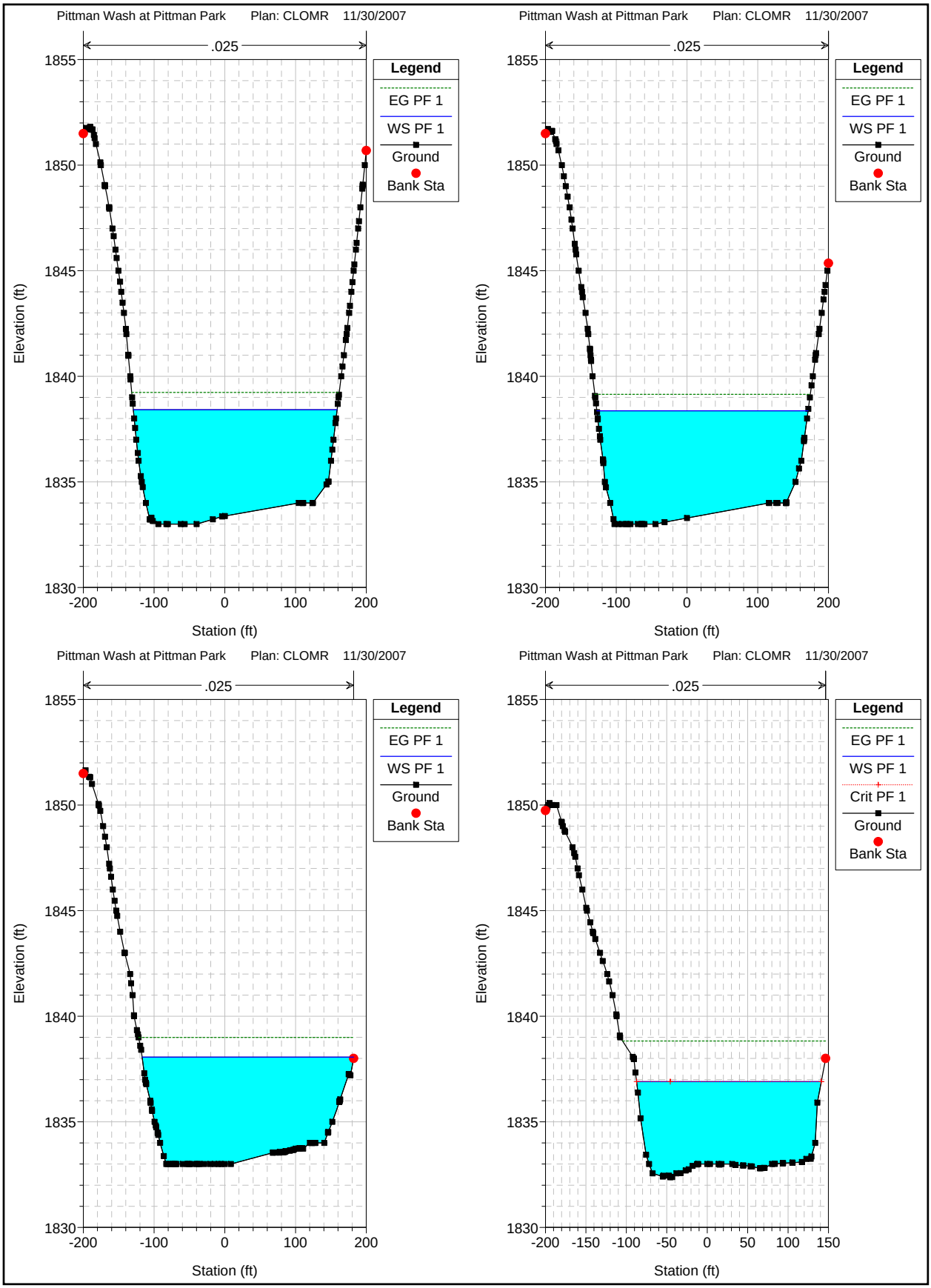
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*WEST            *    -2981.61*       .1*       .3*
*WEST            *    -3000   *       .1*       .3*
*WEST            *    -3090   *Lat Struct*         *
*WEST            *    -3100   *       .1*       .3*
*WEST            *    -3200   *       .1*       .3*
*WEST            *    -3300   *       .1*       .3*
*WEST            *    -3334.30*       .1*       .3*
*WEST            *    -3353.0 *       .1*       .3*
*WEST            *    -3400   *       .1*       .3*
**************************************************
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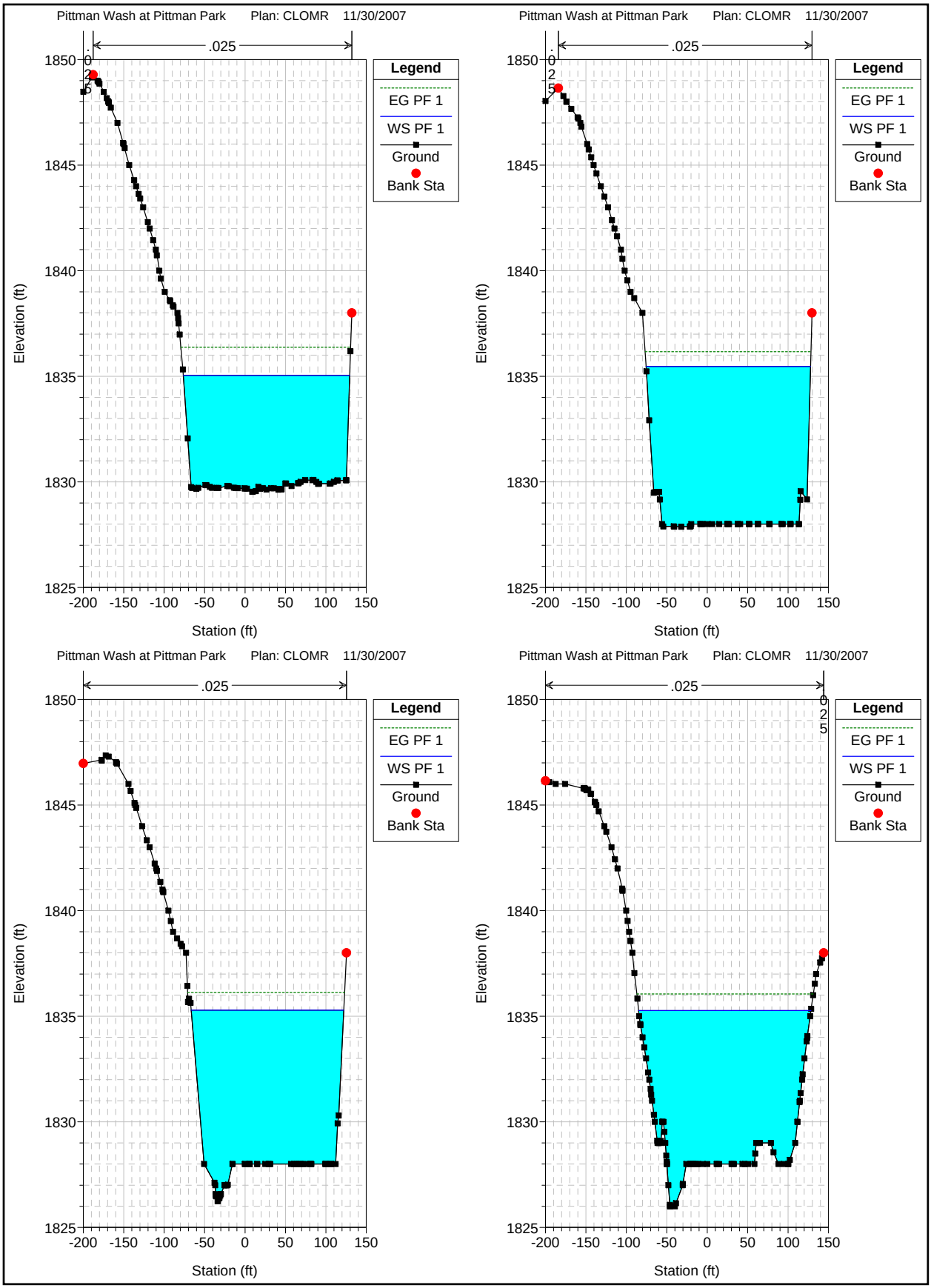
Profile Output Table - CHECKRAS

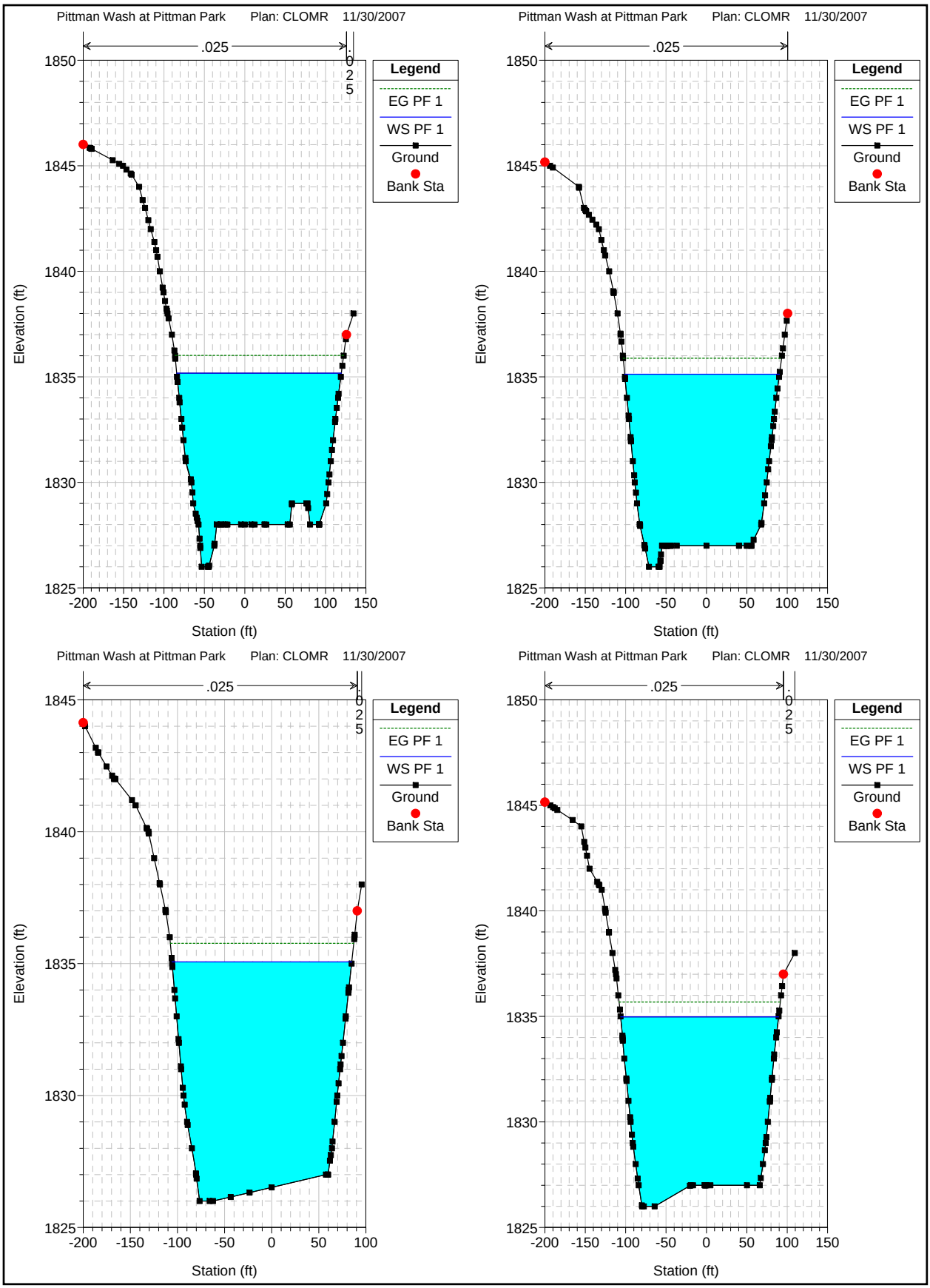
Reach	River Sta	Profile	Froude # Chl	Top Wdth Act (ft)	Conv. Total (cfs)	Prof Delta WS (ft)	Left Sta Eff (ft)	Enc Sta L (ft)	Center Station (ft)	Enc Sta R (ft)	Rght Sta Eff (ft)	Min Ch El (ft)	Left Stagn (ft)	Right Stagn (ft)
WEST	-2100	PF 1	1.00	100.63	224729.2		-47.14		0.00		53.49	1843.25		
WEST	-2200	PF 1	0.87	221.28	147699.6		-103.67		0.00		117.61	1833.00		
WEST	-2233.54	PF 1	0.55	278.04	237004.0		-134.95		0.00		143.09	1833.00		
WEST	-2300	PF 1	0.67	278.30	193416.4		-127.70		0.00		150.60	1833.00		
WEST	-2360.86	PF 1	0.60	287.97	217413.8		-129.32		0.00		158.64	1833.00		
WEST	-2400	PF 1	0.59	298.59	221514.5		-127.44		0.00		171.15	1833.00		
WEST	-2463.97	PF 1	0.67	298.95	191685.0		-116.94		-8.99		182.01	1833.00		
WEST	-2483.86	PF 1	1.01	228.43	124788.5		-87.31		-26.73		141.12	1832.37		
WEST	-2500	PF 1	0.73	205.73	179476.6		-76.30		-27.87		129.43	1829.53		
WEST	-2509.72	PF 1	0.44	203.38	308600.7		-75.50		-27.20		127.88	1827.88		
WEST	-2534.35	PF 1	0.49	188.76	279706.2		-66.62		-37.22		122.14	1826.24		
WEST	-2578.87	PF 1	0.50	213.23	274156.3		-84.86		-27.91		128.37	1826.00		
WEST	-2604.73	PF 1	0.51	203.87	265836.3		-84.27		-37.04		119.60	1826.00		
WEST	-2700	PF 1	0.46	191.66	303292.4		-101.31		-49.69		90.35	1826.00		
WEST	-2800	PF 1	0.43	190.78	322129.8		-105.84		-54.60		84.94	1826.00		
WEST	-2900	PF 1	0.44	195.54	317428.9		-106.26		-52.34		89.28	1826.00		
WEST	-2981.61	PF 1	0.40	203.52	352245.6		-99.83		-44.37		103.69	1825.81		
WEST	-3000	PF 1	0.39	202.86	359270.1		-97.27		-41.93		105.59	1825.78		
WEST	-3090		Lat Struct											
WEST	-3100	PF 1	0.44	189.66	311453.5		-83.25		-46.80		106.41	1825.54		
WEST	-3200	PF 1	0.47	156.46	282130.0		-75.06		-84.30		81.40	1825.31		
WEST	-3300	PF 1	0.56	149.74	222245.5		-54.27		-70.96		95.46	1825.08		
WEST	-3334.30	PF 1	1.00	116.91	229884.0		-44.53		19.36		72.38	1825.00		
WEST	-3353.0	PF 1	1.00	111.11	229697.2		-47.18		19.75		63.93	1824.25		
WEST	-3400	PF 1	1.01	85.57	227415.5		-38.43		14.45		47.14	1822.37		

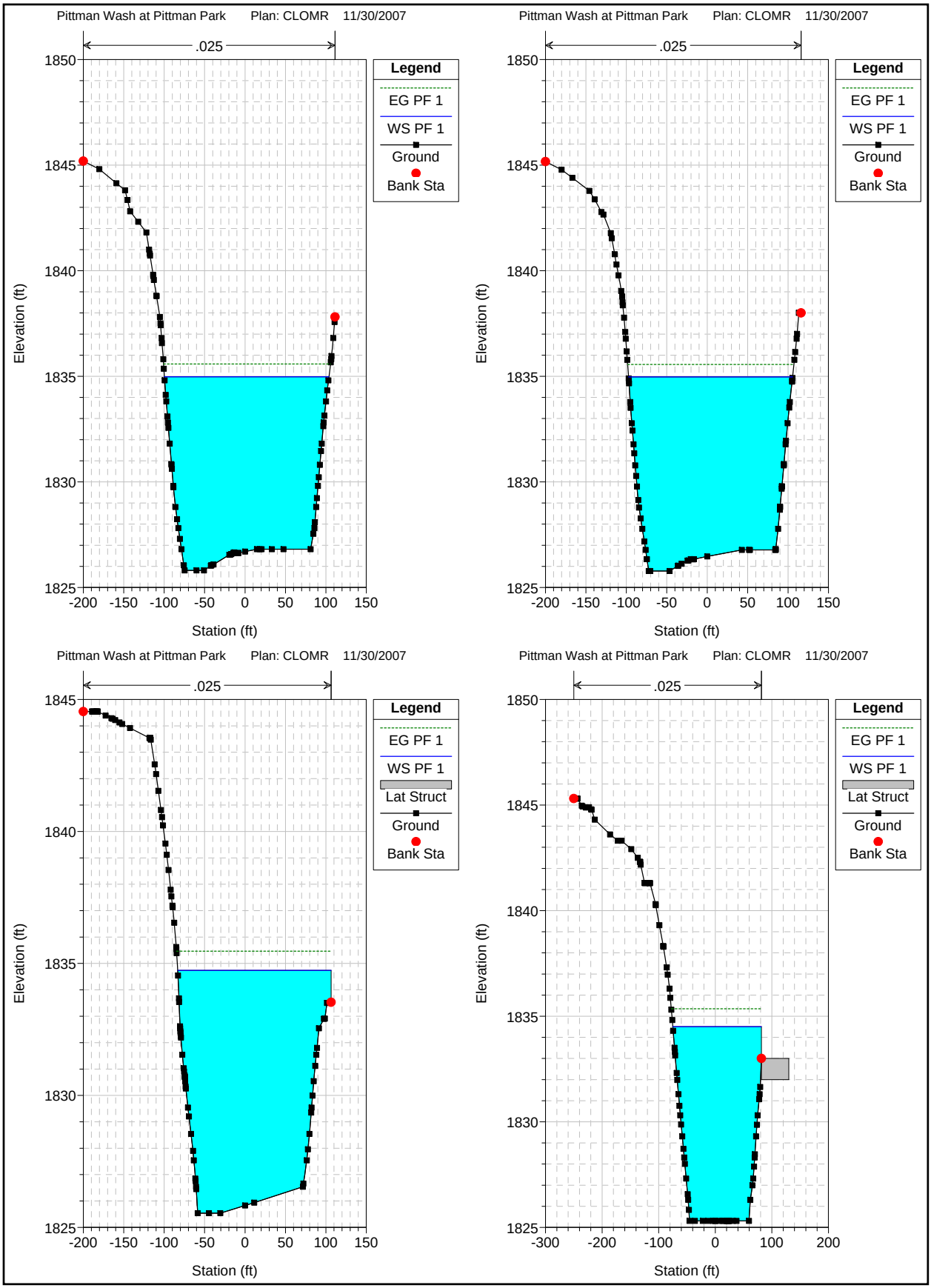

Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
1860
1855
1850
1845
1840
1835
1830
1825
1820
-3400
-3200
-3000
-2800
-2600
-2400
-2200
-2000
Main Channel Distance (ft)

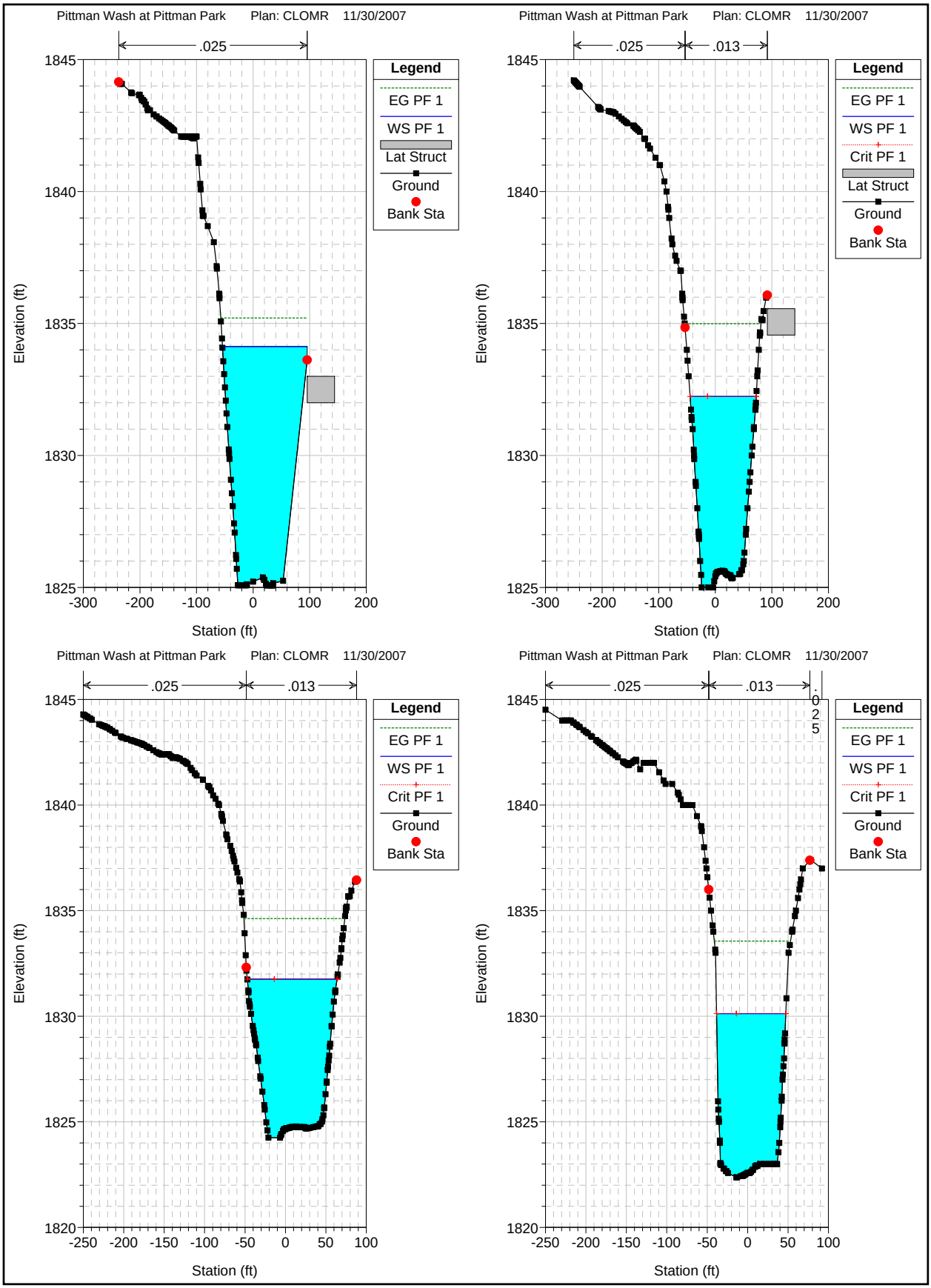

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.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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WS PF 1
Ground
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Elevation (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Ground
Bank Sta
Elevation (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
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WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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-200 -150 -100 -50 0 50 100 150
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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-200 -150 -100 -50 0 50 100 150
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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1845
1840
1835
1830
1825
-200 -150 -100 -50 0 50 100 150


Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)


Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
Legend
EG PF 1
WS PF 1
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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.013
Legend
EG PF 1
WS PF 1
Crit PF 1
Lat Struct
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
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.013
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Pittman Wash at Pittman Park Plan: CLOMR 11/30/2007
.025
.013
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

PITTMAN WASH CHANNEL
CHECK-RAS OUTPUT

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.prj
Plan File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.p01
Geometry File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.g01
Flow File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.f01
Report File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.nt
Selected profiles: PF 1
Date: 11/30/2007
Time: 10:23:23 AM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
MAIN,WEST						
-2100		-----	0.015	0.015	0.3	0.5
		-----	0.015	-----		
-2200		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2233.54		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2300		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2360.86		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2400		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2463.97		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2483.86		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2500		0.025	0.025	0.025	0.1	0.3
-2509.72		0.025	0.025	0.025	0.1	0.3
-2534.35		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2578.87		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2604.73		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2700		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2800		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2900		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-2981.61		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-3000		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-3090	Lateral Weirs					
-3100		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-3200		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-3300		-----	0.025	0.025	0.1	0.3
		-----	0.025	-----		
-3334.3		0.025	0.013	0.025	0.1	0.3
-3353		0.025	0.013	0.025	0.1	0.3
-3400		0.025	0.013	0.025	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.025	0.025
Right Overbank n Value:	0.015	0.025
Channel n Value:	0.013	0.025

```
Contraction Coefficient:      0.1            0.3
Expansion   Coefficient:      0.3            0.5


ROUGHNESS COEFFICIENT CHECK
-----------------------------------

RS:     -2100
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2100
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2200
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2200
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2233.54
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2233.54
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2300
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2300
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2360.86
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2360.86
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2400
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.
```

```
RS:      -2400
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2463.97
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2463.97
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2483.86
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2483.86
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2500
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:     -2500
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2500
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2500
NT RC 05 The left overbank n value of 0.025 and the right overbank n value
         of 0.025 are less than or equal to the channel n value of 0.025
         The overbank n values should be reevaluated.

RS:     -2509.72
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:     -2509.72
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2509.72
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2509.72
```

```
NT RC 05 The left overbank n value of 0.025 and the right overbank n value
         of 0.025 are less than or equal to the channel n value of 0.025
         The overbank n values should be reevaluated.

RS:     -2534.35
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2534.35
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2578.87
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2578.87
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2604.73
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2604.73
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2700
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2700
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2800
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2800
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2900
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2900
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
```

```
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -2981.61
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -2981.61
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3000
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -3000
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3100
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -3100
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3200
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -3200
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3300
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -3300
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3334.3
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:     -3334.3
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.
```

```
RS:      -3334.3
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:     -3353
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:     -3353
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:      -3353
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

TRANSITION LOSS COEFFICIENT CHECK
---------------------------------

RS:     -2100
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

ROUGHNESS COEFFICIENT AT STRUCTURES
-----------------------------------

---END---
```

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.prj
Plan File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.p01
Geometry File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.g01
Flow File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.f01
Report File: C:\Documents and Settings\michaelw\Desktop\HECRAS2\CLOMR\Pittman.xs
Selected profiles: PF 1
Date: 11/30/2007
Time: 10:24:06 AM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
MAIN,WEST						
-2100	100	100	100	100.63	9638	C
-2200	33.56	33.56	33.56	221.28	9638	
-2233.54	66.43	66.43	66.43	278.04	9638	
-2300	60.86	60.86	60.86	278.3	9638	
-2360.86	0.1	39.14	78.15	287.97	9638	
-2400	0.11	64.02	127.38	298.59	9638	
-2463.97	19.88	19.88	19.88	298.95	9638	E
-2483.86	16.12	16.12	16.12	228.43	9638	C
-2500	9.7	9.7	9.7	205.73	9638	
-2509.72	24.63	24.63	24.63	203.38	9638	
-2534.35	44.52	44.52	44.52	188.76	9638	
-2578.87	25.86	25.86	25.86	213.23	9638	
-2604.73	57.07	95.27	133.17	203.87	9638	
-2700	59.9	100	139.77	191.66	9638	
-2800	59.9	100	465.23	190.78	9638	
-2900	48.91	81.61	184.24	195.54	9638	
-2981.61	18.36	18.36	18.36	203.52	9638	
-3000	100	100	100	202.86	9638	
-3090	Lateral Weirs					
-3100	100	100	100	189.66	9607.66	E
-3200	100	100	100	156.46	9076.84	E
-3300	34.28	34.28	34.28	149.74	8674.86	E
-3334.3	18.78	18.78	18.78	116.91	8650.85	C
-3353	65.73	65.73	65.73	111.11	8650.85	C
-3400	0	0	0	85.57	8650.85	C

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: -3100

XS DC 01 Discharge decreases in the downstream direction.

RS: -3200
XS DC 01 Discharge decreases in the downstream direction.

RS: -3300
XS DC 01 Discharge decreases in the downstream direction.

RS: -3334.3
XS DC 01 Discharge decreases in the downstream direction.

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is MAIN,WEST
         Critical is specified as the downstream boundary
         for profile PF 1

XS BC 02 The name of the stream is MAIN,WEST
         Critical is specified as the upstream boundary
         for profile PF 1

XS BC 03 Maximum number of iterations is 0
         It should not be less than 20.

LATERAL WEIRS CHECK

---END---

Conditional Letter of Map Revision **Railroad East Outfall Channel**

Appendix D
Reference Material



PITTMAN WASH FLOOD INSURANCE STUDY
RESTUDY

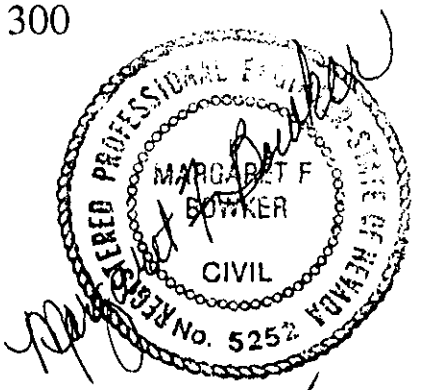
HYDROLOGY SUMMARY

PITTMAN WASH
FLOOD INSURANCE STUDY RESTUDY
CLARK COUNTY, NEVADA

VOLUME 1
TECHNICAL DATA NOTEBOOK

PREPARED FOR:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
301 EAST CLARK AVENUE, SUITE 300
LAS VEGAS, NEVADA 89101

NIMBUS JOB #9406
JUNE, 1995



6/22/95

Table 2. Summary of 100-Yr. Discharges PITTMAN WASH			NIMBUS				FIS by JMM	
			With Duck Creek Split		Without Duck Creek Split		DARF	100 yr Discharge
Location	HEC-1 I.D.	JMM I.D.	DARF	100 yr. Discharge	DARF	100 yr. Discharge		
Duck Creek Split Flow	CB PIT	---	.73	3353	---	---	---	---
Southern Beltway Alignment	156	156	.59	9258	.64	9920	.64	10,600
U.P.R.R.	158	158	.58	9273	.62	9838	.62	10,500
Bonanza Gravel Pit & U.P.R.R.	160	----	.87	2974	.87	2974	---	---
Arroyo Grande Sports Complex	AGSC	----	.57	9011	.61	9638	---	---
Pittman Channel at U.S.95	US95	---	.57	7457	.60	7638	---	---
Gibson Road Channel at U.S.95	B3A	----	---	---	.60	1679	---	---
Boulder Highway at Castlerock rive	B1E	B1E	---	---	.60	1676	.60	2,600

* JMM used SDN3 Storm distribution in the FIS Hydrology report.

** The worst case scenario is highlighted and is used in this study.

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             MAY   1991                *
 *          VERSION 4.0.1E               *
 *                                       *
 *  RUN DATE  08/01/1997  TIME  13:01:54 *
 *                                       *
 *****************************************
```


```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*          (916) 551-1748               *
*                                       *
*****************************************
```


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

```
M A C I N T O S H ®
2 0 0 0   T I M E S T E P
V E R S I O N : 4.0.1E
```


Hydrotech Microsystems
P.O. Box 40184
Portland, OR 97240-0184
(503) 257-6926

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              * Revised diversion into the detention basin to limit spill to station 4+00 on
              * the d/s end - MW, 8/1/97
              *
              * REVPITT1833SHORTHEC1.DAT increase det basin outflow at elev 1834 - MW, 6/10/97
              *
              * PITT1833SHORTHEC1.DAT uses the diversion based on a shortened weir length
              * (only goes from x400 to x600, instead of to x700) - MW, 6/9/97
              *
              * PITT1833HEC1.DAT takes PITTREV2_HEC1.DAT and uses diversion based on a weir
              * elevation of 1833 rather than 1831 - MW, 6/9/97
              *
              * PITT_FIS.DAT runs simulation for 300 timesteps (25 hr) - MW, 6/5/97
              *
              * PITT_EX2.DAT takes PITT_EX and uses the revised diversion data into PPDB with
              * channel invert increased by 0.2 ft to induce more spill into the basin - MW,
              * 6/3/97
              *
              * This file (PITT_EX) takes Nimbus' 406H1-2.DAT file and only models DARF
              * for Pittman Park (aka Arroyo Grande Sports Complex); also adds the diversion
              * into the Pittman Park detention basin per the design hydraulics for the
              * Pittman Wash channel adjacent to the park); and truncates Nimbus' model
              * at the detention basin site - Montgomery Watson, 4/30/97
              *
              *DIAGRAM
    1         ID     PITTMAN WASH  FIS RESTUDY
    2         ID     100 YEAR 6 HOUR STORM ( SDN #5)
    3         ID     PREPARED FOR CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
    4         ID     PREPARED BY NIMBUS ENGINEERS, RENO, NV
    5         ID     FILE NAME: 406H1-2.DAT
    6         ID     DATE: MARCH 1995
    7         ID
    8         ID     THIS HEC-1 MODEL IS MODIFIED FROM JMM HYDROLOGY MODEL (PITEX100)
    9         ID     FOR PITTMAN WASH, DATED OCTOBER 1990.
   10         ID
   11         ID
   12         ID
   13         ID     FOLLOWINGS WERE USED AS BASIS FOR JMM HYDROLOGY MODEL
   14         ID          UPPER WATERSHED MODEL TAKEN FROM COSMO WORLD HYDROLOGY
   15         ID          LOWER WATERSHED MODEL TAKEN FROM COE HYDROLOGY
   16         ID          KINEMATIC SUBBASINS CONVERTED TO SCS UNIT HYDROGRAPH
   17         ID          CHANNEL ROUTING CHANGED TO REFLECT NEW EXISTING FACILITIES
   18         ID          SUBBASIN ROUTING CHANGED TO REFLECT NEW DEVELOPMENT
   19         ID
   20         ID
   21         ID     NIMBUS MODIFIED THE FOLLOWING TO UPDATE THE EXISTING HEC-1 MODEL
   22         ID          INCLUDED PITTMAN CHANNEL, LAKE MEAD DRAINAGE CHANNEL,
   23         ID               DRAINAGE INTERCEPT CHANNEL, BLK MTN CHANNEL,
   24         ID               WHITNEY CHANNEL, HENDERSON COMMERCE CENTER,
```

```
                ID              SPLIT TO DUCK CREEK.
                ID
                ID
                ID    JR CARDS BASED ON THE FOLLOWING DARF AND PT OF CONCENTRATION
                ID
                ID
                ID       THIS HEC-1 MODEL DOES NOTINCLUDE SPLIT FROM DUCK CREEK
1                                          HEC-1 INPUT                                          PAGE  2

     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                ID       REFER TO 406H1-1.DAT - INCLUDES DUCK CREEK SPLIT
                ID
                ID
                ID
                ID      POINT OF    AREA    DARF
                ID       CONCEN    SQ.MI.
                ID
                ID        156       73.7    .64
                ID        158       86.4    .62
                ID        160        9.3    .87
                ID       AGSC       95.7    .61
                ID       US95      101.5    .60
                ID        A1B      102.4    .60
                ID        EB2        0.6    .98
                ID        B3A       97.6    .60
                ID        B1E       99.1    .60
                ID
                ID    JR CARD RATIOS FOR 100-YR STORM IS THE DEPTH AREA REDUCTION FACTOR (DARF)
                ID
                IT       5       0       0     300
                IN       5       0       0
                IO       5       0       0
                * JR  PREC    0.98    0.87    0.64    0.62    0.61    0.60
                JR    PREC    0.61

                KK      B1
                BA    .213
                PB    3.05
                *  REPLACED SDN3 DISTRIBUTION WITH SDN5
                *  PER CCRFCD DRAINAGE MANUAL, SDN5 SHOULD BE USED WHEN DRAINAGE AREAS ARE
                *  EQUAL TO OR GREATER THEN 10 SQUARE MILES.
                *
                PC    .000    .020    .059    .080    .110    .144    .150    .160    .168    .171
                PC    .180    .182    .187    .190    .197    .202    .210    .220    .230    .241
                PC    .250    .259    .265    .280    .290    .300    .305    .309    .310    .317
                PC    .321    .327    .333    .346    .361    .381    .408    .430    .477    .514
                PC    .561    .630    .710    .720    .731    .752    .779    .790    .795    .804
                PC    .810    .820    .826    .840    .859    .889    .910    .938    .966    .970
                PC    .974    .979    .981    .983    .985    .989    .990    .992    .993    .996
                PC    .997    .999    1.00
                *
                *
                *   SDN3 STORM DISTRIBUTION
                *   .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
                *   .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
                *   .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
                *   .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
                *   .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
                *   .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
                *   .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
                *   .998    .999    1.00
                LS              85.
                UD     .55
1                                          HEC-1 INPUT                                          PAGE  3

     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                KK     RB1
                RM       2     .49     .15

                KK      B2
                BA    .374
                PB    2.96
                LS              85.
                UD     .39

                KK     NB1
                HC       2

                KK    RNB1
                RM       2     .41     .15

                KK      B3
                BA    .316
                PB    2.90
                LS              85.
                UD     .35

                KK     NB2
                HC      2.

                KK    RNB2
                RM       2     .36     .15

                KK      B4
                BA    .154
                PB    2.86
                LS              85.
                UD     .32

                KK     NB3
                HC       2

                KK      C1
                BA    .319
```

```
 97          PB    3.00
 98          LS              85.
 99          UD     .49

100          KK     RC1
101          RM       2     .36     .15

102          KK      C2
103          BA    .396
104          PB    2.93
105          LS              85.
106          UD     .31
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

107          KK     NC1
108          HC       2

109          KK    RNC1
110          RM       1     .19     .15

111          KK      C6
112          BA    .097
113          PB    2.90
114          LS              85.
115          UD     .21

116          KK      C4
117          BA    .143
118          PB    2.90
119          LS              85.
120          UD     .24

121          KK     NC2
122          HC       3

123          KK    RNC2
124          RM       1     .15     .15

125          KK      C7
126          BA    .070
127          PB    2.86
128          LS              85.
129          UD     .20

130          KK     NC3
131          HC       2

132          KK      F1
133          BA    9.34
134          PB    3.47
135          LS              87.
136          UD     .97

137          KK      F2
138          BA    2.35
139          PB    3.36
140          LS              87.
141          UD     .79

142          KK     NF1
143          HC       2

144          KK    RNF1
145          RM       2     .64     .10
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

146          KK      F3
147          BA    2.68
148          PB    3.29
149          LS              86.
150          UD     .65

151          KK     RF3
152          RM       2     .66     .10

153          KK      F4
154          BA    .68
155          PB    3.25
156          LS              86.
157          UD     .45

158          KK     RF4
159          RM       3     .87     .10

160          KK      F5
161          BA    1.85
162          PB    3.19
163          LS              86.
164          UD     .63

165          KK     RF5
166          RM       2     .48     .10

167          KK     NF2
168          HC       4

169          KK    RNF2
170          RM       1     .21     .10

171          KK      F6
172          BA    1.54
```

```
173          PB    3.29
174          LS             86.
175          UD     .59

176          KK     RF6
177          RM       1     .16     .10

178          KK      F7
179          BA    4.62
180          PB    3.25
181          LS             86.
182          UD     .88

183          KK     NF3
184          HC       3
1                                        HEC-1 INPUT                                        PAGE  6

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

185          KK    RNF3
186          RM       2     .77     .10

187          KK      F8
188          BA     .83
189          PB    3.19
190          LS             86.
191          UD     .41

192          KK     RF8
193          RM       4    1.45     .10

194          KK      F9
195          BA    1.68
196          PB    3.07
197          LS             86.
198          UD     .63

199          KK     F10
200          BA    1.65
201          PB    3.15
202          LS             86.
203          UD     .73

204          KK     NF4
205          HC       3

206          KK    RNF4
207          RM       3    0.85     .10

208          KK      D1
209          BA    .480
210          PB    3.00
211          LS             85.
212          UD     .61

213          KK     RD1
214          RM       2     .48     .15

215          KK      D2
216          BA    .763
217          PB    2.96
218          LS             85.
219          UD     .45

220          KK     ND1
221          HC       2

222          KK     F11
223          BA    3.41
224          PB    3.00
225          LS             85.
226          UD    1.02
1                                        HEC-1 INPUT                                        PAGE  7

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

227          KK     NF5
228          HC       4

229          KK    RNF5
230          RM       1     .24     .10

231          KK      D6
232          KM     SUBBASIN D6 WAS ORIGINALLY CALLED D3 IN JMM MODEL BUT NOT SHOWN
233          KM     ON WATERSHED MAP - AREA HAS BEEN MODIFIED AND LAG TIME CHECKED
234          BA    .153
235          PB    2.90
236          LS             75.
237          UD    1.00

238          KK      D4
239          KM     SUBBASIN D4 AREA & LAG TIME HAVE BEEN MODIFIED TO MATCH WATERSHED MAP
240          BA    .172
241          LS             85.
242          UD   .9470

243          KK     ND2
244          HC       2

245          KK     NF6
246          HC       3

247          KK    RNF6
248          RM       1     .27     .10
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 249          KK    C3C8
 250          BA     .41
 251          PB    2.90
 252          LS              85.
 253          UD     .71

 254          KK      FG
 255          BA    2.06
 256          PB    2.90
 257          LS              84.
 258          UD    1.04

 259          KK     NF7
 260          HC       4

 261          KK    RCP4    ROUTE  CP4  THRU  156
 262          RM       3   .7317     .15

 263          KK      A1
 264          BA    .254
 265          PB    2.93
 266          LS              85.
 267          UD     .56
1                                    HEC-1 INPUT                                    PAGE  8

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 268          KK     RA1
 269          RM       1     .13     .15

 270          KK      A3
 271          BA    .027
 272          PB    2.90
 273          LS              85.
 274          UD     .28

 275          KK      A4
 276          BA    .080
 277          PB    2.86
 278          LS              85.
 279          UD     .21

 280          KK     NA1
 281          HC       3

 282          KK      A8
 283          BA    .410
 284          PB    2.93
 285          LS              85.
 286          UD     .74

 287          KK      A9
 288          BA     .19
 289          PB    2.86
 290          LS              85.
 291          UD     .34

 292          KK     NA2
 293          HC       2

 294          KK    RNA2
 295          RM       1     .06     .15

 296          KK     NA3
 297          HC       2

 298          KK    RNA3
 299          RM       1     .13     .15

 300          KK      A5
 301          BA    .036
 302          PB    2.86
 303          LS              85.
 304          UD     .27

 305          KK      A6
 306          BA    .055
 307          PB    2.86
 308          LS              84.
 309          UD     .12
1                                    HEC-1 INPUT                                    PAGE  9

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 310          KK     NA4
 311          HC       2

 312          KK    RNA4
 313          RM       1     .16     .15

 314          KK      A7
 315          BA    .293
 316          PB    2.90
 317          LS              85.
 318          UD     .64

 319          KK     NA5
 320          HC       3

 321          KK    RNA5
 322          RM       2     .39     .15

 323          KK     A10
 324          BA     .35
 325          PB    2.86
```

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 326          LS             85.
 327          UD     .44

 328          KK     A11
 329          BA     .42
 330          PB    2.86
 331          LS             85.
 332          UD     .64

 333          KK     A12
 334          BA     .93
 335          PB    2.86
 336          LS             85.
 337          UD     .73

 338          KK     NA6
 339          HC       4

 340          KK    RCP5 ROUTE     CP5    THRU     156
 341          RM       2   .4550     .15

 342          KK      H1
 343          BA    2.68
 344          PB    3.15
 345          LS             87.
 346          UD     .45

 347          KK     RH1
 348          RM       2     .70     .10
1                                    HEC-1 INPUT                                    PAGE 10

     LINE     ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


 349          KK      H2
 350          BA    2.09
 351          PB    3.07
 352          LS             86.
 353          UD     .66

 354          KK     NH1
 355          HC       2

 356          KK    RNH1
 357          RM       2     .43     .10

 358          KK      H3
 359          BA    1.10
 360          PB    3.05
 361          LS             85.
 362          UD     .56

 363          KK     RH3
 364          RM       2     .35     .15

 365          KK      H4
 366          BA    1.25
 367          PB    2.93
 368          LS             72.
 369          UD     .72

 370          KK      H5
 371          BA     .94
 372          PB    2.93
 373          LS             85.
 374          UD     .84

 375          KK     NH2
 376          HC       4

 377          KK    RNH2
 378          RM       1     .38     .10

 379          KK    H6MB
 380          KM     SUBBASIN H6MB AREA & LAG TIME HAS BEEN MODIFIED
 381          KM     TO MATCH JMM WATERSHED MAP
 382          BA   .9583
 383          PB    2.86
 384          LS             63.
 385          UD  1.0861

 386          KK     NH3
 387          HC       2
1                                    HEC-1 INPUT                                    PAGE 11

     LINE     ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10


 388          KK    RNH3
 389          KM     ROUTING MODIFIED TO REFLECT CHANGE IN SUBBASIN H6MB
 390          RM       6    0.54     0.1

 391          KK    H6MA
 392          KM     SUBBASIN H6MA AREA & LAG TIME HAS BEEN MODIFIED
 393          KM     TO MATCH JMM WATERSHED MAP
 394          BA  1.2962
 395          PB    2.86
 396          LS              85
 397          UD   .2016

 398          KK     NH4
 399          HC       2

 400          KK    RCP7    ROUTE     CP7    THRU     156
 401          KM     ROUTING MODIFIED TO REFLECT CHANGE IN SUBBASIN H6MA
 402          RM       2  0.2028     .15
```

```
403          KK      G1
404          BA    3.35
405          PB    3.33
406          LS            87.
407          UD     .79

408          KK     RG1
409          RM       4    1.02     .15

410          KK      G2
411          BA    1.98
412          PB    3.22
413          LS            86.
414          UD     .81

415          KK     NG1
416          HC       2

417          KK    RNG1
418          RM       3     .63     .15

419          KK      G3
420          BA    1.95
421          PB    3.29
422          LS            87.
423          UD     .70

424          KK     RG3
425          RM       4    1.31     .10
1                                  HEC-1 INPUT                                    PAGE 12

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

426          KK      G4
427          BA    2.09
428          PB    3.22
429          LS            87.
430          UD     .56

431          KK     RG4
432          RM       4    1.31     .10

433          KK      G5
434          BA    1.99
435          PB    3.10
436          LS            86.
437          UD    1.04

438          KK     RG5
439          RM       2     .30     .15

440          KK      G6
441          BA    2.98
442          PB    3.15
443          LS            85.
444          UD    1.16

445          KK     NG2
446          HC       5

447          KK    RNG2
448          RM       2     .51     .15

449          KK      G7
450          BA    2.01
451          PB    3.00
452          LS            85.
453          UD     .98

454          KK      G8
455          BA    2.20
456          PB    3.00
457          LS            85.
458          UD    1.34
             *  split from pittman wash to duck creek thru culverts under lake mead drive
             *  1 - 36" cmp, 1-8' x 4', and 1 - 8' x 4'
             *  assumed no weir over lake mead drive

459          KK    DDCR
460          DT     DDC
461          DI       0     200     600    1000    3000
462          DQ       0     200     463     554     575
             *    THIS MODEL DOES NOT INCLUDE DUCK CREEK SPLIT
1                                  HEC-1 INPUT                                    PAGE 13

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

463          KK     NG3
464          HC       3
             *
             *
             *

465          KK    RCP2    ROUTE     CP2    THRU     156
466          RM       6  1.5383     .15

467          KK     156       SUBAREA     156
468          BA  5.0299
469          PB    2.86
470          LS            80.
471          UD  1.0435

472          KK     156
473          KM      COMBINE AREA 156 WITH COSMO WORLD HYDROLOGY FLOWS
474          KM      ROUTED FROM CONCENTRATION PTS 2, 4, 5, AND 7
```

```
475          HC       5

476          KK    156R    ROUTE     156    THRU     158
477          RM       3     .77     .15

478          KK      34
479          KM      SUBBASINS 34B & MAC SHOWN ON WATERSHED MAP
480          BA  4.5636
481          PB    3.15
482          LS               85
483          UD   1.002

484          KK     34R    ROUTE      34    THRU     157
485          RM       3    .682     .15

486          KK     157     SUBAREA 157
487          KM     SUBBASIN 157 WAS DECREASED BECAUSE OF DRAINAGE INTERCEPT CHANNEL
488          BA  2.3594
489          PB    2.86
490          LS               80
491          UD   .7747

492          KK     157 COMBINE     157     AND     34R
493          HC       2

494          KK    157R    ROUTE     157    THRU     158
495          RM       5    1.15     .15

496          KK     158
497          KM     SUBBASIN 158 WAS DECREASED BECAUSE OF DRAINAGE INTERCEPT CHANNEL
498          BA  4.6432
499          PB    2.86
500          LS               75
501          UD   .9242
1                                        HEC-1 INPUT                                        PAGE 14
           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

502          KK     A1D   DISTRICT A AREA 1 SUBBASIN D
503          KM      RUNOFF FROM A1D
504          BA  1.1503
505          PB    2.86
506          LS               77
507          UD   .2681
             *

508          KK     158        COMBINE 156R, 157R, 158, AND A1D
509          HC       4
             *

510          KK  RT ARO    ROUTE TO ARROYO GRANDE
511          RM       1   0.107     0.2

512          KK     B3C     DISTRICT B  AREA 3 SUBBASIN C
513          KM        RUNOFF FROM B3C
514          BA  2.8216
515          PB    3.00
516          LS               86
517          UD   .6416

518          KK    RB3C
519          KM      ROUTE B3C THRU B3B
520          RM       2    .465     .15

521          KK     B3D     DISTRICT B  AREA 3 SUBBASIN D
522          KM        RUNOFF FROM B3D
523          BA  2.5483
524          PB    2.93
525          LS               81
526          UD   .5299

527          KK    RB3D
528          KM      ROUTE B3D THRU B3B
529          RM       3    .650     .15

530          KK     B3B     DISTRICT B  AREA 3 SUBBASIN B
531          KM     SUBBASIN B3B INCREASED DUE TO DRAINAGE INTERCEPT CHANNEL
532          BA   2.514
533          PB    2.86
534          LS               83
535          UD   .7028

536          KK    B11B
537          KM    SUBBASIN B11B DECREASED DUE TO LAKE MEAD DRAINAGE CHANNEL
538          KM    AND BLACK MOUNTAIN CHANNEL
539          BA  1.3898
540          PB    3.00
541          LS               87
542          UD   .6493
1                                        HEC-1 INPUT                                        PAGE 15
           LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

543          KK   RB11B
544          KM     ROUTE B11B THRU DRAINAGE INTERCEPT CHANNEL
545          RK    4000  0.0007   0.022            TRAP      48     2.0
             *

546          KK     160 COMBINE ROUTED B3C, ROUTED B3D, B3B AND B11B
547          KM     CONCENTRATION POINT 160 ADDED TO TAKE FLOW UNDER UPRR AT GRAVEL PIT
548          HC       4
             *

549          KK  RT ARO
550          KM     ROUTE 160 TO ARROYO GRANDE SPORTS COMPLEX
```

```
551          RM       2    .199     .15
             *
552          KK    AGSC
553          KM     COMBINE 158 AND 160 AT ARROYO GRANDE SPORTS COMPLEX
554          HC       2
             *
             * Revised inflow data (8/1/97)
             * The following data is from the estimate of the diversion into the
             * basin based on a 200-ft long weir elevation of 1833 (6/9/97):
555          KK   PARK
556          KM   Channel overflow section into proposed COH park in Section 9
557          KO       1
558          DT    PARK
559          DI       0    3000    4000    5000    6000    7000    8000    9000   10000
560          DQ       0       0       0       0       0     133     417     760    1117
             *
             * Add MW's model of the proposed detention basin:
561          KK  PARKDIV
562          DR    PARK
             *
             * Increase det basin outflow at elev 1834 to 450 cfs - MW, 6/10/97
563          KK  PARKDET
564          KM   Model Pittman Park Detention Basin (with additional excavation) - MW, 5/97
565          KO       1
566          RS       1    STOR       0
567          SV       0     0.4     2.6     4.8     7.4    10.1    21.2    32.4    42.4    52.4
568          SV    63.9    75.4    87.9   100.0     115
569          SE  1820.6    1822    1823    1824    1825    1826    1827    1828    1829    1830
570          SE    1831    1832    1833    1834    1835
571          SQ       0      10      19      25      30      34      38      41      45      47
572          SQ      50      53      55     550    1500
573          KK  DETCOMB
574          KM   Combine detention basin outflow with channel hydrograph - MW, 6/10/97
575          HC       2
             *
             *
             * ********************************************************************************
             *
             * "Asterisk out" the remainder of the data file - MW, 4/97
             * KK  PWCH
             * KM   DIVERSION TO RANCHO GALLERIA SUBDIVISION
             * DT  WEIR
             * DI       0    4800    8000    9638   10000
             * DQ       0       0    1084    1928    2151
             * *
             * *
             * KK  PWCH
             * KM   ROUTE FLOW THROUGH CONCRETE LINED PITTMAN CHANNEL TO U.S. 95
             * RK 12000   .0075    .013            TRAP      35     2.0
             * KK    WB    DISTRICT W AREA B
             * KM    RUNOFF FROM WB
             * BA.82727
             * PB  2.86
             * LS             81
             * UD   .44
             * KK    WC    DISTRICT W AREA C
             * KM    RUNOFF FROM WC
             * BA.65439
             * PB  2.86
             * LS             76
             * UD   .33
             * KK    WD    DISTRICT W AREA D
             * KM    RUNOFF FROM WD
             * BA.37027
             * PB  2.86
             * LS             79
             * UD   .29
             * KK    WE    DISTRICT W AREA E
             * KM    RUNOFF FROM WE
             * BA.52470
             * PB  2.86
             * LS             81
             * UD   .36
             * KK   A1C
             * KM   SUBBASIN AREA DECREASED DUE TO PITTMAN CHANNEL
             * BA .8271
             * PB  2.86
             * LS             75
             * UD1.1980
             * KK    WE
             * KM    COMBINE WB, WC, WD, WE, AND AIC
             * HC      5
             * KK   RWE
             * KM   ROUTE WE TO US 95
             * RM      2   .5083     .15
             * KK    WA    DISTRICT W AREA A
             * KM    RUNOFF FROM WA
             * KM    SUBBASIN WA WAS DECREASED IN SIZE DUE TO US 95 EXTENSION
             * KM    CONCENTRATION POINT WAS ADDED AT US 95 AND SUBBASIN A1B3 ADDED
             * BA1.3153
             * PB  2.86
             * LS             78
             * UD .2433
             * KK    WF    DISTRICT W AREA F
             * KM   SUBBASIN WF WAS SHOWN ON JMM WATERSHED MAP BUT NOT INCLUDED
             * KM   IN THEIR MODEL
             * BA .6284
             * PB  2.86
             * LS             79
             * UD  .499
             * KK   RWF
             * KM   ROUTE WF TO US95
```

```
* RM     4     .33     .15
* KK  A1B2
* BA .5452
* PB  2.86
* LS             82
* UD .9561
* KK RA1B2
* KM   ROUTE A1B2 TO US95
* RM     3     .26     .15
* *
* KKRC WIR    RECALL DIVERSION FROM ARROYO GRANDE SPORTS COMPLEX
* DR  WEIR
* KKRT STP    ROUTE TO HTE INT. OF STEPHANIE & WARM SPRING
* RM     4    0.31    0.15
* KK  A1E1
* BA  0.09
* PB  2.86
* LS             75
* UD   .42
* KKCB STP    COMBINE "WEIR" & A1E1 @ INT OF STEPHANIE & WARM SPRINGS
* HC     2
* *
* KKDV STP     WEIR FLOW OVER STEPHANY ST. TO EAST
* DT STEPH
* DI     0     800    1371    1928    2500
* DQ     0     760    1306    1832    2367
* *
* KKRT A1E    ROUTE THRU A1E2
* RM     3    0.22    0.15
* KK  A1E2
* KM   NEW SUBBASIN CREATED FROM A1C DUE TO PITTMAN CHANNEL
* BA  0.08
* PB  2.86
* LS             75
* UD   .34
* KKCB A1E
* HC     2
* KK  RA1E
* KM   ROUTE A1E TO US 95
* RM    11    0.90     .15
* KK  US95
* KM   COMBINE WA, WF, WE, A1E, A1B2 & PWCH
* HC     6
* KK  RA1B
* KM  ROUTE FLOWS AT US 95 TO A1B
* RM     8    0.68     .15
* KK  A1B3
* KM  SUBBASIN WAS PART OF JMM BASIN WA
* BA .2870
* PB  2.86
* LS             78
* UD .8023
* KK  A1B1
* BA .5974
* PB  2.86
* LS             85
* UD   .60
* KK   A1B     COMBINE US95, A1B1, AND A1B3
* KM   CONCENTRATION POINT DOES NOT INCLUDE ANY FLOW FROM DUCK CREEK
* HC     3
* KK  RA1B
* KM  ROUTE A1B TO A1A
* RM     2     .78      .1
* *
* KKRC STE  RECALL STEPHANY ST.
* DR STEPH
* *
* KK   EB1
* KM   SAME AS BASIN A IN VTN MODEL FOR HENDERSON COMMERCE CENTER
* BA .2922
* PB  2.79
* LS             77
* UD   .55
* KKCB EB1
* HC     2
* KKRT B3A   ROUTE THRU B3A
* RM     2    0.19     0.3
* KK   EB2
* KM   SAME AS BASIN B IN VTN MODEL FOR HENDERSON COMMERCE CENTER
* BA .6000
* PB  2.79
* LS             77
* UD   .66
* KKRT B3A   ROUTE THRU B3A
* RM     1    0.12     0.3
* KK   EB3
* KM   SAME AS BASIN C IN VTN MODEL FOR HENDERSON COMMERCE CENTER
* BA .6297
* PB  2.79
* LS             77
* UD   .69
* * KK   B3A
* KM   SAME AS ON-SITE BASIN IN VTN MODEL FOR HENDERSON COMMERCE CENTER
* BA  .340
* PB  2.77
* LS             88
* UD   .31
* KK  B11A
* KM  SUBBASIN MODIFIED  TO REFLECT EFFECTS OF BLK MTN CHANNEL
* BA .5266
* PB  2.86
* LS             85
* UD1.1574
* KKFRWYSP    DIVERSION OF FLOW AT CULVERT ON NEW FREEWAY
* KM   FLOWS WHICH PASS THRU CULVERT ARE SHOWN ON DQ CARDS
* DTCULVSP
* DI     0     850    5000
```

```
* DQ     0     850     850
* *
* KK   B3A     COMBINE REB, B3A, & B11A
* HC     5
* *
* KK  RB3A
* KM  ROUTE B3A TO B1E
* RM     5    0.39      .2
* KK   B1E    DISTRICT B AREA 1 SUBBASIN E
* KM   RUNOFF FROM B1E
* BA.94094
* PB  2.86
* LS             86
* UD  1.05
* KKR CULV
* KM  RETRIEVE DIVERSION CULVSP
* DRCULVSP
* KKRT B1E
* KM  ROUTE CULVSP THRU B1E
* RM     9    0.75      .15
* KK   B1E
* KM   COMBINE B3A & B1E
* HC     3
* KK  RB1E
* KM  ROUTE B3A & B1E TO B1A
* RM    13     1.1      .15
* KK   B1L   DISTRICT B AREA 1 SUBBASIN L
* KM    RUNOFF FROM B1L
* BA1.7719
* PB  3.22
* LS             83
* UD .6336
* KK  RB1L
* KM    ROUTE  B1L THRU B1M
* RM     2    .288      .15
* KK   B1M   DISTRICT B AREA 1 SUBBASIN M
* KM    SUBBASIN AREA DECREASED BECAUSE OF GIBSON CHANNEL
* BA1.6786
* PB  3.00
* LS             87
* UD .5178
* KK   B1M  COMBINE ROUTED B1L AND B1M
* HC     2
* KK   B1I   DISTRICT B AREA 1 SUBBASIN I
* KM    RUNOFF FROM B1I
* BA1.9443
* PB  3.00
* LS             81
* UD .2549
* *   DIVERSION OF FLOWS TO VAN WAGONEN CHNL DELETED BECAUSE NO FLOWS ARE DIVERT
* *   KK   B1IDIV   DIVERSION OF FLOW BY VAN WAGONEN CHNL
* *   KM   FLOW WHICH CROSSES VAN WAGONEN CHNL SHOWN ON DQ CARDS
* *   DT   VANWAG
* *   DI   0  1000    5000
* *   DQ   0     0    4000
* KK  B11C
* KM   NEW SUBBASIN CREATED FROM ORIGINAL B11B & B1M DUE TO BLK MTN CHANNEL
* BA1.5711
* PB  3.00
* LS             87
* UD .6493
* KK RB11C
* KM   ROUTE B11C THRU BLK MTN CHANNEL
* RK  3300   .0152     .02           TRAP      20     2.0
* KKCP B1M
* KM   COMBINE FLOWS FROM B1M, B1I, & B11C
* HC     3
* KK  RB1M
* KM   ROUTE B1M THRU B1G
* RM     2    .300      .15
* KK   B1G   DISTRICT B AREA 1 SUBBASIN G
* KM   SUBBASIN AREA DECREASED BECAUSE OF US 95 EXTENSION
* BA1.5539
* PB  2.86
* LS             92
* UD .4284
* KK   B1G  COMBINE ROUTED B1M & B1G
* HC     2
* KK  RB1G
* KM    ROUTE  B1G THRU B1F
* RM     2    .427      .15
* KK   B1F   DISTRICT B AREA 1 SUBBASIN F
* KM    RUNOFF FROM B1F
* BA .6885
* PB  2.86
* LS             88
* UD   .51
* KK   B1F  COMBINE ROUTED B1G AND BIF
* HC     2
* KK   B1D   DISTRICT B AREA 1 SUBBASIN D
* KM    RUNOFF FROM B1D
* BA.39159
* PB  2.86
* LS             88
* UD   .51
* KK   B1B   DISTRICT B AREA 1 SUBBASIN B
* KM    RUNOFF FROM B1B
* BA  .910
* PB  2.86
* LS             88
* UD   .37
* KK   B1B  COMBINE B1F, B1D, & B1B
* HC     3
* KK  RB1B
* KM    ROUTE  B1B THRU B1A
* RM     3   .5833      .15
* *   RETRIEVAL OF DIVERTED FLOWS BY VAN WAGONEN CHANNEL REMOVED HERE
```

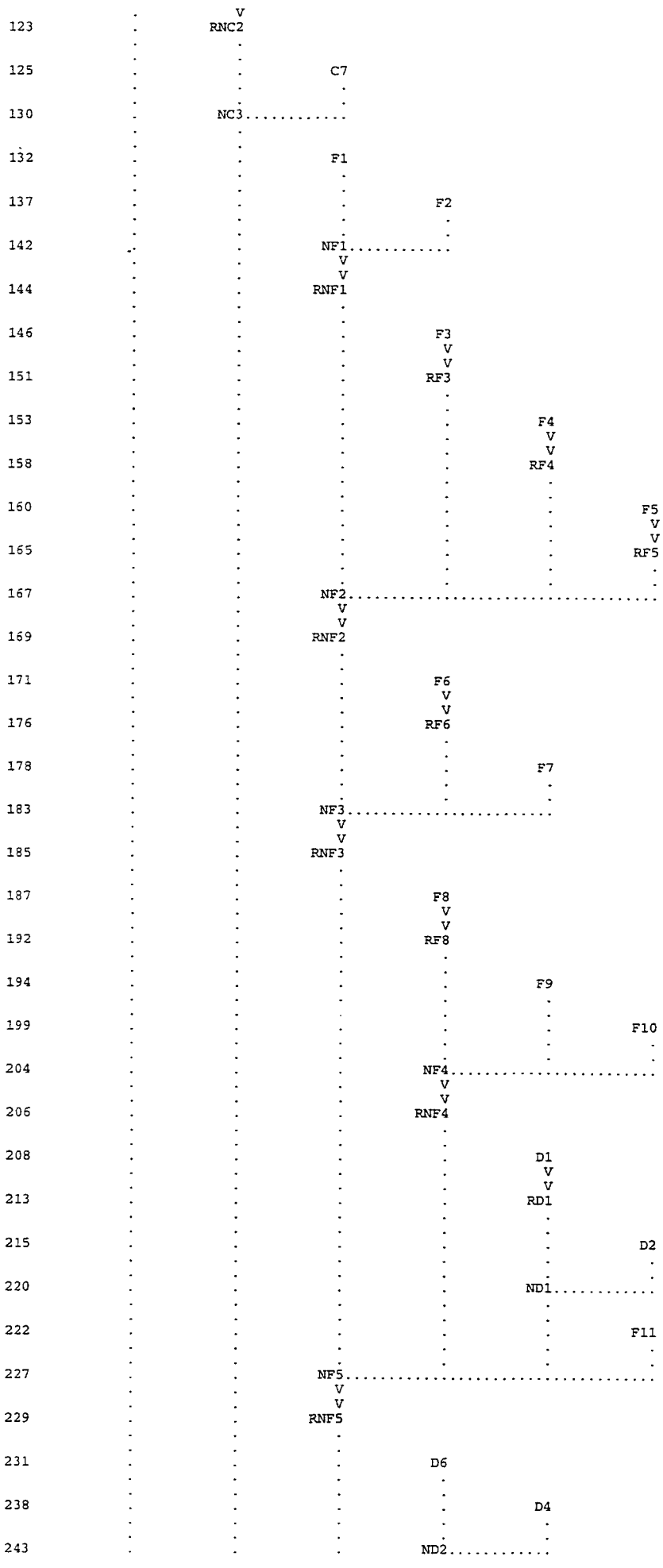
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                    * *   BECAUSE NO FLOWS DIVERTED
                    * *   KK   VANWAG   RETRIEVE B1I FLOWS NOT DIVERTED BY VAN WAGONEN CHNL
                    * *   DR   VANWAG
                    * *   KK      RVW
                    *   KM      ROUTE B1I THRU C101
                    *   RK      9800   .027   .018         TRAP   60.0   1.0
                    * KK  C101    DISTRICT C AREA 1 SUBBASIN 01
                    * KM  RUNOFF FROM C101
                    * BA1.0665
                    * PB  2.93
                    * LS              89
                    * UD   .52
                    * KK   C1P    DISTRICT C AREA 1 SUBBASIN P
                    * KM   RUNOFF FROM c1p
                    * BA.41945
                    * PB  2.86
                    * LS              86
                    * UD   .36
                    * KK   C1P   COMBINE ROUTED C1P AND C101
                    * HC     2
                    * KK  RC1P
                    * KM   ROUTE C1P THRU B1A
                    * RM     2   .5550     .15
                    * KK   B1A
                    * BA.87053
                    * PB  2.86
                    * LS              86
                    * UD   .37
                    * KK   B1A
                    * KM   COMBINE B1A, B1B, B1E & C1P
                    * HC     4
                    * KK  RB1A
                    * KM   ROUTE B1A TO A1A
                    * RM     2   .5483     .15
                    * KK   A1A
                    * BA1.0275
                    * PB  2.86
                    * LS              78
                    * UD1.0373
                    * KK   A1A
                    * KM   COMBINE A1A, A1B, & B1A
                    * HC     3
```

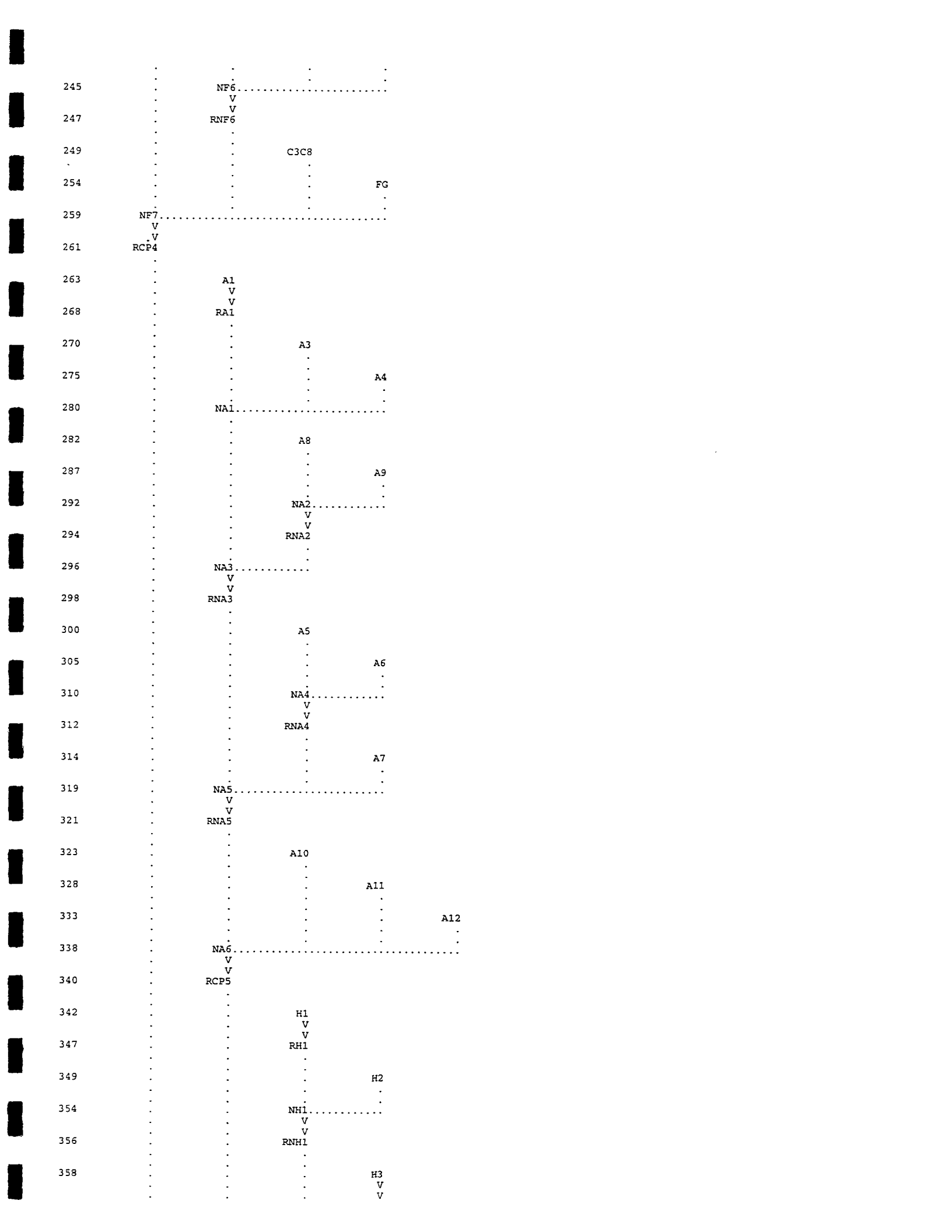


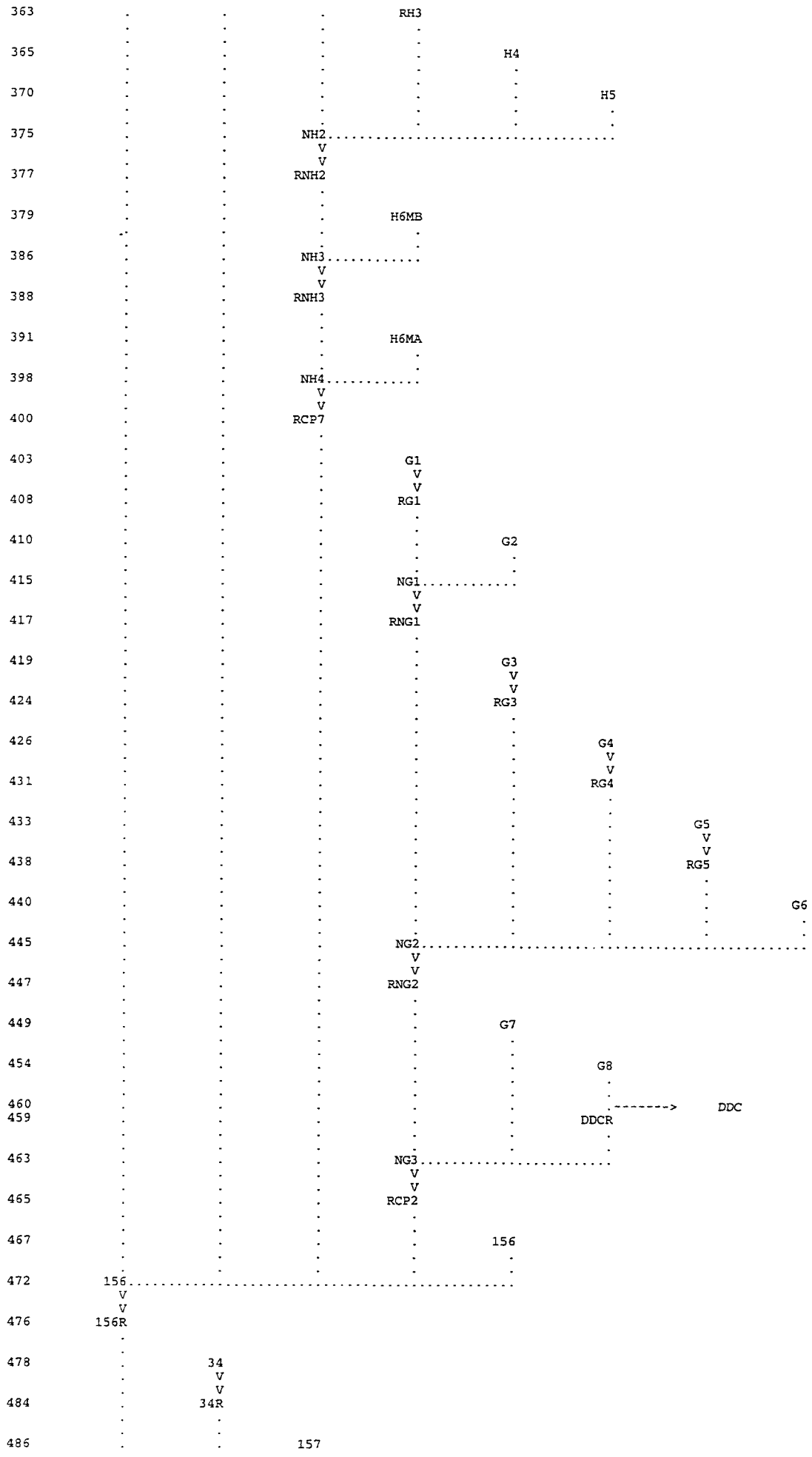
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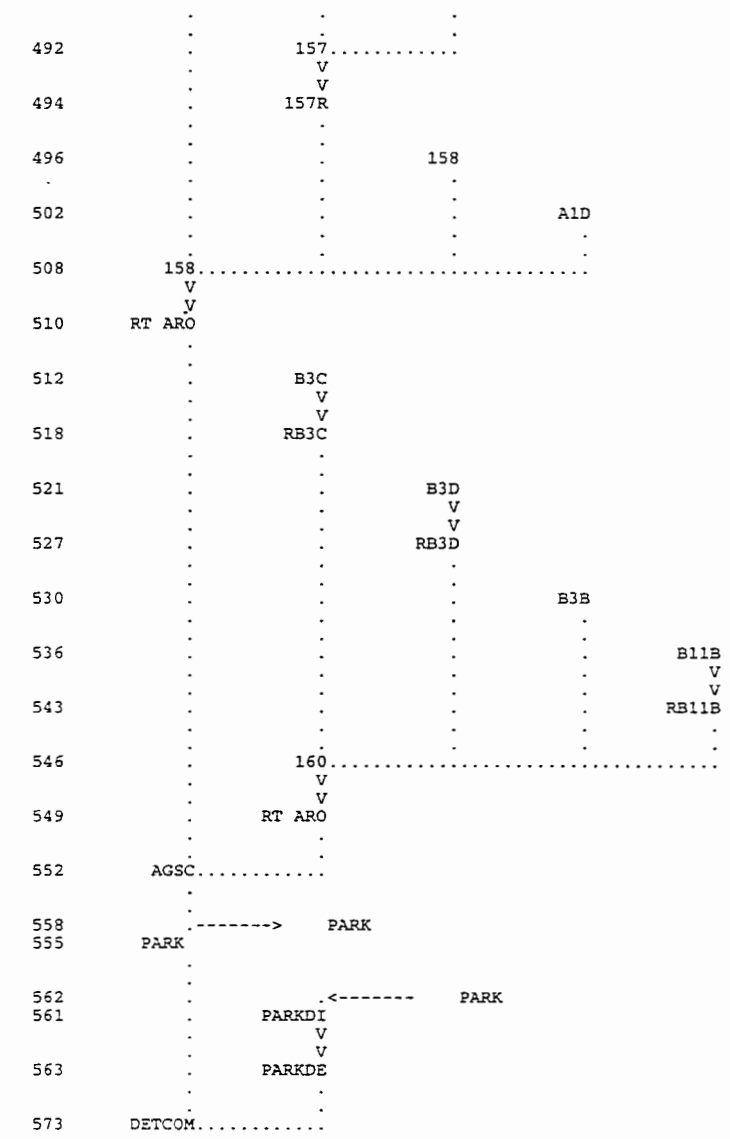
       576          ZZ
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1 SCHEMATIC DIAGRAM OF STREAM NETWORK


V
123 RNC2
125 C7
130 NC3
132 F1
137 F2
142 NF1
144 RNF1
146 F3
151 RF3
153 F4
158 RF4
160 F5
165 RF5
167 NF2
169 RNF2
171 F6
176 RF6
178 F7
183 NF3
185 RNF3
187 F8
192 RF8
194 F9
199 F10
204 NF4
206 RNF4
208 D1
213 RD1
215 D2
220 ND1
222 F11
227 NF5
229 RNF5
231 D6
238 D4
243 ND2


245
NF6
247
RNF6
249
C3C8
254
FG
259
NF7
261
RCP4
263
A1
268
RA1
270
A3
275
A4
280
NA1
282
A8
287
A9
292
NA2
294
RNA2
296
NA3
298
RNA3
300
A5
305
A6
310
NA4
312
RNA4
314
A7
319
NA5
321
RNA5
323
A10
328
A11
333
A12
338
NA6
340
RCP5
342
H1
347
RH1
349
H2
354
NH1
356
RNH1
358
H3


363
RH3
365
H4
370
H5
375
NH2
377
RNH2
379
H6MB
386
NH3
388
RNH3
391
H6MA
398
NH4
400
RCP7
403
G1
408
RG1
410
G2
415
NG1
417
RNG1
419
G3
424
RG3
426
G4
431
RG4
433
G5
438
RG5
440
G6
445
NG2
447
RNG2
449
G7
454
G8
460
459
DDCR
DDC
463
NG3
465
RCP2
467
156
472
156
476
156R
478
34
484
34R
486
157



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*                MAY   1991             *
*             VERSION 4.0.1E            *
*                                       *
*  RUN DATE  08/01/1997  TIME  13:01:54 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 551-1748              *
*                                       *
*****************************************
```

PITTMAN WASH FIS RESTUDY
100 YEAR 6 HOUR STORM (SDN #5)
PREPARED FOR CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
PREPARED BY NIMBUS ENGINEERS, RENO, NV
FILE NAME: 406H1-2.DAT
DATE: MARCH 1995

THIS HEC-1 MODEL IS MODIFIED FROM JMM HYDROLOGY MODEL (PITEX100)
FOR PITTMAN WASH, DATED OCTOBER 1990.

FOLLOWINGS WERE USED AS BASIS FOR JMM HYDROLOGY MODEL
UPPER WATERSHED MODEL TAKEN FROM COSMO WORLD HYDROLOGY
LOWER WATERSHED MODEL TAKEN FROM COE HYDROLOGY
KINEMATIC SUBBASINS CONVERTED TO SCS UNIT HYDROGRAPH
CHANNEL ROUTING CHANGED TO REFLECT NEW EXISTING FACILITIES
SUBBASIN ROUTING CHANGED TO REFLECT NEW DEVELOPMENT

NIMBUS MODIFIED THE FOLLOWING TO UPDATE THE EXISTING HEC-1 MODEL
INCLUDED PITTMAN CHANNEL, LAKE MEAD DRAINAGE CHANNEL,
DRAINAGE INTERCEPT CHANNEL, BLK MTN CHANNEL,
WHITNEY CHANNEL, HENDERSON COMMERCE CENTER,
SPLIT TO DUCK CREEK.

JR CARDS BASED ON THE FOLLOWING DARF AND PT OF CONCENTRATION

THIS HEC-1 MODEL DOES NOTINCLUDE SPLIT FROM DUCK CREEK
REFER TO 406H1-1.DAT - INCLUDES DUCK CREEK SPLIT

POINT OF CONCEN	AREA SQ.MI.	DARF
156	73.7	.64
158	86.4	.62
160	9.3	.87
AGSC	95.7	.61
US95	101.5	.60
A1B	102.4	.60
EB2	0.6	.98
B3A	97.6	.60
B1E	99.1	.60

JR CARD RATIOS FOR 100-YR STORM IS THE DEPTH AREA REDUCTION FACTOR (DARF)

53 IO OUTPUT CONTROL VARIABLES
IPRNT 5 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA
NMIN 5 MINUTES IN COMPUTATION INTERVAL
IDATE 1 0 STARTING DATE
ITIME 0000 STARTING TIME
NQ 300 NUMBER OF HYDROGRAPH ORDINATES
NDDATE 2 0 ENDING DATE
NDTIME 0055 ENDING TIME
ICENT 19 CENTURY MARK

COMPUTATION INTERVAL 0.08 HOURS
TOTAL TIME BASE 24.92 HOURS

ENGLISH UNITS
DRAINAGE AREA SQUARE MILES
PRECIPITATION DEPTH INCHES
LENGTH, ELEVATION FEET
FLOW CUBIC FEET PER SECOND
STORAGE VOLUME ACRE-FEET
SURFACE AREA ACRES
TEMPERATURE DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
0.61

*** ***

****
*
555 KK * PARK *
*
****

557 KO OUTPUT CONTROL VARIABLES
IPRNT 1 PRINT CONTROL
IPLOT 0 PLOT CONTROL
QSCAL 0. HYDROGRAPH PLOT SCALE

DT DIVERSION
ISTAD PARK DIVERSION HYDROGRAPH IDENTIFICATION

DI INFLOW	0.00	3000.00	4000.00	5000.00	6000.00	7000.00	8000.00	9000.00	10000.00
DQ DIVERTED FLOW	0.00	0.00	0.00	0.00	0.00	133.00	417.00	760.00	1117.00

***

DIVERSION HYDROGRAPH PARK
PLAN 1, RATIO = 0.61

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	273.	1		1230	151	0.	1		1845	226	0.
1		0005	2	0.	1		0620	77	332.	1		1235	152	0.	1		1850	227	0.
1		0010	3	0.	1		0625	78	390.	1		1240	153	0.	1		1855	228	0.
1		0015	4	0.	1		0630	79	454.	1		1245	154	0.	1		1900	229	0.
1		0020	5	0.	1		0635	80	522.	1		1250	155	0.	1		1905	230	0.
1		0025	6	0.	1		0640	81	587.	1		1255	156	0.	1		1910	231	0.
1		0030	7	0.	1		0645	82	649.	1		1300	157	0.	1		1915	232	0.
1		0035	8	0.	1		0650	83	708.	1		1305	158	0.	1		1920	233	0.
1		0040	9	0.	1		0655	84	763.	1		1310	159	0.	1		1925	234	0.
1		0045	10	0.	1		0700	85	814.	1		1315	160	0.	1		1930	235	0.
1		0050	11	0.	1		0705	86	860.	1		1320	161	0.	1		1935	236	0.
1		0055	12	0.	1		0710	87	899.	1		1325	162	0.	1		1940	237	0.
1		0100	13	0.	1		0715	88	932.	1		1330	163	0.	1		1945	238	0.
1		0105	14	0.	1		0720	89	958.	1		1335	164	0.	1		1950	239	0.
1		0110	15	0.	1		0725	90	976.	1		1340	165	0.	1		1955	240	0.
1		0115	16	0.	1		0730	91	986.	1		1345	166	0.	1		2000	241	0.
1		0120	17	0.	1		0735	92	988.	1		1350	167	0.	1		2005	242	0.
1		0125	18	0.	1		0740	93	981.	1		1355	168	0.	1		2010	243	0.

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0130	19	0.	1		0745	94	967.	1		1400	169	0.	1		2015	244	0.
1		0135	20	0.	1		0750	95	944.	1		1405	170	0.	1		2020	245	0.
1		0140	21	0.	1		0755	96	913.	1		1410	171	0.	1		2025	246	0.
1		0145	22	0.	1		0800	97	874.	1		1415	172	0.	1		2030	247	0.
1		0150	23	0.	1		0805	98	827.	1		1420	173	0.	1		2035	248	0.
1		0155	24	0.	1		0810	99	774.	1		1425	174	0.	1		2040	249	0.
1		0200	25	0.	1		0815	100	715.	1		1430	175	0.	1		2045	250	0.
1		0205	26	0.	1		0820	101	650.	1		1435	176	0.	1		2050	251	0.
1		0210	27	0.	1		0825	102	580.	1		1440	177	0.	1		2055	252	0.
1		0215	28	0.	1		0830	103	505.	1		1445	178	0.	1		2100	253	0.
1		0220	29	0.	1		0835	104	426.	1		1450	179	0.	1		2105	254	0.
1		0225	30	0.	1		0840	105	355.	1		1455	180	0.	1		2110	255	0.
1		0230	31	0.	1		0845	106	282.	1		1500	181	0.	1		2115	256	0.
1		0235	32	0.	1		0850	107	207.	1		1505	182	0.	1		2120	257	0.
1		0240	33	0.	1		0855	108	132.	1		1510	183	0.	1		2125	258	0.
1		0245	34	0.	1		0900	109	95.	1		1515	184	0.	1		2130	259	0.
1		0250	35	0.	1		0905	110	57.	1		1520	185	0.	1		2135	260	0.
1		0255	36	0.	1		0910	111	20.	1		1525	186	0.	1		2140	261	0.
1		0300	37	0.	1		0915	112	0.	1		1530	187	0.	1		2145	262	0.
1		0305	38	0.	1		0920	113	0.	1		1535	188	0.	1		2150	263	0.
1		0310	39	0.	1		0925	114	0.	1		1540	189	0.	1		2155	264	0.
1		0315	40	0.	1		0930	115	0.	1		1545	190	0.	1		2200	265	0.
1		0320	41	0.	1		0935	116	0.	1		1550	191	0.	1		2205	266	0.
1		0325	42	0.	1		0940	117	0.	1		1555	192	0.	1		2210	267	0.
1		0330	43	0.	1		0945	118	0.	1		1600	193	0.	1		2215	268	0.
1		0335	44	0.	1		0950	119	0.	1		1605	194	0.	1		2220	269	0.
1		0340	45	0.	1		0955	120	0.	1		1610	195	0.	1		2225	270	0.
1		0345	46	0.	1		1000	121	0.	1		1615	196	0.	1		2230	271	0.
1		0350	47	0.	1		1005	122	0.	1		1620	197	0.	1		2235	272	0.
1		0355	48	0.	1		1010	123	0.	1		1625	198	0.	1		2240	273	0.
1		0400	49	0.	1		1015	124	0.	1		1630	199	0.	1		2245	274	0.
1		0405	50	0.	1		1020	125	0.	1		1635	200	0.	1		2250	275	0.
1		0410	51	0.	1		1025	126	0.	1		1640	201	0.	1		2255	276	0.
1		0415	52	0.	1		1030	127	0.	1		1645	202	0.	1		2300	277	0.
1		0420	53	0.	1		1035	128	0.	1		1650	203	0.	1		2305	278	0.
1		0425	54	0.	1		1040	129	0.	1		1655	204	0.	1		2310	279	0.
1		0430	55	0.	1		1045	130	0.	1		1700	205	0.	1		2315	280	0.
1		0435	56	0.	1		1050	131	0.	1		1705	206	0.	1		2320	281	0.
1		0440	57	0.	1		1055	132	0.	1		1710	207	0.	1		2325	282	0.
1		0445	58	0.	1		1100	133	0.	1		1715	208	0.	1		2330	283	0.
1		0450	59	0.	1		1105	134	0.	1		1720	209	0.	1		2335	284	0.
1		0455	60	0.	1		1110	135	0.	1		1725	210	0.	1		2340	285	0.
1		0500	61	0.	1		1115	136	0.	1		1730	211	0.	1		2345	286	0.
1		0505	62	0.	1		1120	137	0.	1		1735	212	0.	1		2350	287	0.
1		0510	63	0.	1		1125	138	0.	1		1740	213	0.	1		2355	288	0.
1		0515	64	0.	1		1130	139	0.	1		1745	214	0.	2		0000	289	0.
1		0520	65	0.	1		1135	140	0.	1		1750	215	0.	2		0005	290	0.
1		0525	66	0.	1		1140	141	0.	1		1755	216	0.	2		0010	291	0.
1		0530	67	0.	1		1145	142	0.	1		1800	217	0.	2		0015	292	0.
1		0535	68	0.	1		1150	143	0.	1		1805	218	0.	2		0020	293	0.
1		0540	69	0.	1		1155	144	0.	1		1810	219	0.	2		0025	294	0.
1		0545	70	12.	1		1200	145	0.	1		1815	220	0.	2		0030	295	0.
1		0550	71	46.	1		1205	146	0.	1		1820	221	0.	2		0035	296	0.
1		0555	72	79.	1		1210	147	0.	1		1825	222	0.	2		0040	297	0.
1		0600	73	111.	1		1215	148	0.	1		1830	223	0.	2		0045	298	0.
1		0605	74	150.	1		1220	149	0.	1		1835	224	0.	2		0050	299	0.
1		0610	75	212.	1		1225	150	0.	1		1840	225	0.	2		0055	300	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
		(CFS)				
988.	7.58		319.	80.	77.	77.
		(INCHES)	0.031	0.031	0.031	0.031
		(AC-FT)	158.	158.	158.	158.

CUMULATIVE AREA = 95.68 SQ MI

HYDROGRAPH AT STATION PARK
PLAN 1, RATIO = 0.61

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0615	76	7219.	1		1230	151	172.	1		1845	226	0.
1		0005	2	0.	1		0620	77	7368.	1		1235	152	151.	1		1850	227	0.
1		0010	3	0.	1		0625	78	7515.	1		1240	153	133.	1		1855	228	0.
1		0015	4	0.	1		0630	79	7654.	1		1245	154	117.	1		1900	229	0.
1		0020	5	0.	1		0635	80	7783.	1		1250	155	102.	1		1905	230	0.
1		0025	6	0.	1		0640	81	7909.	1		1255	156	89.	1		1910	231	0.
1		0030	7	0.	1		0645	82	8028.	1		1300	157	78.	1		1915	232	0.
1		0035	8	0.	1		0650	83	8141.	1		1305	158	68.	1		1920	233	0.
1		0040	9	0.	1		0655	84	8245.	1		1310	159	59.	1		1925	234	0.
1		0045	10	0.	1		0700	85	8337.	1		1315	160	52.	1		1930	235	0.
1		0050	11	0.	1		0705	86	8419.	1		1320	161	45.	1		1935	236	0.
1		0055	12	0.	1		0710	87	8491.	1		1325	162	39.	1		1940	237	0.
1		0100	13	0.	1		0715	88	8550.	1		1330	163	34.	1		1945	238	0.
1		0105	14	0.	1		0720	89	8596.	1		1335	164	29.	1		1950	239	0.
1		0110	15	0.	1		0725	90	8628.	1		1340	165	25.	1		1955	240	0.
1		0115	16	0.	1		0730	91	8647.	1		1345	166	22.	1		2000	241	0.
1		0120	17	0.	1		0735	92	8650.	1		1350	167	19.	1		2005	242	0.
1		0125	18	0.	1		0740	93	8639.	1		1355	168	16.	1		2010	243	0.
1		0130	19	0.	1		0745	94	8613.	1		1400	169	14.	1		2015	244	0.
1		0135	20	0.	1		0750	95	8571.	1		1405	170	12.	1		2020	245	0.
1		0140	21	0.	1		0755	96	8516.	1		1410	171	10.	1		2025	246	0.
1		0145	22	0.	1		0800	97	8445.	1		1415	172	9.	1		2030	247	0.
1		0150	23	1.	1		0805	98	8362.	1		1420	173	7.	1		2035	248	0.
1		0155	24	2.	1		0810	99	8265.	1		1425	174	6.	1		2040	249	0.
1		0200	25	3.	1		0815	100	8154.	1		1430	175	5.	1		2045	250	0.
1		0205	26	5.	1		0820	101	8030.	1		1435	176	5.	1		2050	251	0.
1		0210	27	7.	1		0825	102	7896.	1		1440	177	4.	1		2055	252	0.

1	0215	28	11.	*	1	0830	103	7752.	*	1	1445	178	3.	*	1	2100	253	0.
1	0220	29	16.	*	1	0835	104	7599.	*	1	1450	179	3.	*	1	2105	254	0.
1	0225	30	23.	*	1	0840	105	7426.	*	1	1455	180	2.	*	1	2110	255	0.
1	0230	31	31.	*	1	0845	106	7243.	*	1	1500	181	2.	*	1	2115	256	0.
1	0235	32	41.	*	1	0850	107	7054.	*	1	1505	182	2.	*	1	2120	257	0.
1	0240	33	52.	*	1	0855	108	6858.	*	1	1510	183	1.	*	1	2125	258	0.
1	0245	34	65.	*	1	0900	109	6618.	*	1	1515	184	1.	*	1	2130	259	0.
1	0250	35	79.	*	1	0905	110	6374.	*	1	1520	185	1.	*	1	2135	260	0.
1	0255	36	93.	*	1	0910	111	6128.	*	1	1525	186	1.	*	1	2140	261	0.
1	0300	37	107.	*	1	0915	112	5862.	*	1	1530	187	1.	*	1	2145	262	0.
1	0305	38	123.	*	1	0920	113	5577.	*	1	1535	188	1.	*	1	2150	263	0.
1	0310	39	142.	*	1	0925	114	5293.	*	1	1540	189	1.	*	1	2155	264	0.
1	0315	40	167.	*	1	0930	115	5012.	*	1	1545	190	0.	*	1	2200	265	0.
1	0320	41	202.	*	1	0935	116	4735.	*	1	1550	191	0.	*	1	2205	266	0.
1	0325	42	253.	*	1	0940	117	4463.	*	1	1555	192	0.	*	1	2210	267	0.
1	0330	43	326.	*	1	0945	118	4197.	*	1	1600	193	0.	*	1	2215	268	0.
1	0335	44	431.	*	1	0950	119	3938.	*	1	1605	194	0.	*	1	2220	269	0.
1	0340	45	567.	*	1	0955	120	3687.	*	1	1610	195	0.	*	1	2225	270	0.
1	0345	46	723.	*	1	1000	121	3443.	*	1	1615	196	0.	*	1	2230	271	0.
1	0350	47	894.	*	1	1005	122	3209.	*	1	1620	197	0.	*	1	2235	272	0.
1	0355	48	1093.	*	1	1010	123	2984.	*	1	1625	198	0.	*	1	2240	273	0.
1	0400	49	1326.	*	1	1015	124	2768.	*	1	1630	199	0.	*	1	2245	274	0.
1	0405	50	1583.	*	1	1020	125	2563.	*	1	1635	200	0.	*	1	2250	275	0.
1	0410	51	1849.	*	1	1025	126	2367.	*	1	1640	201	0.	*	1	2255	276	0.
1	0415	52	2107.	*	1	1030	127	2182.	*	1	1645	202	0.	*	1	2300	277	0.
1	0420	53	2351.	*	1	1035	128	2007.	*	1	1650	203	0.	*	1	2305	278	0.
1	0425	54	2576.	*	1	1040	129	1842.	*	1	1655	204	0.	*	1	2310	279	0.
1	0430	55	2780.	*	1	1045	130	1687.	*	1	1700	205	0.	*	1	2315	280	0.
1	0435	56	2964.	*	1	1050	131	1542.	*	1	1705	206	0.	*	1	2320	281	0.
1	0440	57	3134.	*	1	1055	132	1407.	*	1	1710	207	0.	*	1	2325	282	0.
1	0445	58	3298.	*	1	1100	133	1280.	*	1	1715	208	0.	*	1	2330	283	0.
1	0450	59	3462.	*	1	1105	134	1163.	*	1	1720	209	0.	*	1	2335	284	0.
1	0455	60	3631.	*	1	1110	135	1055.	*	1	1725	210	0.	*	1	2340	285	0.
1	0500	61	3809.	*	1	1115	136	954.	*	1	1730	211	0.	*	1	2345	286	0.
1	0505	62	3999.	*	1	1120	137	862.	*	1	1735	212	0.	*	1	2350	287	0.
1	0510	63	4203.	*	1	1125	138	777.	*	1	1740	213	0.	*	1	2355	288	0.
1	0515	64	4429.	*	1	1130	139	699.	*	1	1745	214	0.	*	2	0000	289	0.
1	0520	65	4680.	*	1	1135	140	628.	*	1	1750	215	0.	*	2	0005	290	0.
1	0525	66	4953.	*	1	1140	141	563.	*	1	1755	216	0.	*	2	0010	291	0.
1	0530	67	5239.	*	1	1145	142	504.	*	1	1800	217	0.	*	2	0015	292	0.
1	0535	68	5529.	*	1	1150	143	450.	*	1	1805	218	0.	*	2	0020	293	0.
1	0540	69	5813.	*	1	1155	144	401.	*	1	1810	219	0.	*	2	0025	294	0.
1	0545	70	6076.	*	1	1200	145	357.	*	1	1815	220	0.	*	2	0030	295	0.
1	0550	71	6302.	*	1	1205	146	318.	*	1	1820	221	0.	*	2	0035	296	0.
1	0555	72	6517.	*	1	1210	147	282.	*	1	1825	222	0.	*	2	0040	297	0.
1	0600	73	6722.	*	1	1215	148	250.	*	1	1830	223	0.	*	2	0045	298	0.
1	0605	74	6910.	*	1	1220	149	221.	*	1	1835	224	0.	*	2	0050	299	0.
1	0610	75	7066.	*	1	1225	150	195.	*	1	1840	225	0.	*	2	0055	300	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)					
		(CFS)				
8650.	7.58		6201.	1689.	1627.	1627.
		(INCHES)	0.603	0.657	0.657	0.657
		(AC-FT)	3075.	3351.	3351.	3351.

CUMULATIVE AREA = 95.68 SQ MI

563 KK PARKDE T

565 KO OUTPUT CONTROL VARIABLES

IPRNT	1	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

566 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	0.00	INITIAL CONDITION
X	0.00	WORKING R AND D COEFFICIENT

567 SV	STORAGE	0.0	0.4	2.6	4.8	7.4	10.1	21.2	32.4	42.4	52.4
		63.9	75.4	87.9	100.0	115.0					
569 SE	ELEVATION	1820.60	1822.00	1823.00	1824.00	1825.00	1826.00	1827.00	1828.00	1829.00	1830.00
		1831.00	1832.00	1833.00	1834.00	1835.00					
571 SQ	DISCHARGE	0.	10.	19.	25.	30.	34.	38.	41.	45.	47.
		50.	53.	55.	550.	1500.					

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HYDROGRAPH AT STATION PARKDE
PLAN 1, RATIO = 0.61

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	1820.6	1		0820	101	722.	102.7	1834.2	1		1640	201	48.	57.3	1830.4

1	0005	2	0.	0.0	1820.6	*	1	0825	102	684.	102.1	1834.1	*	1	1645	202	48.	57.0	1830.4
1	0010	3	0.	0.0	1820.6	•	1	0830	103	633.	101.3	1834.1	•	1	1650	203	48.	56.6	1830.4
1	0015	4	0.	0.0	1820.6	*	1	0835	104	573.	100.4	1834.0	•	1	1655	204	48.	56.3	1830.3
1	0020	5	0.	0.0	1820.6	*	1	0840	105	521.	99.3	1833.9	•	1	1700	205	48.	56.0	1830.3
1	0025	6	0.	0.0	1820.6	•	1	0845	106	471.	98.1	1833.8	•	1	1705	206	48.	55.6	1830.3
1	0030	7	0.	0.0	1820.6	•	1	0850	107	415.	96.7	1833.7	*	1	1710	207	48.	55.3	1830.3
1	0035	8	0.	0.0	1820.6	•	1	0855	108	354.	95.2	1833.6	•	1	1715	208	48.	55.0	1830.2
1	0040	9	0.	0.0	1820.6	*	1	0900	109	295.	93.8	1833.5	•	1	1720	209	48.	54.6	1830.2
1	0045	10	0.	0.0	1820.6	*	1	0905	110	241.	92.4	1833.4	•	1	1725	210	48.	54.3	1830.2
1.	0050	11	0.	0.0	1820.6	*	1	0910	111	191.	91.2	1833.3	*	1	1730	211	47.	54.0	1830.1
1	0055	12	0.	0.0	1820.6	*	1	0915	112	146.	90.1	1833.2	•	1	1735	212	47.	53.7	1830.1
1	0100	13	0.	0.0	1820.6	*	1	0920	113	110.	89.2	1833.1	*	1	1740	213	47.	53.3	1830.1
1	0105	14	0.	0.0	1820.6	*	1	0925	114	83.	88.6	1833.1	•	1	1745	214	47.	53.0	1830.1
1	0110	15	0.	0.0	1820.6	•	1	0930	115	62.	88.1	1833.0	•	1	1750	215	47.	52.7	1830.0
1	0115	16	0.	0.0	1820.6	*	1	0935	116	55.	87.7	1833.0	*	1	1755	216	47.	52.4	1830.0
1	0120	17	0.	0.0	1820.6	•	1	0940	117	55.	87.3	1833.0	*	1	1800	217	47.	52.0	1830.0
1	0125	18	0.	0.0	1820.6	•	1	0945	118	55.	86.9	1832.9	•	1	1805	218	47.	51.7	1829.9
1	0130	19	0.	0.0	1820.6	*	1	0950	119	55.	86.5	1832.9	*	1	1810	219	47.	51.4	1829.9
1	0135	20	0.	0.0	1820.6	*	1	0955	120	55.	86.2	1832.9	•	1	1815	220	47.	51.1	1829.9
1	0140	21	0.	0.0	1820.6	•	1	1000	121	55.	85.8	1832.8	*	1	1820	221	47.	50.8	1829.8
1	0145	22	0.	0.0	1820.6	*	1	1005	122	55.	85.4	1832.8	•	1	1825	222	47.	50.4	1829.8
1	0150	23	0.	0.0	1820.6	*	1	1010	123	55.	85.0	1832.8	*	1	1830	223	47.	50.1	1829.8
1	0155	24	0.	0.0	1820.6	•	1	1015	124	54.	84.7	1832.7	*	1	1835	224	46.	49.8	1829.7
1	0200	25	0.	0.0	1820.6	•	1	1020	125	54.	84.3	1832.7	•	1	1840	225	46.	49.5	1829.7
1	0205	26	0.	0.0	1820.6	*	1	1025	126	54.	83.9	1832.7	*	1	1845	226	46.	49.2	1829.7
1	0210	27	0.	0.0	1820.6	*	1	1030	127	54.	83.5	1832.7	*	1	1850	227	46.	48.8	1829.6
1	0215	28	0.	0.0	1820.6	•	1	1035	128	54.	83.2	1832.6	•	1	1855	228	46.	48.5	1829.6
1	0220	29	0.	0.0	1820.6	*	1	1040	129	54.	82.8	1832.6	*	1	1900	229	46.	48.2	1829.6
1	0225	30	0.	0.0	1820.6	•	1	1045	130	54.	82.4	1832.6	*	1	1905	230	46.	47.9	1829.5
1	0230	31	0.	0.0	1820.6	•	1	1050	131	54.	82.0	1832.5	*	1	1910	231	46.	47.6	1829.5
1	0235	32	0.	0.0	1820.6	•	1	1055	132	54.	81.7	1832.5	•	1	1915	232	46.	47.2	1829.5
1	0240	33	0.	0.0	1820.6	•	1	1100	133	54.	81.3	1832.5	*	1	1920	233	46.	46.9	1829.5
1	0245	34	0.	0.0	1820.6	•	1	1105	134	54.	80.9	1832.4	*	1	1925	234	46.	46.6	1829.4
1	0250	35	0.	0.0	1820.6	•	1	1110	135	54.	80.6	1832.4	•	1	1930	235	46.	46.3	1829.4
1	0255	36	0.	0.0	1820.6	*	1	1115	136	54.	80.2	1832.4	•	1	1935	236	46.	46.0	1829.4
1	0300	37	0.	0.0	1820.6	*	1	1120	137	54.	79.8	1832.4	*	1	1940	237	46.	45.7	1829.3
1	0305	38	0.	0.0	1820.6	*	1	1125	138	54.	79.4	1832.3	•	1	1945	238	46.	45.4	1829.3
1	0310	39	0.	0.0	1820.6	*	1	1130	139	54.	79.1	1832.3	*	1	1950	239	46.	45.0	1829.3
1	0315	40	0.	0.0	1820.6	*	1	1135	140	54.	78.7	1832.3	*	1	1955	240	45.	44.7	1829.2
1	0320	41	0.	0.0	1820.6	•	1	1140	141	53.	78.3	1832.2	•	1	2000	241	45.	44.4	1829.2
1	0325	42	0.	0.0	1820.6	•	1	1145	142	53.	78.0	1832.2	*	1	2005	242	45.	44.1	1829.2
1	0330	43	0.	0.0	1820.6	•	1	1150	143	53.	77.6	1832.2	•	1	2010	243	45.	43.8	1829.1
1	0335	44	0.	0.0	1820.6	*	1	1155	144	53.	77.2	1832.1	*	1	2015	244	45.	43.5	1829.1
1	0340	45	0.	0.0	1820.6	•	1	1200	145	53.	76.9	1832.1	*	1	2020	245	45.	43.2	1829.1
1	0345	46	0.	0.0	1820.6	*	1	1205	146	53.	76.5	1832.1	*	1	2025	246	45.	42.9	1829.0
1	0350	47	0.	0.0	1820.6	*	1	1210	147	53.	76.1	1832.1	*	1	2030	247	45.	42.5	1829.0
1	0355	48	0.	0.0	1820.6	*	1	1215	148	53.	75.8	1832.0	*	1	2035	248	45.	42.2	1829.0
1	0400	49	0.	0.0	1820.6	*	1	1220	149	53.	75.4	1832.0	*	1	2040	249	45.	41.9	1829.0
1	0405	50	0.	0.0	1820.6	•	1	1225	150	53.	75.0	1832.0	•	1	2045	250	45.	41.6	1828.9
1	0410	51	0.	0.0	1820.6	*	1	1230	151	53.	74.7	1831.9	•	1	2050	251	45.	41.3	1828.9
1	0415	52	0.	0.0	1820.6	•	1	1235	152	53.	74.3	1831.9	*	1	2055	252	44.	41.0	1828.9
1	0420	53	0.	0.0	1820.6	•	1	1240	153	53.	74.0	1831.9	*	1	2100	253	44.	40.7	1828.8
1	0425	54	0.	0.0	1820.6	*	1	1245	154	53.	73.6	1831.8	•	1	2105	254	44.	40.4	1828.8
1	0430	55	0.	0.0	1820.6	*	1	1250	155	52.	73.2	1831.8	*	1	2110	255	44.	40.1	1828.8
1	0435	56	0.	0.0	1820.6	*	1	1255	156	52.	72.9	1831.8	*	1	2115	256	44.	39.8	1828.7
1	0440	57	0.	0.0	1820.6	*	1	1300	157	52.	72.5	1831.7	*	1	2120	257	44.	39.5	1828.7
1	0445	58	0.	0.0	1820.6	*	1	1305	158	52.	72.2	1831.7	*	1	2125	258	44.	39.2	1828.7
1	0450	59	0.	0.0	1820.6	*	1	1310	159	52.	71.8	1831.7	*	1	2130	259	44.	38.9	1828.6
1	0455	60	0.	0.0	1820.6	*	1	1315	160	52.	71.4	1831.7	•	1	2135	260	43.	38.6	1828.6
1	0500	61	0.	0.0	1820.6	*	1	1320	161	52.	71.1	1831.6	•	1	2140	261	43.	38.3	1828.6
1	0505	62	0.	0.0	1820.6	•	1	1325	162	52.	70.7	1831.6	*	1	2145	262	43.	38.0	1828.6
1	0510	63	0.	0.0	1820.6	•	1	1330	163	52.	70.4	1831.6	*	1	2150	263	43.	37.7	1828.5
1	0515	64	0.	0.0	1820.6	*	1	1335	164	52.	70.0	1831.5	*	1	2155	264	43.	37.4	1828.5
1	0520	65	0.	0.0	1820.6	*	1	1340	165	52.	69.7	1831.5	*	1	2200	265	43.	37.1	1828.5
1	0525	66	0.	0.0	1820.6	*	1	1345	166	51.	69.3	1831.5	*	1	2205	266	43.	36.8	1828.4
1	0530	67	0.	0.0	1820.6	•	1	1350	167	51.	68.9	1831.4	*	1	2210	267	43.	36.5	1828.4
1	0535	68	0.	0.0	1820.6	*	1	1355	168	51.	68.6	1831.4	•	1	2215	268	43.	36.2	1828.4
1	0540	69	0.	0.0	1820.6	*	1	1400	169	51.	68.2	1831.4	•	1	2220	269	42.	35.9	1828.4
1	0545	70	1.	0.0	1820.7	*	1	1405	170	51.	67.9	1831.3	*	1	2225	270	42.	35.6	1828.3
1	0550	71	5.	0.2	1821.4	•	1	1410	171	51.	67.5	1831.3	•	1	2230	271	42.	35.3	1828.3
1	0555	72	11.	0.6	1822.1	*	1	1415	172	51.	67.2	1831.3	*	1	2235	272	42.	35.0	1828.3
1	0600	73	13.	1.2	1822.3	*	1	1420	173	51.	66.8	1831.3	•	1	2240	273	42.	34.8	1828.2
1	0605	74	16.	2.0	1822.7	•	1	1425	174	51.	66.5	1831.2	*	1	2245	274	42.	34.5	1828.2
1	0610	75	20.	3.1	1823.2	*	1	1430	175	51.	66.1	1831.2	*	1	2250	275	42.	34.2	1828.2
1	0615	76	24.	4.6	1823.9	•	1	1435	176	50.	65.8	1831.2	•	1	2255	276	42.	33.9	1828.1
1	0620	77	28.	6.5	1824.7	•	1	1440	177	50.	65.4	1831.1	•	1	2300	277	41.	33.6	1828.1
1	0625	78	32.	8.8	1825.5	•	1	1445	178	50.	65.1	1831.1	•	1	2305	278	41.	33.3	1828.1
1	0630	79	34.	11.5	1826.1	*	1	1450	179	50.	64.7	1831.1	*	1	2310	279	41.	33.0	1828.1
1	0635	80	36.	14.6	1826.4	*	1	1455	180	50.	64.4	1831.0	•	1	2315	280	41.	32.8	1828.0
1	0640	81	37.	18.1	1826.7	•	1	1500	181	50.	64.1	1831.0	•	1	2320	281	41.	32.5	1828.0
1	0645	82	38.	22.1	1827.1	•	1	1505	182	50.	63.7	1831.0	•	1	2325	282	41.	32.2	1828.0
1	0650	83	39.	26.5	1827.5	*	1	1510	183	50.	63.4	1831.0	*	1	2330	283	41.	31.9	1828.0
1	0655	84	41.	31.3	1827.9	*	1	1515	184	50.	63.0	1830.9	•	1	2335	284	41.	31.6	1827.9
1	0700	85	43.	36.5	1828.4	•	1	1520	185	50.	62.7	1830.9	•	1	2340	285	41.	31.3	1827.9
1	0705	86	45.	41.9	1829.0	*	1	1525	186	50.	62.3	1830.9	•	1	2345	286	41.	31.1	1827.9
1	0710	87	46.	47.7	1829.5	*	1	1530	187	50.	62.0	1830.8	•	1	2350	287	41.	30.8	1827.9
1	0715	88	47.	53.7	1830.1	*	1	1535	188	49.	61.7	1830.8	•	1	2355	288	40.	30.5	1827.8
1	0720	89	49.	59.8	1830.6	*	1	1540	189	49.	61.3	1830.8	*	2	0000	289	40.	30.2	1827.8
1	0725	90	51.	66.2	1831.2	•	1	1545	190	49.	61.0	1830.7	*	2	0005	290	40.	30.0	1827.8
1	0730	91	52.	72.6	1831.8	*	1	1550	191	49.	60.6	1830.7	•	2	0010	291	40.	29.7	1827.8
1	0735	92	54.	79.0	1832.3	*	1	1555	192	49.	60.3	1830.7	•	2	0015	292	40.	29.4	1827.7
1	0740	93	55.	85.4	1832.8	•	1	1600	193	49.	60.0	1830.7	*	2	0020	293	40.	29.1	1827.7
1	0745	94	192.	91.2	1833.3	*	1	1605	194	49.	59.6	1830.6	•	2	0025	294	40.	28.8	1827.7
1	0750	95	381.	95.9	1833.7	*	1	1610	195	49.	59.3	1830.6	•	2	0030	295	40.	28.6	1827.7
1	0755	96	516.	99.2	1833.9	*	1	1615	196	49.	59.0	1830.6	•	2	0035	296	40.	28.3	1827.6
1	0800	97	636.	101.4	1834.1	•	1	1620	197	49.	58.6	1830.5	•	2	0040	297	40.	28.0	1827.6
1	0805	98	713.	102.6	1834.2	*	1	1625	198	49.	58.3	1830.5	•	2	0045	298	40.	27.7	1827.6
1	0810	99	744.	103.1	1834.2	*	1	1630	199	48.	58.0	1830.5	•	2	0050	299	40.	27.5	1827.6
1	0815	100	744.	103.1	1834.2	*	1	1635	200	48.	57.6	1830.5	•	2	0055	300	40.	27.2	1827.5
						*							*						

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PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)			
+ 744.	8.25	168.	66.	64.	64.

	(INCHES)	0.000	0.000	0.000	0.000
	(AC-FT)	83.	131.	131.	131.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
103.	8.17	84.	46.	44.	44.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1834.20	8.17	1832.73	1828.28	1828.00	1828.00

CUMULATIVE AREA = 0.00 SQ MI

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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 0.61
HYDROGRAPH AT					
+	B1	0.21	1	FLOW	51.
				TIME	4.00
ROUTED TO					
+	RB1	0.21	1	FLOW	43.
				TIME	4.42
HYDROGRAPH AT					
+	B2	0.37	1	FLOW	100.
				TIME	3.75
2 COMBINED AT					
+	NB1	0.59	1	FLOW	118.
				TIME	3.83
ROUTED TO					
+	RNB1	0.59	1	FLOW	105.
				TIME	4.33
HYDROGRAPH AT					
+	B3	0.32	1	FLOW	86.
				TIME	3.75
2 COMBINED AT					
+	NB2	0.90	1	FLOW	153.
				TIME	4.08
ROUTED TO					
+	RNB2	0.90	1	FLOW	145.
				TIME	4.42
HYDROGRAPH AT					
+	B4	0.15	1	FLOW	42.
				TIME	3.75
2 COMBINED AT					
+	NB3	1.06	1	FLOW	163.
				TIME	5.00
HYDROGRAPH AT					
+	C1	0.32	1	FLOW	79.
				TIME	3.92
ROUTED TO					
+	RC1	0.32	1	FLOW	70.
				TIME	4.25
HYDROGRAPH AT					
+	C2	0.40	1	FLOW	116.
				TIME	3.67
2 COMBINED AT					
+	NC1	0.72	1	FLOW	147.
				TIME	3.75
ROUTED TO					
+	RNC1	0.72	1	FLOW	137.
				TIME	4.08
HYDROGRAPH AT					
+	C6	0.10	1	FLOW	33.
				TIME	3.58
HYDROGRAPH AT					
+	C4	0.14	1	FLOW	46.
				TIME	3.67
3 COMBINED AT					
+	NC2	0.96	1	FLOW	181.
				TIME	3.92
ROUTED TO					
+	RNC2	0.96	1	FLOW	177.
				TIME	4.08
HYDROGRAPH AT					
+	C7	0.07	1	FLOW	24.
				TIME	3.58
2 COMBINED AT					

+	NC3	1.03	1	FLOW	188.
				TIME	4.00
HYDROGRAPH AT					
+	F1	9.34	1	FLOW	2352.
				TIME	4.42
HYDROGRAPH AT					
+	F2	2.35	1	FLOW	632.
				TIME	4.25
2 COMBINED AT					
+	NF1	11.69	1	FLOW	2959.
				TIME	4.33
ROUTED TO					
+	RNF1	11.69	1	FLOW	2585.
				TIME	5.08
HYDROGRAPH AT					
+	F3	2.68	1	FLOW	728.
				TIME	4.08
ROUTED TO					
+	RF3	2.68	1	FLOW	576.
				TIME	4.67
HYDROGRAPH AT					
+	F4	0.68	1	FLOW	217.
				TIME	3.83
ROUTED TO					
+	RF4	0.68	1	FLOW	151.
				TIME	4.67
HYDROGRAPH AT					
+	F5	1.85	1	FLOW	483.
				TIME	4.08
ROUTED TO					
+	RF5	1.85	1	FLOW	414.
				TIME	4.50
4 COMBINED AT					
+	NF2	16.90	1	FLOW	3606.
				TIME	4.92
ROUTED TO					
+	RNF2	16.90	1	FLOW	3548.
				TIME	5.25
HYDROGRAPH AT					
+	F6	1.54	1	FLOW	440.
				TIME	4.00
ROUTED TO					
+	RF6	1.54	1	FLOW	420.
				TIME	4.17
HYDROGRAPH AT					
+	F7	4.62	1	FLOW	1036.
				TIME	4.33
3 COMBINED AT					
+	NF3	23.06	1	FLOW	4667.
				TIME	5.25
ROUTED TO					
+	RNF3	23.06	1	FLOW	4335.
				TIME	6.00
HYDROGRAPH AT					
+	F8	0.83	1	FLOW	267.
				TIME	3.83
ROUTED TO					
+	RF8	0.83	1	FLOW	153.
				TIME	5.33
HYDROGRAPH AT					
+	F9	1.68	1	FLOW	409.
				TIME	4.08
HYDROGRAPH AT					
+	F10	1.65	1	FLOW	390.
				TIME	4.17
3 COMBINED AT					
+	NF4	4.16	1	FLOW	839.
				TIME	4.17
ROUTED TO					
+	RNF4	4.16	1	FLOW	699.
				TIME	5.67
HYDROGRAPH AT					
+	D1	0.48	1	FLOW	106.
				TIME	4.00
ROUTED TO					
+	RD1	0.48	1	FLOW	92.
				TIME	4.50
HYDROGRAPH AT					
+	D2	0.76	1	FLOW	192.
				TIME	3.83

2 COMBINED AT					
+	ND1	1.24	1	FLOW	235.
				TIME	4.00
HYDROGRAPH AT					
+	F11	3.41	1	FLOW	565.
				TIME	4.50
4 COMBINED AT					
+	NF5	31.87	1	FLOW	5506.
				TIME	5.83
ROUTED TO					
+	RNF5	31.87	1	FLOW	5430.
				TIME	6.08
HYDROGRAPH AT					
+	D6	0.15	1	FLOW	11.
				TIME	5.42
HYDROGRAPH AT					
+	D4	0.17	1	FLOW	28.
				TIME	4.42
2 COMBINED AT					
+	ND2	0.32	1	FLOW	37.
				TIME	4.50
3 COMBINED AT					
+	NF6	33.22	1	FLOW	5514.
				TIME	6.00
ROUTED TO					
+	RNF6	33.22	1	FLOW	5424.
				TIME	6.25
HYDROGRAPH AT					
+	C3C8	0.41	1	FLOW	78.
				TIME	4.17
HYDROGRAPH AT					
+	FG	2.06	1	FLOW	292.
				TIME	4.58
4 COMBINED AT					
+	NF7	36.75	1	FLOW	5679.
				TIME	6.17
ROUTED TO					
+	RCP4	36.75	1	FLOW	5503.
				TIME	6.92
HYDROGRAPH AT					
+	A1	0.25	1	FLOW	56.
				TIME	4.00
ROUTED TO					
+	RA1	0.25	1	FLOW	54.
				TIME	4.08
HYDROGRAPH AT					
+	A3	0.03	1	FLOW	8.
				TIME	3.67
HYDROGRAPH AT					
+	A4	0.08	1	FLOW	27.
				TIME	3.58
3 COMBINED AT					
+	NA1	0.36	1	FLOW	71.
				TIME	4.00
HYDROGRAPH AT					
+	A8	0.41	1	FLOW	78.
				TIME	4.17
HYDROGRAPH AT					
+	A9	0.19	1	FLOW	51.
				TIME	3.75
2 COMBINED AT					
+	NA2	0.60	1	FLOW	112.
				TIME	4.00
ROUTED TO					
+	RNA2	0.60	1	FLOW	111.
				TIME	4.08
2 COMBINED AT					
+	NA3	0.96	1	FLOW	182.
				TIME	4.00
ROUTED TO					
+	RNA3	0.96	1	FLOW	178.
				TIME	4.17
HYDROGRAPH AT					
+	A5	0.04	1	FLOW	11.
				TIME	3.67
HYDROGRAPH AT					
+	A6	0.05	1	FLOW	20.
				TIME	3.58
2 COMBINED AT					
+	NA4	0.09	1	FLOW	30.
				TIME	3.58

ROUTED TO					
+	RNA4	0.09	1	FLOW	25.
				TIME	3.67
HYDROGRAPH AT					
+	A7	0.29	1	FLOW	59.
				TIME	4.08
3 COMBINED AT					
+	NA5	1.35	1	FLOW	251.
				TIME	4.08
ROUTED TO					
+	RNA5	1.35	1	FLOW	231.
				TIME	4.50
HYDROGRAPH AT					
+	A10	0.35	1	FLOW	83.
				TIME	3.83
HYDROGRAPH AT					
+	A11	0.42	1	FLOW	83.
				TIME	4.08
HYDROGRAPH AT					
+	A12	0.93	1	FLOW	170.
				TIME	4.17
4 COMBINED AT					
+	NA6	3.05	1	FLOW	513.
				TIME	4.25
ROUTED TO					
+	RCP5	3.05	1	FLOW	471.
				TIME	4.75
HYDROGRAPH AT					
+	H1	2.68	1	FLOW	865.
				TIME	3.83
ROUTED TO					
+	RH1	2.68	1	FLOW	614.
				TIME	4.50
HYDROGRAPH AT					
+	H2	2.09	1	FLOW	497.
				TIME	4.08
2 COMBINED AT					
+	NH1	4.77	1	FLOW	1043.
				TIME	4.33
ROUTED TO					
+	RNH1	4.77	1	FLOW	954.
				TIME	4.75
HYDROGRAPH AT					
+	H3	1.10	1	FLOW	263.
				TIME	4.00
ROUTED TO					
+	RH3	1.10	1	FLOW	239.
				TIME	4.33
HYDROGRAPH AT					
+	H4	1.25	1	FLOW	82.
				TIME	5.33
HYDROGRAPH AT					
+	H5	0.94	1	FLOW	167.
				TIME	4.33
4 COMBINED AT					
+	NH2	8.06	1	FLOW	1354.
				TIME	4.58
ROUTED TO					
+	RNH2	8.06	1	FLOW	1266.
				TIME	5.33
HYDROGRAPH AT					
+	H6MB	0.96	1	FLOW	16.
				TIME	5.75
2 COMBINED AT					
+	NH3	9.02	1	FLOW	1280.
				TIME	5.42
ROUTED TO					
+	RNH3	9.02	1	FLOW	1272.
				TIME	5.92
HYDROGRAPH AT					
+	H6MA	1.30	1	FLOW	441.
				TIME	3.58
2 COMBINED AT					
+	NH4	10.31	1	FLOW	1295.
				TIME	5.92
ROUTED TO					
+	RCP7	10.31	1	FLOW	1292.
				TIME	6.08
HYDROGRAPH AT					
+	G1	3.35	1	FLOW	888.

				TIME	4.25
ROUTED TO					
+	RG1	3.35	1	FLOW	729.
				TIME	5.33
HYDROGRAPH AT					
+	G2	1.98	1	FLOW	459.
				TIME	4.25
2 COMBINED AT					
+	NG1	5.33	1	FLOW	1082.
				TIME	5.25
ROUTED TO					
+	RNG1	5.33	1	FLOW	1031.
				TIME	5.92
HYDROGRAPH AT					
+	G3	1.95	1	FLOW	541.
				TIME	4.08
ROUTED TO					
+	RG3	1.95	1	FLOW	395.
				TIME	5.67
HYDROGRAPH AT					
+	G4	2.09	1	FLOW	627.
				TIME	4.00
ROUTED TO					
+	RG4	2.09	1	FLOW	420.
				TIME	5.33
HYDROGRAPH AT					
+	G5	1.99	1	FLOW	371.
				TIME	4.50
ROUTED TO					
+	RG5	1.99	1	FLOW	362.
				TIME	4.83
HYDROGRAPH AT					
+	G6	2.98	1	FLOW	505.
				TIME	4.75
5 COMBINED AT					
+	NG2	14.34	1	FLOW	2589.
				TIME	5.67
ROUTED TO					
+	RNG2	14.34	1	FLOW	2523.
				TIME	6.08
HYDROGRAPH AT					
+	G7	2.01	1	FLOW	340.
				TIME	4.50
HYDROGRAPH AT					
+	G8	2.20	1	FLOW	323.
				TIME	5.25
DIVERSION TO					
+	DDC	2.20	1	FLOW	281.
				TIME	5.25
HYDROGRAPH AT					
+	DDCR	2.20	1	FLOW	42.
				TIME	5.25
3 COMBINED AT					
+	NG3	18.55	1	FLOW	2749.
				TIME	5.92
ROUTED TO					
+	RCP2	18.55	1	FLOW	2548.
				TIME	7.50
HYDROGRAPH AT					
+	156	5.03	1	FLOW	500.
				TIME	5.42
5 COMBINED AT					
+	156	73.69	1	FLOW	9131.
				TIME	6.83
ROUTED TO					
+	156R	73.69	1	FLOW	8873.
				TIME	7.67
HYDROGRAPH AT					
+	34	4.56	1	FLOW	837.
				TIME	4.50
ROUTED TO					
+	34R	4.56	1	FLOW	773.
				TIME	5.33
HYDROGRAPH AT					
+	157	2.36	1	FLOW	274.
				TIME	4.25
2 COMBINED AT					
+	157	6.92	1	FLOW	1024.
				TIME	5.25
ROUTED TO					

+	157R	6.92	1	FLOW	944.
				TIME	6.50
HYDROGRAPH AT					
+	158	4.64	1	FLOW	332.
				TIME	5.42
HYDROGRAPH AT					
+	A1D	1.15	1	FLOW	170.
				TIME	3.67
4 COMBINED AT					
+	158	86.41	1	FLOW	9561.
				TIME	7.50
ROUTED TO					
+	RT ARO	86.41	1	FLOW	9547.
				TIME	7.58
HYDROGRAPH AT					
+	B3C	2.82	1	FLOW	654.
				TIME	4.08
ROUTED TO					
+	RB3C	2.82	1	FLOW	573.
				TIME	4.50
HYDROGRAPH AT					
+	B3D	2.55	1	FLOW	421.
				TIME	4.00
ROUTED TO					
+	RB3D	2.55	1	FLOW	343.
				TIME	4.67
HYDROGRAPH AT					
+	B3B	2.51	1	FLOW	402.
				TIME	4.17
HYDROGRAPH AT					
+	B11B	1.39	1	FLOW	343.
				TIME	4.08
ROUTED TO					
+	RB11B	1.39	1	FLOW	342.
				TIME	4.25
4 COMBINED AT					
+	160	9.27	1	FLOW	1563.
				TIME	4.42
ROUTED TO					
+	RT ARO	9.27	1	FLOW	1529.
				TIME	4.67
2 COMBINED AT					
+	AGSC	95.68	1	FLOW	9638.
				TIME	7.58
DIVERSION TO					
+	PARK	95.68	1	FLOW	988.
				TIME	7.58
HYDROGRAPH AT					
+	PARK	95.68	1	FLOW	8650.
				TIME	7.58
HYDROGRAPH AT					
+	PARKDI	0.00	1	FLOW	988.
				TIME	7.58
ROUTED TO					
+	PARKDE	0.00	1	FLOW	744.
				TIME	8.25
			** PEAK STAGES IN FEET **		
			1	STAGE	1834.20
				TIME	8.17
2 COMBINED AT					
+	DETCOM	95.68	1	FLOW	9081.
				TIME	8.00

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

						INTERPOLATED TO COMPUTATION INTERVAL			
ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= 0.61									
RB11B	MANE	5.00	341.86	254.72	0.78	5.00	341.60	255.00	0.78

CONTINUITY SUMMARY (AC-FT) - INFLOW=0.5744E+02 EXCESS=0.0000E+00 OUTFLOW=0.5762E+02 BASIN STORAGE=0.3870E-02 PERCENT ERROR= -0.3

*** NORMAL END OF HEC-1 ***

Total job elapsed time = 01 min 20 sec

QUEST APARTMENT SITE LOMR
CASE NO. 06-09-BE64P

HYDROLOGY REVISION

Federal Emergency Management Agency

Washington, D.C. 20472

AUG 0 8 2007

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 06-09-BE64P
Community Name: City of Henderson, NV
Community No.: 320005
Effective Date of This Revision: SEP 1 0 2007

The Honorable James B. Gibson
Mayor, City of Henderson
240 South Water Street
Henderson, NV 89015

Dear Mayor Gibson:

The Flood Insurance Rate Map for your community has 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 Oakland, California, at (510) 627-7175, 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,

Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation

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

List of Enclosures:

Letter of Map Revision Determination Document
Annotated Flood Insurance Rate Map

cc: Mr. Curt Chandler, P.E., CFM
Land Development Manager
Department of Public Works
City of Henderson

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District

[redacted]
President
CVL Consultants, Inc.

[redacted]
The Greystone Group

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Henderson Clark County Nevada	GRADING	HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 320005		
IDENTIFIER	Cornerstone Development	APPROXIMATE LATITUDE & LONGITUDE: 36.044, -115.052 SOURCE: FIRM Panel DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 32003C2595 E DATE: September 27, 2002	NO REVISION TO THE FLOOD INSURANCE STUDY REPORT

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)

Unnamed Tributary to Pittman Wash - from approximately 1,300 feet upstream to approximately 2,900 feet upstream of Santiago Drive

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Unnamed Tributary to Pittman Wash	Zone A	Zone A	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.

Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation Division

109770 10.3.1.0609BE64 102-I-C

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 or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance discharges computed in the submitted hydrologic model. Future development of projects upstream could cause increased discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on discharges and could, therefore, indicate that greater flood hazards exist in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State law have been obtained. State 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 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 revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

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.

Max H. Yuan, P.E., 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. Sally M. Ziolkowski
Director, Federal Insurance and Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) 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.

Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation Division

Federal Emergency Management Agency
Washington, D.C. 20472

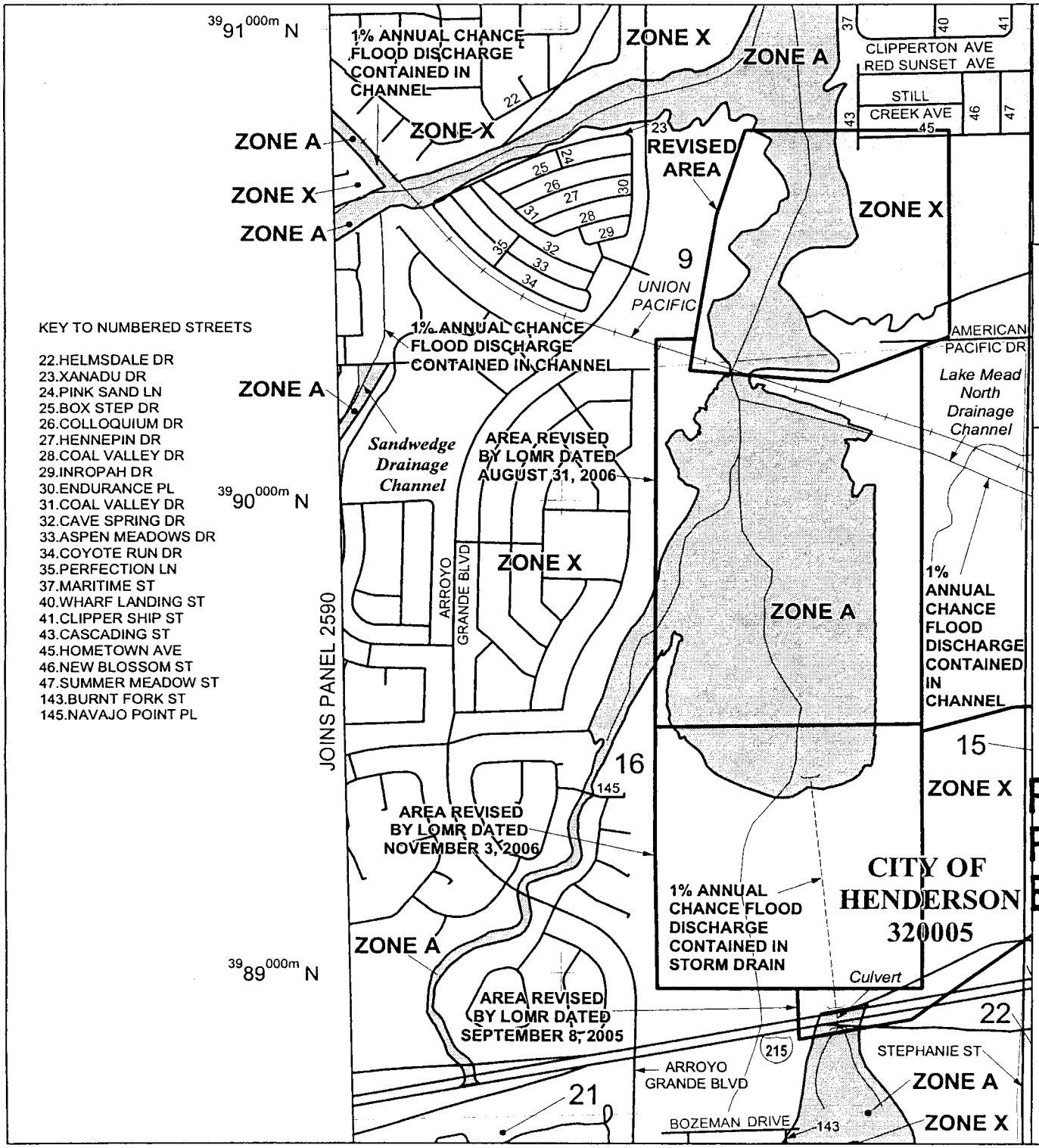
LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

This revision will become effective 30 days from the date of this letter. Any requests to review or alter this determination should be made within 30 days and must be based on scientific or technical data.

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.

Max H. Yuan, P.E., Project Engineer
Engineering Management Section
Mitigation Division



KEY TO NUMBERED STREETS

22.HELMSDALE DR
23.XANADU DR
24.PINK SAND LN
25.BOX STEP DR
26.COLLOQUIUM DR
27.HENNEPIN DR
28.COAL VALLEY DR
29.INROPAH DR
30.ENDURANCE PL
31.COAL VALLEY DR
32.CAVE SPRING DR
33.ASPEN MEADOWS DR
34.COYOTE RUN DR
35.PERFECTION LN
37.MARITIME ST
40.WHARF LANDING ST
41.CLIPPER SHIP ST
43.CASCADING ST
45.HOMETOWN AVE
46.NEW BLOSSOM ST
47.SUMMER MEADOW ST
143.BURNT FORK ST
145.NAVAJO POINT PL

Legend

- 1% annual chance (100-Year) Floodplain
- 1% annual chance (100-Year) Floodway
- 0.2% annual chance (500-Year) Floodplain

MAP SCALE 1" = 1000'

500 0 1000 FEET

300 0 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2595E

FIRM

FLOOD INSURANCE RATE MAP

CLARK COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2595 OF 4090

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320003	2595	E
HENDERSON, CITY OF	320005	2595	E

REVISED TO REFLECT LOMR EFFECTIVE SEP 10 2007

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 32003C2595E

MAP REVISED SEPTEMBER 27, 2002

Federal Emergency Management Agency

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*          SEPTEMBER 1990               *
*            VERSION 4.0                *
*                                       *
*  RUN DATE  05/10/2007  TIME  14:23:41 *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

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

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
                    *DIAGRAM
*** FREE ***
         1          ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
         2          ID    PITTMAN WATERSHED
         3          ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
         4          ID    INPUT FILE =    PIT5rff.DAT
         5          ID    INPUT FILE DATE = 10/17/06
         6          ID
         7          ID
         8          ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
         9          ID
        10          ID    AREA (SQUARE MILES)    DARF
        11          ID
        12          ID    12-16  0.832
        13          ID    16-20  0.804
        14          ID    20-30  0.765
        15          ID    30-40  0.725
        16          ID    40-50  0.695
        17          ID    50-100  0.64
        18          ID    100-150  0.58
        19          ID    150-200  0.53
        20          ID    >200  VARIES
        21          ID
        22          IT      5       0       0     250
        23          IO      5       0       0
        24          IN      5       0       0
        25          JR   PREC   0.832   0.804   0.765   0.725   0.695    0.64    0.58    0.53
                    *
        26          KK  PRE030
        27          BA   0.257
        28          PB    3.31
        29          PC       0    0.02   0.059    0.08    0.11   0.144    0.15    0.16   0.168   0.171
        30          PC    0.18   0.182   0.187    0.19   0.197   0.202    0.21    0.22    0.23   0.241
        31          PC    0.25   0.259   0.265    0.28    0.29     0.3   0.305   0.309    0.31   0.317
        32          PC   0.321   0.327   0.333   0.346   0.361   0.381   0.408    0.43   0.477   0.514
        33          PC   0.561    0.63    0.71    0.72   0.731   0.752   0.779    0.79   0.795   0.804
        34          PC    0.81    0.82   0.826    0.84   0.859   0.889    0.91   0.938   0.966    0.97
        35          PC   0.974   0.979   0.981   0.983   0.985   0.989    0.99   0.992   0.993   0.996
        36          PC   0.997   0.999       1
        37          LS       0    86.7
        38          UD   0.122
                    *
        39          KK RPRE030
        40          KM   ROUTE PRE030 TO CPRE040
        41          KM   UNNAMED STREET
        42          RD    3700   0.081   0.016       0    TRAP       0      50
                    *
```

1 HEC-1 INPUT PAGE 2

```
      LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
        43          KK  PRE040
        44          BA   0.300
        45          PB    2.91
        46          LS       0    87.0
        47          UD   0.133
                    *
        48          KK CPRE040
        49          KM   COMBINE PRE040 AND CPRE030
        50          HC       2
                    *
```

```
 51          KKRCPRE040
 52          KM    ROUTE CPRE040 TO CPRE050
 53          KM    FACILITY = PITTMAN WASH BLACK MOUNTAIN
 54          KM    FACILITY # = PTBM 0045
 55          KM    LINING= CONCRETE
 56          RD     3330   0.036   0.015       0    TRAP      14       0
             *

 57          KK  PRE050
 58          BA   0.293
 59          PB    2.86
 60          LS       0    88.9
 61          UD   0.131
             *

 62          KK CPRE050
 63          KM    COMBINE PRE050 AND CPRE040
 64          HC       2
             *

 65          KKRCPRE050
 66          KM    ROUTE CPRE050 TO CPRE060
 67          KM    FACILITY = PITTMAN WASH BLACK MOUNTAIN
 68          KM    FACILITY # = PTBM 0045, PTBM 0019, PTBM 0005
 69          KM    LINING= CONCRETE
 70          RD     3667   0.037   0.015       0    TRAP      20       2
             *

 71          KK  PRE060
 72          BA   0.530
 73          PB    2.83
 74          LS       0    88.1
 75          UD   0.265
             *

 76          KK CPRE060
 77          KM    COMBINE PRE060 AND CPRE050
 78          HC       2
             *
```

1 HEC-1 INPUT PAGE 3

```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 79          KKRCPRE060
 80          KM    ROUTE CPRE060 TO CPRE070
 81          KM    FACILITY = PITTMAN RAILROAD EAST
 82          KM    FACILITY # = PTRE 0098, PTRE 0157
 83          KM    LINING= EARTHEN
 84          RD     4740   0.003   0.025       0    TRAP      25       2
             *

 85          KK  PRE070
 86          BA   0.257
 87          PB    2.80
 88          LS       0    93.0
 89          UD   0.381
             *

 90          KK CPRE070
 91          KM    COMBINE PRE070 AND CPRE060
 92          HC       2
             *

 93          KK  PRE080
 94          BA   0.536
 95          PB    3.03
 96          LS       0    81.0
 97          UD   0.165
             *

 98          KK RPRE080
 99          KM    ROUTE PRE080 TO CPRE100
100          KM    GOLF COURSE
101          RD     7283    0.05    0.03       0    TRAP      50       5
             *

102          KK  PRE090
103          BA   0.581
104          PB    2.96
105          LS       0    85.6
106          UD   0.161
             *

107          KK RPRE090
108          KM    ROUTE PRE090 TO CPRE100
109          KM    GOLF COURSE
110          RD     2611   0.049    0.03       0    TRAP      50       5
             *

111          KK  PRE100
112          BA   0.314
113          PB    2.91
114          LS       0    82.5
115          UD   0.193
             *
```

1 HEC-1 INPUT PAGE 4

```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

116          KK CPRE100
117          KM    COMBINE PRE100, PRE080, AND PRE090
118          HC       3
```

```
*
119         KKRCPRE100
120         KM   ROUTE CPRE100 TO CPRE110
121         KM   FACILITY = PITTMAN STEPHANIE
122         KM   FACILITY # = PTST 0155, PTST 0108
123         KM   LINING= RCB
124         RD    3360   0.037   0.015       0    TRAP      11       0
            *
125         KKRCPRE100
126         KM   ROUTE CPRE100 TO CPRE110
127         KM   FACILITY = PITTMAN STEPHANIE
128         KM   FACILITY # = PTST 0083 , 0052
129         KM   LINING= ARCH STORM DRAIN
130         RD    3120   0.037   0.015       0    TRAP      12       0
            *
131         KK  PRE110
132         BA   0.534
133         PB    2.83
134         LS       0    90.0
135         UD   0.275
            *
136         KK CPRE110
137         KM   COMBINE PRE110 AND CPRE100
138         HC       2
            *
139         KKRCPRE110
140         KM   ROUTE CPRE110 TO CPRE120
141         KM   FACILITY = PITTMAN STEPHANIE
142         KM   FACILITY # = PTST 0016, PTST 0000
143         KM   LINING= ARCH STORM DRAIN/CONCRETE
144         RD    2600   0.028   0.015       0    TRAP      16       0
            *
145         KK CPRE120
146         KM   COMBINE CPRE070 AND CPRE110
147         HC       2
            *
148         KKRCPRE120
149         KM   ROUTE CPRE120 TO CPRE125
150         KM   FACILITY = PITTMAN RAILROAD EAST
151         KM   FACILITY # = PTRE 0037
152         KM   LINING= EARTHEN
153         RD    3000   0.003   0.025       0    TRAP      50       2
            *
1                                        HEC-1 INPUT                                        PAGE  5

LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

154         KK  PRE120
155         BA   0.371
156         PB    2.79
157         LS       0    88.4
158         UD   0.412
            *
159         KK CPRE125
160         KM   COMBINE PRE120 AND CPRE120
161         HC       2
            *
162         KK  PMR010
163         BA   4.375
164         PB    3.06
165         LS       0    82.6
166         UD   0.716
            *
167         KK  PMR020
168         BA   0.232
169         PB    2.92
170         LS       0    81.4
171         UD   0.258
            *
172         KK CPMR020
173         KM   COMBINE PMR010 TO PMR020
174         HC       2
            *
175         KKRCPMR020
176         KM   ROUTE CPMR020 TO CPMR030
177         KM   FACILITY = PITTMAN MACDONALD RANCH
178         KM   FACILITY # = PTMR 0400
179         KM   LINING= CONCRETE
180         RD    4190   0.029   0.015       0    TRAP      18       2
            *
181         KK  PMR030
182         BA   0.338
183         PB    2.87
184         LS       0    79.8
185         UD   0.231
            *
186         KK CPMR030
187         KM   COMBINE PMR030 AND CPMR020
188         HC       2
```

```
*
1                                    HEC-1 INPUT                                    PAGE  6

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  189     KKRCPMR030
  190     KM   ROUTE CPMR030 TO CPMR040
  191     KM   FACILITY = PITTMAN MACDONALD RANCH
  192     KM   FACILITY # = PTMR 0376, PTMR 0331, PTMR0400
  193     KM   LINING= CONCRETE
  194     RD    5240   0.024   0.015       0    TRAP      18       2
          *

  195     KK  PMR040
  196     BA   0.370
  197     PB    2.83
  198     LS       0    87.3
  199     UD   0.238
          *

  200     KK CPMR040
  201     KM   COMBINE CPMR030 AND PMR040
  202     HC       2
          *

  203     KKRCPMR040
  204     KM   ROUTE CPMR040 TO CPMR135
  205     KM   FACILITY = PITTMAN MACDONALD RANCH
  206     KM   FACILITY # = PTMR 0233
  207     KM   LINING= GRASS
  208     RD    3320   0.028    0.03       0    TRAP     100       5
          *

  209     KKRCPMR040
  210     KM   ROUTE CPMR040 TO CPMR135
  211     KM   FACILITY = PITTMAN MACDONALD RANCH
  212     KM   FACILITY # = PTMR 0190
  213     KM   LINING= CONCRETE
  214     RD    2380   0.028   0.015       0    TRAP      31       2
          *

  215     KK  PMR140
  216     BA   0.345
  217     PB    2.82
  218     LS       0    71.7
  219     UD   0.313
          *

  220     KK CPMR135
  221     KM   COMBINE PMR140 AND CPMR040
  222     HC       2
          *

  223     KK  PMR050
  224     BA   0.418
  225     PB    2.87
  226     LS       0    82.3
  227     UD   0.191
          *
1                                    HEC-1 INPUT                                    PAGE  7

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  228     KK RPMR050
  229     KM   ROUTE PMR050 TO CPMR070
  230     KM   TIGER WILLOW/CARMEL VALLEY/INDIGO CREEK
  231     RD    2300   0.036   0.016       0    TRAP       0      50
          *

  232     KK  PMR080
  233     BA   0.510
  234     PB    2.95
  235     LS       0    80.7
  236     UD   0.177
          *

  237     KK RPMR080
  238     KM   ROUTE PMR080 TO CPMR060
  239     KM   ALONG ANELLI/CYPRESS GREENS
  240     KM   FACILITY = RCP
  241     RD    2210   0.032   0.013       0    CIRC       8
          *

  242     KK  PMR060
  243     BA   0.200
  244     PB    2.92
  245     LS       0    79.2
  246     UD   0.126
          *

  247     KK RPMR060
  248     KM   ROUTE PMR060 TO CPMR060
  249     KM   DRAINAGE EASEMENT
  250     KM   FACILITY = RCP
  251     RD    2390   0.042   0.013       0    CIRC       6
          *

  252     KK CPMR060
  253     KM   COMBINE PMR060 AND PMR080
  254     HC       2
          *
```

```
255          KKRCPMR060
256          KM   ROUTE CPMR060 TO CPMR070
257          KM   FACILITY = PITTMAN DESERT WILLOW
258          KM   FACILITY # = PTDW 0088
259          KM   LINING= GRASS
260          RD    3670   0.032    0.03       0    TRAP     100       5
             *

261          KK  PMR070
262          BA   0.288
263          PB    2.85
264          LS       0    73.7
265          UD   0.251
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

266          KK CPMR070
267          KM   COMBINE CPMR060, PMR050, AND PMR070
268          HC       3
             *

269          KK    DETB
270          KO       3
271          KM   FACILITY#= PTDW 0085
272          KM   DESERT WILLOWS GOLF COURSE DETENTION BASIN
273          KM   PARAMETERS TAKEN FROM THE MACDONALD RANCH DRAINAGE STUDY
274          KM   GOLF COURSE DETENTION BASIN
275          KM   STORAGE VOLUME = 38 ACRE-FEET
276          KM   OUTLET = 66" RCP
277          KM   100-YR DISCHARGE = 568 CFS
278          KM   SPILLWAY LENGTH = 300 FT
279          KM   SPILLWAY CREST ELEVATION = 2250 FT
280          RS       1    STOR      -1
281          SV       0    0.17    0.98    2.89    6.64   12.04   18.85    27.6   37.87   49.66
282          SE    42.5      43      44      45      46      47      48      49      50      51
283          SS      50     300       3     1.5
284          SL   36.15   23.74    0.89     0.5
             *

285          KKRCPMR070
286          KM   ROUTE CPMR070 TO CPMR090
287          KM   FACILITY = PITTMAN DESERT WILLOW
288          KM   FACILITY # = PTDW 0029, PTDW 0069
289          RD    2690   0.024   0.013       0    CIRC       6       0
             *

290          KK  PMR090
291          BA   0.542
292          PB    2.90
293          LS       0    81.6
294          UD   0.204
             *

295          KK RPMR090
296          KM   ROUTE PMR090 TO CPMR090
297          KM   ALONG ROMA HILLS DRIVE
298          KM   FACILITY = RCP
299          RD     830   0.036   0.013       0    CIRC       5
             *

300          KK  PMR095
301          BA   0.236
302          PB    2.85
303          LS       0    77.7
304          UD   0.262
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

305          KK CPMR090
306          KM   COMBINE PMR090, CPMR070 AND PMR095
307          HC       3
             *

308          KKRCPMR090
309          KM   ROUTE CPMR090 TO CPMR140
310          KM   FACILITY = PITTMAN DESERT WILLOW
311          KM   FACILITY # = PTDW 0000
312          KM   LINING = CONCRETE
313          RD    1310   0.029   0.015       0    TRAP      29       2
             *

314          KK CPMR140
315          KM   COMBINE CPMR090 AND CPMR135
316          HC       2
             *

317          KK  PMR130
318          BA   0.350
319          PB    2.85
320          LS       0    87.8
321          UD   0.156
             *

322          KK CPMR130
323          KM   COMBINE PMR130 AND CPMR140
324          HC       2
             *
```

```
325          KKRCPMR130
326          KM   ROUTE CPMR130 TO CPMR165
327          KM   FACILITY = PITTMAN MACDONALD RANCH
328          KM   FACILITY # = PTMR0132
329          KM   LINING = CONCRETE
330          RD    3470   0.022   0.015       0    TRAP      25       2
             *

331          KK  PMR165
332          BA   0.177
333          PB    2.83
334          LS       0    82.1
335          UD   0.196
             *

336          KK CPMR165
337          KM   COMBINE CPMR130 AND PMR165
338          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

339          KK  PMR100
340          BA   0.736
341          PB    3.00
342          LS       0    81.0
343          UD   0.228
             *

344          KK RPMR100
345          KM   ASSUMED ROUTE THROUGH STREET
346          KM   ROUTE PMR100 TO CPMR110
347          RD    2060   0.053   0.016       0    TRAP       0      50
             *

348          KK  PMR110
349          BA   0.260
350          PB    2.93
351          LS       0    81.7
352          UD   0.151
             *

353          KK CPMR110
354          KM   COMBINE CPMR100 AND PMR110
355          HC       2
             *

356          KKRCPMR110
357          KM   ROUTE CPMR110 TO CPMR120
358          KM   FACILITY = PITTMAN FOOTHILLS DRIVE
359          KM   FACILITY # = PTFD 0111, PTFD 0068
360          KM   LINING = NATURAL WASH
361          KM   GOLF COURSE
362          RD    4340   0.028    0.04       0    TRAP      75       5
             *

363          KK  PMR120
364          BA   0.326
365          PB    2.88
366          LS       0    80.3
367          UD   0.235
             *

368          KK CPMR120
369          KM   COMBINE CPMR110 AND PMR120
370          HC       2
             *

371          KKRCPMR120
372          KM   ROUTE CPMR120 TO CPMR164
373          KM   FACILITY = PITTMAN FOOTHILLS DRIVE
374          KM   FACILITY # = PTFD 0051
375          KM   LINING = CONCRETE
376          RD     680    0.01   0.015       0    TRAP      13       1
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

377          KKRCPMR120
378          KM   ROUTE CPMR120 TO CPMR164
379          KM   FACILITY = PITTMAN FOOTHILLS DRIVE
380          KM   FACILITY # = PTFD 0026
381          KM   LINING = CONCRETE
382          RD    2600    0.01   0.015       0    TRAP      20       0
             *

383          KK CPMR164
384          KM   COMBINE CPMR165 AND CPMR130
385          HC       2
             *

386          KKRCPMR164
387          KM   ROUTE CPMR164 TO CPMR155
388          KM   FACILITY = PITTMAN MACDONALD RANCH
389          KM   FACILITY # = PTMR 0111, PTMR 0093, PTMR 0055
390          KM   LINING = CONCRETE
391          RD    3540   0.022   0.015       0    TRAP      25       2
             *

392          KK  PMR150
```

```
393          BA   0.301
394          PB    2.82
395          LS       0    89.8
396          UD   0.304
             *

397          KK  PMR160
398          BA   0.393
399          PB    2.80
400          LS       0    81.5
401          UD   0.354
             *

402          KK CPMR155
403          KM   COMBINE CPMR164 WITH PMR150 AND PMR160
404          HC       3
             *

405          KK  PMR170
406          BA   0.546
407          PB    2.79
408          LS       0    92.8
409          UD   0.442
             *

410          KK RPMR170
411          KM   ROUTE PMR170 TO CPMR195
412          KM   FACILITY = PITTMAN LAKE MEAD
413          KM   FACILITY # = PTLM 0078
414          KM   LINING = CONCRETE
415          RD    6560   0.016   0.015       0    TRAP      15       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

416          KK  PMR200
417          BA   0.378
418          PB    2.79
419          LS       0    82.1
420          UD   0.345
             *

421          KK CPMR195
422          KM   COMBINED PMR200 AND PMR170
423          HC       2
             *

424          KK  PMR190
425          BA   0.203
426          PB    2.81
427          LS       0    81.5
428          UD   0.258
             *

429          KK RPMR190
430          KM   ROUTE PMR190 TO CPMR200
431          KM   VALLEY VERDE DRIVE
432          RD    1580   0.023   0.016       0    TRAP       0      50
             *

433          KK CPMR200
434          KM   COMBINE PMR190 AND CPMR195
435          HC       2
             *

436          KKRCPMR200
437          KM   ROUTE CPMR200 TO CPMR160
438          KM   FACILITY = PITTMAN LAKE MEAD
439          KM   FACILITY # = PTLM 0028
440          KM   LINING = CONCRETE
441          RD    2360   0.016   0.015       0    TRAP      10     1.5
             *

442          KKRCPMR200
443          KM   ROUTE CPMR200 TO CPMR160
444          KM   FACILITY = PITTMAN LAKE MEAD
445          KM   FACILITY # = PTLM 0010
446          KM   LINING = CONCRETE
447          RD    1000   0.016   0.015       0    TRAP    18.5      0
             *

448          KK CPMR160
449          KM   COMBINE CPMR200 AND CPMR155
450          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

451          KKRCPMR160
452          KM   ROUTE CPMR160 TO CPRE140
453          KM   FACILITY = PITTMAN MACDONALD RANCH
454          KM   FACILITY # = PTMR 0000
455          KM   LINING = CONCRETE
456          RD    3520   0.018   0.015       0    TRAP      30       2
             *

457          KK  PRE130
458          BA   0.293
459          PB    2.78
460          LS       0    85.8
```

```
 461          UD   0.319
              *

 462          KK CPRE140
 463          KM   COMBINE PRE130 AND CPMR160
 464          HC       2
              *

 465          KK CPRE130
 466          KM   COMBINE CPRE140 AND CPRE125
 467          KO       1
 468          HC       2
              *

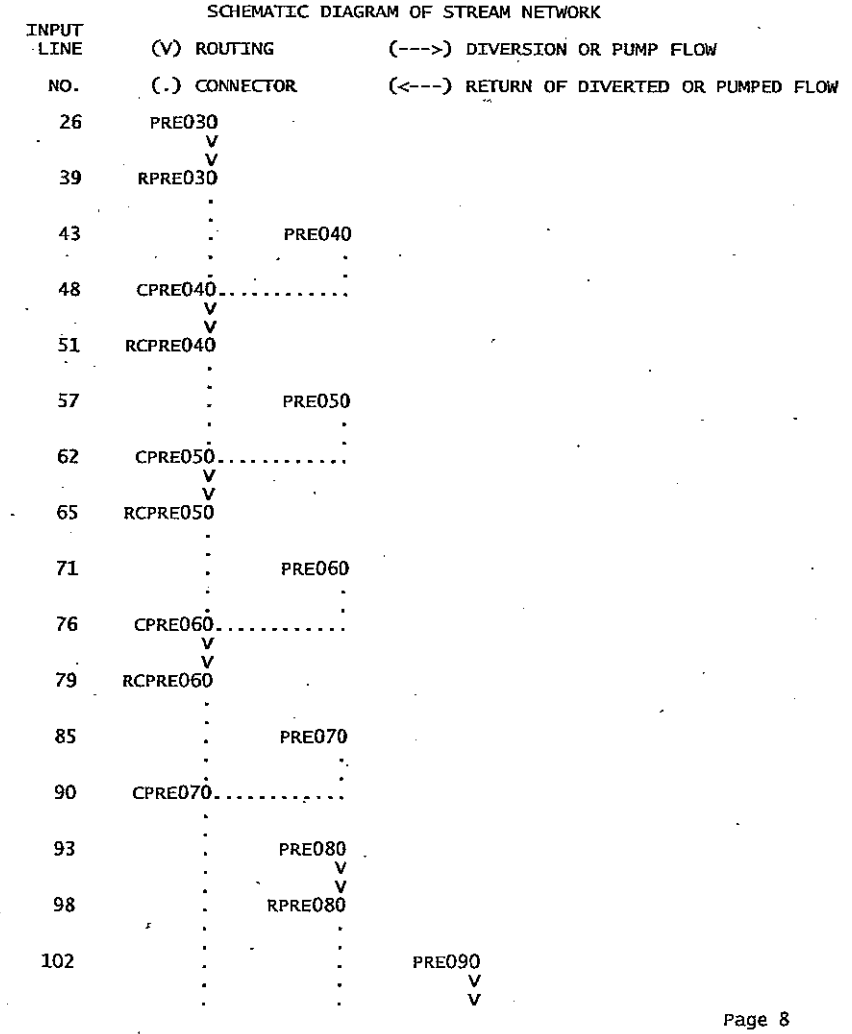
 469          KKPTRE0035
 470          KM   EXISTING CORNERSTONE GRAVEL PIT
 471          KM   MAY 2007
 472          KO       1
 473          KM   FACILITY # = PTRE 0035
 474          KM   STORAGE VOLUME = 1317 ACRE-FEET
 475          KM   OUTLET = NONE - EXISTING RAILROAD TRACK TRESSEL
 476          KM   100-YEAR DISCHARGE = 0 CFS
 477          KM   SPILLWAY LENGTH = NONE
 478          KM   SPILLWAY CREST ELEVATION = 1892
 479          KM   SPILLWAY TYPE = NONE
 480          KM   PMF DISCHARGE =25,500 CFS
 481          KM   TOP OF EMBANKMENT ELEVATION = N/A
 482          RS       1    STOR        0
 483          SV       0    75.5    161.3    255.8    357.2    467.9    587.7    651.0    671.0    739.0
 484          SV   810.0   883.0    957.0
 485          SE    1880    1882     1884     1886     1888     1890     1891     1892     1893     1894
 486          SE    1895    1896     1897
 487          SQ       0       0        0        0        0      180      201      594     1185     2784
 488          SQ    4226    5776     7501
              *

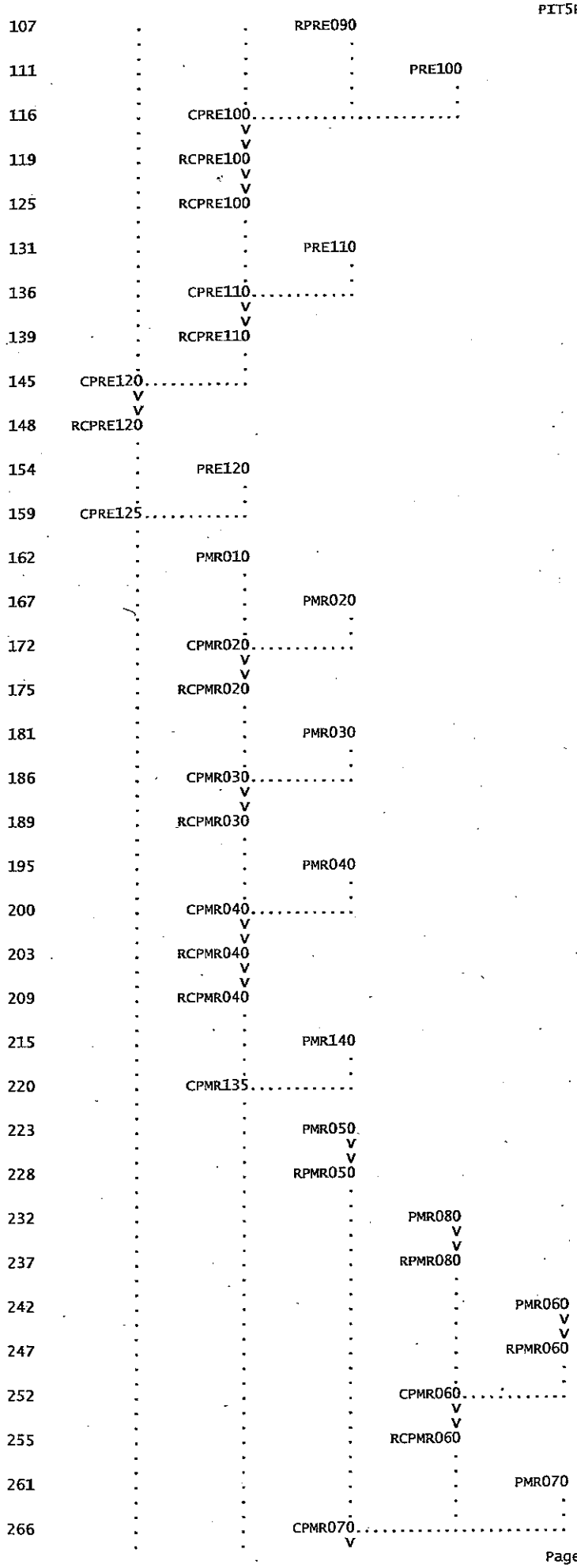
 489          KKRCPRE130
 490          KM   ROUTE CPRE130 TO CPWA310
 491          KM   OUTFLOW FROM THE PITTMAN RAILROAD EAST DETENTION BASIN
 492          KM   FACILITY = PITTMAN MACDONALD RANCH
 493          KM   FACILITY # = PTRE 0000
 494          KM   LINING = RCP
```

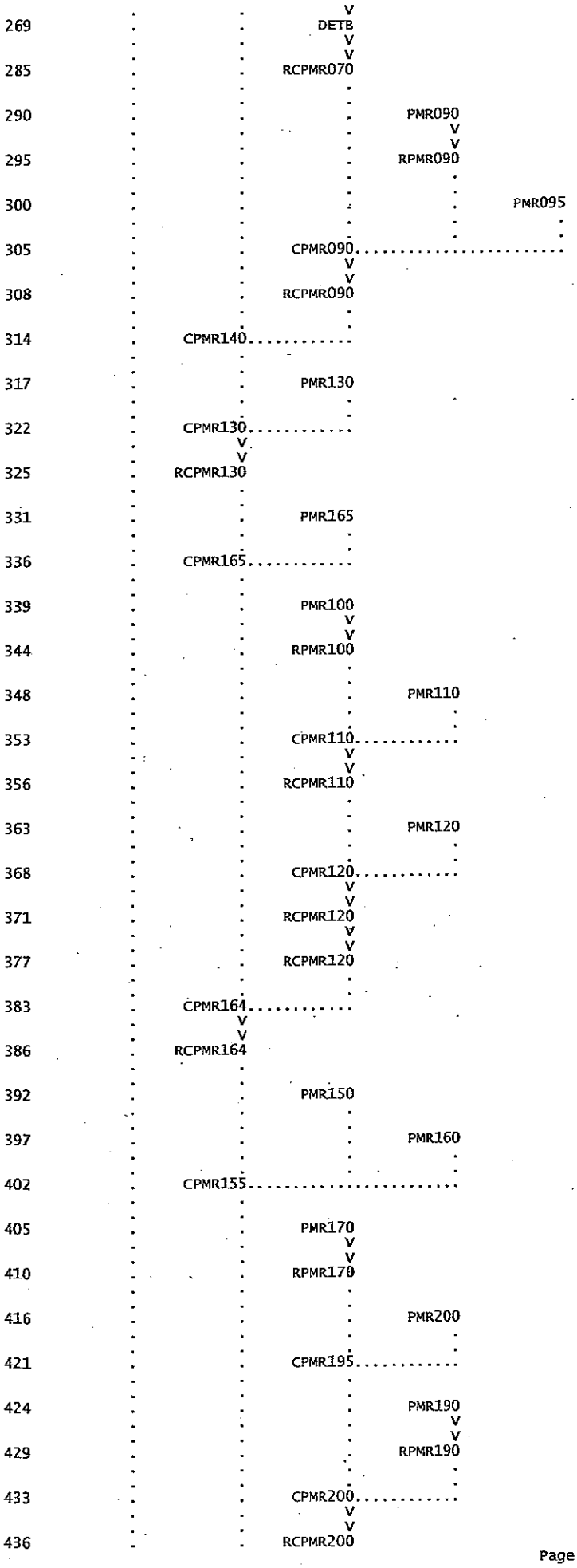


```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
 495          RD    1930   0.038   0.013       0    CIRC       5
              *
 496          ZZ
```

1 SCHEMATIC DIAGRAM OF STREAM NETWORK




107
RPRE090
111
PRE100
116
CPRE100
119
RCPRE100
125
RCPRE100
131
PRE110
136
CPRE110
139
RCPRE110
145
CPRE120
148
RCPRE120
154
PRE120
159
CPRE125
162
PMR010
167
PMR020
172
CPMR020
175
RCPMR020
181
PMR030
186
CPMR030
189
RCPMR030
195
PMR040
200
CPMR040
203
RCPMR040
209
RCPMR040
215
PMR140
220
CPMR135
223
PMR050
228
RPMR050
232
PMR080
237
RPMR080
242
PMR060
247
RPMR060
252
CPMR060
255
RCPMR060
261
PMR070
266
CPMR070


269 DETB
285 RCPMR070
290 PMR090
295 RPMR090
300 PMR095
305 CPMR090
308 RCPMR090
314 CPMR140
317 PMR130
322 CPMR130
325 RCPMR130
331 PMR165
336 CPMR165
339 PMR100
344 RPMR100
348 PMR110
353 CPMR110
356 RCPMR110
363 PMR120
368 CPMR120
371 RCPMR120
377 RCPMR120
383 CPMR164
386 RCPMR164
392 PMR150
397 PMR160
402 CPMR155
405 PMR170
410 RPMR170
416 PMR200
421 CPMR195
424 PMR190
429 RPMR190
433 CPMR200
436 RCPMR200

```
                .          .          V
                .          .          V
  442           .          .      RCPMR200
                .          .          .
                .          .          .
  448           .      CPMR160.........
                .          V
                .          V
  451           .     RCPMR160
                .          .
                .          .
  457           .          .       PRE130
                .          .          .
                .          .          .
  462           .      CPRE140.........
                .          .
                .          .
  465      CPRE130.........
                V
                V
  469     PTRE0035
                V
                V
  489     RCPRE130

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1*****************************************
 *                                       *
 *    FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *          SEPTEMBER 1990               *
 *           VERSION 4.0                 *
 *                                       *
 *  RUN DATE  05/10/2007  TIME  14:23:41 *
 *                                       *
 *****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
PITTMAN WATERSHED
RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
INPUT FILE = PIT5rff.DAT
INPUT FILE DATE = 10/17/06

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

AREA (SQUARE MILES)	DARF
12-16	0.832
16-20	0.804
20-30	0.765
30-40	0.725
40-50	0.695
50-100	0.64
100-150	0.58
150-200	0.53
>200	VARIES

```
  23 IO          OUTPUT CONTROL VARIABLES
                      IPRNT          5  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1   0  STARTING DATE
                      ITIME       0000  STARTING TIME
                        NQ         250  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1   0  ENDING DATE
                     NDTIME       2045  ENDING TIME
                     ICENT         19  CENTURY MARK

                COMPUTATION INTERVAL      .08 HOURS
                   TOTAL TIME BASE   20.75 HOURS

           ENGLISH UNITS
                DRAINAGE AREA          SQUARE MILES
                PRECIPITATION DEPTH    INCHES
                LENGTH, ELEVATION      FEET
                FLOW                   CUBIC FEET PER SECOND
                STORAGE VOLUME         ACRE-FEET
                SURFACE AREA           ACRES
                TEMPERATURE            DEGREES FAHRENHEIT

     JP         MULTI-PLAN OPTION
                     NPLAN          1  NUMBER OF PLANS

     JR         MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                    .83       .80       .76       .73       .69       .64       .58       .53

*** *** *** *
```

```
**************

270 KO          OUTPUT CONTROL VARIABLES
                     IPRNT         3  PRINT CONTROL
                     IPLOT         0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                         FACILITY#= PTDW 0085
                         DESERT WILLOWS GOLF COURSE DETENTION BASIN
                         PARAMETERS TAKEN FROM THE MACDONALD RANCH DRAINAGE STUDY
                         GOLF COURSE DETENTION BASIN
                         STORAGE VOLUME = 38 ACRE-FEET
                         OUTLET = 66" RCP
                         100-YR DISCHARGE = 568 CFS
                         SPILLWAY LENGTH = 300 FT
                         SPILLWAY CREST ELEVATION = 2250 FT

                HYDROGRAPH ROUTING DATA

280 RS          STORAGE ROUTING
                     NSTPS         1  NUMBER OF SUBREACHES
                     ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC    -1.00  INITIAL CONDITION
                     X           .00 WORKING R AND D COEFFICIENT

281 SV            STORAGE        .0       .2      1.0      2.9      6.6     12.0     18.9     27.6     37.9     49.7

282 SE          ELEVATION     42.50    43.00    44.00    45.00    46.00    47.00    48.00    49.00    50.00    51.00

284 SL          LOW-LEVEL OUTLET
                     ELEVL      36.15  ELEVATION AT CENTER OF OUTLET
                     CAREA      23.74  CROSS-SECTIONAL AREA
                     COQL         .89  COEFFICIENT
                     EXPL         .50  EXPONENT OF HEAD

283 SS          SPILLWAY
                     CREL       50.00  SPILLWAY CREST ELEVATION
                     SPWID     300.00  SPILLWAY WIDTH
                     COQW        3.00  WEIR COEFFICIENT
                     EXPW        1.50  EXPONENT OF HEAD

                                                ***

                                        COMPUTED OUTFLOW-ELEVATION DATA

                OUTFLOW        .00    442.89    460.01    478.50    498.55    520.34    544.13    570.20    598.89    630.62
              ELEVATION      42.50     42.98     43.52     44.12     44.81     45.58     46.46     47.47     48.64     50.00

                OUTFLOW     632.30    640.42    660.12    696.52    754.77    839.98    957.28   1111.80   1308.66   1552.99
              ELEVATION      50.01     50.05     50.10     50.17     50.26     50.37     50.50     50.65     50.81     51.00

                                     COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                STORAGE        .00       .16       .17       .59       .98      1.22      2.52      2.89      5.06      6.64
                OUTFLOW     427.00    442.89    443.50    460.01    474.77    478.50    498.55    504.10    520.34    531.82
              ELEVATION      42.50     42.98     43.00     43.52     44.00     44.12     44.81     45.00     45.58     46.00

                STORAGE       9.13     12.04     15.26     18.85     24.46     27.60     37.87     38.03     38.41     39.02
                OUTFLOW     544.13    558.16    570.20    583.32    598.89    607.43    630.62    632.30    640.42    660.12
              ELEVATION      46.46     47.00     47.47     48.00     48.64     49.00     50.00     50.01     50.05     50.10

                STORAGE      39.85     40.92     42.21     43.73     45.48     47.46     49.66
                OUTFLOW     696.52    754.77    839.98    957.28   1111.80   1308.66   1552.99
              ELEVATION      50.17     50.26     50.37     50.50     50.65     50.81     51.00

***             ***             ***             ***             ***

                HYDROGRAPH AT STATION     DETB
                  FOR PLAN 1, RATIO =  .83

                                                MAXIMUM AVERAGE FLOW
  PEAK FLOW     TIME                    6-HR        24-HR        72-HR      20.75-HR
+   (CFS)       (HR)
                                (CFS)
+    481.       3.83                    429.         427.         427.         427.
                            (INCHES)   2.819        9.692        9.692        9.692
                            (AC-FT)      213.         732.         732.         732.

                                                MAXIMUM AVERAGE STORAGE
  PEAK STORAGE  TIME                    6-HR        24-HR        72-HR      20.75-HR
+  (AC-FT)      (HR)
      1.         .08                      0.           0.           0.          -1.

                                                MAXIMUM AVERAGE STAGE
  PEAK STAGE    TIME                    6-HR        24-HR        72-HR      20.75-HR
+   (FEET)      (HR)
     44.20      3.83                   42.57        42.52        42.52        42.52

                CUMULATIVE AREA =  1.42 SQ MI

***             ***             ***             ***             ***

                HYDROGRAPH AT STATION     DETB
                  FOR PLAN 1, RATIO =  .80

                                                MAXIMUM AVERAGE FLOW
  PEAK FLOW     TIME                    6-HR        24-HR        72-HR      20.75-HR
+   (CFS)       (HR)
                                (CFS)
+    462.       3.83                    428.         426.         426.         426.
                            (INCHES)   2.811        9.684        9.684        9.684
```

	(AC-FT)	212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
43.58	3.83	42.53	42.51	42.51	42.51

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .76

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)				
		(CFS)			
+ 427.	.08	427.	426.	426.	426.
		(INCHES) 2.804	9.677	9.677	9.677
		(AC-FT) 212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .73

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)				
		(CFS)			
+ 427.	.08	427.	426.	426.	426.
		(INCHES) 2.804	9.677	9.677	9.677
		(AC-FT) 212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .69

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)				
		(CFS)			
+ 427.	.08	427.	426.	426.	426.
		(INCHES) 2.804	9.677	9.677	9.677
		(AC-FT) 212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .64

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)				
		(CFS)			
+ 427.	.08	427.	426.	426.	426.
		(INCHES) 2.804	9.677	9.677	9.677

	(AC-FT)	212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .58

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 427.	.08		427.	426.	426.	426.
		(INCHES)	2.804	9.677	9.677	9.677
		(AC-FT)	212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DETB
FOR PLAN 1, RATIO = .53

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 427.	.08		427.	426.	426.	426.
		(INCHES)	2.804	9.677	9.677	9.677
		(AC-FT)	212.	731.	731.	731.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
1.	.08	0.	0.	0.	-1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
42.50	.00	42.50	42.50	42.50	42.50

CUMULATIVE AREA = 1.42 SQ MI

*** *** *** *

DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW
1		0030	7	430.	*	1		0545	70	2013.	*	1		1100	133	427.	*	1		1615	196	427.
1		0035	8	434.	*	1		0550	71	1847.	*	1		1105	134	427.	*	1		1620	197	427.
1		0040	9	442.	*	1		0555	72	1700.	*	1		1110	135	427.	*	1		1625	198	427.
1		0045	10	454.	*	1		0600	73	1568.	*	1		1115	136	427.	*	1		1630	199	427.
1		0050	11	467.	*	1		0605	74	1449.	*	1		1120	137	427.	*	1		1635	200	427.
1		0055	12	481.	*	1		0610	75	1340.	*	1		1125	138	427.	*	1		1640	201	427.
1		0100	13	496.	*	1		0615	76	1238.	*	1		1130	139	427.	*	1		1645	202	427.
1		0105	14	511.	*	1		0620	77	1144.	*	1		1135	140	427.	*	1		1650	203	427.
1		0110	15	522.	*	1		0625	78	1059.	*	1		1140	141	427.	*	1		1655	204	427.
1		0115	16	531.	*	1		0630	79	981.	*	1		1145	142	427.	*	1		1700	205	427.
1		0120	17	537.	*	1		0635	80	912.	*	1		1150	143	427.	*	1		1705	206	427.
1		0125	18	542.	*	1		0640	81	849.	*	1		1155	144	427.	*	1		1710	207	427.
1		0130	19	548.	*	1		0645	82	791.	*	1		1200	145	427.	*	1		1715	208	427.
1		0135	20	558.	*	1		0650	83	740.	*	1		1205	146	427.	*	1		1720	209	427.
1		0140	21	574.	*	1		0655	84	695.	*	1		1210	147	427.	*	1		1725	210	427.
1		0145	22	596.	*	1		0700	85	656.	*	1		1215	148	427.	*	1		1730	211	427.
1		0150	23	624.	*	1		0705	86	623.	*	1		1220	149	427.	*	1		1735	212	427.
1		0155	24	656.	*	1		0710	87	595.	*	1		1225	150	427.	*	1		1740	213	427.
1		0200	25	694.	*	1		0715	88	571.	*	1		1230	151	427.	*	1		1745	214	427.
1		0205	26	740.	*	1		0720	89	551.	*	1		1235	152	427.	*	1		1750	215	427.
1		0210	27	788.	*	1		0725	90	532.	*	1		1240	153	427.	*	1		1755	216	427.
1		0215	28	833.	*	1		0730	91	516.	*	1		1245	154	427.	*	1		1800	217	427.
1		0220	29	867.	*	1		0735	92	501.	*	1		1250	155	427.	*	1		1805	218	427.
1		0225	30	890.	*	1		0740	93	489.	*	1		1255	156	427.	*	1		1810	219	427.
1		0230	31	905.	*	1		0745	94	479.	*	1		1300	157	427.	*	1		1815	220	427.
1		0235	32	912.	*	1		0750	95	471.	*	1		1305	158	427.	*	1		1820	221	427.
1		0240	33	913.	*	1		0755	96	464.	*	1		1310	159	427.	*	1		1825	222	427.
1		0245	34	910.	*	1		0800	97	458.	*	1		1315	160	427.	*	1		1830	223	427.
1		0250	35	911.	*	1		0805	98	453.	*	1		1320	161	427.	*	1		1835	224	427.
1		0255	36	928.	*	1		0810	99	449.	*	1		1325	162	427.	*	1		1840	225	427.
1		0300	37	974.	*	1		0815	100	446.	*	1		1330	163	427.	*	1		1845	226	427.
1		0305	38	1059.	*	1		0820	101	443.	*	1		1335	164	427.	*	1		1850	227	427.
1		0310	39	1203.	*	1		0825	102	440.	*	1		1340	165	427.	*	1		1855	228	427.
1		0315	40	1441.	*	1		0830	103	438.	*	1		1345	166	427.	*	1		1900	229	427.
1		0320	41	1818.	*	1		0835	104	436.	*	1		1350	167	427.	*	1		1905	230	427.
1		0325	42	2366.	*	1		0840	105	435.	*	1		1355	168	427.	*	1		1910	231	427.
1		0330	43	3113.	*	1		0845	106	433.	*	1		1400	169	427.	*	1		1915	232	427.
1		0335	44	4050.	*	1		0850	107	432.	*	1		1405	170	427.	*	1		1920	233	427.
1		0340	45	5002.	*	1		0855	108	431.	*	1		1410	171	427.	*	1		1925	234	427.
1		0345	46	5674.	*	1		0900	109	430.	*	1		1415	172	427.	*	1		1930	235	427.
1		0350	47	5880.	*	1		0905	110	430.	*	1		1420	173	427.	*	1		1935	236	427.
1		0355	48	5689.	*	1		0910	111	429.	*	1		1425	174	427.	*	1		1940	237	427.
1		0400	49	5317.	*	1		0915	112	429.	*	1		1430	175	427.	*	1		1945	238	427.
1		0405	50	4928.	*	1		0920	113	428.	*	1		1435	176	427.	*	1		1950	239	427.
1		0410	51	4578.	*	1		0925	114	428.	*	1		1440	177	427.	*	1		1955	240	427.
1		0415	52	4254.	*	1		0930	115	428.	*	1		1445	178	427.	*	1		2000	241	427.
1		0420	53	3941.	*	1		0935	116	428.	*	1		1450	179	427.	*	1		2005	242	427.
1		0425	54	3645.	*	1		0940	117	428.	*	1		1455	180	427.	*	1		2010	243	427.
1		0430	55	3400.	*	1		0945	118	427.	*	1		1500	181	427.	*	1		2015	244	427.
1		0435	56	3242.	*	1		0950	119	427.	*	1		1505	182	427.	*	1		2020	245	427.
1		0440	57	3198.	*	1		0955	120	427.	*	1		1510	183	427.	*	1		2025	246	427.
1		0445	58	3278.	*	1		1000	121	427.	*	1		1515	184	427.	*	1		2030	247	427.
1		0450	59	3482.	*	1		1005	122	427.	*	1		1520	185	427.	*	1		2035	248	427.
1		0455	60	3784.	*	1		1010	123	427.	*	1		1525	186	427.	*	1		2040	249	427.
1		0500	61	4061.	*	1		1015	124	427.	*	1		1530	187	427.	*	1		2045	250	427.
1		0505	62	4156.	*	1		1020	125	427.	*	1		1535	188	427.	*					
1		0510	63	4022.	*	1		1025	126	427.	*	1		1540	189	427.	*					
					*						*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)	(CFS)				
+ 5880.	3.83		2092.	908.	908.	908.
		(INCHES)	1.232	1.849	1.849	1.849
		(AC-FT)	1037.	1557.	1557.	1557.

CUMULATIVE AREA = 15.79 SQ MI

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HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .80

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DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0515	64	3576.	*	1		1030	127	427.	*	1		1545	190	427.
1		0005	2	1.	*	1		0520	65	3229.	*	1		1035	128	427.	*	1		1550	191	427.
1		0010	3	23.	*	1		0525	66	2885.	*	1		1040	129	427.	*	1		1555	192	427.
1		0015	4	157.	*	1		0530	67	2585.	*	1		1045	130	427.	*	1		1600	193	427.
1		0020	5	376.	*	1		0535	68	2337.	*	1		1050	131	427.	*	1		1605	194	427.
1		0025	6	426.	*	1		0540	69	2127.	*	1		1055	132	427.	*	1		1610	195	427.
1		0030	7	429.	*	1		0545	70	1946.	*	1		1100	133	427.	*	1		1615	196	427.
1		0035	8	432.	*	1		0550	71	1787.	*	1		1105	134	427.	*	1		1620	197	427.
1		0040	9	439.	*	1		0555	72	1647.	*	1		1110	135	427.	*	1		1625	198	427.
1		0045	10	449.	*	1		0600	73	1521.	*	1		1115	136	427.	*	1		1630	199	427.
1		0050	11	461.	*	1		0605	74	1406.	*	1		1120	137	427.	*	1		1635	200	427.
1		0055	12	473.	*	1		0610	75	1302.	*	1		1125	138	427.	*	1		1640	201	427.
1		0100	13	486.	*	1		0615	76	1204.	*	1		1130	139	427.	*	1		1645	202	427.
1		0105	14	498.	*	1		0620	77	1114.	*	1		1135	140	427.	*	1		1650	203	427.
1		0110	15	509.	*	1		0625	78	1032.	*	1		1140	141	427.	*	1		1655	204	427.
1		0115	16	516.	*	1		0630	79	958.	*	1		1145	142	427.	*	1		1700	205	427.
1		0120	17	522.	*	1		0635	80	892.	*	1		1150	143	427.	*	1		1705	206	427.
1		0125	18	528.	*	1		0640	81	831.	*	1		1155	144	427.	*	1		1710	207	427.
1		0130	19	534.	*	1		0645	82	777.	*	1		1200	145	427.	*	1		1715	208	427.
1		0135	20	543.	*	1		0650	83	728.	*	1		1205	146	427.	*	1		1720	209	427.
1		0140	21	557.	*	1		0655	84	685.	*	1		1210	147	427.	*	1		1725	210	427.
1		0145	22	576.	*	1		0700	85	648.	*	1		1215	148	427.	*	1		1730	211	427.
1		0150	23	601.	*	1		0705	86	616.	*	1		1220	149	427.	*	1		1735	212	427.

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0155	24	629.	1		0710	87	589.	1		1225	150	427.	1		1740	213	427.
1		0200	25	663.	1		0715	88	566.	1		1230	151	427.	1		1745	214	427.
1		0205	26	703.	1		0720	89	546.	1		1235	152	427.	1		1750	215	427.
1		0210	27	746.	1		0725	90	529.	1		1240	153	427.	1		1755	216	427.
1		0215	28	787.	1		0730	91	513.	1		1245	154	427.	1		1800	217	427.
1		0220	29	819.	1		0735	92	499.	1		1250	155	427.	1		1805	218	427.
1		0225	30	841.	1		0740	93	487.	1		1255	156	427.	1		1810	219	427.
1		0230	31	856.	1		0745	94	478.	1		1300	157	427.	1		1815	220	427.
1		0235	32	864.	1		0750	95	469.	1		1305	158	427.	1		1820	221	427.
1		0240	33	866.	1		0755	96	463.	1		1310	159	427.	1		1825	222	427.
1		0245	34	865.	1		0800	97	457.	1		1315	160	427.	1		1830	223	427.
1		0250	35	867.	1		0805	98	452.	1		1320	161	427.	1		1835	224	427.
1		0255	36	883.	1		0810	99	448.	1		1325	162	427.	1		1840	225	427.
1		0300	37	925.	1		0815	100	445.	1		1330	163	427.	1		1845	226	427.
1		0305	38	1003.	1		0820	101	442.	1		1335	164	427.	1		1850	227	427.
1		0310	39	1135.	1		0825	102	440.	1		1340	165	427.	1		1855	228	427.
1		0315	40	1351.	1		0830	103	438.	1		1345	166	427.	1		1900	229	427.
1		0320	41	1693.	1		0835	104	436.	1		1350	167	427.	1		1905	230	427.
1		0325	42	2199.	1		0840	105	435.	1		1355	168	427.	1		1910	231	427.
1		0330	43	2898.	1		0845	106	433.	1		1400	169	427.	1		1915	232	427.
1		0335	44	3778.	1		0850	107	432.	1		1405	170	427.	1		1920	233	427.
1		0340	45	4687.	1		0855	108	431.	1		1410	171	427.	1		1925	234	427.
1		0345	46	5332.	1		0900	109	430.	1		1415	172	427.	1		1930	235	427.
1		0350	47	5545.	1		0905	110	430.	1		1420	173	427.	1		1935	236	427.
1		0355	48	5378.	1		0910	111	429.	1		1425	174	427.	1		1940	237	427.
1		0400	49	5035.	1		0915	112	429.	1		1430	175	427.	1		1945	238	427.
1		0405	50	4676.	1		0920	113	428.	1		1435	176	427.	1		1950	239	427.
1		0410	51	4352.	1		0925	114	428.	1		1440	177	427.	1		1955	240	427.
1		0415	52	4054.	1		0930	115	428.	1		1445	178	427.	1		2000	241	427.
1		0420	53	3762.	1		0935	116	428.	1		1450	179	427.	1		2005	242	427.
1		0425	54	3485.	1		0940	117	428.	1		1455	180	427.	1		2010	243	427.
1		0430	55	3253.	1		0945	118	427.	1		1500	181	427.	1		2015	244	427.
1		0435	56	3102.	1		0950	119	427.	1		1505	182	427.	1		2020	245	427.
1		0440	57	3059.	1		0955	120	427.	1		1510	183	427.	1		2025	246	427.
1		0445	58	3130.	1		1000	121	427.	1		1515	184	427.	1		2030	247	427.
1		0450	59	3319.	1		1005	122	427.	1		1520	185	427.	1		2035	248	427.
1		0455	60	3599.	1		1010	123	427.	1		1525	186	427.	1		2040	249	427.
1		0500	61	3869.	1		1015	124	427.	1		1530	187	427.	1		2045	250	427.
1		0505	62	3970.	1		1020	125	427.	1		1535	188	427.					
1		0510	63	3852.	1		1025	126	427.	1		1540	189	427.					

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
(CFS)	(HR)					
		(CFS)				
5545.	3.83		1996.	880.	880.	880.
		(INCHES)	1.175	1.792	1.792	1.792
		(AC-FT)	990.	1509.	1509.	1509.

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .76

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0515	64	3367.	1		1030	127	427.	1		1545	190	427.
1		0005	2	1.	1		0520	65	3051.	1		1035	128	427.	1		1550	191	427.
1		0010	3	18.	1		0525	66	2732.	1		1040	129	427.	1		1555	192	427.
1		0015	4	147.	1		0530	67	2452.	1		1045	130	427.	1		1600	193	427.
1		0020	5	379.	1		0535	68	2219.	1		1050	131	427.	1		1605	194	427.
1		0025	6	427.	1		0540	69	2023.	1		1055	132	427.	1		1610	195	427.
1		0030	7	428.	1		0545	70	1853.	1		1100	133	427.	1		1615	196	427.
1		0035	8	431.	1		0550	71	1705.	1		1105	134	427.	1		1620	197	427.
1		0040	9	435.	1		0555	72	1573.	1		1110	135	427.	1		1625	198	427.
1		0045	10	443.	1		0600	73	1454.	1		1115	136	427.	1		1630	199	427.
1		0050	11	452.	1		0605	74	1346.	1		1120	137	427.	1		1635	200	427.
1		0055	12	462.	1		0610	75	1248.	1		1125	138	427.	1		1640	201	427.
1		0100	13	473.	1		0615	76	1156.	1		1130	139	427.	1		1645	202	427.
1		0105	14	483.	1		0620	77	1071.	1		1135	140	427.	1		1650	203	427.
1		0110	15	491.	1		0625	78	995.	1		1140	141	427.	1		1655	204	427.
1		0115	16	498.	1		0630	79	926.	1		1145	142	427.	1		1700	205	427.
1		0120	17	504.	1		0635	80	864.	1		1150	143	427.	1		1705	206	427.
1		0125	18	509.	1		0640	81	808.	1		1155	144	427.	1		1710	207	427.
1		0130	19	515.	1		0645	82	757.	1		1200	145	427.	1		1715	208	427.
1		0135	20	523.	1		0650	83	711.	1		1205	146	427.	1		1720	209	427.
1		0140	21	535.	1		0655	84	671.	1		1210	147	427.	1		1725	210	427.
1		0145	22	552.	1		0700	85	636.	1		1215	148	427.	1		1730	211	427.
1		0150	23	572.	1		0705	86	606.	1		1220	149	427.	1		1735	212	427.
1		0155	24	596.	1		0710	87	580.	1		1225	150	427.	1		1740	213	427.
1		0200	25	624.	1		0715	88	559.	1		1230	151	427.	1		1745	214	427.
1		0205	26	658.	1		0720	89	540.	1		1235	152	427.	1		1750	215	427.
1		0210	27	694.	1		0725	90	524.	1		1240	153	427.	1		1755	216	427.
1		0215	28	728.	1		0730	91	509.	1		1245	154	427.	1		1800	217	427.
1		0220	29	755.	1		0735	92	496.	1		1250	155	427.	1		1805	218	427.
1		0225	30	775.	1		0740	93	485.	1		1255	156	427.	1		1810	219	427.
1		0230	31	790.	1		0745	94	475.	1		1300	157	427.	1		1815	220	427.
1		0235	32	800.	1		0750	95	468.	1		1305	158	427.	1		1820	221	427.
1		0240	33	804.	1		0755	96	461.	1		1310	159	427.	1		1825	222	427.
1		0245	34	805.	1		0800	97	456.	1		1315	160	427.	1		1830	223	427.
1		0250	35	808.	1		0805	98	451.	1		1320	161	427.	1		1835	224	427.
1		0255	36	822.	1		0810	99	447.	1		1325	162	427.	1		1840	225	427.
1		0300	37	860.	1		0815	100	444.	1		1330	163	427.	1		1845	226	427.
1		0305	38	928.	1		0820	101	442.	1		1335	164	427.	1		1850	227	427.
1		0310	39	1042.	1		0825	102	439.	1		1340	165	427.	1		1855	228	427.
1		0315	40	1228.	1		0830	103	437.	1		1345	166	427.	1		1900	229	427.

DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW
1		0320	41	1523.	*	1		0835	104	436.	*	1		1350	167	427.	*	1		1905	230	427.
1		0325	42	1968.	*	1		0840	105	434.	*	1		1355	168	427.	*	1		1910	231	427.
1		0330	43	2593.	*	1		0845	106	433.	*	1		1400	169	427.	*	1		1915	232	427.
1		0335	44	3399.	*	1		0850	107	432.	*	1		1405	170	427.	*	1		1920	233	427.
1		0340	45	4241.	*	1		0855	108	431.	*	1		1410	171	427.	*	1		1925	234	427.
1		0345	46	4858.	*	1		0900	109	430.	*	1		1415	172	427.	*	1		1930	235	427.
1		0350	47	5079.	*	1		0905	110	430.	*	1		1420	173	427.	*	1		1935	236	427.
1		0355	48	4957.	*	1		0910	111	429.	*	1		1425	174	427.	*	1		1940	237	427.
1		0400	49	4657.	*	1		0915	112	429.	*	1		1430	175	427.	*	1		1945	238	427.
1		0405	50	4335.	*	1		0920	113	428.	*	1		1435	176	427.	*	1		1950	239	427.
1		0410	51	4043.	*	1		0925	114	428.	*	1		1440	177	427.	*	1		1955	240	427.
1		0415	52	3775.	*	1		0930	115	428.	*	1		1445	178	427.	*	1		2000	241	427.
1		0420	53	3512.	*	1		0935	116	428.	*	1		1450	179	427.	*	1		2005	242	427.
1		0425	54	3261.	*	1		0940	117	428.	*	1		1455	180	427.	*	1		2010	243	427.
1		0430	55	3046.	*	1		0945	118	427.	*	1		1500	181	427.	*	1		2015	244	427.
1		0435	56	2907.	*	1		0950	119	427.	*	1		1505	182	427.	*	1		2020	245	427.
1		0440	57	2864.	*	1		0955	120	427.	*	1		1510	183	427.	*	1		2025	246	427.
1		0445	58	2928.	*	1		1000	121	427.	*	1		1515	184	427.	*	1		2030	247	427.
1		0450	59	3097.	*	1		1005	122	427.	*	1		1520	185	427.	*	1		2035	248	427.
1		0455	60	3354.	*	1		1010	123	427.	*	1		1525	186	427.	*	1		2040	249	427.
1		0500	61	3604.	*	1		1015	124	427.	*	1		1530	187	427.	*	1		2045	250	427.
1		0505	62	3709.	*	1		1020	125	427.	*	1		1535	188	427.	*					
1		0510	63	3612.	*	1		1025	126	427.	*	1		1540	189	427.	*					
					*						*						*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)	1863.	841.	841.	841.
+ 5079.	3.83	(INCHES)	1.097	1.712	1.712	1.712
		(AC-FT)	924.	1442.	1442.	1442.

CUMULATIVE AREA = 15.79 SQ MI

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HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .73

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DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW		DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0515	64	3154.	*	1		1030	127	427.	*	1		1545	190	427.
1		0005	2	0.	*	1		0520	65	2868.	*	1		1035	128	427.	*	1		1550	191	427.
1		0010	3	14.	*	1		0525	66	2575.	*	1		1040	129	427.	*	1		1555	192	427.
1		0015	4	133.	*	1		0530	67	2315.	*	1		1045	130	427.	*	1		1600	193	427.
1		0020	5	380.	*	1		0535	68	2099.	*	1		1050	131	427.	*	1		1605	194	427.
1		0025	6	429.	*	1		0540	69	1916.	*	1		1055	132	427.	*	1		1610	195	427.
1		0030	7	428.	*	1		0545	70	1757.	*	1		1100	133	427.	*	1		1615	196	427.
1		0035	8	429.	*	1		0550	71	1619.	*	1		1105	134	427.	*	1		1620	197	427.
1		0040	9	432.	*	1		0555	72	1495.	*	1		1110	135	427.	*	1		1625	198	427.
1		0045	10	438.	*	1		0600	73	1385.	*	1		1115	136	427.	*	1		1630	199	427.
1		0050	11	445.	*	1		0605	74	1285.	*	1		1120	137	427.	*	1		1635	200	427.
1		0055	12	453.	*	1		0610	75	1193.	*	1		1125	138	427.	*	1		1640	201	427.
1		0100	13	462.	*	1		0615	76	1107.	*	1		1130	139	427.	*	1		1645	202	427.
1		0105	14	470.	*	1		0620	77	1029.	*	1		1135	140	427.	*	1		1650	203	427.
1		0110	15	477.	*	1		0625	78	957.	*	1		1140	141	427.	*	1		1655	204	427.
1		0115	16	482.	*	1		0630	79	893.	*	1		1145	142	427.	*	1		1700	205	427.
1		0120	17	487.	*	1		0635	80	836.	*	1		1150	143	427.	*	1		1705	206	427.
1		0125	18	493.	*	1		0640	81	784.	*	1		1155	144	427.	*	1		1710	207	427.
1		0130	19	498.	*	1		0645	82	737.	*	1		1200	145	427.	*	1		1715	208	427.
1		0135	20	506.	*	1		0650	83	695.	*	1		1205	146	427.	*	1		1720	209	427.
1		0140	21	516.	*	1		0655	84	657.	*	1		1210	147	427.	*	1		1725	210	427.
1		0145	22	529.	*	1		0700	85	624.	*	1		1215	148	427.	*	1		1730	211	427.
1		0150	23	546.	*	1		0705	86	596.	*	1		1220	149	427.	*	1		1735	212	427.
1		0155	24	566.	*	1		0710	87	572.	*	1		1225	150	427.	*	1		1740	213	427.
1		0200	25	589.	*	1		0715	88	552.	*	1		1230	151	427.	*	1		1745	214	427.
1		0205	26	617.	*	1		0720	89	534.	*	1		1235	152	427.	*	1		1750	215	427.
1		0210	27	647.	*	1		0725	90	518.	*	1		1240	153	427.	*	1		1755	216	427.
1		0215	28	674.	*	1		0730	91	505.	*	1		1245	154	427.	*	1		1800	217	427.
1		0220	29	696.	*	1		0735	92	492.	*	1		1250	155	427.	*	1		1805	218	427.
1		0225	30	712.	*	1		0740	93	482.	*	1		1255	156	427.	*	1		1810	219	427.
1		0230	31	725.	*	1		0745	94	473.	*	1		1300	157	427.	*	1		1815	220	427.
1		0235	32	735.	*	1		0750	95	465.	*	1		1305	158	427.	*	1		1820	221	427.
1		0240	33	740.	*	1		0755	96	459.	*	1		1310	159	427.	*	1		1825	222	427.
1		0245	34	744.	*	1		0800	97	454.	*	1		1315	160	427.	*	1		1830	223	427.
1		0250	35	749.	*	1		0805	98	450.	*	1		1320	161	427.	*	1		1835	224	427.
1		0255	36	763.	*	1		0810	99	446.	*	1		1325	162	427.	*	1		1840	225	427.
1		0300	37	796.	*	1		0815	100	443.	*	1		1330	163	427.	*	1		1845	226	427.
1		0305	38	854.	*	1		0820	101	441.	*	1		1335	164	427.	*	1		1850	227	427.
1		0310	39	951.	*	1		0825	102	439.	*	1		1340	165	427.	*	1		1855	228	427.
1		0315	40	1110.	*	1		0830	103	437.	*	1		1345	166	427.	*	1		1900	229	427.
1		0320	41	1360.	*	1		0835	104	435.	*	1		1350	167	427.	*	1		1905	230	427.
1		0325	42	1745.	*	1		0840	105	434.	*	1		1355	168	427.	*	1		1910	231	427.
1		0330	43	2297.	*	1		0845	106	433.	*	1		1400	169	427.	*	1		1915	232	427.
1		0335	44	3025.	*	1		0850	107	432.	*	1		1405	170	427.	*	1		1920	233	427.
1		0340	45	3804.	*	1		0855	108	431.	*	1		1410	171	427.	*	1		1925	234	427.
1		0345	46	4400.	*	1		0900	109	430.	*	1		1415	172	427.	*	1		1930	235	427.
1		0350	47	4650.	*	1		0905	110	429.	*	1		1420	173	427.	*	1		1935	236	427.
1		0355	48	4568.	*	1		0910	111	429.	*	1		1425	174	427.	*	1		1940	237	427.
1		0400	49	4309.	*	1		0915	112	429.	*	1		1430	175	427.	*	1		1945	238	427.
1		0405	50	4015.	*	1		0920	113	428.	*	1		1435	176	427.	*	1		1950	239	427.
1		0410	51	3747.	*	1		0925	114	428.	*	1		1440	177	427.	*	1		1955	240	427.
1		0415	52	3504.	*	1		0930	115	428.	*	1		1445	178	427.	*	1		2000	241	427.
1		0420	53	3267.	*	1		0935	116	428.	*	1		1450	179	427.	*	1		2005	242	427.
1		0425	54	3040.	*	1		0940	117	428.	*	1		1455	180	427.	*	1		2010	243	427.
1		0430	55	2843.	*	1		0945	118	427.	*	1		1500	181	427.	*	1		2015	244	427.
1		0435	56	2712.	*	1		0950	119	427.	*	1		1505	182	427.	*	1		2020	245	427.
1		0440	57	2667.	*	1		0955	120	427.	*	1		1510	183	427.	*	1		2025	246	427.

PIT5RFF3

1	0445	58	2718.	*	1	1000	121	427.	*	1	1515	184	427.	*	1	2030	247	427.
1	0450	59	2865.	*	1	1005	122	427.	*	1	1520	185	427.	*	1	2035	248	427.
1	0455	60	3093.	*	1	1010	123	427.	*	1	1525	186	427.	*	1	2040	249	427.
1	0500	61	3330.	*	1	1015	124	427.	*	1	1530	187	427.	*	1	2045	250	427.
1	0505	62	3442.	*	1	1020	125	427.	*	1	1535	188	427.	*				
1	0510	63	3368.	*	1	1025	126	427.	*	1	1540	189	427.	*				
				*					*					*				

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 4650.	3.83		1733.	803.	803.	803.
		(INCHES)	1.021	1.634	1.634	1.634
		(AC-FT)	859.	1376.	1376.	1376.

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .69

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0515	64	2991.	*	1		1030	127	427.	*	1		1545	190	427.
1		0005	2	0.	*	1		0520	65	2728.	*	1		1035	128	427.	*	1		1550	191	427.
1		0010	3	14.	*	1		0525	66	2456.	*	1		1040	129	427.	*	1		1555	192	427.
1		0015	4	128.	*	1		0530	67	2213.	*	1		1045	130	427.	*	1		1600	193	427.
1		0020	5	378.	*	1		0535	68	2009.	*	1		1050	131	427.	*	1		1605	194	427.
1		0025	6	429.	*	1		0540	69	1837.	*	1		1055	132	427.	*	1		1610	195	427.
1		0030	7	428.	*	1		0545	70	1687.	*	1		1100	133	427.	*	1		1615	196	427.
1		0035	8	428.	*	1		0550	71	1556.	*	1		1105	134	427.	*	1		1620	197	427.
1		0040	9	431.	*	1		0555	72	1440.	*	1		1110	135	427.	*	1		1625	198	427.
1		0045	10	435.	*	1		0600	73	1336.	*	1		1115	136	427.	*	1		1630	199	427.
1		0050	11	441.	*	1		0605	74	1242.	*	1		1120	137	427.	*	1		1635	200	427.
1		0055	12	447.	*	1		0610	75	1155.	*	1		1125	138	427.	*	1		1640	201	427.
1		0100	13	454.	*	1		0615	76	1075.	*	1		1130	139	427.	*	1		1645	202	427.
1		0105	14	461.	*	1		0620	77	1000.	*	1		1135	140	427.	*	1		1650	203	427.
1		0110	15	466.	*	1		0625	78	932.	*	1		1140	141	427.	*	1		1655	204	427.
1		0115	16	471.	*	1		0630	79	871.	*	1		1145	142	427.	*	1		1700	205	427.
1		0120	17	475.	*	1		0635	80	818.	*	1		1150	143	427.	*	1		1705	206	427.
1		0125	18	479.	*	1		0640	81	770.	*	1		1155	144	427.	*	1		1710	207	427.
1		0130	19	485.	*	1		0645	82	727.	*	1		1200	145	427.	*	1		1715	208	427.
1		0135	20	492.	*	1		0650	83	687.	*	1		1205	146	427.	*	1		1720	209	427.
1		0140	21	501.	*	1		0655	84	651.	*	1		1210	147	427.	*	1		1725	210	427.
1		0145	22	513.	*	1		0700	85	620.	*	1		1215	148	427.	*	1		1730	211	427.
1		0150	23	527.	*	1		0705	86	592.	*	1		1220	149	427.	*	1		1735	212	427.
1		0155	24	542.	*	1		0710	87	568.	*	1		1225	150	427.	*	1		1740	213	427.
1		0200	25	561.	*	1		0715	88	548.	*	1		1230	151	427.	*	1		1745	214	427.
1		0205	26	584.	*	1		0720	89	530.	*	1		1235	152	427.	*	1		1750	215	427.
1		0210	27	610.	*	1		0725	90	515.	*	1		1240	153	427.	*	1		1755	216	427.
1		0215	28	635.	*	1		0730	91	502.	*	1		1245	154	427.	*	1		1800	217	427.
1		0220	29	655.	*	1		0735	92	490.	*	1		1250	155	427.	*	1		1805	218	427.
1		0225	30	669.	*	1		0740	93	480.	*	1		1255	156	427.	*	1		1810	219	427.
1		0230	31	679.	*	1		0745	94	471.	*	1		1300	157	427.	*	1		1815	220	427.
1		0235	32	688.	*	1		0750	95	464.	*	1		1305	158	427.	*	1		1820	221	427.
1		0240	33	696.	*	1		0755	96	458.	*	1		1310	159	427.	*	1		1825	222	427.
1		0245	34	701.	*	1		0800	97	453.	*	1		1315	160	427.	*	1		1830	223	427.
1		0250	35	708.	*	1		0805	98	449.	*	1		1320	161	427.	*	1		1835	224	427.
1		0255	36	723.	*	1		0810	99	446.	*	1		1325	162	427.	*	1		1840	225	427.
1		0300	37	754.	*	1		0815	100	443.	*	1		1330	163	427.	*	1		1845	226	427.
1		0305	38	805.	*	1		0820	101	440.	*	1		1335	164	427.	*	1		1850	227	427.
1		0310	39	887.	*	1		0825	102	438.	*	1		1340	165	427.	*	1		1855	228	427.
1		0315	40	1020.	*	1		0830	103	436.	*	1		1345	166	427.	*	1		1900	229	427.
1		0320	41	1239.	*	1		0835	104	435.	*	1		1350	167	427.	*	1		1905	230	427.
1		0325	42	1581.	*	1		0840	105	434.	*	1		1355	168	427.	*	1		1910	231	427.
1		0330	43	2086.	*	1		0845	106	433.	*	1		1400	169	427.	*	1		1915	232	427.
1		0335	44	2752.	*	1		0850	107	432.	*	1		1405	170	427.	*	1		1920	233	427.
1		0340	45	3480.	*	1		0855	108	431.	*	1		1410	171	427.	*	1		1925	234	427.
1		0345	46	4051.	*	1		0900	109	430.	*	1		1415	172	427.	*	1		1930	235	427.
1		0350	47	4307.	*	1		0905	110	429.	*	1		1420	173	427.	*	1		1935	236	427.
1		0355	48	4260.	*	1		0910	111	429.	*	1		1425	174	427.	*	1		1940	237	427.
1		0400	49	4038.	*	1		0915	112	428.	*	1		1430	175	427.	*	1		1945	238	427.
1		0405	50	3769.	*	1		0920	113	428.	*	1		1435	176	427.	*	1		1950	239	427.
1		0410	51	3521.	*	1		0925	114	428.	*	1		1440	177	427.	*	1		1955	240	427.
1		0415	52	3295.	*	1		0930	115	428.	*	1		1445	178	427.	*	1		2000	241	427.
1		0420	53	3077.	*	1		0935	116	428.	*	1		1450	179	427.	*	1		2005	242	427.
1		0425	54	2868.	*	1		0940	117	428.	*	1		1455	180	427.	*	1		2010	243	427.
1		0430	55	2687.	*	1		0945	118	427.	*	1		1500	181	427.	*	1		2015	244	427.
1		0435	56	2563.	*	1		0950	119	427.	*	1		1505	182	427.	*	1		2020	245	427.
1		0440	57	2520.	*	1		0955	120	427.	*	1		1510	183	427.	*	1		2025	246	427.
1		0445	58	2564.	*	1		1000	121	427.	*	1		1515	184	427.	*	1		2030	247	427.
1		0450	59	2697.	*	1		1005	122	427.	*	1		1520	185	427.	*	1		2035	248	427.
1		0455	60	2904.	*	1		1010	123	427.	*	1		1525	186	427.	*	1		2040	249	427.
1		0500	61	3123.	*	1		1015	124	427.	*	1		1530	187	427.	*	1		2045	250	427.
1		0505	62	3239.	*	1		1020	125	427.	*	1		1535	188	427.	*					
1		0510	63	3186.	*	1		1025	126	427.	*	1		1540	189	427.	*					
					*						*						*					

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 4307.	3.83		1636.	774.	774.	774.
		(INCHES)	.964	1.576	1.576	1.576
		(AC-FT)	811.	1327.	1327.	1327.

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .64

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0515	64	2695.	1		1030	127	427.	1		1545	190	427.
1		0005	2	0.	1		0520	65	2475.	1		1035	128	427.	1		1550	191	427.
1		0010	3	11.	1		0525	66	2240.	1		1040	129	427.	1		1555	192	427.
1		0015	4	112.	1		0530	67	2025.	1		1045	130	427.	1		1600	193	427.
1		0020	5	390.	1		0535	68	1843.	1		1050	131	427.	1		1605	194	427.
1		0025	6	429.	1		0540	69	1689.	1		1055	132	427.	1		1610	195	427.
1		0030	7	428.	1		0545	70	1555.	1		1100	133	427.	1		1615	196	427.
1		0035	8	428.	1		0550	71	1437.	1		1105	134	427.	1		1620	197	427.
1		0040	9	429.	1		0555	72	1334.	1		1110	135	427.	1		1625	198	427.
1		0045	10	431.	1		0600	73	1242.	1		1115	136	427.	1		1630	199	427.
1		0050	11	434.	1		0605	74	1158.	1		1120	137	427.	1		1635	200	427.
1		0055	12	439.	1		0610	75	1080.	1		1125	138	427.	1		1640	201	427.
1		0100	13	444.	1		0615	76	1008.	1		1130	139	427.	1		1645	202	427.
1		0105	14	449.	1		0620	77	941.	1		1135	140	427.	1		1650	203	427.
1		0110	15	453.	1		0625	78	880.	1		1140	141	427.	1		1655	204	427.
1		0115	16	456.	1		0630	79	826.	1		1145	142	427.	1		1700	205	427.
1		0120	17	459.	1		0635	80	778.	1		1150	143	427.	1		1705	206	427.
1		0125	18	463.	1		0640	81	736.	1		1155	144	427.	1		1710	207	427.
1		0130	19	467.	1		0645	82	697.	1		1200	145	427.	1		1715	208	427.
1		0135	20	472.	1		0650	83	662.	1		1205	146	427.	1		1720	209	427.
1		0140	21	479.	1		0655	84	630.	1		1210	147	427.	1		1725	210	427.
1		0145	22	488.	1		0700	85	602.	1		1215	148	427.	1		1730	211	427.
1		0150	23	499.	1		0705	86	577.	1		1220	149	427.	1		1735	212	427.
1		0155	24	511.	1		0710	87	555.	1		1225	150	427.	1		1740	213	427.
1		0200	25	525.	1		0715	88	537.	1		1230	151	427.	1		1745	214	427.
1		0205	26	542.	1		0720	89	521.	1		1235	152	427.	1		1750	215	427.
1		0210	27	562.	1		0725	90	507.	1		1240	153	427.	1		1755	216	427.
1		0215	28	582.	1		0730	91	495.	1		1245	154	427.	1		1800	217	427.
1		0220	29	597.	1		0735	92	484.	1		1250	155	427.	1		1805	218	427.
1		0225	30	607.	1		0740	93	475.	1		1255	156	427.	1		1810	219	427.
1		0230	31	614.	1		0745	94	467.	1		1300	157	427.	1		1815	220	427.
1		0235	32	620.	1		0750	95	461.	1		1305	158	427.	1		1820	221	427.
1		0240	33	625.	1		0755	96	455.	1		1310	159	427.	1		1825	222	427.
1		0245	34	630.	1		0800	97	451.	1		1315	160	427.	1		1830	223	427.
1		0250	35	636.	1		0805	98	447.	1		1320	161	427.	1		1835	224	427.
1		0255	36	649.	1		0810	99	444.	1		1325	162	427.	1		1840	225	427.
1		0300	37	674.	1		0815	100	441.	1		1330	163	427.	1		1845	226	427.
1		0305	38	716.	1		0820	101	439.	1		1335	164	427.	1		1850	227	427.
1		0310	39	782.	1		0825	102	437.	1		1340	165	427.	1		1855	228	427.
1		0315	40	883.	1		0830	103	436.	1		1345	166	427.	1		1900	229	427.
1		0320	41	1048.	1		0835	104	434.	1		1350	167	427.	1		1905	230	427.
1		0325	42	1314.	1		0840	105	433.	1		1355	168	427.	1		1910	231	427.
1		0330	43	1719.	1		0845	106	432.	1		1400	169	427.	1		1915	232	427.
1		0335	44	2273.	1		0850	107	431.	1		1405	170	427.	1		1920	233	427.
1		0340	45	2904.	1		0855	108	430.	1		1410	171	427.	1		1925	234	427.
1		0345	46	3423.	1		0900	109	430.	1		1415	172	427.	1		1930	235	427.
1		0350	47	3697.	1		0905	110	429.	1		1420	173	427.	1		1935	236	427.
1		0355	48	3711.	1		0910	111	429.	1		1425	174	427.	1		1940	237	427.
1		0400	49	3547.	1		0915	112	428.	1		1430	175	427.	1		1945	238	427.
1		0405	50	3324.	1		0920	113	428.	1		1435	176	427.	1		1950	239	427.
1		0410	51	3111.	1		0925	114	428.	1		1440	177	427.	1		1955	240	427.
1		0415	52	2918.	1		0930	115	428.	1		1445	178	427.	1		2000	241	427.
1		0420	53	2733.	1		0935	116	428.	1		1450	179	427.	1		2005	242	427.
1		0425	54	2557.	1		0940	117	427.	1		1455	180	427.	1		2010	243	427.
1		0430	55	2404.	1		0945	118	427.	1		1500	181	427.	1		2015	244	427.
1		0435	56	2297.	1		0950	119	427.	1		1505	182	427.	1		2020	245	427.
1		0440	57	2254.	1		0955	120	427.	1		1510	183	427.	1		2025	246	427.
1		0445	58	2287.	1		1000	121	427.	1		1515	184	427.	1		2030	247	427.
1		0450	59	2395.	1		1005	122	427.	1		1520	185	427.	1		2035	248	427.
1		0455	60	2568.	1		1010	123	427.	1		1525	186	427.	1		2040	249	427.
1		0500	61	2759.	1		1015	124	427.	1		1530	187	427.	1		2045	250	427.
1		0505	62	2874.	1		1020	125	427.	1		1535	188	427.					
1		0510	63	2847.	1		1025	126	427.	1		1540	189	427.					

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)				
	(CFS)	1464.	723.	723.	723.
+ 3711.	3.92	(INCHES) .862	1.473	1.473	1.473
		(AC-FT) 726.	1241.	1241.	1241.

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .58

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0515	64	2374.	1		1030	127	427.	1		1545	190	427.
1		0005	2	0.	1		0520	65	2197.	1		1035	128	427.	1		1550	191	427.
1		0010	3	7.	1		0525	66	2001.	1		1040	129	427.	1		1555	192	427.
1		0015	4	114.	1		0530	67	1818.	1		1045	130	427.	1		1600	193	427.

1	0020	5	376.	*	1	0535	68	1662.	*	1	1050	131	427.	*	1	1605	194	427.
1	0025	6	428.	*	1	0540	69	1528.	*	1	1055	132	427.	*	1	1610	195	427.
1	0030	7	429.	*	1	0545	70	1412.	*	1	1100	133	427.	*	1	1615	196	427.
1	0035	8	427.	*	1	0550	71	1309.	*	1	1105	134	427.	*	1	1620	197	427.
1	0040	9	428.	*	1	0555	72	1219.	*	1	1110	135	427.	*	1	1625	198	427.
1	0045	10	429.	*	1	0600	73	1140.	*	1	1115	136	427.	*	1	1630	199	427.
1	0050	11	430.	*	1	0605	74	1066.	*	1	1120	137	427.	*	1	1635	200	427.
1	0055	12	432.	*	1	0610	75	998.	*	1	1125	138	427.	*	1	1640	201	427.
1	0100	13	435.	*	1	0615	76	934.	*	1	1130	139	427.	*	1	1645	202	427.
1	0105	14	439.	*	1	0620	77	876.	*	1	1135	140	427.	*	1	1650	203	427.
1	0110	15	442.	*	1	0625	78	824.	*	1	1140	141	427.	*	1	1655	204	427.
1	0115	16	445.	*	1	0630	79	776.	*	1	1145	142	427.	*	1	1700	205	427.
1	0120	17	447.	*	1	0635	80	734.	*	1	1150	143	427.	*	1	1705	206	427.
1	0125	18	449.	*	1	0640	81	698.	*	1	1155	144	427.	*	1	1710	207	427.
1	0130	19	452.	*	1	0645	82	664.	*	1	1200	145	427.	*	1	1715	208	427.
1	0135	20	455.	*	1	0650	83	633.	*	1	1205	146	427.	*	1	1720	209	427.
1	0140	21	460.	*	1	0655	84	606.	*	1	1210	147	427.	*	1	1725	210	427.
1	0145	22	467.	*	1	0700	85	581.	*	1	1215	148	427.	*	1	1730	211	427.
1	0150	23	474.	*	1	0705	86	560.	*	1	1220	149	427.	*	1	1735	212	427.
1	0155	24	483.	*	1	0710	87	541.	*	1	1225	150	427.	*	1	1740	213	427.
1	0200	25	493.	*	1	0715	88	525.	*	1	1230	151	427.	*	1	1745	214	427.
1	0205	26	505.	*	1	0720	89	510.	*	1	1235	152	427.	*	1	1750	215	427.
1	0210	27	519.	*	1	0725	90	498.	*	1	1240	153	427.	*	1	1755	216	427.
1	0215	28	533.	*	1	0730	91	487.	*	1	1245	154	427.	*	1	1800	217	427.
1	0220	29	545.	*	1	0735	92	478.	*	1	1250	155	427.	*	1	1805	218	427.
1	0225	30	553.	*	1	0740	93	470.	*	1	1255	156	427.	*	1	1810	219	427.
1	0230	31	558.	*	1	0745	94	463.	*	1	1300	157	427.	*	1	1815	220	427.
1	0235	32	563.	*	1	0750	95	457.	*	1	1305	158	427.	*	1	1820	221	427.
1	0240	33	566.	*	1	0755	96	452.	*	1	1310	159	427.	*	1	1825	222	427.
1	0245	34	569.	*	1	0800	97	448.	*	1	1315	160	427.	*	1	1830	223	427.
1	0250	35	573.	*	1	0805	98	445.	*	1	1320	161	427.	*	1	1835	224	427.
1	0255	36	580.	*	1	0810	99	442.	*	1	1325	162	427.	*	1	1840	225	427.
1	0300	37	597.	*	1	0815	100	440.	*	1	1330	163	427.	*	1	1845	226	427.
1	0305	38	628.	*	1	0820	101	438.	*	1	1335	164	427.	*	1	1850	227	427.
1	0310	39	679.	*	1	0825	102	436.	*	1	1340	165	427.	*	1	1855	228	427.
1	0315	40	755.	*	1	0830	103	435.	*	1	1345	166	427.	*	1	1900	229	427.
1	0320	41	872.	*	1	0835	104	434.	*	1	1350	167	427.	*	1	1905	230	427.
1	0325	42	1061.	*	1	0840	105	433.	*	1	1355	168	427.	*	1	1910	231	427.
1	0330	43	1359.	*	1	0845	106	432.	*	1	1400	169	427.	*	1	1915	232	427.
1	0335	44	1789.	*	1	0850	107	431.	*	1	1405	170	427.	*	1	1920	233	427.
1	0340	45	2308.	*	1	0855	108	430.	*	1	1410	171	427.	*	1	1925	234	427.
1	0345	46	2775.	*	1	0900	109	430.	*	1	1415	172	427.	*	1	1930	235	427.
1	0350	47	3056.	*	1	0905	110	429.	*	1	1420	173	427.	*	1	1935	236	427.
1	0355	48	3121.	*	1	0910	111	429.	*	1	1425	174	427.	*	1	1940	237	427.
1	0400	49	3022.	*	1	0915	112	428.	*	1	1430	175	427.	*	1	1945	238	427.
1	0405	50	2850.	*	1	0920	113	428.	*	1	1435	176	427.	*	1	1950	239	427.
1	0410	51	2675.	*	1	0925	114	428.	*	1	1440	177	427.	*	1	1955	240	427.
1	0415	52	2517.	*	1	0930	115	428.	*	1	1445	178	427.	*	1	2000	241	427.
1	0420	53	2368.	*	1	0935	116	428.	*	1	1450	179	427.	*	1	2005	242	427.
1	0425	54	2226.	*	1	0940	117	427.	*	1	1455	180	427.	*	1	2010	243	427.
1	0430	55	2099.	*	1	0945	118	427.	*	1	1500	181	427.	*	1	2015	244	427.
1	0435	56	2009.	*	1	0950	119	427.	*	1	1505	182	427.	*	1	2020	245	427.
1	0440	57	1972.	*	1	0955	120	427.	*	1	1510	183	427.	*	1	2025	246	427.
1	0445	58	1993.	*	1	1000	121	427.	*	1	1515	184	427.	*	1	2030	247	427.
1	0450	59	2075.	*	1	1005	122	427.	*	1	1520	185	427.	*	1	2035	248	427.
1	0455	60	2213.	*	1	1010	123	427.	*	1	1525	186	427.	*	1	2040	249	427.
1	0500	61	2375.	*	1	1015	124	427.	*	1	1530	187	427.	*	1	2045	250	427.
1	0505	62	2488.	*	1	1020	125	427.	*	1	1535	188	427.	*				
1	0510	63	2487.	*	1	1025	126	427.	*	1	1540	189	427.	*				
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 3121.	3.92		1284.	671.	671.	671.
		(INCHES)	.756	1.366	1.366	1.366
		(AC-FT)	637.	1150.	1150.	1150.

CUMULATIVE AREA = 15.79 SQ MI

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HYDROGRAPH AT STATION CPRE130
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .53

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DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
					*						*						*					
1		0000	1	0.	*	1		0515	64	2110.	*	1		1030	127	427.	*	1		1545	190	427.
1		0005	2	0.	*	1		0520	65	1968.	*	1		1035	128	427.	*	1		1550	191	427.
1		0010	3	2.	*	1		0525	66	1804.	*	1		1040	129	427.	*	1		1555	192	427.
1		0015	4	71.	*	1		0530	67	1647.	*	1		1045	130	427.	*	1		1600	193	427.
1		0020	5	402.	*	1		0535	68	1511.	*	1		1050	131	427.	*	1		1605	194	427.
1		0025	6	432.	*	1		0540	69	1395.	*	1		1055	132	427.	*	1		1610	195	427.
1		0030	7	428.	*	1		0545	70	1293.	*	1		1100	133	427.	*	1		1615	196	427.
1		0035	8	427.	*	1		0550	71	1203.	*	1		1105	134	427.	*	1		1620	197	427.
1		0040	9	427.	*	1		0555	72	1125.	*	1		1110	135	427.	*	1		1625	198	427.
1		0045	10	428.	*	1		0600	73	1054.	*	1		1115	136	427.	*	1		1630	199	427.
1		0050	11	428.	*	1		0605	74	989.	*	1		1120	137	427.	*	1		1635	200	427.
1		0055	12	430.	*	1		0610	75	929.	*	1		1125	138	427.	*	1		1640	201	427.
1		0100	13	431.	*	1		0615	76	873.	*	1		1130	139	427.	*	1		1645	202	427.
1		0105	14	433.	*	1		0620	77	822.	*	1		1135	140	427.	*	1		1650	203	427.
1		0110	15	435.	*	1		0625	78	776.	*	1		1140	141	427.	*	1		1655	204	427.
1		0115	16	437.	*	1		0630	79	735.	*	1		1145	142	427.	*	1		1700	205	427.
1		0120	17	439.	*	1		0635	80	699.	*	1		1150	143	427.	*	1		1705	206	427.
1		0125	18	441.	*	1		0640	81	666.	*	1		1155	144	427.	*	1		1710	207	427.
1		0130	19	443.	*	1		0645	82	637.	*	1		1200	145	427.	*	1		1715	208	427.
1		0135	20	445.	*	1		0650	83	611.	*	1		1205	146	427.	*	1		1720	209	427.
1		0140	21	449.	*	1		0655	84	587.	*	1		1210	147	427.	*	1		1725	210	427.

1	0145	22	453.	*	1	0700	85	566.	*	1	1215	148	427.	*	1	1730	211	427.		
1	0150	23	458.	*	1	0705	86	547.	*	1	1220	149	427.	*	1	1735	212	427.		
1	0155	24	464.	*	1	0710	87	530.	*	1	1225	150	427.	*	1	1740	213	427.		
1	0200	25	471.	*	1	0715	88	516.	*	1	1230	151	427.	*	1	1745	214	427.		
1	0205	26	480.	*	1	0720	89	503.	*	1	1235	152	427.	*	1	1750	215	427.		
1	0210	27	489.	*	1	0725	90	493.	*	1	1240	153	427.	*	1	1755	216	427.		
1	0215	28	500.	*	1	0730	91	484.	*	1	1245	154	427.	*	1	1800	217	427.		
1	0220	29	508.	*	1	0735	92	476.	*	1	1250	155	427.	*	1	1805	218	427.		
1	0225	30	515.	*	1	0740	93	469.	*	1	1255	156	427.	*	1	1810	219	427.		
1	0230	31	520.	*	1	0745	94	463.	*	1	1300	157	427.	*	1	1815	220	427.		
1	0235	32	524.	*	1	0750	95	458.	*	1	1305	158	427.	*	1	1820	221	427.		
1	0240	33	528.	*	1	0755	96	453.	*	1	1310	159	427.	*	1	1825	222	427.		
1	0245	34	531.	*	1	0800	97	449.	*	1	1315	160	427.	*	1	1830	223	427.		
1	0250	35	533.	*	1	0805	98	446.	*	1	1320	161	427.	*	1	1835	224	427.		
1	0255	36	537.	*	1	0810	99	443.	*	1	1325	162	427.	*	1	1840	225	427.		
1	0300	37	548.	*	1	0815	100	440.	*	1	1330	163	427.	*	1	1845	226	427.		
1	0305	38	569.	*	1	0820	101	438.	*	1	1335	164	427.	*	1	1850	227	427.		
1	0310	39	604.	*	1	0825	102	437.	*	1	1340	165	427.	*	1	1855	228	427.		
1	0315	40	658.	*	1	0830	103	435.	*	1	1345	166	427.	*	1	1900	229	427.		
1	0320	41	743.	*	1	0835	104	434.	*	1	1350	167	427.	*	1	1905	230	427.		
1	0325	42	876.	*	1	0840	105	433.	*	1	1355	168	427.	*	1	1910	231	427.		
1	0330	43	1095.	*	1	0845	106	432.	*	1	1400	169	427.	*	1	1915	232	427.		
1	0335	44	1425.	*	1	0850	107	431.	*	1	1405	170	427.	*	1	1920	233	427.		
1	0340	45	1839.	*	1	0855	108	430.	*	1	1410	171	427.	*	1	1925	234	427.		
1	0345	46	2242.	*	1	0900	109	430.	*	1	1415	172	427.	*	1	1930	235	427.		
1	0350	47	2520.	*	1	0905	110	429.	*	1	1420	173	427.	*	1	1935	236	427.		
1	0355	48	2626.	*	1	0910	111	429.	*	1	1425	174	427.	*	1	1940	237	427.		
1	0400	49	2583.	*	1	0915	112	429.	*	1	1430	175	427.	*	1	1945	238	427.		
1	0405	50	2459.	*	1	0920	113	428.	*	1	1435	176	427.	*	1	1950	239	427.		
1	0410	51	2320.	*	1	0925	114	428.	*	1	1440	177	427.	*	1	1955	240	427.		
1	0415	52	2190.	*	1	0930	115	428.	*	1	1445	178	427.	*	1	2000	241	427.		
1	0420	53	2067.	*	1	0935	116	428.	*	1	1450	179	427.	*	1	2005	242	427.		
1	0425	54	1952.	*	1	0940	117	428.	*	1	1455	180	427.	*	1	2010	243	427.		
1	0430	55	1850.	*	1	0945	118	427.	*	1	1500	181	427.	*	1	2015	244	427.		
1	0435	56	1775.	*	1	0950	119	427.	*	1	1505	182	427.	*	1	2020	245	427.		
1	0440	57	1742.	*	1	0955	120	427.	*	1	1510	183	427.	*	1	2025	246	427.		
1	0445	58	1756.	*	1	1000	121	427.	*	1	1515	184	427.	*	1	2030	247	427.		
1	0450	59	1819.	*	1	1005	122	427.	*	1	1520	185	427.	*	1	2035	248	427.		
1	0455	60	1928.	*	1	1010	123	427.	*	1	1525	186	427.	*	1	2040	249	427.		
1	0500	61	2062.	*	1	1015	124	427.	*	1	1530	187	427.	*	1	2045	250	427.		
1	0505	62	2166.	*	1	1020	125	427.	*	1	1535	188	427.	*						
1	0510	63	2187.	*	1	1025	126	427.	*	1	1540	189	427.	*						
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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2626.	3.92		1141.	629.	629.	629.
		(INCHES)	.672	1.281	1.281	1.281
		(AC-FT)	566.	1079.	1079.	1079.

CUMULATIVE AREA = 15.79 SQ MI

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469 KK    *  PTRE0035   *
          *             *
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472 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE
                        FACILITY # = PTRE 0035
                        STORAGE VOLUME = 1317 ACRE-FEET
                        OUTLET = NONE - EXISTING RAILROAD TRACK TRESSEL
                        100-YEAR DISCHARGE = 0 CFS
                        SPILLWAY LENGTH = NONE
                        SPILLWAY CREST ELEVATION = 1892
                        SPILLWAY TYPE = NONE
                        PMF DISCHARGE =25,500 CFS
                        TOP OF EMBANKMENT ELEVATION = N/A

               HYDROGRAPH ROUTING DATA

482 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC        .00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

483 SV            STORAGE         .0     75.5    161.3    255.8    357.2    467.9    587.7    651.0    671.0    739.0
                               810.0    883.0    957.0

485 SE            ELEVATION   1880.00  1882.00  1884.00  1886.00  1888.00  1890.00  1891.00  1892.00  1893.00  1894.00
                              1895.00  1896.00  1897.00

487 SQ            DISCHARGE       0.       0.       0.       0.       0.     180.     201.     594.    1185.    2784.
                              4226.    5776.    7501.
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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	1		0700	85	1076.	667.3	1892.8	1		1400	169	435.	625.3	1891.6
1		0005	2	0.	.0	1880.0	1		0705	86	995.	664.6	1892.7	1		1405	170	434.	625.3	1891.6
1		0010	3	0.	.1	1880.0	1		0710	87	924.	662.2	1892.6	1		1410	171	434.	625.2	1891.6
1		0015	4	0.	.7	1880.0	1		0715	88	861.	660.0	1892.5	1		1415	172	434.	625.2	1891.6
1		0020	5	0.	2.6	1880.1	1		0720	89	806.	658.2	1892.4	1		1420	173	433.	625.1	1891.6
1		0025	6	0.	5.3	1880.1	1		0725	90	757.	656.5	1892.3	1		1425	174	433.	625.1	1891.6
1		0030	7	0.	8.3	1880.2	1		0730	91	714.	655.1	1892.2	1		1430	175	433.	625.0	1891.6
1		0035	8	0.	11.3	1880.3	1		0735	92	676.	653.8	1892.1	1		1435	176	433.	625.0	1891.6
1		0040	9	0.	14.3	1880.4	1		0740	93	643.	652.6	1892.1	1		1440	177	432.	625.0	1891.6
1		0045	10	0.	17.4	1880.5	1		0745	94	613.	651.7	1892.0	1		1445	178	432.	624.9	1891.6
1		0050	11	0.	20.5	1880.5	1		0750	95	593.	650.8	1892.0	1		1450	179	432.	624.9	1891.6
1		0055	12	0.	23.8	1880.6	1		0755	96	587.	649.9	1892.0	1		1455	180	432.	624.9	1891.6
1		0100	13	0.	27.2	1880.7	1		0800	97	582.	649.1	1892.0	1		1500	181	432.	624.8	1891.6
1		0105	14	0.	30.6	1880.8	1		0805	98	577.	648.2	1892.0	1		1505	182	431.	624.8	1891.6
1		0110	15	0.	34.2	1880.9	1		0810	99	571.	647.4	1891.9	1		1510	183	431.	624.8	1891.6
1		0115	16	0.	37.8	1881.0	1		0815	100	566.	646.5	1891.9	1		1515	184	431.	624.7	1891.6
1		0120	17	0.	41.5	1881.1	1		0820	101	561.	645.7	1891.9	1		1520	185	431.	624.7	1891.6
1		0125	18	0.	45.2	1881.2	1		0825	102	556.	644.9	1891.9	1		1525	186	431.	624.7	1891.6
1		0130	19	0.	49.0	1881.3	1		0830	103	551.	644.1	1891.9	1		1530	187	431.	624.7	1891.6
1		0135	20	0.	52.8	1881.4	1		0835	104	546.	643.3	1891.9	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	56.7	1881.5	1		0840	105	542.	642.6	1891.9	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	60.7	1881.6	1		0845	106	537.	641.9	1891.9	1		1545	190	430.	624.6	1891.6
1		0150	23	0.	64.9	1881.7	1		0850	107	533.	641.2	1891.8	1		1550	191	430.	624.6	1891.6
1		0155	24	0.	69.3	1881.8	1		0855	108	529.	640.5	1891.8	1		1555	192	430.	624.6	1891.6
1		0200	25	0.	74.0	1882.0	1		0900	109	525.	639.8	1891.8	1		1600	193	430.	624.5	1891.6
1		0205	26	0.	78.9	1882.1	1		0905	110	521.	639.2	1891.8	1		1605	194	430.	624.5	1891.6
1		0210	27	0.	84.2	1882.2	1		0910	111	517.	638.6	1891.8	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	89.7	1882.3	1		0915	112	513.	638.0	1891.8	1		1615	196	429.	624.5	1891.6
1		0220	29	0.	95.6	1882.5	1		0920	113	510.	637.4	1891.8	1		1620	197	429.	624.5	1891.6
1		0225	30	0.	101.6	1882.6	1		0925	114	506.	636.9	1891.8	1		1625	198	429.	624.5	1891.6
1		0230	31	0.	107.8	1882.8	1		0930	115	503.	636.3	1891.8	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	114.1	1882.9	1		0935	116	500.	635.8	1891.8	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	120.4	1883.0	1		0940	117	497.	635.3	1891.8	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	126.6	1883.2	1		0945	118	494.	634.9	1891.7	1		1645	202	429.	624.4	1891.6
1		0250	35	0.	132.9	1883.3	1		0950	119	491.	634.4	1891.7	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	139.2	1883.5	1		0955	120	488.	634.0	1891.7	1		1655	204	429.	624.4	1891.6
1		0300	37	0.	145.8	1883.6	1		1000	121	486.	633.6	1891.7	1		1700	205	429.	624.4	1891.6
1		0305	38	0.	152.8	1883.8	1		1005	122	483.	633.2	1891.7	1		1705	206	429.	624.4	1891.6
1		0310	39	0.	160.6	1884.0	1		1010	123	481.	632.8	1891.7	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	169.7	1884.2	1		1015	124	479.	632.4	1891.7	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	180.9	1884.4	1		1020	125	477.	632.1	1891.7	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	195.3	1884.7	1		1025	126	475.	631.8	1891.7	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	214.2	1885.1	1		1030	127	473.	631.4	1891.7	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	238.9	1885.6	1		1035	128	471.	631.1	1891.7	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	270.0	1886.3	1		1040	129	469.	630.8	1891.7	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	306.8	1887.0	1		1045	130	467.	630.6	1891.7	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	346.6	1887.8	1		1050	131	465.	630.3	1891.7	1		1750	215	428.	624.3	1891.6
1		0355	48	47.	386.3	1888.5	1		1055	132	464.	630.0	1891.7	1		1755	216	428.	624.3	1891.6
1		0400	49	108.	423.6	1889.2	1		1100	133	462.	629.8	1891.7	1		1800	217	428.	624.3	1891.6
1		0405	50	164.	458.0	1889.8	1		1105	134	461.	629.5	1891.7	1		1805	218	428.	624.3	1891.6
1		0410	51	184.	489.5	1890.2	1		1110	135	459.	629.3	1891.7	1		1810	219	428.	624.2	1891.6
1		0415	52	189.	518.6	1890.4	1		1115	136	458.	629.1	1891.7	1		1815	220	428.	624.2	1891.6
1		0420	53	194.	545.5	1890.6	1		1120	137	457.	628.9	1891.7	1		1820	221	428.	624.2	1891.6
1		0425	54	198.	570.3	1890.9	1		1125	138	455.	628.7	1891.6	1		1825	222	428.	624.2	1891.6
1		0430	55	234.	593.1	1891.1	1		1130	139	454.	628.5	1891.6	1		1830	223	428.	624.2	1891.6
1		0435	56	364.	613.9	1891.4	1		1135	140	453.	628.3	1891.6	1		1835	224	428.	624.2	1891.6
1		0440	57	483.	633.2	1891.7	1		1140	141	452.	628.1	1891.6	1		1840	225	428.	624.2	1891.6
1		0445	58	614.	651.7	1892.0	1		1145	142	451.	628.0	1891.6	1		1845	226	428.	624.2	1891.6
1		0450	59	1125.	669.0	1892.9	1		1150	143	450.	627.8	1891.6	1		1850	227	428.	624.2	1891.6
1		0455	60	1512.	684.9	1893.2	1		1155	144	449.	627.6	1891.6	1		1855	228	428.	624.2	1891.6
1		0500	61	1873.	700.3	1893.4	1		1200	145	448.	627.5	1891.6	1		1900	229	428.	624.2	1891.6
1		0505	62	2208.	714.5	1893.6	1		1205	146	447.	627.4	1891.6	1		1905	230	428.	624.2	1891.6
1		0510	63	2490.	726.5	1893.8	1		1210	147	446.	627.2	1891.6	1		1910	231	428.	624.2	1891.6
1		0515	64	2697.	735.3	1893.9	1		1215	148	446.	627.1	1891.6	1		1915	232	428.	624.2	1891.6
1		0520	65	2818.	740.7	1894.0	1		1220	149	445.	627.0	1891.6	1		1920	233	427.	624.2	1891.6
1		0525	66	2865.	743.0	1894.1	1		1225	150	444.	626.8	1891.6	1		1925	234	427.	624.2	1891.6
1		0530	67	2861.	742.8	1894.1	1		1230	151	443.	626.7	1891.6	1		1930	235	427.	624.2	1891.6
1		0535	68	2821.	740.8	1894.0	1		1235	152	443.	626.6	1891.6	1		1935	236	427.	624.2	1891.6
1		0540	69	2750.	737.5	1894.0	1		1240	153	442.	626.5	1891.6	1		1940	237	427.	624.2	1891.6
1		0545	70	2654.	733.5	1893.9	1		1245	154	441.	626.4	1891.6	1		1945	238	427.	624.2	1891.6
1		0550	71	2545.	728.8	1893.9	1		1250	155	441.	626.3	1891.6	1		1950	239	427.	624.2	1891.6
1		0555	72	2430.	723.9	1893.8	1		1255	156	440.	626.2	1891.6	1		1955	240	427.	624.2	1891.6
1		0600	73	2310.	718.9	1893.7	1		1300	157	440.	626.1	1891.6	1		2000	241	427.	624.2	1891.6
1		0605	74	2190.	713.8	1893.6	1		1305	158	439.	626.1	1891.6	1		2005	242	427.	624.2	1891.6
1		0610	75	2071.	708.7	1893.6	1		1310	159	439.	626.0	1891.6	1		2010	243	427.	624.2	1891.6
1		0615	76	1954.	703.7	1893.5	1		1315	160	438.	625.9	1891.6	1		2015	244	427.	624.2	1891.6
1		0620	77	1840.	698.8	1893.4	1		1320	161	438.	625.8	1891.6	1		2020	245	427.	624.1	1891.6
1		0625	78	1729.	694.1	1893.3	1		1325	162	437.	625.7	1891.6	1		2025	246	427.	624.1	1891.6
1		0630	79	1623.	689.6	1893.3	1		1330	163	437.	625.7	1891.6	1		2030	247	427.	624.1	1891.6
1		0635	80	1521.	685.3	1893.2	1		1335	164	436.	625.6	1891.6	1		2035	248	427.	624.1	1891.6
1		0640	81	1425.	681.2	1893.2	1		1340	165	436.	625.5	1891.6	1		2040	249	427.	624.1	1891.6
1		0645	82	1335.	677.4	1893.1	1		1345	166	436.	625.5	1891.6	1		2045	250	427.	624.1	1891.6
1		0650	83	1249.	673.7	1893.0	1		1350	167	435.	625.4	1891.6							
1		0655	84	1166.	670.4	1893.0	1		1355	168	435.	625.4	1891.6							

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	20.75-HR
2865.	5.42	(CFS)	1124.	544.	544.	544.
		(INCHES)	.662	1.108	1.108	1.108
		(AC-FT)	557.	933.	933.	933.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	20.75-HR
743.	5.42	667.	534.	534.	534.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1894.06	5.42	1892.52	1890.08	1890.08	1890.08

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .80

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	1		0700	85	1031.	665.8	1892.7	1		1400	169	434.	625.3	1891.6
1		0005	2	0.	.0	1880.0	1		0705	86	957.	663.3	1892.6	1		1405	170	434.	625.3	1891.6
1		0010	3	0.	.1	1880.0	1		0710	87	892.	661.1	1892.5	1		1410	171	434.	625.2	1891.6
1		0015	4	0.	.7	1880.0	1		0715	88	834.	659.1	1892.4	1		1415	172	434.	625.2	1891.6
1		0020	5	0.	2.5	1880.1	1		0720	89	782.	657.4	1892.3	1		1420	173	433.	625.1	1891.6
1		0025	6	0.	5.3	1880.1	1		0725	90	737.	655.8	1892.2	1		1425	174	433.	625.1	1891.6
1		0030	7	0.	8.2	1880.2	1		0730	91	697.	654.5	1892.2	1		1430	175	433.	625.0	1891.6
1		0035	8	0.	11.2	1880.3	1		0735	92	662.	653.3	1892.1	1		1435	176	433.	625.0	1891.6
1		0040	9	0.	14.2	1880.4	1		0740	93	631.	652.2	1892.1	1		1440	177	432.	625.0	1891.6
1		0045	10	0.	17.3	1880.5	1		0745	94	603.	651.3	1892.0	1		1445	178	432.	624.9	1891.6
1		0050	11	0.	20.4	1880.5	1		0750	95	591.	650.5	1892.0	1		1450	179	432.	624.9	1891.6
1		0055	12	0.	23.6	1880.6	1		0755	96	585.	649.6	1892.0	1		1455	180	432.	624.9	1891.6
1		0100	13	0.	26.9	1880.7	1		0800	97	580.	648.8	1892.0	1		1500	181	431.	624.8	1891.6
1		0105	14	0.	30.3	1880.8	1		0805	98	575.	647.9	1892.0	1		1505	182	431.	624.8	1891.6
1		0110	15	0.	33.8	1880.9	1		0810	99	570.	647.1	1891.9	1		1510	183	431.	624.8	1891.6
1		0115	16	0.	37.3	1881.0	1		0815	100	565.	646.3	1891.9	1		1515	184	431.	624.7	1891.6
1		0120	17	0.	40.9	1881.1	1		0820	101	560.	645.4	1891.9	1		1520	185	431.	624.7	1891.6
1		0125	18	0.	44.5	1881.2	1		0825	102	555.	644.6	1891.9	1		1525	186	431.	624.7	1891.6
1		0130	19	0.	48.2	1881.3	1		0830	103	550.	643.9	1891.9	1		1530	187	430.	624.7	1891.6
1		0135	20	0.	51.9	1881.4	1		0835	104	545.	643.1	1891.9	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	55.6	1881.5	1		0840	105	540.	642.4	1891.9	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	59.5	1881.6	1		0845	106	536.	641.7	1891.9	1		1545	190	430.	624.6	1891.6
1		0150	23	0.	63.6	1881.7	1		0850	107	532.	641.0	1891.8	1		1550	191	430.	624.6	1891.6
1		0155	24	0.	67.8	1881.8	1		0855	108	527.	640.3	1891.8	1		1555	192	430.	624.6	1891.6
1		0200	25	0.	72.3	1881.9	1		0900	109	523.	639.6	1891.8	1		1600	193	430.	624.5	1891.6
1		0205	26	0.	77.0	1882.0	1		0905	110	519.	639.0	1891.8	1		1605	194	430.	624.5	1891.6
1		0210	27	0.	82.0	1882.2	1		0910	111	516.	638.4	1891.8	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	87.3	1882.3	1		0915	112	512.	637.8	1891.8	1		1615	196	429.	624.5	1891.6
1		0220	29	0.	92.8	1882.4	1		0920	113	509.	637.2	1891.8	1		1620	197	429.	624.5	1891.6
1		0225	30	0.	98.5	1882.5	1		0925	114	505.	636.7	1891.8	1		1625	198	429.	624.5	1891.6
1		0230	31	0.	104.3	1882.7	1		0930	115	502.	636.2	1891.8	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	110.3	1882.8	1		0935	116	499.	635.7	1891.8	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	116.2	1882.9	1		0940	117	496.	635.2	1891.8	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	122.2	1883.1	1		0945	118	493.	634.7	1891.7	1		1645	202	429.	624.4	1891.6
1		0250	35	0.	128.2	1883.2	1		0950	119	490.	634.3	1891.7	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	134.2	1883.4	1		0955	120	488.	633.9	1891.7	1		1655	204	429.	624.4	1891.6
1		0300	37	0.	140.4	1883.5	1		1000	121	485.	633.5	1891.7	1		1700	205	429.	624.4	1891.6
1		0305	38	0.	147.1	1883.7	1		1005	122	483.	633.1	1891.7	1		1705	206	429.	624.3	1891.6
1		0310	39	0.	154.4	1883.8	1		1010	123	480.	632.7	1891.7	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	163.0	1884.0	1		1015	124	478.	632.3	1891.7	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	173.5	1884.3	1		1020	125	476.	632.0	1891.7	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	186.9	1884.5	1		1025	126	474.	631.7	1891.7	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	204.4	1884.9	1		1030	127	472.	631.3	1891.7	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	227.4	1885.4	1		1035	128	470.	631.0	1891.7	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	256.5	1886.0	1		1040	129	468.	630.8	1891.7	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	291.1	1886.7	1		1045	130	467.	630.5	1891.7	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	328.5	1887.4	1		1050	131	465.	630.2	1891.7	1		1750	215	428.	624.3	1891.6
1		0355	48	14.	366.1	1888.2	1		1055	132	463.	630.0	1891.7	1		1755	216	428.	624.3	1891.6
1		0400	49	72.	401.6	1888.8	1		1100	133	462.	629.7	1891.7	1		1800	217	428.	624.3	1891.6
1		0405	50	126.	434.4	1889.4	1		1105	134	460.	629.5	1891.7	1		1805	218	428.	624.3	1891.6
1		0410	51	174.	464.4	1889.9	1		1110	135	459.	629.2	1891.7	1		1810	219	428.	624.2	1891.6
1		0415	52	184.	492.2	1890.2	1		1115	136	458.	629.0	1891.7	1		1815	220	428.	624.2	1891.6
1		0420	53	189.	517.8	1890.4	1		1120	137	456.	628.8	1891.6	1		1820	221	428.	624.2	1891.6
1		0425	54	193.	541.4	1890.6	1		1125	138	455.	628.6	1891.6	1		1825	222	428.	624.2	1891.6
1		0430	55	197.	563.3	1890.8	1		1130	139	454.	628.4	1891.6	1		1830	223	428.	624.2	1891.6
1		0435	56	200.	583.8	1891.0	1		1135	140	453.	628.3	1891.6	1		1835	224	428.	624.2	1891.6
1		0440	57	298.	603.3	1891.2	1		1140	141	452.	628.1	1891.6	1		1840	225	428.	624.2	1891.6
1		0445	58	415.	622.2	1891.5	1		1145	142	451.	627.9	1891.6	1		1845	226	428.	624.2	1891.6
1		0450	59	533.	641.1	1891.8	1		1150	143	450.	627.8	1891.6	1		1850	227	428.	624.2	1891.6
1		0455	60	864.	660.1	1892.5	1		1155	144	449.	627.6	1891.6	1		1855	228	428.	624.2	1891.6
1		0500	61	1354.	678.2	1893.1	1		1200	145	448.	627.5	1891.6	1		1900	229	428.	624.2	1891.6
1		0505	62	1739.	694.5	1893.3	1		1205	146	447.	627.3	1891.6	1		1905	230	428.	624.2	1891.6
1		0510	63	2064.	708.4	1893.5	1		1210	147	446.	627.2	1891.6	1		1910	231	428.	624.2	1891.6
1		0515	64	2311.	718.9	1893.7	1		1215	148	445.	627.1	1891.6	1		1915	232	428.	624.2	1891.6
1		0520	65	2475.	725.9	1893.8	1		1220	149	445.	626.9	1891.6	1		1920	233	427.	624.2	1891.6
1		0525	66	2562.	729.6	1893.9	1		1225	150	444.	626.8	1891.6	1		1925	234	427.	624.2	1891.6
1		0530	67	2588.	730.7	1893.9	1		1230	151	443.	626.7	1891.6	1		1930	235	427.	624.2	1891.6
1		0535	68	2569.	729.9	1893.9	1		1235	152	442.	626.6	1891.6	1		1935	236	427.	624.2	1891.6
1		0540	69	2519.	727.7	1893.8	1		1240	153	442.	626.5	1891.6	1		1940	237	427.	624.2	1891.6
1		0545	70	2446.	724.6	1893.8	1		1245	154	441.	626.4	1891.6	1		1945	238	427.	624.2	1891.6
1		0550	71	2360.	720.9	1893.7	1		1250	155	441.	626.3	1891.6	1		1950	239	427.	624.2	1891.6
1		0555	72	2263.	716.9	1893.7	1		1255	156	440.	626.2	1891.6	1		1955	240	427.	624.2	1891.6
1		0600	73	2162.	712.5	1893.6	1		1300	157	439.	626.1	1891.6	1		2000	241	427.	624.2	1891.6
1		0605	74	2057.	708.1	1893.5	1		1305	158	439.	626.0	1891.6	1		2005	242	427.	624.2	1891.6
1		0610	75	1952.	703.6	1893.5	1		1310	159	438.	625.9	1891.6	1		2010	243	427.	624.2	1891.6
1		0615	76	1847.	699.2	1893.4	1		1315	160	438.	625.9	1891.6	1		2015	244	427.	624.2	1891.6
1		0620	77	1744.	694.8	1893.3	1		1320	161	438.	625.8	1891.6	1		2020	245	427.	624.1	1891.6
1		0625	78	1643.	690.5	1893.3	1		1325	162	437.	625.7	1891.6	1		2025	246	427.	624.1	1891.6
1		0630	79	1546.	686.4	1893.2	1		1330	163	437.	625.7	1891.6	1		2030	247	427.	624.1	1891.6
1		0635	80	1453.	682.4	1893.2	1		1335	164	436.	625.6	1891.6	1		2035	248	427.	624.1	1891.6
1		0640	81	1365.	678.6	1893.1	1		1340	165	436.	625.5	1891.6	1		2040	249	427.	624.1	1891.6
1		0645	82	1281.	675.1	1893.1	1		1345	166	435.	625.5	1891.6	1		2045	250	427.	624.1	1891.6
1		0650	83	1201.	671.7	1893.0	1		1350	167	435.	625.4	1891.6							
1		0655	84	1114.	668.6	1892.9	1		1355	168	435.	625.4	1891.6							

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2588.	5.50		1034.	516.	516.	516.
		(INCHES)	.609	1.050	1.050	1.050
		(AC-FT)	513.	885.	885.	885.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
731.	5.50	663.	531.	531.	531.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1893.88	5.50	1892.44	1890.03	1890.03	1890.03

CUMULATIVE AREA = 15.79 SQ MI

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HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .76

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	1		0700	85	967.	663.6	1892.6	1		1400	169	434.	625.3	1891.6
1		0005	2	0.	.0	1880.0	1		0705	86	903.	661.4	1892.5	1		1405	170	434.	625.2	1891.6
1		0010	3	0.	.1	1880.0	1		0710	87	846.	659.5	1892.4	1		1410	171	434.	625.2	1891.6
1		0015	4	0.	.6	1880.0	1		0715	88	795.	657.8	1892.3	1		1415	172	433.	625.1	1891.6
1		0020	5	0.	2.4	1880.1	1		0720	89	749.	656.3	1892.3	1		1420	173	433.	625.1	1891.6
1		0025	6	0.	5.2	1880.1	1		0725	90	709.	654.9	1892.2	1		1425	174	433.	625.1	1891.6
1		0030	7	0.	8.2	1880.2	1		0730	91	674.	653.7	1892.1	1		1430	175	433.	625.0	1891.6
1		0035	8	0.	11.1	1880.3	1		0735	92	642.	652.6	1892.1	1		1435	176	432.	625.0	1891.6
1		0040	9	0.	14.1	1880.4	1		0740	93	614.	651.7	1892.0	1		1440	177	432.	624.9	1891.6
1		0045	10	0.	17.1	1880.5	1		0745	94	593.	650.8	1892.0	1		1445	178	432.	624.9	1891.6
1		0050	11	0.	20.2	1880.5	1		0750	95	588.	650.0	1892.0	1		1450	179	432.	624.9	1891.6
1		0055	12	0.	23.4	1880.6	1		0755	96	583.	649.2	1892.0	1		1455	180	432.	624.8	1891.6
1		0100	13	0.	26.6	1880.7	1		0800	97	577.	648.3	1892.0	1		1500	181	431.	624.8	1891.6
1		0105	14	0.	29.9	1880.8	1		0805	98	572.	647.5	1891.9	1		1505	182	431.	624.8	1891.6
1		0110	15	0.	33.2	1880.9	1		0810	99	567.	646.7	1891.9	1		1510	183	431.	624.8	1891.6
1		0115	16	0.	36.6	1881.0	1		0815	100	562.	645.9	1891.9	1		1515	184	431.	624.7	1891.6
1		0120	17	0.	40.1	1881.1	1		0820	101	557.	645.1	1891.9	1		1520	185	431.	624.7	1891.6
1		0125	18	0.	43.6	1881.2	1		0825	102	552.	644.3	1891.9	1		1525	186	431.	624.7	1891.6
1		0130	19	0.	47.1	1881.2	1		0830	103	547.	643.5	1891.9	1		1530	187	430.	624.6	1891.6
1		0135	20	0.	50.7	1881.3	1		0835	104	543.	642.8	1891.9	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	54.3	1881.4	1		0840	105	538.	642.0	1891.9	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	58.1	1881.5	1		0845	106	534.	641.3	1891.8	1		1545	190	430.	624.6	1891.6
1		0150	23	0.	61.9	1881.6	1		0850	107	530.	640.6	1891.8	1		1550	191	430.	624.6	1891.6
1		0155	24	0.	66.0	1881.7	1		0855	108	526.	640.0	1891.8	1		1555	192	430.	624.5	1891.6
1		0200	25	0.	70.2	1881.9	1		0900	109	522.	639.3	1891.8	1		1600	193	430.	624.5	1891.6
1		0205	26	0.	74.6	1882.0	1		0905	110	518.	638.7	1891.8	1		1605	194	430.	624.5	1891.6
1		0210	27	0.	79.2	1882.1	1		0910	111	514.	638.1	1891.8	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	84.1	1882.2	1		0915	112	510.	637.5	1891.8	1		1615	196	429.	624.5	1891.6
1		0220	29	0.	89.2	1882.3	1		0920	113	507.	637.0	1891.8	1		1620	197	429.	624.5	1891.6
1		0225	30	0.	94.5	1882.4	1		0925	114	504.	636.5	1891.8	1		1625	198	429.	624.4	1891.6
1		0230	31	0.	99.9	1882.6	1		0930	115	501.	635.9	1891.8	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	105.4	1882.7	1		0935	116	497.	635.5	1891.8	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	110.9	1882.8	1		0940	117	495.	635.0	1891.7	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	116.4	1883.0	1		0945	118	492.	634.5	1891.7	1		1645	202	429.	624.4	1891.6
1		0250	35	0.	122.0	1883.1	1		0950	119	489.	634.1	1891.7	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	127.6	1883.2	1		0955	120	486.	633.7	1891.7	1		1655	204	429.	624.4	1891.6
1		0300	37	0.	133.4	1883.3	1		1000	121	484.	633.3	1891.7	1		1700	205	429.	624.4	1891.6
1		0305	38	0.	139.6	1883.5	1		1005	122	482.	632.9	1891.7	1		1705	206	429.	624.3	1891.6
1		0310	39	0.	146.3	1883.7	1		1010	123	479.	632.5	1891.7	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	154.2	1883.8	1		1015	124	477.	632.2	1891.7	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	163.6	1884.0	1		1020	125	475.	631.8	1891.7	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	175.6	1884.3	1		1025	126	473.	631.5	1891.7	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	191.4	1884.6	1		1030	127	471.	631.2	1891.7	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	212.0	1885.1	1		1035	128	469.	630.9	1891.7	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	238.3	1885.6	1		1040	129	468.	630.6	1891.7	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	269.6	1886.3	1		1045	130	466.	630.4	1891.7	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	303.8	1886.9	1		1050	131	464.	630.1	1891.7	1		1750	215	428.	624.3	1891.6
1		0355	48	0.	338.4	1887.6	1		1055	132	463.	629.8	1891.7	1		1755	216	428.	624.3	1891.6
1		0400	49	23.	371.4	1888.3	1		1100	133	461.	629.6	1891.7	1		1800	217	428.	624.3	1891.6
1		0405	50	73.	402.1	1888.8	1		1105	134	460.	629.4	1891.7	1		1805	218	428.	624.2	1891.6
1		0410	51	119.	430.2	1889.3	1		1110	135	458.	629.1	1891.7	1		1810	219	428.	624.2	1891.6
1		0415	52	161.	456.2	1889.8	1		1115	136	457.	628.9	1891.7	1		1815	220	428.	624.2	1891.6
1		0420	53	182.	480.1	1890.1	1		1120	137	456.	628.7	1891.6	1		1820	221	428.	624.2	1891.6
1		0425	54	186.	502.2	1890.3	1		1125	138	455.	628.5	1891.6	1		1825	222	428.	624.2	1891.6
1		0430	55	190.	522.6	1890.5	1		1130	139	453.	628.4	1891.6	1		1830	223	428.	624.2	1891.6
1		0435	56	193.	541.8	1890.6	1		1135	140	452.	628.2	1891.6	1		1835	224	428.	624.2	1891.6
1		0440	57	196.	560.3	1890.8	1		1140	141	451.	628.0	1891.6	1		1840	225	428.	624.2	1891.6
1		0445	58	199.	578.9	1890.9	1		1145	142	450.	627.8	1891.6	1		1845	226	428.	624.2	1891.6
1		0450	59	265.	598.0	1891.2	1		1150	143	449.	627.7	1891.6	1		1850	227	428.	624.2	1891.6
1		0455	60	389.	618.0	1891.5	1		1155	144	448.	627.5	1891.6	1		1855	228	428.	624.2	1891.6
1		0500	61	519.	638.8	1891.8	1		1200	145	447.	627.4	1891.6	1		1900	229	428.	624.2	1891.6
1		0505	62	841.	659.3	1892.4	1		1205	146	447.	627.3	1891.6	1		1905	230	428.	624.2	1891.6
1		0510	63	1328.	677.1	1893.1	1		1210	147	446.	627.1	1891.6	1		1910	231	428.	624.2	1891.6
1		0515	64	1652.	690.9	1893.3	1		1215	148	445.	627.0	1891.6	1		1915	232	427.	624.2	1891.6
1		0520	65	1885.	700.8	1893.4	1		1220	149	444.	626.9	1891.6	1		1920	233	427.	624.2	1891.6
1		0525	66	2036.	707.2	1893.5	1		1225	150	444.	626.8	1891.6	1		1925	234	427.	624.2	1891.6
1		0530	67	2119.	710.7	1893.6	1		1230	151	443.	626.6	1891.6	1		1930	235	427.	624.2	1891.6
1		0535	68	2152.	712.1	1893.6	1		1235	152	442.	626.5	1891.6	1		1935	236	427.	624.2	1891.6
1		0540	69	2147.	711.9	1893.6	1		1240	153	442.	626.4	1891.6	1		1940	237	427.	624.2	1891.6
1		0545	70	2116.	710.6	1893.6	1		1245	154	441.	626.3	1891.6	1		1945	238	427.	624.2	1891.6
1		0550	71	2065.	708.4	1893.6	1		1250	155	440.	626.2	1891.6	1		1950	239	427.	624.2	1891.6
1		0555	72	2001.	705.7	1893.5	1		1255	156	440.	626.2	1891.6	1		1955	240	427.	624.2	1891.6
1		0600	73	1928.	702.6	1893.5	1		1300	157	439.	626.1	1891.6	1		2000	241	427.	624.2	1891.6

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0605	74	1849.	699.2	1893.4	1		1305	158	439.	626.0	1891.6	1		2005	242	427.	624.2	1891.6
1		0610	75	1766.	695.7	1893.4	1		1310	159	438.	625.9	1891.6	1		2010	243	427.	624.2	1891.6
1		0615	76	1682.	692.1	1893.3	1		1315	160	438.	625.8	1891.6	1		2015	244	427.	624.1	1891.6
1		0620	77	1597.	688.5	1893.3	1		1320	161	437.	625.8	1891.6	1		2020	245	427.	624.1	1891.6
1		0625	78	1512.	684.9	1893.2	1		1325	162	437.	625.7	1891.6	1		2025	246	427.	624.1	1891.6
1		0630	79	1430.	681.4	1893.2	1		1330	163	436.	625.6	1891.6	1		2030	247	427.	624.1	1891.6
1		0635	80	1349.	678.0	1893.1	1		1335	164	436.	625.6	1891.6	1		2035	248	427.	624.1	1891.6
1		0640	81	1272.	674.7	1893.1	1		1340	165	436.	625.5	1891.6	1		2040	249	427.	624.1	1891.6
1		0645	82	1199.	671.6	1893.0	1		1345	166	435.	625.4	1891.6	1		2045	250	427.	624.1	1891.6
1		0650	83	1116.	668.7	1892.9	1		1350	167	435.	625.4	1891.6							
1		0655	84	1038.	666.0	1892.8	1		1355	168	435.	625.3	1891.6							

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	20.75-HR
		(CFS)				
2152.	5.58		910.	477.	477.	477.
		(INCHES)	.536	.971	.971	.971
		(AC-FT)	451.	818.	818.	818.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	20.75-HR
712.	5.58	657.	527.	527.	527.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	20.75-HR
1893.60	5.58	1892.33	1889.95	1889.95	1889.95

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .73

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	1		0700	85	898.	661.3	1892.5	1		1400	169	434.	625.3	1891.6
1		0005	2	0.	.0	1880.0	1		0705	86	845.	659.5	1892.4	1		1405	170	434.	625.2	1891.6
1		0010	3	0.	.1	1880.0	1		0710	87	797.	657.9	1892.3	1		1410	171	434.	625.2	1891.6
1		0015	4	0.	.6	1880.0	1		0715	88	753.	656.4	1892.3	1		1415	172	433.	625.1	1891.6
1		0020	5	0.	2.3	1880.1	1		0720	89	714.	655.1	1892.2	1		1420	173	433.	625.1	1891.6
1		0025	6	0.	5.1	1880.1	1		0725	90	680.	653.9	1892.1	1		1425	174	433.	625.0	1891.6
1		0030	7	0.	8.1	1880.2	1		0730	91	649.	652.8	1892.1	1		1430	175	433.	625.0	1891.6
1		0035	8	0.	11.0	1880.3	1		0735	92	621.	651.9	1892.0	1		1435	176	432.	625.0	1891.6
1		0040	9	0.	14.0	1880.4	1		0740	93	596.	651.1	1892.0	1		1440	177	432.	624.9	1891.6
1		0045	10	0.	17.0	1880.4	1		0745	94	590.	650.3	1892.0	1		1445	178	432.	624.9	1891.6
1		0050	11	0.	20.0	1880.5	1		0750	95	584.	649.5	1892.0	1		1450	179	432.	624.9	1891.6
1		0055	12	0.	23.1	1880.6	1		0755	96	579.	648.6	1892.0	1		1455	180	431.	624.8	1891.6
1		0100	13	0.	26.3	1880.7	1		0800	97	574.	647.8	1891.9	1		1500	181	431.	624.8	1891.6
1		0105	14	0.	29.5	1880.8	1		0805	98	569.	647.0	1891.9	1		1505	182	431.	624.8	1891.6
1		0110	15	0.	32.7	1880.9	1		0810	99	564.	646.2	1891.9	1		1510	183	431.	624.7	1891.6
1		0115	16	0.	36.0	1881.0	1		0815	100	559.	645.4	1891.9	1		1515	184	431.	624.7	1891.6
1		0120	17	0.	39.4	1881.0	1		0820	101	554.	644.6	1891.9	1		1520	185	431.	624.7	1891.6
1		0125	18	0.	42.7	1881.1	1		0825	102	549.	643.8	1891.9	1		1525	186	430.	624.7	1891.6
1		0130	19	0.	46.2	1881.2	1		0830	103	545.	643.1	1891.9	1		1530	187	430.	624.6	1891.6
1		0135	20	0.	49.6	1881.3	1		0835	104	540.	642.3	1891.9	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	53.1	1881.4	1		0840	105	536.	641.6	1891.9	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	56.7	1881.5	1		0845	106	531.	640.9	1891.8	1		1545	190	430.	624.6	1891.6
1		0150	23	0.	60.4	1881.6	1		0850	107	527.	640.3	1891.8	1		1550	191	430.	624.6	1891.6
1		0155	24	0.	64.3	1881.7	1		0855	108	523.	639.6	1891.8	1		1555	192	430.	624.5	1891.6
1		0200	25	0.	68.2	1881.8	1		0900	109	519.	639.0	1891.8	1		1600	193	430.	624.5	1891.6
1		0205	26	0.	72.4	1881.9	1		0905	110	516.	638.4	1891.8	1		1605	194	429.	624.5	1891.6
1		0210	27	0.	76.7	1882.0	1		0910	111	512.	637.8	1891.8	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	81.3	1882.1	1		0915	112	509.	637.2	1891.8	1		1615	196	429.	624.5	1891.6
1		0220	29	0.	86.0	1882.2	1		0920	113	505.	636.7	1891.8	1		1620	197	429.	624.5	1891.6
1		0225	30	0.	90.9	1882.4	1		0925	114	502.	636.2	1891.8	1		1625	198	429.	624.4	1891.6
1		0230	31	0.	95.8	1882.5	1		0930	115	499.	635.7	1891.8	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	100.8	1882.6	1		0935	116	496.	635.2	1891.8	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	105.9	1882.7	1		0940	117	493.	634.7	1891.7	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	111.0	1882.8	1		0945	118	490.	634.3	1891.7	1		1645	202	429.	624.4	1891.6
1		0250	35	0.	116.2	1882.9	1		0950	119	488.	633.9	1891.7	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	121.4	1883.1	1		0955	120	485.	633.5	1891.7	1		1655	204	429.	624.4	1891.6
1		0300	37	0.	126.7	1883.2	1		1000	121	483.	633.1	1891.7	1		1700	205	429.	624.3	1891.6
1		0305	38	0.	132.4	1883.3	1		1005	122	480.	632.7	1891.7	1		1705	206	428.	624.3	1891.6
1		0310	39	0.	138.6	1883.5	1		1010	123	478.	632.3	1891.7	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	145.7	1883.6	1		1015	124	476.	632.0	1891.7	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	154.2	1883.8	1		1020	125	474.	631.7	1891.7	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	164.9	1884.1	1		1025	126	472.	631.3	1891.7	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	178.9	1884.4	1		1030	127	470.	631.0	1891.7	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	197.2	1884.8	1		1035	128	468.	630.8	1891.7	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	220.7	1885.3	1		1040	129	467.	630.5	1891.7	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	248.9	1885.9	1		1045	130	465.	630.2	1891.7	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	280.1	1886.5	1		1050	131	463.	630.0	1891.7	1		1750	215	428.	624.3	1891.6
1		0355	48	0.	311.8	1887.1	1		1055	132	462.	629.7	1891.7	1		1755	216	428.	624.3	1891.6
1		0400	49	0.	342.4	1887.7	1		1100	133	460.	629.5	1891.7	1		1800	217	428.	624.3	1891.6
1		0405	50	22.	371.0	1888.2	1		1105	134	459.	629.2	1891.7	1		1805	218	428.	624.2	1891.6
1		0410	51	65.	397.4	1888.7	1		1110	135	458.	629.0	1891.7	1		1810	219	428.	624.2	1891.6
1		0415	52	105.	421.8	1889.2	1		1115	136	456.	628.8	1891.6	1		1815	220	428.	624.2	1891.6
1		0420	53	142.	444.3	1889.6	1		1120	137	455.	628.6	1891.6	1		1820	221	428.	624.2	1891.6
1		0425	54	175.	464.9	1889.9	1		1125	138	454.	628.4	1891.6	1		1825	222	428.	624.2	1891.6
1		0430	55	183.	483.9	1890.1	1		1130	139	453.	628.3	1891.6	1		1830	223	428.	624.2	1891.6
1		0435	56	186.	501.8	1890.3	1		1135	140	452.	628.1	1891.6	1		1835	224	428.	624.2	1891.6
1		0440	57	189.	519.0	1890.4	1		1140	141	451.	627.9	1891.6	1		1840	225	428.	624.2	1891.6
1		0445	58	192.	536.2	1890.6	1		1145	142	450.	627.8	1891.6	1		1845	226	428.	624.2	1891.6
1		0450	59	195.	554.1	1890.7	1		1150	143	449.	627.6	1891.6	1		1850	227	428.	624.2	1891.6
1		0455	60	198.	573.3	1890.9	1		1155	144	448.	627.5	1891.6	1		1855	228	428.	624.2	1891.6

1	0500	61	240.	593.9	1891.1	*	1	1200	145	447.	627.3	1891.6	*	1	1900	229	428.	624.2	1891.6
1	0505	62	371.	615.1	1891.4	*	1	1205	146	446.	627.2	1891.6	*	1	1905	230	428.	624.2	1891.6
1	0510	63	498.	635.6	1891.8	*	1	1210	147	445.	627.1	1891.6	*	1	1910	231	428.	624.2	1891.6
1	0515	64	682.	654.0	1892.1	*	1	1215	148	445.	626.9	1891.6	*	1	1915	232	427.	624.2	1891.6
1	0520	65	1112.	668.5	1892.9	*	1	1220	149	444.	626.8	1891.6	*	1	1920	233	427.	624.2	1891.6
1	0525	66	1367.	678.7	1893.1	*	1	1225	150	443.	626.7	1891.6	*	1	1925	234	427.	624.2	1891.6
1	0530	67	1529.	685.6	1893.2	*	1	1230	151	442.	626.6	1891.6	*	1	1930	235	427.	624.2	1891.6
1	0535	68	1630.	689.9	1893.3	*	1	1235	152	442.	626.5	1891.6	*	1	1935	236	427.	624.2	1891.6
1	0540	69	1687.	692.3	1893.3	*	1	1240	153	441.	626.4	1891.6	*	1	1940	237	427.	624.2	1891.6
1	0545	70	1709.	693.3	1893.3	*	1	1245	154	441.	626.3	1891.6	*	1	1945	238	427.	624.2	1891.6
1	0550	71	1706.	693.2	1893.3	*	1	1250	155	440.	626.2	1891.6	*	1	1950	239	427.	624.2	1891.6
1	0555	72	1684.	692.2	1893.3	*	1	1255	156	439.	626.1	1891.6	*	1	1955	240	427.	624.2	1891.6
1	0600	73	1647.	690.7	1893.3	*	1	1300	157	439.	626.0	1891.6	*	1	2000	241	427.	624.2	1891.6
1	0605	74	1600.	688.7	1893.3	*	1	1305	158	438.	625.9	1891.6	*	1	2005	242	427.	624.2	1891.6
1	0610	75	1546.	686.4	1893.2	*	1	1310	159	438.	625.9	1891.6	*	1	2010	243	427.	624.2	1891.6
1	0615	76	1487.	683.8	1893.2	*	1	1315	160	438.	625.8	1891.6	*	1	2015	244	427.	624.1	1891.6
1	0620	77	1424.	681.2	1893.1	*	1	1320	161	437.	625.7	1891.6	*	1	2020	245	427.	624.1	1891.6
1	0625	78	1359.	678.4	1893.1	*	1	1325	162	437.	625.7	1891.6	*	1	2025	246	427.	624.1	1891.6
1	0630	79	1294.	675.7	1893.1	*	1	1330	163	436.	625.6	1891.6	*	1	2030	247	427.	624.1	1891.6
1	0635	80	1230.	672.9	1893.0	*	1	1335	164	436.	625.5	1891.6	*	1	2035	248	427.	624.1	1891.6
1	0640	81	1163.	670.3	1893.0	*	1	1340	165	435.	625.5	1891.6	*	1	2040	249	427.	624.1	1891.6
1	0645	82	1089.	667.7	1892.8	*	1	1345	166	435.	625.4	1891.6	*	1	2045	250	427.	624.1	1891.6
1	0650	83	1020.	665.4	1892.7	*	1	1350	167	435.	625.4	1891.6	*						
1	0655	84	956.	663.3	1892.6	*	1	1355	168	434.	625.3	1891.6	*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)	(CFS)				
+ 1709.	5.75		790.	439.	439.	439.
		(INCHES)	.465	.893	.893	.893
		(AC-FT)	392.	752.	752.	752.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
693.	5.75	652.	522.	522.	522.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1893.33	5.75	1892.21	1889.87	1889.87	1889.87

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .69

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	*	1		0700	85	845.	659.5	1892.4	*	1		1400	169	434.	625.2	1891.6
1		0005	2	0.	.0	1880.0	*	1		0705	86	801.	658.0	1892.4	*	1		1405	170	434.	625.2	1891.6
1		0010	3	0.	.0	1880.0	*	1		0710	87	760.	656.6	1892.3	*	1		1410	171	433.	625.1	1891.6
1		0015	4	0.	.5	1880.0	*	1		0715	88	723.	655.4	1892.2	*	1		1415	172	433.	625.1	1891.6
1		0020	5	0.	2.3	1880.1	*	1		0720	89	689.	654.2	1892.2	*	1		1420	173	433.	625.1	1891.6
1		0025	6	0.	5.1	1880.1	*	1		0725	90	658.	653.2	1892.1	*	1		1425	174	433.	625.0	1891.6
1		0030	7	0.	8.0	1880.2	*	1		0730	91	631.	652.2	1892.1	*	1		1430	175	432.	625.0	1891.6
1		0035	8	0.	11.0	1880.3	*	1		0735	92	606.	651.4	1892.0	*	1		1435	176	432.	624.9	1891.6
1		0040	9	0.	13.9	1880.4	*	1		0740	93	592.	650.6	1892.0	*	1		1440	177	432.	624.9	1891.6
1		0045	10	0.	16.9	1880.4	*	1		0745	94	587.	649.8	1892.0	*	1		1445	178	432.	624.9	1891.6
1		0050	11	0.	19.9	1880.5	*	1		0750	95	582.	649.0	1892.0	*	1		1450	179	432.	624.8	1891.6
1		0055	12	0.	23.0	1880.6	*	1		0755	96	577.	648.2	1892.0	*	1		1455	180	431.	624.8	1891.6
1		0100	13	0.	26.1	1880.7	*	1		0800	97	572.	647.4	1891.9	*	1		1500	181	431.	624.8	1891.6
1		0105	14	0.	29.2	1880.8	*	1		0805	98	567.	646.6	1891.9	*	1		1505	182	431.	624.8	1891.6
1		0110	15	0.	32.4	1880.9	*	1		0810	99	562.	645.8	1891.9	*	1		1510	183	431.	624.7	1891.6
1		0115	16	0.	35.6	1880.9	*	1		0815	100	557.	645.0	1891.9	*	1		1515	184	431.	624.7	1891.6
1		0120	17	0.	38.9	1881.0	*	1		0820	101	552.	644.2	1891.9	*	1		1520	185	431.	624.7	1891.6
1		0125	18	0.	42.2	1881.1	*	1		0825	102	547.	643.4	1891.9	*	1		1525	186	430.	624.6	1891.6
1		0130	19	0.	45.5	1881.2	*	1		0830	103	543.	642.7	1891.9	*	1		1530	187	430.	624.6	1891.6
1		0135	20	0.	48.9	1881.3	*	1		0835	104	538.	642.0	1891.9	*	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	52.3	1881.4	*	1		0840	105	534.	641.3	1891.8	*	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	55.8	1881.5	*	1		0845	106	529.	640.6	1891.8	*	1		1545	190	430.	624.6	1891.6
1		0150	23	0.	59.4	1881.6	*	1		0850	107	525.	640.0	1891.8	*	1		1550	191	430.	624.5	1891.6
1		0155	24	0.	63.0	1881.7	*	1		0855	108	521.	639.3	1891.8	*	1		1555	192	430.	624.5	1891.6
1		0200	25	0.	66.8	1881.8	*	1		0900	109	518.	638.7	1891.8	*	1		1600	193	430.	624.5	1891.6
1		0205	26	0.	70.8	1881.9	*	1		0905	110	514.	638.1	1891.8	*	1		1605	194	429.	624.5	1891.6
1		0210	27	0.	74.9	1882.0	*	1		0910	111	510.	637.5	1891.8	*	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	79.2	1882.1	*	1		0915	112	507.	637.0	1891.8	*	1		1615	196	429.	624.5	1891.6
1		0220	29	0.	83.6	1882.2	*	1		0920	113	504.	636.5	1891.8	*	1		1620	197	429.	624.4	1891.6
1		0225	30	0.	88.2	1882.3	*	1		0925	114	501.	635.9	1891.8	*	1		1625	198	429.	624.4	1891.6
1		0230	31	0.	92.8	1882.4	*	1		0930	115	497.	635.5	1891.8	*	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	97.5	1882.5	*	1		0935	116	495.	635.0	1891.7	*	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	102.3	1882.6	*	1		0940	117	492.	634.5	1891.7	*	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	107.1	1882.7	*	1		0945	118	489.	634.1	1891.7	*	1		1645	202	429.	624.4	1891.6
1		0250	35	0.	112.0	1882.9	*	1		0950	119	486.	633.7	1891.7	*	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	116.9	1883.0	*	1		0955	120	484.	633.3	1891.7	*	1		1655	204	429.	624.4	1891.6
1		0300	37	0.	122.0	1883.1	*	1		1000	121	482.	632.9	1891.7	*	1		1700	205	429.	624.3	1891.6
1		0305	38	0.	127.4	1883.2	*	1		1005	122	479.	632.5	1891.7	*	1		1705	206	428.	624.3	1891.6
1		0310	39	0.	133.2	1883.3	*	1		1010	123	477.	632.2	1891.7	*	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	139.8	1883.5	*	1		1015	124	475.	631.8	1891.7	*	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	147.5	1883.7	*	1		1020	125	473.	631.5	1891.7	*	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	157.3	1883.9	*	1		1025	126	471.	631.2	1891.7	*	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	169.9	1884.2	*	1		1030	127	469.	630.9	1891.7	*	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	186.5	1884.5	*	1		1035	128	468.	630.6	1891.7	*	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	208.0	1885.0	*	1		1040	129	466.	630.4	1891.7	*	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	233.9	1885.5	*	1		1045	130	464.	630.1	1891.7	*	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	262.7	1886.1	*	1		1050	131	463.	629.8	1891.7	*	1		1750	215	428.	624.3	1891.6

1	0355	48	0.	292.2	1886.7	*	1	1055	132	461.	629.6	1891.7	*	1	1755	216	428.	624.3	1891.6
1	0400	49	0.	320.8	1887.3	*	1	1100	133	460.	629.4	1891.7	*	1	1800	217	428.	624.2	1891.6
1	0405	50	0.	347.7	1887.8	*	1	1105	134	458.	629.2	1891.7	*	1	1805	218	428.	624.2	1891.6
1	0410	51	25.	372.7	1888.3	*	1	1110	135	457.	628.9	1891.7	*	1	1810	219	428.	624.2	1891.6
1	0415	52	63.	395.9	1888.7	*	1	1115	136	456.	628.7	1891.6	*	1	1815	220	428.	624.2	1891.6
1	0420	53	98.	417.3	1889.1	*	1	1120	137	455.	628.5	1891.6	*	1	1820	221	428.	624.2	1891.6
1	0425	54	130.	436.9	1889.4	*	1	1125	138	453.	628.4	1891.6	*	1	1825	222	428.	624.2	1891.6
1	0430	55	159.	455.1	1889.8	*	1	1130	139	452.	628.2	1891.6	*	1	1830	223	428.	624.2	1891.6
1	0435	56	181.	472.0	1890.0	*	1	1135	140	451.	628.0	1891.6	*	1	1835	224	428.	624.2	1891.6
1	0440	57	184.	488.2	1890.2	*	1	1140	141	450.	627.8	1891.6	*	1	1840	225	428.	624.2	1891.6
1	0445	58	186.	504.5	1890.3	*	1	1145	142	449.	627.7	1891.6	*	1	1845	226	428.	624.2	1891.6
1	0450	59	189.	521.3	1890.4	*	1	1150	143	448.	627.5	1891.6	*	1	1850	227	428.	624.2	1891.6
1	0455	60	193.	539.3	1890.6	*	1	1155	144	447.	627.4	1891.6	*	1	1855	228	428.	624.2	1891.6
1	0500	61	196.	558.7	1890.8	*	1	1200	145	447.	627.3	1891.6	*	1	1900	229	428.	624.2	1891.6
1	0505	62	200.	579.2	1890.9	*	1	1205	146	446.	627.1	1891.6	*	1	1905	230	428.	624.2	1891.6
1	0510	63	276.	599.7	1891.2	*	1	1210	147	445.	627.0	1891.6	*	1	1910	231	427.	624.2	1891.6
1	0515	64	393.	618.7	1891.5	*	1	1215	148	444.	626.9	1891.6	*	1	1915	232	427.	624.2	1891.6
1	0520	65	497.	635.3	1891.8	*	1	1220	149	444.	626.8	1891.6	*	1	1920	233	427.	624.2	1891.6
1	0525	66	584.	649.4	1892.0	*	1	1225	150	443.	626.6	1891.6	*	1	1925	234	427.	624.2	1891.6
1	0530	67	874.	660.5	1892.5	*	1	1230	151	442.	626.5	1891.6	*	1	1930	235	427.	624.2	1891.6
1	0535	68	1103.	668.2	1892.9	*	1	1235	152	442.	626.4	1891.6	*	1	1935	236	427.	624.2	1891.6
1	0540	69	1241.	673.4	1893.0	*	1	1240	153	441.	626.3	1891.6	*	1	1940	237	427.	624.2	1891.6
1	0545	70	1319.	676.7	1893.1	*	1	1245	154	440.	626.2	1891.6	*	1	1945	238	427.	624.2	1891.6
1	0550	71	1365.	678.6	1893.1	*	1	1250	155	440.	626.2	1891.6	*	1	1950	239	427.	624.2	1891.6
1	0555	72	1385.	679.5	1893.1	*	1	1255	156	439.	626.1	1891.6	*	1	1955	240	427.	624.2	1891.6
1	0600	73	1385.	679.5	1893.1	*	1	1300	157	439.	626.0	1891.6	*	1	2000	241	427.	624.2	1891.6
1	0605	74	1371.	678.9	1893.1	*	1	1305	158	438.	625.9	1891.6	*	1	2005	242	427.	624.2	1891.6
1	0610	75	1345.	677.8	1893.1	*	1	1310	159	438.	625.8	1891.6	*	1	2010	243	427.	624.1	1891.6
1	0615	76	1310.	676.3	1893.1	*	1	1315	160	437.	625.8	1891.6	*	1	2015	244	427.	624.1	1891.6
1	0620	77	1269.	674.6	1893.1	*	1	1320	161	437.	625.7	1891.6	*	1	2020	245	427.	624.1	1891.6
1	0625	78	1224.	672.7	1893.0	*	1	1325	162	436.	625.6	1891.6	*	1	2025	246	427.	624.1	1891.6
1	0630	79	1174.	670.6	1893.0	*	1	1330	163	436.	625.6	1891.6	*	1	2030	247	427.	624.1	1891.6
1	0635	80	1113.	668.6	1892.9	*	1	1335	164	436.	625.5	1891.6	*	1	2035	248	427.	624.1	1891.6
1	0640	81	1054.	666.6	1892.8	*	1	1340	165	435.	625.4	1891.6	*	1	2040	249	427.	624.1	1891.6
1	0645	82	997.	664.7	1892.7	*	1	1345	166	435.	625.4	1891.6	*	1	2045	250	427.	624.1	1891.6
1	0650	83	944.	662.8	1892.6	*	1	1350	167	435.	625.3	1891.6	*						
1	0655	84	893.	661.1	1892.5	*	1	1355	168	434.	625.3	1891.6	*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1385.	6.00		701.	410.	410.	410.
		(INCHES)	.413	.835	.835	.835
		(AC-FT)	348.	703.	703.	703.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
680.	6.00	648.	519.	519.	519.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1893.13	6.00	1892.11	1889.81	1889.81	1889.81

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .64

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	*	1		0700	85	715.	655.1	1892.2	*	1		1400	169	434.	625.2	1891.6
1		0005	2	0.	.0	1880.0	*	1		0705	86	692.	654.3	1892.2	*	1		1405	170	433.	625.1	1891.6
1		0010	3	0.	.0	1880.0	*	1		0710	87	669.	653.5	1892.1	*	1		1410	171	433.	625.1	1891.6
1		0015	4	0.	.5	1880.0	*	1		0715	88	646.	652.8	1892.1	*	1		1415	172	433.	625.0	1891.6
1		0020	5	0.	2.2	1880.1	*	1		0720	89	625.	652.0	1892.1	*	1		1420	173	433.	625.0	1891.6
1		0025	6	0.	5.0	1880.1	*	1		0725	90	604.	651.3	1892.0	*	1		1425	174	432.	625.0	1891.6
1		0030	7	0.	8.0	1880.2	*	1		0730	91	592.	650.7	1892.0	*	1		1430	175	432.	624.9	1891.6
1		0035	8	0.	10.9	1880.3	*	1		0735	92	588.	650.0	1892.0	*	1		1435	176	432.	624.9	1891.6
1		0040	9	0.	13.9	1880.4	*	1		0740	93	583.	649.3	1892.0	*	1		1440	177	432.	624.9	1891.6
1		0045	10	0.	16.8	1880.4	*	1		0745	94	578.	648.5	1892.0	*	1		1445	178	432.	624.8	1891.6
1		0050	11	0.	19.8	1880.5	*	1		0750	95	574.	647.7	1891.9	*	1		1450	179	431.	624.8	1891.6
1		0055	12	0.	22.8	1880.6	*	1		0755	96	569.	646.9	1891.9	*	1		1455	180	431.	624.8	1891.6
1		0100	13	0.	25.8	1880.7	*	1		0800	97	564.	646.2	1891.9	*	1		1500	181	431.	624.7	1891.6
1		0105	14	0.	28.9	1880.8	*	1		0805	98	559.	645.4	1891.9	*	1		1505	182	431.	624.7	1891.6
1		0110	15	0.	32.0	1880.8	*	1		0810	99	554.	644.6	1891.9	*	1		1510	183	431.	624.7	1891.6
1		0115	16	0.	35.2	1880.9	*	1		0815	100	550.	643.9	1891.9	*	1		1515	184	430.	624.7	1891.6
1		0120	17	0.	38.3	1881.0	*	1		0820	101	545.	643.1	1891.9	*	1		1520	185	430.	624.6	1891.6
1		0125	18	0.	41.5	1881.1	*	1		0825	102	541.	642.4	1891.9	*	1		1525	186	430.	624.6	1891.6
1		0130	19	0.	44.7	1881.2	*	1		0830	103	536.	641.7	1891.9	*	1		1530	187	430.	624.6	1891.6
1		0135	20	0.	47.9	1881.3	*	1		0835	104	532.	641.0	1891.8	*	1		1535	188	430.	624.6	1891.6
1		0140	21	0.	51.2	1881.4	*	1		0840	105	528.	640.4	1891.8	*	1		1540	189	430.	624.6	1891.6
1		0145	22	0.	54.5	1881.4	*	1		0845	106	524.	639.7	1891.8	*	1		1545	190	430.	624.5	1891.6
1		0150	23	0.	57.9	1881.5	*	1		0850	107	520.	639.1	1891.8	*	1		1550	191	430.	624.5	1891.6
1		0155	24	0.	61.4	1881.6	*	1		0855	108	516.	638.5	1891.8	*	1		1555	192	429.	624.5	1891.6
1		0200	25	0.	65.0	1881.7	*	1		0900	109	513.	637.9	1891.8	*	1		1600	193	429.	624.5	1891.6
1		0205	26	0.	68.6	1881.8	*	1		0905	110	509.	637.4	1891.8	*	1		1605	194	429.	624.5	1891.6
1		0210	27	0.	72.4	1881.9	*	1		0910	111	506.	636.8	1891.8	*	1		1610	195	429.	624.5	1891.6
1		0215	28	0.	76.4	1882.0	*	1		0915	112	503.	636.3	1891.8	*	1		1615	196	429.	624.4	1891.6
1		0220	29	0.	80.4	1882.1	*	1		0920	113	500.	635.8	1891.8	*	1		1620	197	429.	624.4	1891.6
1		0225	30	0.	84.6	1882.2	*	1		0925	114	497.	635.3	1891.8	*	1		1625	198	429.	624.4	1891.6
1		0230	31	0.	88.8	1882.3	*	1		0930	115	494.	634.8	1891.7	*	1		1630	199	429.	624.4	1891.6
1		0235	32	0.	93.0	1882.4	*	1		0935	116	491.	634.4	1891.7	*	1		1635	200	429.	624.4	1891.6
1		0240	33	0.	97.3	1882.5	*	1		0940	117	488.	634.0	1891.7	*	1		1640	201	429.	624.4	1891.6
1		0245	34	0.	101.7	1882.6	*	1		0945	118	486.	633.6	1891.7	*	1		1645	202	429.	624.4	1891.6

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0250	35	0.	106.0	1882.7	1		0950	119	483.	633.2	1891.7	1		1650	203	429.	624.4	1891.6
1		0255	36	0.	110.4	1882.8	1		0955	120	481.	632.8	1891.7	1		1655	204	428.	624.3	1891.6
1		0300	37	0.	115.0	1882.9	1		1000	121	479.	632.4	1891.7	1		1700	205	428.	624.3	1891.6
1		0305	38	0.	119.8	1883.0	1		1005	122	477.	632.1	1891.7	1		1705	206	428.	624.3	1891.6
1		0310	39	0.	124.9	1883.2	1		1010	123	474.	631.7	1891.7	1		1710	207	428.	624.3	1891.6
1		0315	40	0.	130.7	1883.3	1		1015	124	472.	631.4	1891.7	1		1715	208	428.	624.3	1891.6
1		0320	41	0.	137.3	1883.4	1		1020	125	471.	631.1	1891.7	1		1720	209	428.	624.3	1891.6
1		0325	42	0.	145.4	1883.6	1		1025	126	469.	630.8	1891.7	1		1725	210	428.	624.3	1891.6
1		0330	43	0.	155.9	1883.9	1		1030	127	467.	630.5	1891.7	1		1730	211	428.	624.3	1891.6
1		0335	44	0.	169.6	1884.2	1		1035	128	465.	630.3	1891.7	1		1735	212	428.	624.3	1891.6
1		0340	45	0.	187.5	1884.6	1		1040	129	464.	630.0	1891.7	1		1740	213	428.	624.3	1891.6
1		0345	46	0.	209.3	1885.0	1		1045	130	462.	629.8	1891.7	1		1745	214	428.	624.3	1891.6
1		0350	47	0.	233.8	1885.5	1		1050	131	461.	629.5	1891.7	1		1750	215	428.	624.3	1891.6
1		0355	48	0.	259.3	1886.1	1		1055	132	459.	629.3	1891.7	1		1755	216	428.	624.2	1891.6
1		0400	49	0.	284.3	1886.6	1		1100	133	458.	629.1	1891.7	1		1800	217	428.	624.2	1891.6
1		0405	50	0.	307.9	1887.0	1		1105	134	457.	628.9	1891.7	1		1805	218	428.	624.2	1891.6
1		0410	51	0.	330.1	1887.5	1		1110	135	455.	628.7	1891.6	1		1810	219	428.	624.2	1891.6
1		0415	52	0.	350.9	1887.9	1		1115	136	454.	628.5	1891.6	1		1815	220	428.	624.2	1891.6
1		0420	53	21.	370.2	1888.2	1		1120	137	453.	628.3	1891.6	1		1820	221	428.	624.2	1891.6
1		0425	54	50.	388.2	1888.6	1		1125	138	452.	628.1	1891.6	1		1825	222	428.	624.2	1891.6
1		0430	55	77.	404.8	1888.9	1		1130	139	451.	628.0	1891.6	1		1830	223	428.	624.2	1891.6
1		0435	56	103.	420.4	1889.1	1		1135	140	450.	627.8	1891.6	1		1835	224	428.	624.2	1891.6
1		0440	57	127.	435.3	1889.4	1		1140	141	449.	627.6	1891.6	1		1840	225	428.	624.2	1891.6
1		0445	58	151.	450.0	1889.7	1		1145	142	448.	627.5	1891.6	1		1845	226	428.	624.2	1891.6
1		0450	59	175.	465.0	1889.9	1		1150	143	447.	627.4	1891.6	1		1850	227	428.	624.2	1891.6
1		0455	60	182.	480.8	1890.1	1		1155	144	446.	627.2	1891.6	1		1855	228	428.	624.2	1891.6
1		0500	61	185.	497.9	1890.3	1		1200	145	446.	627.1	1891.6	1		1900	229	428.	624.2	1891.6
1		0505	62	188.	516.0	1890.4	1		1205	146	445.	627.0	1891.6	1		1905	230	427.	624.2	1891.6
1		0510	63	192.	534.4	1890.6	1		1210	147	444.	626.8	1891.6	1		1910	231	427.	624.2	1891.6
1		0515	64	195.	552.2	1890.7	1		1215	148	443.	626.7	1891.6	1		1915	232	427.	624.2	1891.6
1		0520	65	198.	568.6	1890.8	1		1220	149	443.	626.6	1891.6	1		1920	233	427.	624.2	1891.6
1		0525	66	200.	583.5	1891.0	1		1225	150	442.	626.5	1891.6	1		1925	234	427.	624.2	1891.6
1		0530	67	256.	596.6	1891.1	1		1230	151	441.	626.4	1891.6	1		1930	235	427.	624.2	1891.6
1		0535	68	327.	607.9	1891.3	1		1235	152	441.	626.3	1891.6	1		1935	236	427.	624.2	1891.6
1		0540	69	387.	617.6	1891.5	1		1240	153	440.	626.2	1891.6	1		1940	237	427.	624.2	1891.6
1		0545	70	438.	626.0	1891.6	1		1245	154	440.	626.1	1891.6	1		1945	238	427.	624.2	1891.6
1		0550	71	483.	633.1	1891.7	1		1250	155	439.	626.0	1891.6	1		1950	239	427.	624.2	1891.6
1		0555	72	521.	639.2	1891.8	1		1255	156	439.	626.0	1891.6	1		1955	240	427.	624.2	1891.6
1		0600	73	553.	644.3	1891.9	1		1300	157	438.	625.9	1891.6	1		2000	241	427.	624.2	1891.6
1		0605	74	580.	648.7	1892.0	1		1305	158	438.	625.8	1891.6	1		2005	242	427.	624.1	1891.6
1		0610	75	631.	652.2	1892.1	1		1310	159	437.	625.7	1891.6	1		2010	243	427.	624.1	1891.6
1		0615	76	707.	654.8	1892.2	1		1315	160	437.	625.7	1891.6	1		2015	244	427.	624.1	1891.6
1		0620	77	756.	656.5	1892.3	1		1320	161	436.	625.6	1891.6	1		2020	245	427.	624.1	1891.6
1		0625	78	785.	657.5	1892.3	1		1325	162	436.	625.5	1891.6	1		2025	246	427.	624.1	1891.6
1		0630	79	797.	657.9	1892.3	1		1330	163	436.	625.5	1891.6	1		2030	247	427.	624.1	1891.6
1		0635	80	798.	657.9	1892.3	1		1335	164	435.	625.4	1891.6	1		2035	248	427.	624.1	1891.6
1		0640	81	791.	657.7	1892.3	1		1340	165	435.	625.4	1891.6	1		2040	249	427.	624.1	1891.6
1		0645	82	777.	657.2	1892.3	1		1345	166	435.	625.3	1891.6	1		2045	250	427.	624.1	1891.6
1		0650	83	759.	656.6	1892.3	1		1350	167	434.	625.3	1891.6							
1		0655	84	738.	655.9	1892.2	1		1355	168	434.	625.2	1891.6							

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
(CFS)	(HR)	(CFS)				
798.	6.58		551.	359.	359.	359.
		(INCHES)	.324	.732	.732	.732
		(AC-FT)	273.	616.	616.	616.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
(AC-FT)	(HR)				
658.	6.58	641.	511.	511.	511.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
(FEET)	(HR)				
1892.35	6.58	1891.87	1889.66	1889.66	1889.66

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .58

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	1		0700	85	382.	616.9	1891.5	1		1400	169	427.	624.1	1891.6
1		0005	2	0.	.0	1880.0	1		0705	86	390.	618.2	1891.5	1		1405	170	427.	624.1	1891.6
1		0010	3	0.	.0	1880.0	1		0710	87	397.	619.2	1891.5	1		1410	171	427.	624.1	1891.6
1		0015	4	0.	.4	1880.0	1		0715	88	402.	620.2	1891.5	1		1415	172	427.	624.1	1891.6
1		0020	5	0.	2.1	1880.1	1		0720	89	407.	620.9	1891.5	1		1420	173	427.	624.1	1891.6
1		0025	6	0.	4.9	1880.1	1		0725	90	411.	621.6	1891.5	1		1425	174	427.	624.1	1891.6
1		0030	7	0.	7.9	1880.2	1		0730	91	415.	622.1	1891.5	1		1430	175	427.	624.1	1891.6
1		0035	8	0.	10.8	1880.3	1		0735	92	418.	622.6	1891.6	1		1435	176	427.	624.1	1891.6
1		0040	9	0.	13.7	1880.4	1		0740	93	420.	623.0	1891.6	1		1440	177	427.	624.1	1891.6
1		0045	10	0.	16.7	1880.4	1		0745	94	422.	623.3	1891.6	1		1445	178	427.	624.1	1891.6
1		0050	11	0.	19.6	1880.5	1		0750	95	423.	623.5	1891.6	1		1450	179	427.	624.1	1891.6
1		0055	12	0.	22.6	1880.6	1		0755	96	425.	623.7	1891.6	1		1455	180	427.	624.1	1891.6
1		0100	13	0.	25.6	1880.7	1		0800	97	426.	623.9	1891.6	1		1500	181	427.	624.1	1891.6
1		0105	14	0.	28.6	1880.8	1		0805	98	427.	624.1	1891.6	1		1505	182	427.	624.1	1891.6
1		0110	15	0.	31.6	1880.8	1		0810	99	427.	624.2	1891.6	1		1510	183	427.	624.1	1891.6
1		0115	16	0.	34.7	1880.9	1		0815	100	428.	624.3	1891.6	1		1515	184	427.	624.1	1891.6
1		0120	17	0.	37.8	1881.0	1		0820	101	428.	624.3	1891.6	1		1520	185	427.	624.1	1891.6
1		0125	18	0.	40.9	1881.1	1		0825	102	429.	624.4	1891.6	1		1525	186	427.	624.1	1891.6
1		0130	19	0.	44.0	1881.2	1		0830	103	429.	624.4	1891.6	1		1530	187	427.	624.1	1891.6
1		0135	20	0.	47.1	1881.2	1		0835	104	429.	624.5	1891.6	1		1535	188	427.	624.1	1891.6
1		0140	21	0.	50.2	1881.3	1		0840	105	429.	624.5	1891.6	1		1540	189	427.	624.1	1891.6

1	0145	22	0.	53.4	1881.4	*	1	0845	106	430.	624.5	1891.6	*	1	1545	190	427.	624.1	1891.6
1	0150	23	0.	56.7	1881.5	*	1	0850	107	430.	624.5	1891.6	*	1	1550	191	427.	624.1	1891.6
1	0155	24	0.	60.0	1881.6	*	1	0855	108	430.	624.5	1891.6	*	1	1555	192	427.	624.1	1891.6
1	0200	25	0.	63.3	1881.7	*	1	0900	109	430.	624.5	1891.6	*	1	1600	193	427.	624.1	1891.6
1	0205	26	0.	66.8	1881.8	*	1	0905	110	430.	624.5	1891.6	*	1	1605	194	427.	624.1	1891.6
1	0210	27	0.	70.3	1881.9	*	1	0910	111	430.	624.5	1891.6	*	1	1610	195	427.	624.1	1891.6
1	0215	28	0.	73.9	1882.0	*	1	0915	112	430.	624.5	1891.6	*	1	1615	196	427.	624.1	1891.6
1	0220	29	0.	77.6	1882.0	*	1	0920	113	430.	624.5	1891.6	*	1	1620	197	427.	624.1	1891.6
1	0225	30	0.	81.4	1882.1	*	1	0925	114	429.	624.5	1891.6	*	1	1625	198	427.	624.1	1891.6
1	0230	31	0.	85.2	1882.2	*	1	0930	115	429.	624.5	1891.6	*	1	1630	199	427.	624.1	1891.6
1	0235	32	0.	89.1	1882.3	*	1	0935	116	429.	624.5	1891.6	*	1	1635	200	427.	624.1	1891.6
1	0240	33	0.	93.0	1882.4	*	1	0940	117	429.	624.5	1891.6	*	1	1640	201	427.	624.1	1891.6
1	0245	34	0.	96.9	1882.5	*	1	0945	118	429.	624.5	1891.6	*	1	1645	202	427.	624.1	1891.6
1	0250	35	0.	100.8	1882.6	*	1	0950	119	429.	624.4	1891.6	*	1	1650	203	427.	624.1	1891.6
1	0255	36	0.	104.8	1882.7	*	1	0955	120	429.	624.4	1891.6	*	1	1655	204	427.	624.1	1891.6
1	0300	37	0.	108.8	1882.8	*	1	1000	121	429.	624.4	1891.6	*	1	1700	205	427.	624.1	1891.6
1	0305	38	0.	113.1	1882.9	*	1	1005	122	429.	624.4	1891.6	*	1	1705	206	427.	624.1	1891.6
1	0310	39	0.	117.6	1883.0	*	1	1010	123	429.	624.4	1891.6	*	1	1710	207	427.	624.1	1891.6
1	0315	40	0.	122.5	1883.1	*	1	1015	124	429.	624.4	1891.6	*	1	1715	208	427.	624.1	1891.6
1	0320	41	0.	128.1	1883.2	*	1	1020	125	429.	624.4	1891.6	*	1	1720	209	427.	624.1	1891.6
1	0325	42	0.	134.8	1883.4	*	1	1025	126	429.	624.4	1891.6	*	1	1725	210	427.	624.1	1891.6
1	0330	43	0.	143.1	1883.6	*	1	1030	127	429.	624.3	1891.6	*	1	1730	211	427.	624.1	1891.6
1	0335	44	0.	153.9	1883.8	*	1	1035	128	428.	624.3	1891.6	*	1	1735	212	427.	624.1	1891.6
1	0340	45	0.	168.0	1884.1	*	1	1040	129	428.	624.3	1891.6	*	1	1740	213	427.	624.1	1891.6
1	0345	46	0.	185.5	1884.5	*	1	1045	130	428.	624.3	1891.6	*	1	1745	214	427.	624.1	1891.6
1	0350	47	0.	205.6	1884.9	*	1	1050	131	428.	624.3	1891.6	*	1	1750	215	427.	624.1	1891.6
1	0355	48	0.	226.9	1885.4	*	1	1055	132	428.	624.3	1891.6	*	1	1755	216	427.	624.1	1891.6
1	0400	49	0.	248.0	1885.8	*	1	1100	133	428.	624.3	1891.6	*	1	1800	217	427.	624.1	1891.6
1	0405	50	0.	268.3	1886.2	*	1	1105	134	428.	624.3	1891.6	*	1	1805	218	427.	624.1	1891.6
1	0410	51	0.	287.3	1886.6	*	1	1110	135	428.	624.3	1891.6	*	1	1810	219	427.	624.1	1891.6
1	0415	52	0.	305.2	1887.0	*	1	1115	136	428.	624.3	1891.6	*	1	1815	220	427.	624.1	1891.6
1	0420	53	0.	322.0	1887.3	*	1	1120	137	428.	624.3	1891.6	*	1	1820	221	427.	624.1	1891.6
1	0425	54	0.	337.8	1887.6	*	1	1125	138	428.	624.3	1891.6	*	1	1825	222	427.	624.1	1891.6
1	0430	55	0.	352.7	1887.9	*	1	1130	139	428.	624.2	1891.6	*	1	1830	223	427.	624.1	1891.6
1	0435	56	16.	366.8	1888.2	*	1	1135	140	428.	624.2	1891.6	*	1	1835	224	427.	624.1	1891.6
1	0440	57	38.	380.3	1888.4	*	1	1140	141	428.	624.2	1891.6	*	1	1840	225	427.	624.1	1891.6
1	0445	58	59.	393.6	1888.7	*	1	1145	142	428.	624.2	1891.6	*	1	1845	226	427.	624.1	1891.6
1	0450	59	81.	407.2	1888.9	*	1	1150	143	428.	624.2	1891.6	*	1	1850	227	427.	624.1	1891.6
1	0455	60	104.	421.3	1889.2	*	1	1155	144	428.	624.2	1891.6	*	1	1855	228	427.	624.1	1891.6
1	0500	61	129.	436.3	1889.4	*	1	1200	145	428.	624.2	1891.6	*	1	1900	229	427.	624.1	1891.6
1	0505	62	154.	452.1	1889.7	*	1	1205	146	428.	624.2	1891.6	*	1	1905	230	427.	624.1	1891.6
1	0510	63	180.	468.0	1890.0	*	1	1210	147	428.	624.2	1891.6	*	1	1910	231	427.	624.1	1891.6
1	0515	64	183.	483.5	1890.1	*	1	1215	148	428.	624.2	1891.6	*	1	1915	232	427.	624.1	1891.6
1	0520	65	185.	498.0	1890.3	*	1	1220	149	428.	624.2	1891.6	*	1	1920	233	427.	624.1	1891.6
1	0525	66	188.	511.2	1890.4	*	1	1225	150	428.	624.2	1891.6	*	1	1925	234	427.	624.1	1891.6
1	0530	67	190.	523.0	1890.5	*	1	1230	151	428.	624.2	1891.6	*	1	1930	235	427.	624.1	1891.6
1	0535	68	192.	533.7	1890.5	*	1	1235	152	428.	624.2	1891.6	*	1	1935	236	427.	624.1	1891.6
1	0540	69	193.	543.4	1890.6	*	1	1240	153	428.	624.2	1891.6	*	1	1940	237	427.	624.1	1891.6
1	0545	70	195.	552.1	1890.7	*	1	1245	154	427.	624.2	1891.6	*	1	1945	238	427.	624.1	1891.6
1	0550	71	196.	560.2	1890.8	*	1	1250	155	427.	624.2	1891.6	*	1	1950	239	427.	624.1	1891.6
1	0555	72	197.	567.5	1890.8	*	1	1255	156	427.	624.2	1891.6	*	1	1955	240	427.	624.1	1891.6
1	0600	73	199.	574.3	1890.9	*	1	1300	157	427.	624.2	1891.6	*	1	2000	241	427.	624.1	1891.6
1	0605	74	200.	580.5	1890.9	*	1	1305	158	427.	624.2	1891.6	*	1	2005	242	427.	624.1	1891.6
1	0610	75	201.	586.2	1891.0	*	1	1310	159	427.	624.2	1891.6	*	1	2010	243	427.	624.1	1891.6
1	0615	76	224.	591.4	1891.1	*	1	1315	160	427.	624.2	1891.6	*	1	2015	244	427.	624.1	1891.6
1	0620	77	253.	596.0	1891.1	*	1	1320	161	427.	624.2	1891.6	*	1	2020	245	427.	624.1	1891.6
1	0625	78	278.	600.0	1891.2	*	1	1325	162	427.	624.2	1891.6	*	1	2025	246	427.	624.1	1891.6
1	0630	79	299.	603.6	1891.3	*	1	1330	163	427.	624.2	1891.6	*	1	2030	247	427.	624.1	1891.6
1	0635	80	319.	606.6	1891.3	*	1	1335	164	427.	624.2	1891.6	*	1	2035	248	427.	624.1	1891.6
1	0640	81	335.	609.3	1891.3	*	1	1340	165	427.	624.2	1891.6	*	1	2040	249	427.	624.1	1891.6
1	0645	82	350.	611.6	1891.4	*	1	1345	166	427.	624.1	1891.6	*	1	2045	250	427.	624.1	1891.6
1	0650	83	362.	613.7	1891.4	*	1	1350	167	427.	624.1	1891.6	*						
1	0655	84	373.	615.4	1891.4	*	1	1355	168	427.	624.1	1891.6	*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)					
		(CFS)				
+ 430.	9.00		428.	307.	307.	307.
		(INCHES)	.252	.625	.625	.625
		(AC-FT)	212.	526.	526.	526.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
625.	8.92	624.	498.	498.	498.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1891.58	8.83	1891.58	1889.44	1889.44	1889.44

CUMULATIVE AREA = 15.79 SQ MI

HYDROGRAPH AT STATION PTRE0035
PLAN 1, RATIO = .53

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	1880.0	*	1		0700	85	196.	558.6	1890.8	*	1		1400	169	415.	622.2	1891.5
1		0005	2	0.	.0	1880.0	*	1		0705	86	196.	561.1	1890.8	*	1		1405	170	416.	622.3	1891.5
1		0010	3	0.	.0	1880.0	*	1		0710	87	197.	563.4	1890.8	*	1		1410	171	416.	622.4	1891.5
1		0015	4	0.	.3	1880.0	*	1		0715	88	197.	565.7	1890.8	*	1		1415	172	417.	622.5	1891.5
1		0020	5	0.	1.9	1880.0	*	1		0720	89	198.	567.8	1890.8	*	1		1420	173	417.	622.5	1891.6
1		0025	6	0.	4.8	1880.1	*	1		0725	90	198.	569.9	1890.9	*	1		1425	174	418.	622.6	1891.6
1		0030	7	0.	7.7	1880.2	*	1		0730	91	198.	571.9	1890.9	*	1		1430	175	418.	622.7	1891.6
1		0035	8	0.	10.7	1880.3	*	1		0735	92	199.	573.8	1890.9	*	1		1435	176	418.	622.7	1891.6

1	0040	9	0.	13.6	1880.4	*	1	0740	93	199.	575.7	1890.9	*	1	1440	177	419.	622.8	1891.6				
1	0045	10	0.	16.5	1880.4	*	1	0745	94	199.	577.6	1890.9	*	1	1445	178	419.	622.8	1891.6				
1	0050	11	0.	19.5	1880.5	*	1	0750	95	200.	579.4	1890.9	*	1	1450	179	419.	622.9	1891.6				
1	0055	12	0.	22.5	1880.6	*	1	0755	96	200.	581.1	1890.9	*	1	1455	180	420.	622.9	1891.6				
1	0100	13	0.	25.4	1880.7	*	1	0800	97	200.	582.8	1891.0	*	1	1500	181	420.	623.0	1891.6				
1	0105	14	0.	28.4	1880.8	*	1	0805	98	200.	584.5	1891.0	*	1	1505	182	420.	623.0	1891.6				
1	0110	15	0.	31.4	1880.8	*	1	0810	99	201.	586.2	1891.0	*	1	1510	183	421.	623.1	1891.6				
1	0115	16	0.	34.4	1880.9	*	1	0815	100	202.	587.9	1891.0	*	1	1515	184	421.	623.1	1891.6				
1	0120	17	0.	37.4	1881.0	*	1	0820	101	212.	589.5	1891.0	*	1	1520	185	421.	623.2	1891.6				
1	0125	18	0.	40.4	1881.1	*	1	0825	102	221.	591.0	1891.1	*	1	1525	186	421.	623.2	1891.6				
1	0130	19	0.	43.5	1881.2	*	1	0830	103	230.	592.4	1891.1	*	1	1530	187	422.	623.2	1891.6				
1	0135	20	0.	46.5	1881.2	*	1	0835	104	239.	593.8	1891.1	*	1	1535	188	422.	623.3	1891.6				
1	0140	21	0.	49.6	1881.3	*	1	0840	105	247.	595.1	1891.1	*	1	1540	189	422.	623.3	1891.6				
1	0145	22	0.	52.7	1881.4	*	1	0845	106	255.	596.4	1891.1	*	1	1545	190	422.	623.3	1891.6				
1	0150	23	0.	55.8	1881.5	*	1	0850	107	262.	597.6	1891.2	*	1	1550	191	422.	623.4	1891.6				
1	0155	24	0.	59.0	1881.6	*	1	0855	108	269.	598.7	1891.2	*	1	1555	192	423.	623.4	1891.6				
1	0200	25	0.	62.2	1881.6	*	1	0900	109	276.	599.8	1891.2	*	1	1600	193	423.	623.4	1891.6				
1	0205	26	0.	65.5	1881.7	*	1	0905	110	282.	600.8	1891.2	*	1	1605	194	423.	623.5	1891.6				
1	0210	27	0.	68.9	1881.8	*	1	0910	111	289.	601.8	1891.2	*	1	1610	195	423.	623.5	1891.6				
1	0215	28	0.	72.3	1881.9	*	1	0915	112	294.	602.8	1891.2	*	1	1615	196	423.	623.5	1891.6				
1	0220	29	0.	75.7	1882.0	*	1	0920	113	300.	603.7	1891.3	*	1	1620	197	424.	623.5	1891.6				
1	0225	30	0.	79.3	1882.1	*	1	0925	114	305.	604.5	1891.3	*	1	1625	198	424.	623.6	1891.6				
1	0230	31	0.	82.8	1882.2	*	1	0930	115	311.	605.3	1891.3	*	1	1630	199	424.	623.6	1891.6				
1	0235	32	0.	86.4	1882.3	*	1	0935	116	315.	606.1	1891.3	*	1	1635	200	424.	623.6	1891.6				
1	0240	33	0.	90.0	1882.3	*	1	0940	117	320.	606.9	1891.3	*	1	1640	201	424.	623.6	1891.6				
1	0245	34	0.	93.7	1882.4	*	1	0945	118	325.	607.6	1891.3	*	1	1645	202	424.	623.6	1891.6				
1	0250	35	0.	97.4	1882.5	*	1	0950	119	329.	608.3	1891.3	*	1	1650	203	424.	623.7	1891.6				
1	0255	36	0.	101.0	1882.6	*	1	0955	120	333.	609.0	1891.3	*	1	1655	204	424.	623.7	1891.6				
1	0300	37	0.	104.8	1882.7	*	1	1000	121	337.	609.6	1891.3	*	1	1700	205	425.	623.7	1891.6				
1	0305	38	0.	108.6	1882.8	*	1	1005	122	341.	610.2	1891.4	*	1	1705	206	425.	623.7	1891.6				
1	0310	39	0.	112.7	1882.9	*	1	1010	123	344.	610.8	1891.4	*	1	1710	207	425.	623.7	1891.6				
1	0315	40	0.	117.0	1883.0	*	1	1015	124	348.	611.4	1891.4	*	1	1715	208	425.	623.8	1891.6				
1	0320	41	0.	121.8	1883.1	*	1	1020	125	351.	611.9	1891.4	*	1	1720	209	425.	623.8	1891.6				
1	0325	42	0.	127.4	1883.2	*	1	1025	126	354.	612.4	1891.4	*	1	1725	210	425.	623.8	1891.6				
1	0330	43	0.	134.2	1883.4	*	1	1030	127	357.	612.9	1891.4	*	1	1730	211	425.	623.8	1891.6				
1	0335	44	0.	142.9	1883.6	*	1	1035	128	360.	613.4	1891.4	*	1	1735	212	425.	623.8	1891.6				
1	0340	45	0.	154.1	1883.8	*	1	1040	129	363.	613.8	1891.4	*	1	1740	213	425.	623.8	1891.6				
1	0345	46	0.	168.2	1884.1	*	1	1045	130	366.	614.2	1891.4	*	1	1745	214	425.	623.8	1891.6				
1	0350	47	0.	184.6	1884.5	*	1	1050	131	368.	614.7	1891.4	*	1	1750	215	425.	623.8	1891.6				
1	0355	48	0.	202.3	1884.9	*	1	1055	132	371.	615.1	1891.4	*	1	1755	216	425.	623.9	1891.6				
1	0400	49	0.	220.2	1885.2	*	1	1100	133	373.	615.4	1891.4	*	1	1800	217	426.	623.9	1891.6				
1	0405	50	0.	237.6	1885.6	*	1	1105	134	375.	615.8	1891.4	*	1	1805	218	426.	623.9	1891.6				
1	0410	51	0.	254.0	1886.0	*	1	1110	135	378.	616.1	1891.4	*	1	1810	219	426.	623.9	1891.6				
1	0415	52	0.	269.6	1886.3	*	1	1115	136	380.	616.5	1891.5	*	1	1815	220	426.	623.9	1891.6				
1	0420	53	0.	284.2	1886.6	*	1	1120	137	382.	616.8	1891.5	*	1	1820	221	426.	623.9	1891.6				
1	0425	54	0.	298.1	1886.8	*	1	1125	138	384.	617.1	1891.5	*	1	1825	222	426.	623.9	1891.6				
1	0430	55	0.	311.2	1887.1	*	1	1130	139	385.	617.4	1891.5	*	1	1830	223	426.	623.9	1891.6				
1	0435	56	0.	323.6	1887.3	*	1	1135	140	387.	617.7	1891.5	*	1	1835	224	426.	623.9	1891.6				
1	0440	57	0.	335.8	1887.6	*	1	1140	141	389.	617.9	1891.5	*	1	1840	225	426.	623.9	1891.6				
1	0445	58	0.	347.8	1887.8	*	1	1145	142	390.	618.2	1891.5	*	1	1845	226	426.	623.9	1891.6				
1	0450	59	5.	360.1	1888.1	*	1	1150	143	392.	618.4	1891.5	*	1	1850	227	426.	623.9	1891.6				
1	0455	60	26.	372.9	1888.3	*	1	1155	144	393.	618.7	1891.5	*	1	1855	228	426.	624.0	1891.6				
1	0500	61	47.	386.4	1888.5	*	1	1200	145	395.	618.9	1891.5	*	1	1900	229	426.	624.0	1891.6				
1	0505	62	70.	400.5	1888.8	*	1	1205	146	396.	619.1	1891.5	*	1	1905	230	426.	624.0	1891.6				
1	0510	63	94.	415.0	1889.0	*	1	1210	147	397.	619.3	1891.5	*	1	1910	231	426.	624.0	1891.6				
1	0515	64	117.	429.0	1889.3	*	1	1215	148	399.	619.5	1891.5	*	1	1915	232	426.	624.0	1891.6				
1	0520	65	138.	442.2	1889.5	*	1	1220	149	400.	619.7	1891.5	*	1	1920	233	426.	624.0	1891.6				
1	0525	66	158.	454.2	1889.8	*	1	1225	150	401.	619.9	1891.5	*	1	1925	234	426.	624.0	1891.6				
1	0530	67	175.	464.9	1889.9	*	1	1230	151	402.	620.1	1891.5	*	1	1930	235	426.	624.0	1891.6				
1	0535	68	181.	474.6	1890.1	*	1	1235	152	403.	620.3	1891.5	*	1	1935	236	426.	624.0	1891.6				
1	0540	69	183.	483.3	1890.1	*	1	1240	153	404.	620.4	1891.5	*	1	1940	237	426.	624.0	1891.6				
1	0545	70	184.	491.3	1890.2	*	1	1245	154	405.	620.6	1891.5	*	1	1945	238	426.	624.0	1891.6				
1	0550	71	185.	498.6	1890.3	*	1	1250	155	406.	620.7	1891.5	*	1	1950	239	426.	624.0	1891.6				
1	0555	72	187.	505.4	1890.3	*	1	1255	156	407.	620.9	1891.5	*	1	1955	240	426.	624.0	1891.6				
1	0600	73	188.	511.6	1890.4	*	1	1300	157	408.	621.0	1891.5	*	1	2000	241	426.	624.0	1891.6				
1	0605	74	189.	517.3	1890.4	*	1	1305	158	409.	621.1	1891.5	*	1	2005	242	426.	624.0	1891.6				
1	0610	75	190.	522.6	1890.5	*	1	1310	159	409.	621.2	1891.5	*	1	2010	243	427.	624.0	1891.6				
1	0615	76	190.	527.5	1890.5	*	1	1315	160	410.	621.4	1891.5	*	1	2015	244	427.	624.0	1891.6				
1	0620	77	191.	532.0	1890.5	*	1	1320	161	411.	621.5	1891.5	*	1	2020	245	427.	624.0	1891.6				
1	0625	78	192.	536.2	1890.6	*	1	1325	162	411.	621.6	1891.5	*	1	2025	246	427.	624.0	1891.6				
1	0630	79	193.	540.1	1890.6	*	1	1330	163	412.	621.7	1891.5	*	1	2030	247	427.	624.0	1891.6				
1	0635	80	193.	543.7	1890.6	*	1	1335	164	413.	621.8	1891.5	*	1	2035	248	427.	624.0	1891.6				
1	0640	81	194.	547.1	1890.7	*	1	1340	165	413.	621.9	1891.5	*	1	2040	249	427.	624.0	1891.6				
1	0645	82	194.	550.2	1890.7	*	1	1345	166	414.	622.0	1891.5	*	1	2045	250	427.	624.0	1891.6				
1	0650	83	195.	553.2	1890.7	*	1	1350	167	414.	622.1	1891.5	*										
1	0655	84	195.	556.0	1890.7	*	1	1355	168	415.	622.2	1891.5	*										
						*							*										

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	20.75-HR
+ (CFS)	(HR)	(CFS)				
+ 427.	20.75		425.	265.	265.	265.
		(INCHES)	.250	.540	.540	.540
		(AC-FT)	211.	455.	455.	455.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (AC-FT)	(HR)				
624.	20.75	624.	484.	484.	484.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	20.75-HR
+ (FEET)	(HR)				
1891.57	20.58	1891.57	1889.24	1889.24	1889.24

CUMULATIVE AREA = 15.79 SQ MI

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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .83	RATIO 2 .80	RATIO 3 .76	RATIO 4 .73	RATIO 5 .69	RATIO 6 .64	RATIO 7 .58	RATIO 8 .53
HYDROGRAPH AT												
+	PRE030	.26	1	FLOW	231.	220.	204.	188.	176.	154.	131.	113.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58	3.58
ROUTED TO												
+	RPRE030	.26	1	FLOW	221.	212.	201.	187.	168.	153.	131.	114.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67	3.67
HYDROGRAPH AT												
+	PRE040	.30	1	FLOW	225.	214.	198.	182.	170.	149.	126.	107.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT												
+	CPRE040	.56	1	FLOW	446.	426.	399.	369.	338.	302.	255.	216.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RCPRE040	.56	1	FLOW	430.	410.	383.	351.	324.	284.	240.	201.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	PRE050	.29	1	FLOW	232.	221.	206.	191.	179.	158.	135.	116.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT												
+	CPRE050	.85	1	FLOW	662.	631.	589.	541.	503.	442.	374.	318.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RCPRE050	.85	1	FLOW	636.	602.	558.	513.	477.	417.	354.	302.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67	3.67
HYDROGRAPH AT												
+	PRE060	.53	1	FLOW	321.	305.	283.	260.	243.	213.	180.	153.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT												
+	CPRE060	1.38	1	FLOW	941.	891.	826.	761.	708.	627.	533.	455.
				TIME	3.58	3.58	3.58	3.67	3.67	3.67	3.67	3.67
ROUTED TO												
+	RCPRE060	1.38	1	FLOW	921.	874.	810.	745.	690.	599.	513.	440.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83	3.83
HYDROGRAPH AT												
+	PRE070	.26	1	FLOW	162.	155.	146.	136.	129.	115.	101.	89.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT												
+	CPRE070	1.64	1	FLOW	1084.	1029.	956.	881.	818.	715.	610.	525.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83	3.83
HYDROGRAPH AT												
+	PRE080	.54	1	FLOW	311.	292.	266.	239.	220.	186.	150.	121.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RPRE080	.54	1	FLOW	302.	282.	255.	228.	212.	175.	143.	112.
				TIME	3.75	3.75	3.75	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT												
+	PRE090	.58	1	FLOW	409.	387.	358.	327.	305.	264.	221.	186.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RPRE090	.58	1	FLOW	385.	367.	327.	314.	288.	242.	219.	185.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT												
+	PRE100	.31	1	FLOW	171.	161.	147.	133.	122.	104.	84.	68.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT												
+	CPRE100	1.43	1	FLOW	787.	740.	662.	611.	557.	461.	385.	308.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO												
+	RCPRE100	1.43	1	FLOW	774.	727.	650.	595.	542.	447.	369.	297.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.75
ROUTED TO												
+	RCPRE100	1.43	1	FLOW	757.	711.	634.	579.	529.	445.	367.	294.
				TIME	3.67	3.67	3.67	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT												
+	PRE110	.53	1	FLOW	348.	332.	309.	286.	269.	237.	203.	176.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT												
+	CPRE110	1.96	1	FLOW	1105.	1042.	943.	863.	793.	668.	554.	456.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75	3.75
ROUTED TO												
+	RCPRE110	1.96	1	FLOW	1082.	1022.	923.	845.	779.	663.	551.	453.
				TIME	3.67	3.67	3.67	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT												
+	CPRE120	3.60	1	FLOW	2152.	2040.	1878.	1726.	1598.	1378.	1150.	953.

				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO												
+	RCPRE120	3.60	1	FLOW	2113.	2006.	1851.	1703.	1579.	1361.	1133.	948.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT												
+	PRE120	.37	1	FLOW	182.	173.	160.	147.	137.	120.	102.	86.
				TIME	3.75	3.75	3.75	3.75	3.83	3.83	3.83	3.83
2 COMBINED AT												
+	CPRE125	3.97	1	FLOW	2295.	2178.	2010.	1850.	1716.	1481.	1235.	1031.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT												
+	PMR010	4.38	1	FLOW	1409.	1325.	1210.	1094.	1009.	856.	695.	567.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17
HYDROGRAPH AT												
+	PMR020	.23	1	FLOW	106.	99.	90.	81.	74.	62.	50.	40.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT												
+	CPMR020	4.61	1	FLOW	1452.	1365.	1247.	1128.	1040.	883.	717.	585.
				TIME	4.08	4.17	4.17	4.17	4.17	4.17	4.17	4.17
ROUTED TO												
+	RCPMR020	4.61	1	FLOW	1452.	1366.	1247.	1130.	1038.	879.	713.	583.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.25
HYDROGRAPH AT												
+	PMR030	.34	1	FLOW	140.	131.	118.	105.	96.	80.	63.	49.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT												
+	CPMR030	4.94	1	FLOW	1503.	1413.	1291.	1169.	1074.	910.	738.	601.
				TIME	4.08	4.17	4.17	4.17	4.17	4.17	4.17	4.17
ROUTED TO												
+	RCPMR030	4.94	1	FLOW	1502.	1412.	1288.	1167.	1072.	906.	737.	601.
				TIME	4.17	4.17	4.17	4.17	4.17	4.25	4.25	4.25
HYDROGRAPH AT												
+	PMR040	.37	1	FLOW	221.	210.	195.	179.	167.	145.	122.	104.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT												
+	CPMR040	5.31	1	FLOW	1579.	1485.	1356.	1229.	1130.	957.	777.	632.
				TIME	4.08	4.17	4.17	4.17	4.17	4.17	4.17	4.25
ROUTED TO												
+	RCPMR040	5.31	1	FLOW	1575.	1485.	1349.	1227.	1129.	957.	777.	632.
				TIME	4.17	4.17	4.17	4.17	4.25	4.25	4.25	4.33
ROUTED TO												
+	RCPMR040	5.31	1	FLOW	1568.	1478.	1348.	1227.	1128.	955.	774.	631.
				TIME	4.25	4.25	4.25	4.25	4.25	4.25	4.33	4.33
HYDROGRAPH AT												
+	PMR140	.34	1	FLOW	65.	59.	50.	42.	38.	32.	25.	19.
				TIME	3.75	3.75	3.75	5.00	5.00	5.00	5.00	5.00
2 COMBINED AT												
+	CPMR135	5.66	1	FLOW	1608.	1513.	1375.	1250.	1149.	972.	785.	639.
				TIME	4.17	4.17	4.25	4.25	4.25	4.25	4.25	4.33
HYDROGRAPH AT												
+	PMR050	.42	1	FLOW	221.	208.	189.	171.	157.	133.	107.	87.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RPMR050	.42	1	FLOW	213.	202.	181.	165.	153.	131.	101.	86.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT												
+	PMR080	.51	1	FLOW	269.	252.	229.	206.	188.	158.	126.	101.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RPMR080	.51	1	FLOW	259.	243.	221.	197.	180.	151.	120.	95.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	PMR060	.20	1	FLOW	102.	96.	87.	77.	71.	59.	47.	37.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RPMR060	.20	1	FLOW	101.	94.	85.	76.	69.	57.	45.	35.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT												
+	CPMR060	.71	1	FLOW	360.	337.	306.	273.	250.	208.	165.	131.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO												
+	RCPMR060	.71	1	FLOW	351.	331.	304.	273.	251.	210.	166.	127.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT												
+	PMR070	.29	1	FLOW	75.	69.	60.	51.	45.	34.	26.	21.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	4.92	4.92
3 COMBINED AT												
+	CPMR070	1.42	1	FLOW	629.	587.	520.	465.	427.	359.	282.	221.

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				TIME	3.67	3.67	3.67	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	DETB	1.42	1	FLOW	481.	462.	427.	427.	427.	427.	427.	427.
				TIME	3.83	3.83	.08	.08	.08	.08	.08	.08
			** PEAK STAGES IN FEET **									
			1	STAGE	44.20	43.58	42.50	42.50	42.50	42.50	42.50	42.50
				TIME	3.83	3.83	.00	.00	.00	.00	.00	.00
ROUTED TO													
+	RCPMR070	1.42	1	FLOW	478.	458.	427.	427.	427.	427.	427.	427.
				TIME	3.83	3.83	.17	.17	.17	.17	.17	.17
HYDROGRAPH AT													
+	PMR090	.54	1	FLOW	272.	255.	232.	208.	191.	161.	129.	103.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RPMR090	.54	1	FLOW	268.	251.	228.	205.	188.	158.	126.	101.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	PMR095	.24	1	FLOW	81.	75.	67.	59.	53.	43.	33.	24.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT													
+	CPMR090	2.19	1	FLOW	769.	747.	716.	685.	663.	624.	584.	552.
				TIME	3.58	3.58	3.58	3.58	3.58	3.67	3.67	3.67
ROUTED TO													
+	RCPMR090	2.19	1	FLOW	766.	744.	714.	684.	663.	624.	583.	551.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPMR140	7.85	1	FLOW	2163.	2056.	1905.	1768.	1657.	1463.	1263.	1104.
				TIME	4.08	4.17	4.17	4.17	4.17	4.17	4.25	4.25
HYDROGRAPH AT													
+	PMR130	.35	1	FLOW	259.	246.	228.	210.	197.	172.	146.	124.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CPMR130	8.20	1	FLOW	2230.	2112.	1951.	1810.	1697.	1498.	1292.	1154.
				TIME	4.00	4.08	4.17	4.17	4.17	4.17	4.92	4.92
ROUTED TO													
+	RCPMR130	8.20	1	FLOW	2229.	2107.	1950.	1808.	1694.	1494.	1290.	1151.
				TIME	4.08	4.17	4.17	4.17	4.17	4.25	4.92	4.92
HYDROGRAPH AT													
+	PMR165	.18	1	FLOW	89.	84.	76.	69.	63.	53.	43.	34.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CPMR165	8.38	1	FLOW	2261.	2137.	1972.	1828.	1713.	1509.	1319.	1175.
				TIME	4.08	4.08	4.17	4.17	4.17	4.17	4.92	4.92
HYDROGRAPH AT													
+	PMR100	.74	1	FLOW	355.	333.	304.	273.	251.	211.	170.	137.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RPMR100	.74	1	FLOW	357.	333.	303.	272.	252.	211.	168.	134.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	PMR110	.26	1	FLOW	151.	141.	129.	116.	107.	91.	73.	60.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CPMR110	1.00	1	FLOW	474.	443.	402.	362.	334.	281.	225.	181.
				TIME	3.58	3.58	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCPMR110	1.00	1	FLOW	485.	452.	408.	367.	341.	290.	233.	185.
				TIME	3.75	3.75	3.75	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	PMR120	.33	1	FLOW	139.	130.	118.	106.	97.	80.	64.	50.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CPMR120	1.32	1	FLOW	604.	565.	510.	452.	412.	348.	280.	223.
				TIME	3.75	3.75	3.75	3.75	3.75	3.83	3.83	3.83
ROUTED TO													
+	RCPMR120	1.32	1	FLOW	597.	558.	502.	445.	410.	347.	277.	219.
				TIME	3.75	3.75	3.75	3.75	3.83	3.83	3.83	3.83
ROUTED TO													
+	RCPMR120	1.32	1	FLOW	578.	542.	493.	447.	411.	340.	267.	215.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92	3.92
2 COMBINED AT													
+	CPMR164	9.70	1	FLOW	2733.	2565.	2341.	2150.	2006.	1746.	1479.	1295.
				TIME	3.92	3.92	3.92	3.92	3.92	4.00	4.00	5.00
ROUTED TO													
+	RCPMR164	9.70	1	FLOW	2728.	2559.	2333.	2145.	2002.	1745.	1478.	1290.
				TIME	3.92	3.92	4.00	4.00	4.00	4.00	4.08	5.08
HYDROGRAPH AT													
+	PMR150	.30	1	FLOW	185.	176.	164.	152.	142.	125.	107.	92.

				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT												
+	PMR160	.39	1	FLOW	143.	134.	122.	109.	100.	83.	66.	52.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT												
+	CPMR155	10.40	1	FLOW	2990.	2807.	2561.	2351.	2188.	1895.	1599.	1386.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00	5.00
HYDROGRAPH AT												
+	PMR170	.55	1	FLOW	317.	303.	284.	265.	251.	224.	196.	172.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO												
+	RPMR170	.55	1	FLOW	319.	305.	286.	267.	252.	226.	197.	173.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT												
+	PMR200	.38	1	FLOW	144.	135.	122.	110.	101.	84.	67.	54.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT												
+	CPMR195	.92	1	FLOW	447.	425.	394.	363.	340.	300.	257.	221.
				TIME	3.83	3.83	3.83	3.83	3.92	3.92	3.92	3.92
HYDROGRAPH AT												
+	PMR190	.20	1	FLOW	87.	81.	74.	66.	61.	51.	40.	32.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO												
+	RPMR190	.20	1	FLOW	83.	78.	71.	65.	59.	49.	39.	31.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT												
+	CPMR200	1.13	1	FLOW	522.	495.	458.	421.	393.	342.	289.	247.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.92
ROUTED TO												
+	RCPMR200	1.13	1	FLOW	517.	490.	453.	416.	389.	340.	289.	246.
				TIME	3.83	3.83	3.83	3.83	3.92	3.92	3.92	3.92
ROUTED TO												
+	RCPMR200	1.13	1	FLOW	513.	487.	451.	415.	389.	340.	288.	245.
				TIME	3.83	3.83	3.92	3.92	3.92	3.92	3.92	3.92
2 COMBINED AT												
+	CPMR160	11.52	1	FLOW	3502.	3294.	3012.	2766.	2577.	2234.	1881.	1605.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	4.00	4.00
ROUTED TO												
+	RCPMR160	11.52	1	FLOW	3498.	3289.	3007.	2756.	2564.	2226.	1881.	1597.
				TIME	3.92	3.92	3.92	3.92	3.92	4.00	4.00	4.08
HYDROGRAPH AT												
+	PRE130	.29	1	FLOW	141.	133.	122.	111.	103.	88.	73.	61.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75	3.75
2 COMBINED AT												
+	CPRE140	11.82	1	FLOW	3610.	3395.	3105.	2845.	2647.	2289.	1934.	1639.
				TIME	3.92	3.92	3.92	3.92	3.92	4.00	4.00	4.00
2 COMBINED AT												
+	CPRE130	15.79	1	FLOW	5880.	5545.	5079.	4650.	4307.	3711.	3121.	2626.
				TIME	3.83	3.83	3.83	3.83	3.83	3.92	3.92	3.92
ROUTED TO												
+	PTRE0035	15.79	1	FLOW	2865.	2588.	2152.	1709.	1385.	798.	430.	427.
				TIME	5.42	5.50	5.58	5.75	6.00	6.58	9.00	20.75
			** PEAK STAGES IN FEET **									
			1	STAGE	1894.06	1893.88	1893.60	1893.33	1893.13	1892.35	1891.58	1891.57
				TIME	5.42	5.50	5.58	5.75	6.00	6.58	8.83	20.58
ROUTED TO												
+	RCPRE130	15.79	1	FLOW	2862.	2585.	2147.	1706.	1385.	798.	430.	427.
				TIME	5.50	5.50	5.58	5.83	6.00	6.58	9.00	20.75

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	DT	INTERPOLATED TO COMPUTATION INTERVAL PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
RPRE030	MANE	4.54	228.71	217.69	1.50	5.00	221.25	215.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2062E+02 EXCESS= .0000E+00 OUTFLOW= .2063E+02 BASIN STORAGE= .1408E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
RPRE030	MANE	4.59	218.79	215.87	1.43	5.00	212.35	215.00	1.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1954E+02 EXCESS= .0000E+00 OUTFLOW= .1954E+02 BASIN STORAGE= .1279E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
RPRE030	MANE	4.68	203.35	215.26	1.32	5.00	201.13	215.00	1.32

QUEST APARTMENT SITE LOMR
CASE NO. 06-09-BE64P

HYDRAULIC MODEL

RAILROAD EAST OUTFALL CHANNEL
PRE-PROJECT CONDITIONS: HEC-RAS MODEL

P:\CornerStone\HEC-RAS Sections 07-02-07.dwg jj Tue, 03 Jul 2007 - 8:38am

Avoid cutting underground utility lines. It's costly.

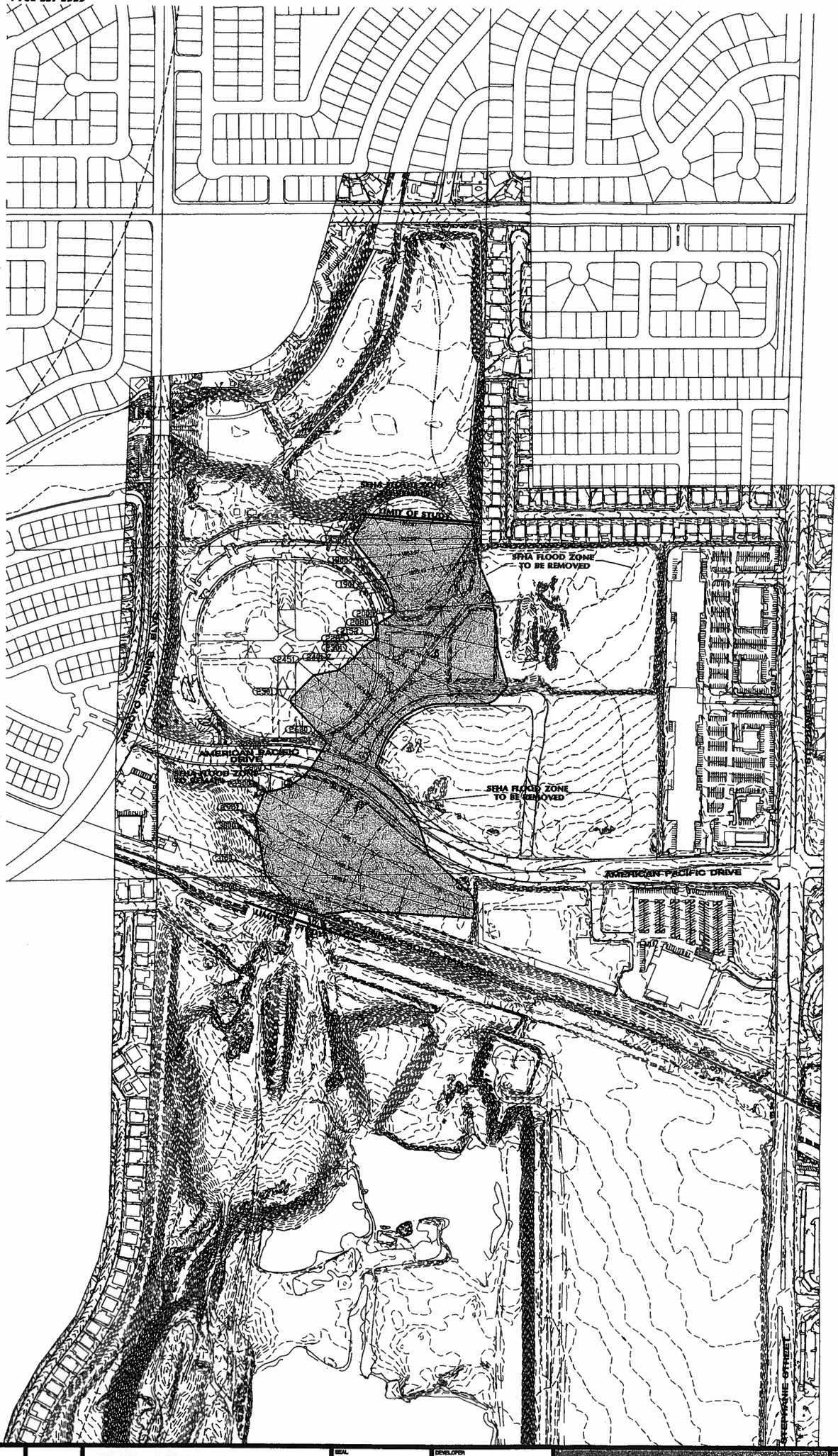
Call before you Dig
1-800-227-2600

Call before you Overhead
1-702-227-2929

NORTH

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 200 ft.

LEGEND
- FLOOD ZONE BOUNDARY
- ZONE "A"
- 160000 HEC-RAS SECTION



CVL Proj. No: 06-3501

SHEET 1 OF 1 AGENCY DWG. NO.

CVL CONSULTANTS, INC.
ENGINEERING · PLANNING · LAND SURVEYING

6280 S. Valley View Blvd
Suite 200
Las Vegas, NV 89118
Tel: (702) 368-3008
Fax: (702) 368-0047

SEAL

DEVELOPER

CORNERSTONE FS RESTUDY

HEC-RAS-CROSS-SECTION
FIGURE-5

No.	Revision	By	Date
4			
3			
2			
1			

W.O.# 6303 Revd. Date: 11-7-07
From & Co.: VTN / Lyon Trico
TO:
Desc: HEC-Ras Cross Sec Figs
Copied: Y/N Scanned: Y/N Logged

DESIGNED BY: RFF
DRAWN BY: RFF
CHECKED BY: RFF/DMB
PROJECT DATE: 05/18/07

BOSS HEC-RAS Profile Output Table - Standard Table 1

River Station	Profile	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)	
3200	PF 1	2865.00	1887.00	1893.96		1894.62	0.002155	6.54	438.19	117.84	0.59752
3100	PF 1	2865.00	1892.00	1893.73	1893.73	1894.33	0.008717	6.24	458.78	384.23	1.00712
3000	PF 1	2865.00	1886.00	1888.81		1889.06	0.003645	4.03	711.61	598.49	0.65068
2951	PF 1	2865.00	1885.00	1888.30	1888.30	1888.69	0.010845	5.01	571.44	783.39	1.03451
2900	PF 1	2865.00	1885.00	1886.14	1886.14	1886.54	0.009279	4.68	571.00	704.74	0.95902
2800	PF 1	2865.00	1877.00	1881.64	1881.64	1882.32	0.003893	7.07	504.62	408.93	0.76582
2700	PF 1	2865.00	1877.00	1879.14	1879.14	1879.75	0.008831	6.26	457.81	386.00	1.01264
2600	PF 1	2865.00	1877.00	1878.44	1878.44	1879.10	0.008469	6.53	438.89	336.58	1.00741
2501	PF 1	2865.00	1873.00	1876.83		1877.44	0.005358	6.27	456.88	263.61	0.83942
2451	PF 1	2865.00	1873.00	1876.14	1876.14	1876.84	0.008295	6.69	428.12	311.10	1.00532
2401	PF 1	2865.00	1872.00	1874.89	1874.89	1875.73	0.007703	7.34	390.22	233.52	1.00091
2301	PF 1	2865.00	1870.00	1873.17	1873.17	1874.05	0.007838	7.55	379.61	220.82	1.01442
2225	PF 1	2865.00	1867.00	1871.64		1871.77	0.000796	2.92	982.43	427.95	0.33919
2152	PF 1	2865.00	1860.00	1870.70	1870.70	1871.57	0.007718	7.50	381.86	572.07	1.00313
2080	PF 1	2865.00	1859.00	1869.29	1869.29	1870.06	0.008115	6.95	408.81	497.18	1.00634
2001	PF 1	2865.00	1858.00	1860.80	1860.80	1862.05	0.006842	8.96	319.84	129.24	1.00346
1901	PF 1	2865.00	1853.00	1855.49	1855.49	1856.39	0.007660	7.61	376.53	212.47	1.00728
1800	PF 1	2865.00	1852.00	1853.97	1853.97	1854.61	0.008692	6.44	444.71	354.58	1.01377
1750	PF 1	2865.00	1851.00	1852.96	1852.96	1853.48	0.009505	5.80	493.65	492.12	1.02119
1700	PF 1	2865.00	1850.00	1851.87	1851.87	1852.43	0.009100	6.00	477.59	438.28	1.01273

HEC-RAS Version 3.1.3 May 2005
RiverCAD XP for AutoCAD
BOSS International
6300 University Avenue
Madison, Wisconsin 53562
Tel : (608) 258-9910
Fax : (608) 258-9943
EMail : support@bossintl.com
WWW : www.bossintl.com

```
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      XXXX  XXX     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 : QUEST APARTMENT
Project Description : LOMR
Project Engineer : Ray Fredericksen
Run Date and Time : 07/03/07 08:08:24 AM

Project in English units

****

PLAN DATA

Plan Summary Information:
Number of: Cross Sections = 20 Multiple Openings = 0
Culverts = 0
Bridges = 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

Computational Flow Regime: Subcritical Flow

Encroachment Data: None

****

FLOW DATA

Flow Data (cfs)

River	Reach	Riv Sta	PF 1
River #1	LOMR	3200	2865

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
River #1	LOMR	PF 1		Critical Depth

****

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 3200

INPUT
Description:
Station Elevation Data, num = 31

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1906	19.5	1906	153.34	1905	217.38	1904	341.34	1897
343.2	1896	345.21	1895	350.7	1894	355.04	1893	357.04	1892
358.99	1891	360.96	1890	362.99	1889	365.04	1888	367.82	1887
373.54	1887	410.88	1888	420.63	1889	423.42	1890	426.09	1891
428.64	1892	430.96	1893	470.42	1894	473.63	1895	476.01	1896
478.45	1897	483.63	1898	491.11	1902	500.64	1903	646.11	1904
655.79	1904								

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	341.34	.025	491.11	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
341.34	491.11	176.5	70.05	194.58	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 3100

INPUT
Description:
Station Elevation Data, num = 21

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1905	42.39	1904	62.19	1903	79.33	1902	92.01	1901
107.78	1900	127.69	1899	155.04	1898	209.57	1897	229.05	1896
246.7	1895	262.26	1894	270.56	1893	289.39	1892	431.83	1892
443.21	1892	462.94	1892	539.24	1893	689.66	1894	740.16	1894
824.71	1894								

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	246.7	.025	740.16	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
246.7	740.16	155.96	99.62	321.47	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 3000

INPUT
Description:
Station Elevation Data, num = 41

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1897	51.87	1896	64.43	1895	78.78	1894	95.5	1894
106.99	1895	118.58	1896	129.42	1897	150.95	1897	156.6	1896
160.57	1895	165.1	1894	169.88	1893	176.77	1892	197.34	1891
218.3	1890	235.8	1889	268.09	1889	271.2	1889	294.93	1890
405.03	1890	502.52	1889	537.03	1888.69	613.27	1888	643.3	1888
765.51	1888	820.01	1888	847.92	1888	859.35	1887.9	961.76	1887
966.97	1887	1040.52	1887	1059.58	1886	1085.09	1886	1112.41	1886.88
1115.96	1887	1119.24	1888	1122.58	1889	1125.67	1890	1127.81	1891
1129.94	1892								

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	160.57	.025	1127.81	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
160.57	1127.81	113.14	60.9	33.06	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2951

INPUT
Description:
Station Elevation Data, num = 34

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1890	18.3	1889	21.37	1889	56.4	1889	63.09	1888
174.94	1887	189.18	1887	232.58	1888	256.88	1889	353.13	1889
363.62	1889	442.62	1888	546.56	1888	568.24	1888	681.42	1888
728.11	1888	770.23	1888	779.48	1888	786.88	1888	874.88	1887
896.21	1887	957.13	1887	964.89	1886	977.4	1885	980.02	1885
985.02	1885.52	989.63	1886	1019.63	1887	1022.33	1888	1025.18	1889
1027.77	1890	1029.72	1891	1031.55	1892	1033.43	1893		

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	1027.77	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	1027.77	112.66	123.81	49	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2900

INPUT
Description:
Station Elevation Data, num = 28

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1889	38.76	1890	54.55	1890	60.19	1889	63.9	1888
66.35	1887	68.54	1886	74.82	1885	114.46	1885	154.68	1885
171.68	1885	527.32	1886	568.97	1887	662.7	1887	726.74	1887
749.79	1887	777.91	1886	817.41	1885	965.84	1885	968.86	1885
970.52	1885	1013.25	1886	1016.36	1887	1019.47	1888	1021.54	1889
1023.01	1890	1024.53	1891	1026.08	1892				

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	66.35	.025	568.97	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
66.35	568.97	103.52	161.8	225.47	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2800

INPUT
Description:
Station Elevation Data, num = 28

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1884	50.46	1883	89.37	1883	113.67	1883	135.48	1883
157.14	1884	272.47	1884	377.31	1884	378.84	1883	380.54	1882
382.31	1881	388.29	1880	391.79	1879	396.06	1878	401.17	1877
405.54	1877	429.53	1878	433.38	1878	441.26	1878	455.58	1879
471.64	1880	488.75	1880	495.47	1880	513.79	1881	552.2	1881
670.76	1881	718.91	1881	830.28	1882				

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	513.79	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	513.79	95.19	80.61	207.15	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2700

INPUT
Description:
Station Elevation Data, num = 18

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1884	60.33	1883	108.42	1882	178.39	1881	239.22	1880
307.11	1879	337.69	1878	462.24	1877	463.96	1877	558.56	1878
670.75	1879	757.32	1880	829	1880	840.18	1880	899.64	1881
911.36	1881.26	945.62	1882	998.22	1883				

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	60.33	.025	998.22	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
60.33	998.22	145.33	51.83	112.64	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2600

INPUT
Description:
Station Elevation Data, num = 22

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1879	42.9	1879	58.13	1879	80.74	1878	102.49	1877
102.96	1877	173.65	1877	372.97	1877	399.27	1878	417.6	1879
431.64	1880	446.58	1881	455.13	1881	465.19	1881	491.62	1882
497.23	1883	501.52	1884	511.76	1885	513.61	1885	516.99	1884
519.31	1883	521.78	1882						

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value

```
      0    .025   58.13    .025   417.6    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right    Coeff Contr.   Expan.
         58.13   417.6            187.98   70.65   76.22          0.1     0.3


CROSS SECTION

RIVER: River #1
REACH: LOMR                 River Station: 2501

INPUT
Description:
Station Elevation Data,  num = 26
    Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.
*********************************************************************************
       0    1878    29.91    1878     31.8    1878    54.37    1877    78.44    1876
  172.09    1875   267.61    1874   279.33    1873   284.06    1873   287.25    1874
   290.5    1875   304.26    1876   325.62    1877   329.34    1877   356.06    1877
  360.13    1878   367.16    1879   374.18    1879   426.49    1879   432.33    1879
  437.06    1878   442.28    1877   498.89    1877   504.26    1878    518.5    1879
  532.15    1880

Mannings n Values,  num = 3
    Sta.   Value     Sta.   Value     Sta.   Value
*************************************************
       0    .025    29.91    .025   532.15    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right    Coeff Contr.   Expan.
         29.91   532.15           152.9   90.77   67.64          0.1     0.3


CROSS SECTION

RIVER: River #1
REACH: LOMR                 River Station: 2451

INPUT
Description:
Station Elevation Data,  num = 22
    Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.
*********************************************************************************
       0  1876.5   115.19    1876    188.6    1875   268.95    1874    307.9    1873
  321.92    1873   325.44    1874   371.42    1875   376.51    1875   382.19    1875
  385.72    1876   388.85    1877   392.04    1878   396.81    1878   415.62    1877
  437.27    1876   441.34    1876   445.98    1877    457.8    1877   486.46    1877
  497.82    1878   532.24    1879

Mannings n Values,  num = 3
    Sta.   Value     Sta.   Value     Sta.   Value
*************************************************
       0    .025        0    .025   532.24    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right    Coeff Contr.   Expan.
            0   532.24           107.08   92.21   98.07          0.1     0.3


CROSS SECTION

RIVER: River #1
REACH: LOMR                 River Station: 2401

INPUT
Description:
Station Elevation Data,  num = 22
    Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.
*********************************************************************************
       0    1876    63.78    1875   100.82    1874   146.63    1873   218.66    1872
   230.2    1872   235.94    1873   237.07    1873   251.19    1873   294.63    1874
   302.1    1875   307.59    1875   312.89    1875   317.75    1876   336.59    1876
  345.81    1876    349.3    1876   363.29    1876   408.23    1877   408.72    1877
  424.05    1877   474.67    1877

Mannings n Values,  num = 3
    Sta.   Value     Sta.   Value     Sta.   Value
*************************************************
       0    .025        0    .025   424.05    .025

Bank Sta: Left   Right    Lengths: Left Channel   Right    Coeff Contr.   Expan.
            0   424.05           84.52  100.99  100.25          0.1     0.3


CROSS SECTION

RIVER: River #1
REACH: LOMR                 River Station: 2301

INPUT
Description:
Station Elevation Data,  num = 16
    Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.     Sta.   Elev.
*********************************************************************************
       0    1875    29.6    1874    50.27    1873   103.25    1872   147.53    1871
```

157.97	1871	163.42	1871	170.36	1871	229.6	1870	266.72	1873
271.71	1874	309.82	1875	314.14	1875	346.22	1874	358.28	1874
431.31	1875								

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	431.31	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	431.31	43.33	105.89	218.12	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2225

INPUT
Description:
Station Elevation Data, num = 27

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1873	58.55	1872	79.02	1871	130.79	1870	147.03	1870
154.32	1870	164.03	1870	187.01	1870	217.28	1869	249.14	1869
294.24	1869	300.12	1868	306.35	1867	328.25	1867	382.15	1868
397.12	1869	416.98	1870	444.86	1870	455.63	1870	485.58	1871
498.48	1872	512.36	1873	522.19	1873	540	1873	568.99	1873
599.2	1873	712.58	1874						

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	599.2	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	599.2	61.98	68.66	111.86	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2152

INPUT
Description:
Station Elevation Data, num = 28

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1873	24.42	1872	42.89	1871	58.93	1870	190.37	1869
229.69	1868	257.36	1867	263.42	1866	268.66	1865	277.16	1865
322.45	1865	348.9	1865	359.6	1865	364.22	1864	366.82	1863
369.33	1862	372.05	1861	374.91	1860	448.33	1860	525.17	1861
533.27	1862	544.02	1863	550.61	1864	555.67	1865	560.36	1866
572.06	1867	593.73	1868	619.78	1869				

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	619.78	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	619.78	63.67	105.93	161.98	0.1	0.3

Ineffective Flow Areas, num = 1

Sta L	Sta R	Elev
267.24	619.5	1871.49

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2080

INPUT
Description:
Station Elevation Data, num = 32

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1872	10.86	1871	18.19	1870	24.63	1869	58.95	1869
66.86	1869	130.26	1868	170.91	1868	224.36	1868	240.1	1867
260.4	1866	276.92	1865	280.5	1864	284.14	1863	292.03	1863
304.19	1864	304.72	1865	317.04	1865	319.44	1864	321.76	1863
324.1	1862	326.37	1861	328.55	1860	354.45	1859	414.05	1859
504.02	1860	506.49	1861	508.96	1862	511.42	1863	513.83	1864
516.28	1865	519.95	1865						

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	516.28	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.

0	516.28	44.59	151.73	211.34	0.1	0.3

Ineffective Flow Areas, num = 1

Sta L	Sta R	Elev
287.47	515.69	1870

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 2001

INPUT
Description:
Station Elevation Data, num = 38

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1868	15.79	1868	22.18	1868	26.94	1868	51.3	1867
57.13	1866	65.56	1865	71.18	1864	76.54	1863	81.91	1862
87.36	1861	91.81	1860	92.73	1859	99.89	1858	197.42	1858
205.37	1859	210.35	1860	219.27	1861	225.11	1862	258.83	1863
263.64	1864	268.4	1865	269.77	1865	287.07	1864	307.25	1863
334.57	1863	354.2	1863	395.11	1863	402.54	1864	417.46	1865
438.82	1865	455.81	1864	469.15	1863	558.4	1863	579.74	1864
584.26	1865	588.32	1865	598.34	1865				

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	71.18	.025	417.46	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
71.18	417.46	133.28	191.32	195.24	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 1901

INPUT
Description:
Station Elevation Data, num = 25

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1869	5.94	1868	11.88	1867	44.85	1866	53.51	1865
58.9	1864	61.37	1863	63.94	1862	66.58	1861	69.23	1860
71.91	1859	302.57	1853	371.68	1853	377.61	1853	400.82	1853
403.94	1854	406.71	1855	432	1856	435.44	1857	440.26	1858
445.53	1859	451.47	1860	471.93	1861	476.83	1862	535.12	1863

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	61.37	.025	476.83	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
61.37	476.83	118.56	76.22	63.42	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 1800

INPUT
Description:
Station Elevation Data, num = 20

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1865	23.02	1866	33.81	1866	42.38	1865	48.43	1864
53.18	1863	57.77	1862	62.22	1861	66.42	1860	70.5	1859
175.16	1853	210.81	1853	253.32	1853	272.59	1853	273.12	1853
280.61	1853	496.35	1852	498.62	1852	527.66	1856	538.92	1866

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	42.38	.025	538.92	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
42.38	538.92	86.17	52.68	28.93	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 1750

INPUT
Description:
Station Elevation Data, num = 13

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.

```
      0    1859    4.77    1858   34.57    1852   57.85    1852  309.17    1852
 416.44    1852  460.83    1852  509.28    1851  510.35    1851  514.08    1852
 518.56    1852  529.19    1855  542.81    1865
```

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	4.77	.025	529.19	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
4.77	529.19	109.38	60.15	48.96	0.1	0.3

CROSS SECTION

RIVER: River #1
REACH: LOMR River Station: 1700

INPUT
Description:
Station Elevation Data, num = 20

Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.	Sta.	Elev.
0	1857	2.64	1856	5.13	1855	8.34	1854	11.99	1853
16.11	1852	20.7	1851	25.86	1850	32.35	1850	194.3	1851
414.85	1851	426.83	1851	432.67	1851	450.22	1850	460.45	1854
468.98	1857	481.57	1867	484.57	1868	486.51	1869	488.23	1870

Mannings n Values, num = 3

Sta.	Value	Sta.	Value	Sta.	Value
0	.025	0	.025	488.23	.025

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	488.23	1	1	0.1	0.3

SUMMARY OF MANNING'S N VALUES

River: River #1

Reach	River Sta.	n1	n2	n3
LOMR	3200	0.025	0.025	0.025
LOMR	3100	0.025	0.025	0.025
LOMR	3000	0.025	0.025	0.025
LOMR	2951	0.025	0.025	0.025
LOMR	2900	0.025	0.025	0.025
LOMR	2800	0.025	0.025	0.025
LOMR	2700	0.025	0.025	0.025
LOMR	2600	0.025	0.025	0.025
LOMR	2501	0.025	0.025	0.025
LOMR	2451	0.025	0.025	0.025
LOMR	2401	0.025	0.025	0.025
LOMR	2301	0.025	0.025	0.025
LOMR	2225	0.025	0.025	0.025
LOMR	2152	0.025	0.025	0.025
LOMR	2080	0.025	0.025	0.025
LOMR	2001	0.025	0.025	0.025
LOMR	1901	0.025	0.025	0.025
LOMR	1800	0.025	0.025	0.025
LOMR	1750	0.025	0.025	0.025
LOMR	1700	0.025	0.025	0.025

SUMMARY OF REACH LENGTHS

River: River #1

Reach	River Sta.	Left	Channel	Right
LOMR	3200	176.5	70.05	194.58
LOMR	3100	155.96	99.62	321.47
LOMR	3000	113.14	60.9	33.06
LOMR	2951	112.66	123.81	49
LOMR	2900	103.52	161.8	225.47
LOMR	2800	95.19	80.61	207.15
LOMR	2700	145.33	51.83	112.64
LOMR	2600	187.98	70.65	76.22
LOMR	2501	152.9	90.77	67.64
LOMR	2451	107.08	92.21	98.07
LOMR	2401	84.52	100.99	100.25
LOMR	2301	43.33	105.89	218.12
LOMR	2225	61.98	68.66	111.86
LOMR	2152	63.67	105.93	161.98
LOMR	2080	44.59	151.73	211.34
LOMR	2001	133.28	191.32	195.24

*LOMR	*	1901	* 118.56*	76.22*	63.42*
*LOMR	*	1800	* 86.17*	52.68*	28.93*
*LOMR	*	1750	* 109.38*	60.15*	48.96*
*LOMR	*	1700	* 1*	1*	1*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: River #1

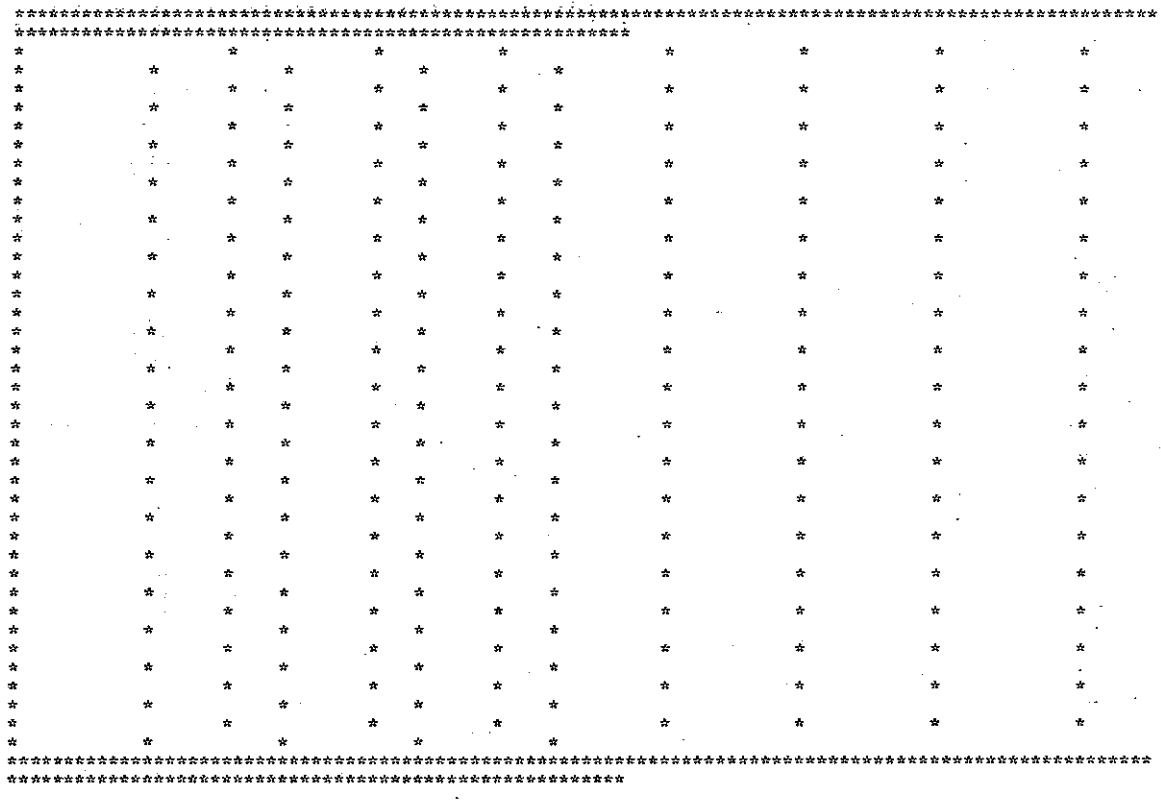
Reach	River Sta.	Contr.	Expan.
*LOMR	3200	0.1	0.3
*LOMR	3100	0.1	0.3
*LOMR	3000	0.1	0.3
*LOMR	2951	0.1	0.3
*LOMR	2900	0.1	0.3
*LOMR	2800	0.1	0.3
*LOMR	2700	0.1	0.3
*LOMR	2600	0.1	0.3
*LOMR	2501	0.1	0.3
*LOMR	2451	0.1	0.3
*LOMR	2401	0.1	0.3
*LOMR	2301	0.1	0.3
*LOMR	2225	0.1	0.3
*LOMR	2152	0.1	0.3
*LOMR	2080	0.1	0.3
*LOMR	2001	0.1	0.3
*LOMR	1901	0.1	0.3
*LOMR	1800	0.1	0.3
*LOMR	1750	0.1	0.3
*LOMR	1700	0.1	0.3

Profile Output - Standard Table 1

Reach	River Sta.	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl

Profile Output - Standard Table 2

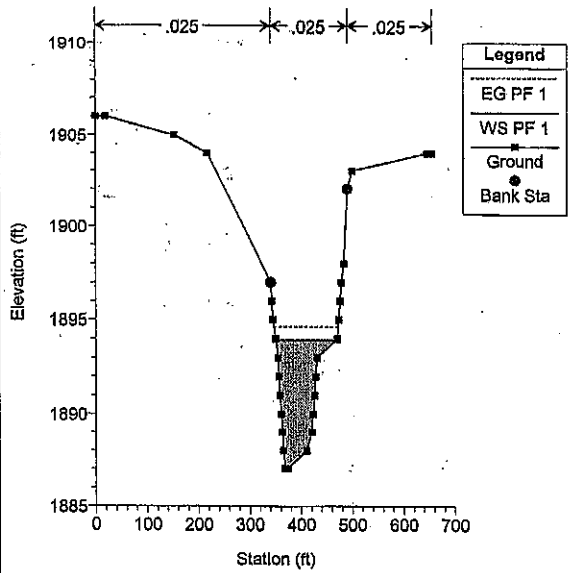
Reach	River Sta.	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)



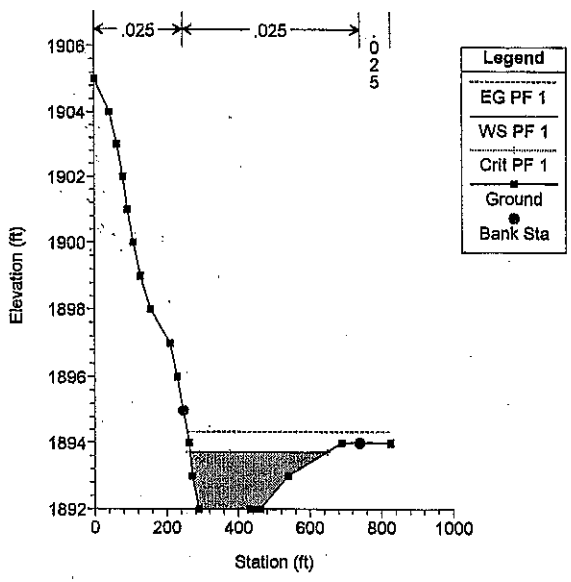
ERRORS WARNINGS AND NOTES
No Errors, Warnings or Notes in Computations

Report Completed - 07/03/07 08:08:29 AM

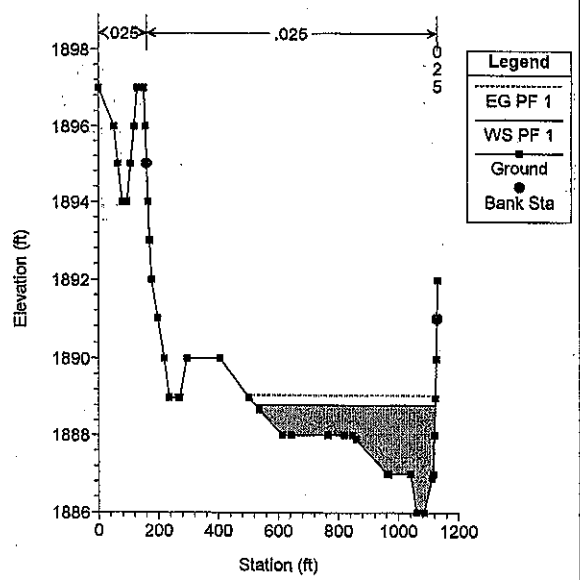
QUEST APARTMENT Plan: LOMR 7/3/2007



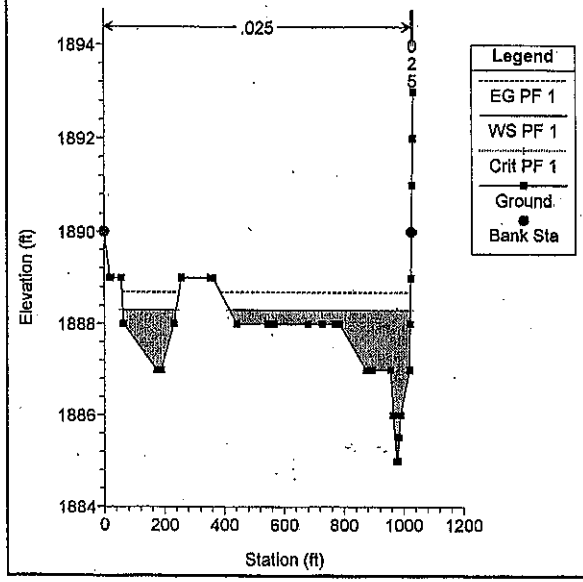
QUEST APARTMENT Plan: LOMR 7/3/2007



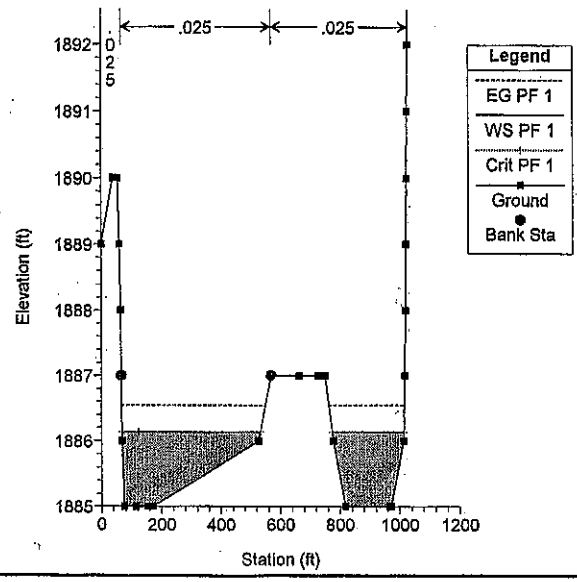
QUEST APARTMENT Plan: LOMR 7/3/2007



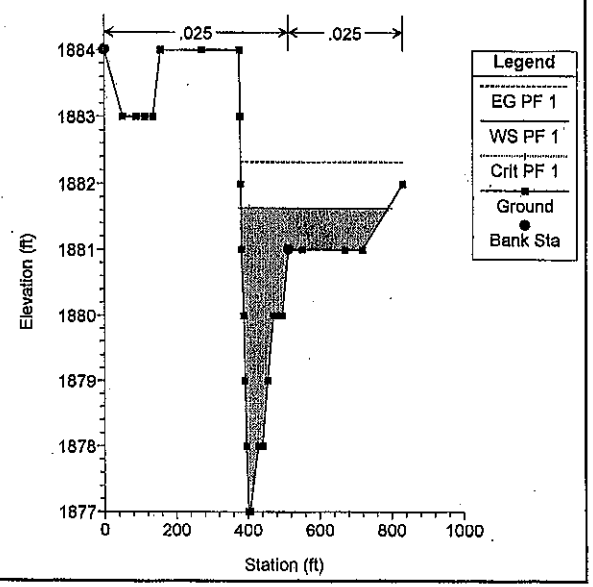
QUEST APARTMENT Plan: LOMR 7/3/2007

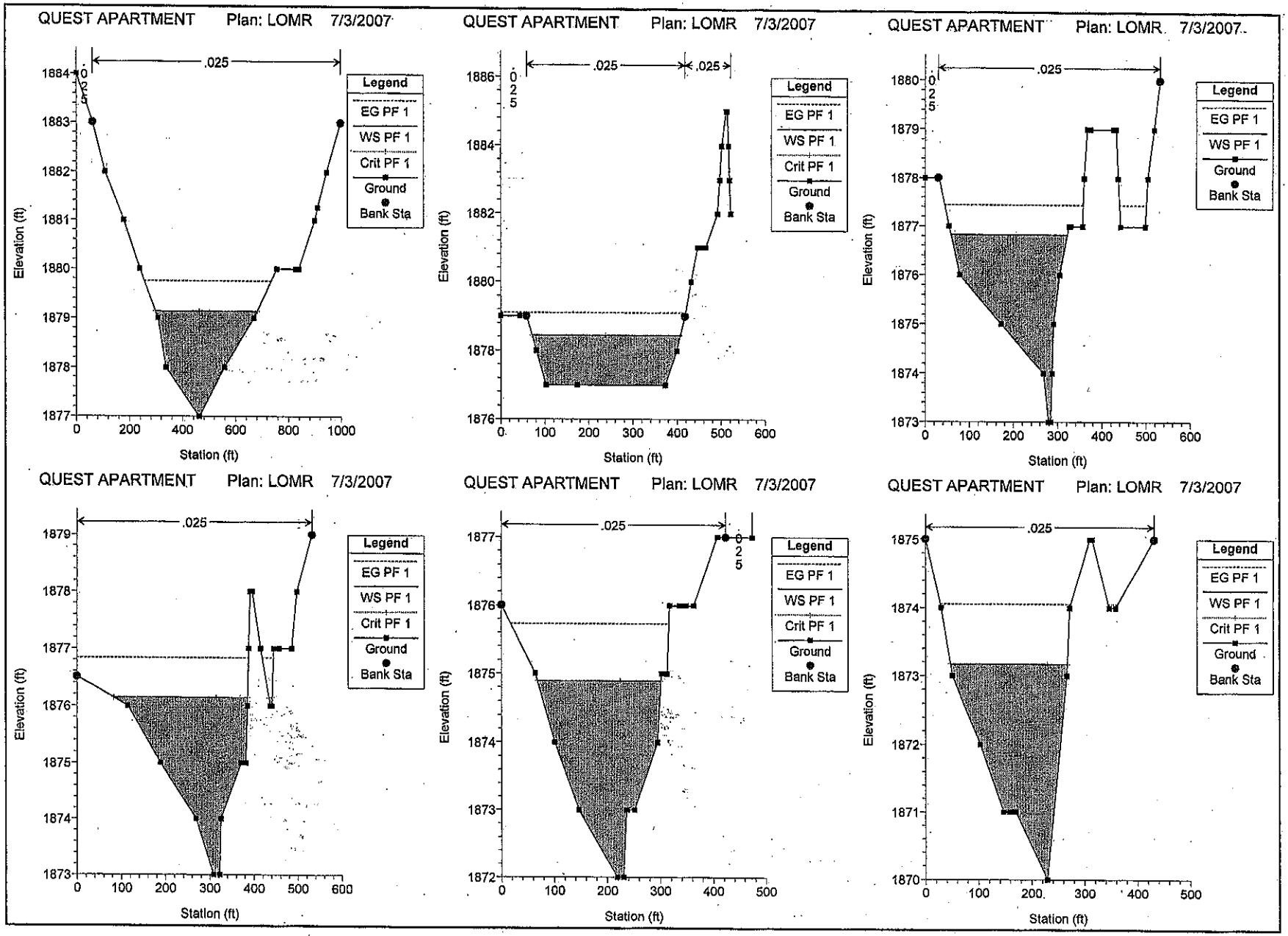


QUEST APARTMENT Plan: LOMR 7/3/2007

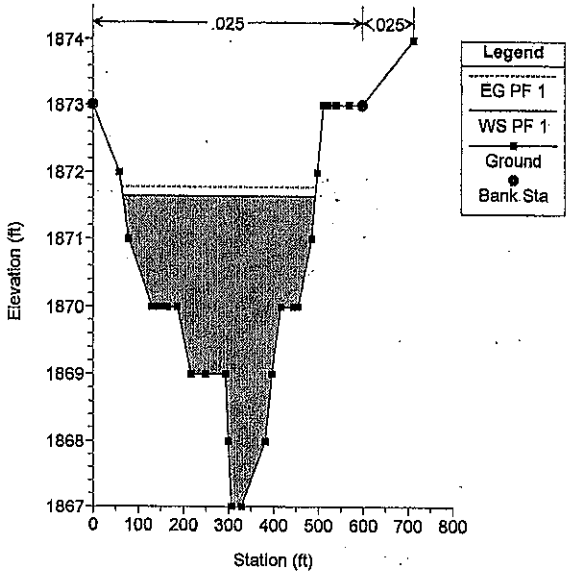


QUEST APARTMENT Plan: LOMR 7/3/2007

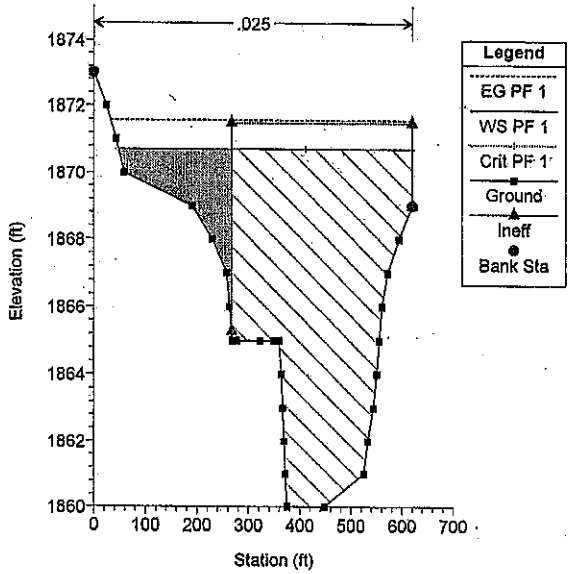



QUEST APARTMENT Plan: LOMR 7/3/2007
.025
0
2
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1884
1883
1882
1881
1880
1879
1878
1877
0
200
400
600
800
1000
QUEST APARTMENT Plan: LOMR 7/3/2007
.025
.025
0
2
5
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1886
1884
1882
1880
1878
1876
0
100
200
300
400
500
600
QUEST APARTMENT Plan: LOMR 7/3/2007
.025
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2
5
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1880
1879
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1877
1876
1875
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1873
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400
500
600
QUEST APARTMENT Plan: LOMR 7/3/2007
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1879
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1877
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1873
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600
QUEST APARTMENT Plan: LOMR 7/3/2007
.025
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Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1877
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1872
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500
QUEST APARTMENT Plan: LOMR 7/3/2007
.025
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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1874
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1870
0
100
200
300
400
500

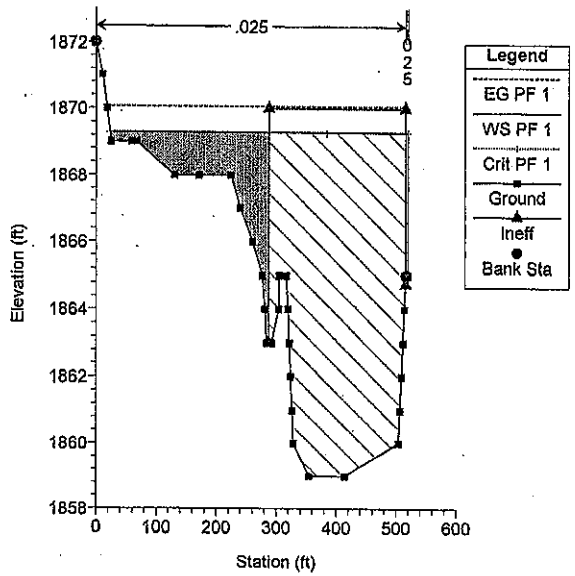
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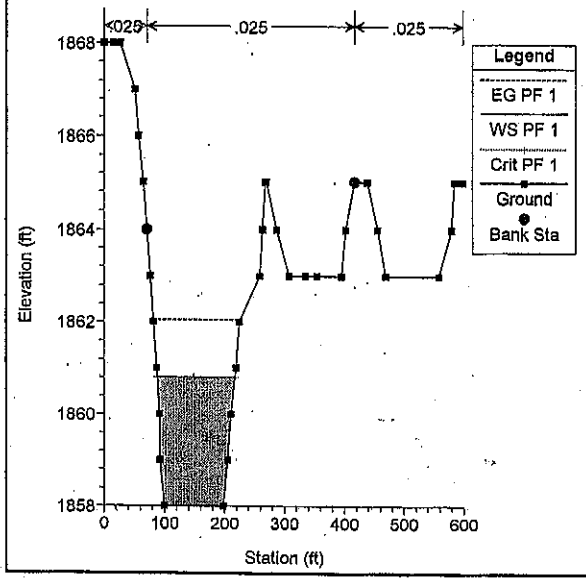
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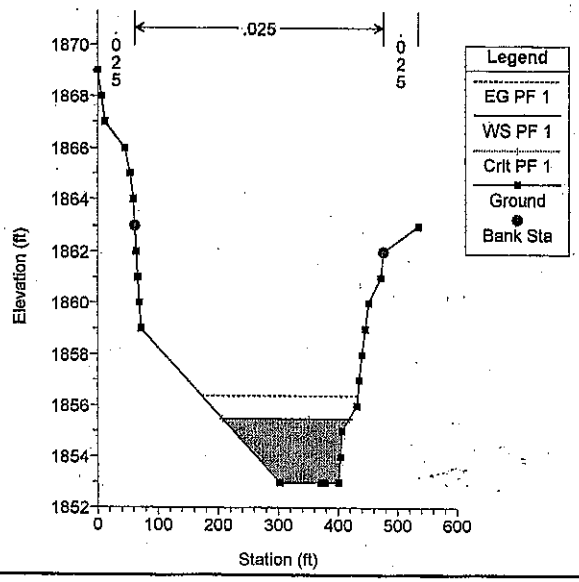
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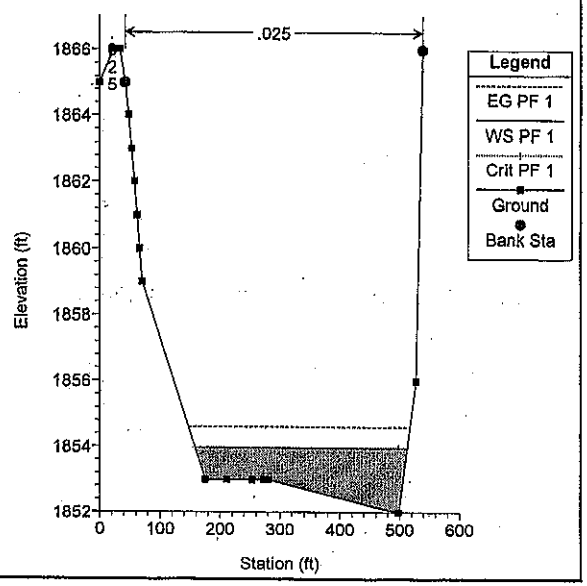
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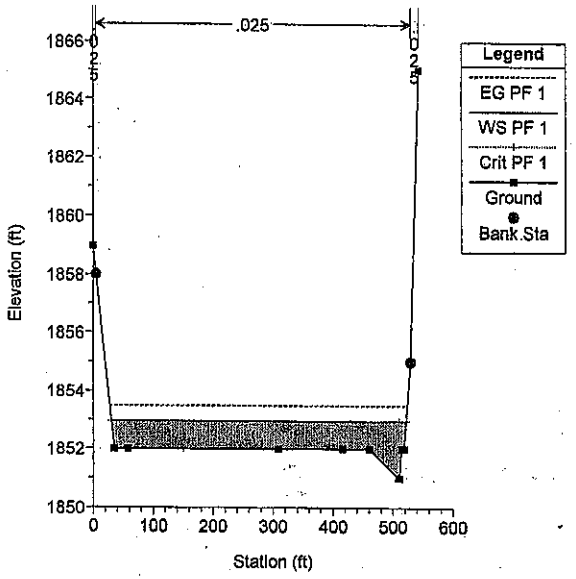
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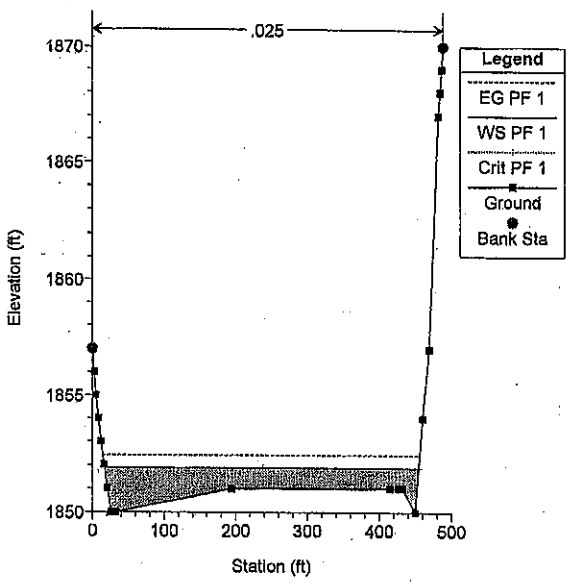
QUEST APARTMENT Plan: LOMR 7/3/2007



QUEST APARTMENT Plan: LOMR 7/3/2007



QUEST APARTMENT Plan: LOMR 7/3/2007



RAILROAD EAST OUTFALL CHANNEL

CHANNEL PLAN & PROFILE

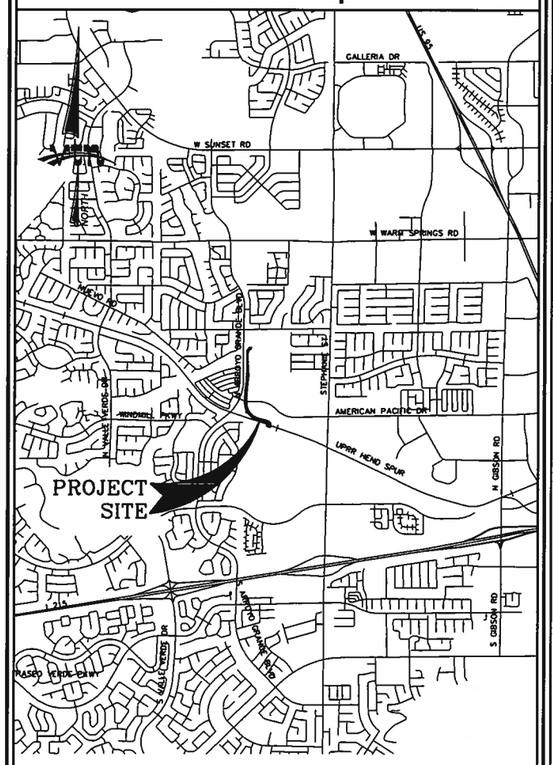
RAILROAD EAST OUTFALL CHANNEL

Contract No. - -

PWP-CL- -

FUNDED BY THE CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

Location Map



VICINITY MAP

NOT TO SCALE

Revisions

No.	DESCRIPTION	BY	DATE	APPROVAL

City Of Henderson

Clark County, Nevada

Department Of Public Works

THE CITY OF HENDERSON ®

A Place To Call Home

Mayor

James B. Gibson

City Council

Arthur A. Hafen

Jack Clark

Steven D. Kirk

Gerri Schroder

City Manager

Mary K. Peck

Director Of Public Works

Robert A. Murnane, P.E.

PROFESSIONAL ENGINEER-STATE OF NEVADA
JEFFREY N. GRIEST
EXP. 12-31-07
CIVIL
No. 7755

90% Submittal
"Not for Construction"
NOVEMBER 2007

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

Approved:

Date:

Gale Wm. Frasier II, P.E. / General Manager

Approval

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS		
FLOOD CONTROL COORDINATOR		
DIRECTOR OF UTILITY SERVICES		
ENGINEERING SERVICES MANAGER		
SURVEY		
RIGHT OF WAY		
NEW DEVELOPMENT		
CITY TRAFFIC ENGINEER		

Agency Approval

AGENCY	REVIEWED BY	DATE
S.N.W.A.		
SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL		
NEVADA POWER COMPANY, DISTRIBUTION		
NEVADA POWER COMPANY, TRANSMISSION		
NEVADA POWER ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS		
COX COMMUNICATION LAS VEGAS, INC.		
SOUTHWEST GAS		
EMBARQ		

THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

VTN
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 233-7755
FAX (702) 362-2592
WEB SITE WWW.VTNNV.COM

RAILROAD EAST OUTFALL CHANNEL
FUNDED BY THE CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
Contract No. - -

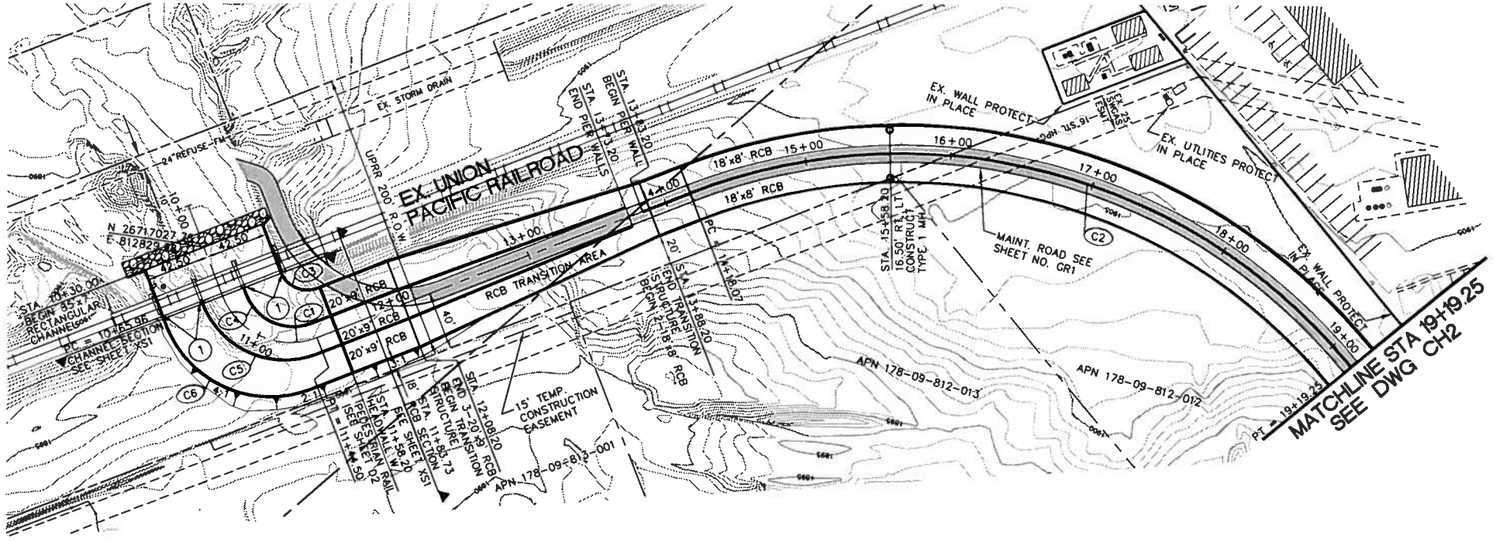
DATE : NOVEMBER 2007

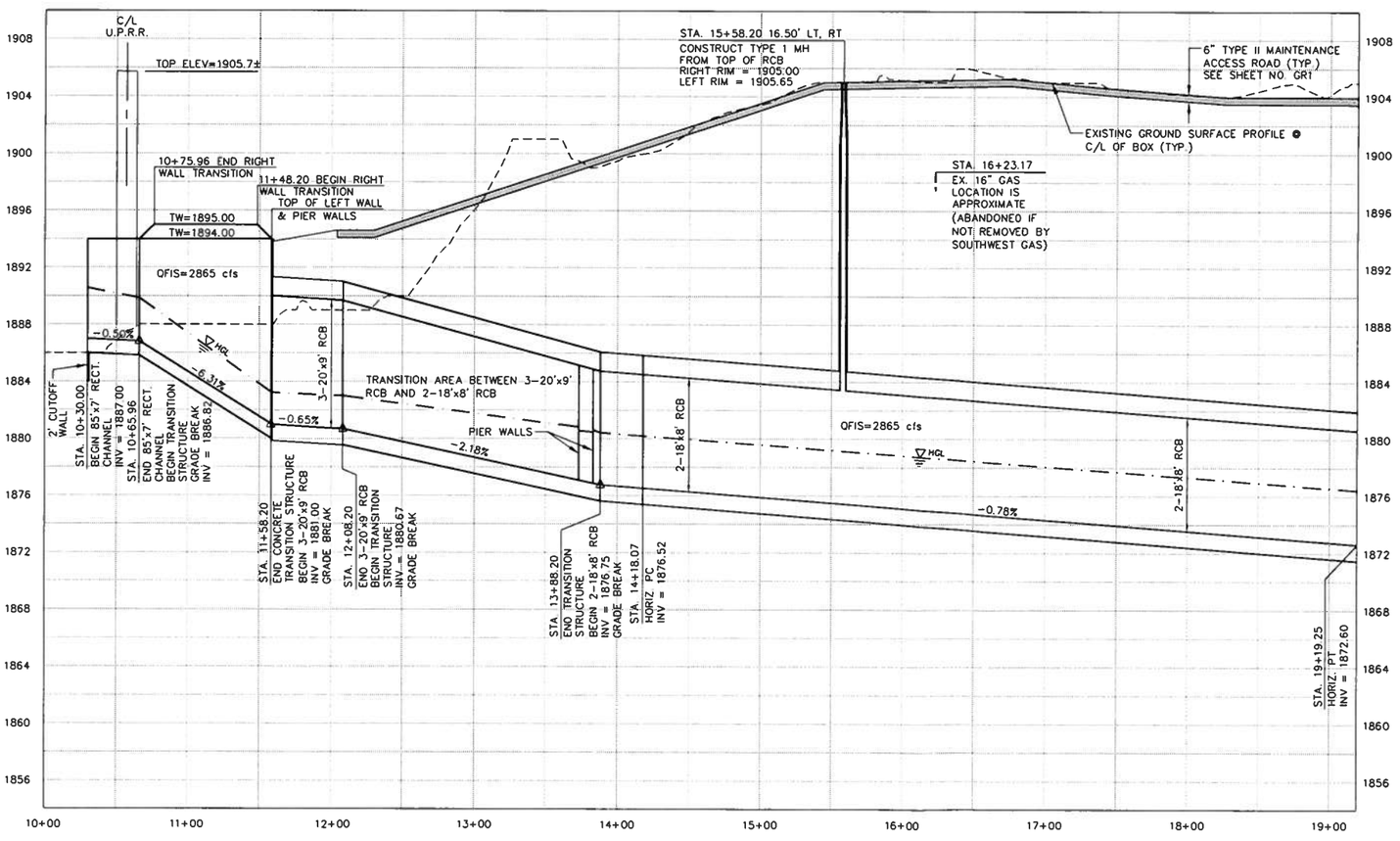
DRAWING No

1

SHEET 1 of XX

SHEET No. G1





GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50 ft.

(VERIFY SCALE - PLANS MAY HAVE BEEN REDUCED)

NORTH

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
3. SEE DRAWING D1 FOR TYPICAL EXCAVATION DETAILS.
4. SEE DRAWINGS S_-S_ & ST1-ST10 FOR STRUCTURAL DETAILS.

CONSTRUCTION NOTES:

(1) EX. RAILROAD BRIDGE PIERS TO REMAIN. PROTECT IN PLACE.

CURVE DATA

CURVE NO.	RADIUS	DELTA	LENGTH
C1	50.00'	90°00'00"	78.54'
C2	400.00'	71°47'20"	501.18'
C3	19.50'	90°00'00"	30.63'
C4	34.50'	90°17'14"	54.37'
C5	60.50'	89°44'54"	94.77'
C6	76.00'	90°00'00"	119.38'

90% Submittal
"Not for Construction"
NOVEMBER 2007

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Call before you Overhead
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
Call 811 or 1-800-227-2600
1-702-455-7544

REVISION | BY | DATE | REV

CITY OF HENDERSON
240 WATER STREET - HENDERSON, NEVADA - 89009
CLARK COUNTY, NEVADA

VAN
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5146
PH (702) 873-7550
FAX (702) 363-2597
WEB SITE www.VTNNV.COM

RCB PLAN & PROFILE
STA. 10+00.00 TO STA. 19+19.25

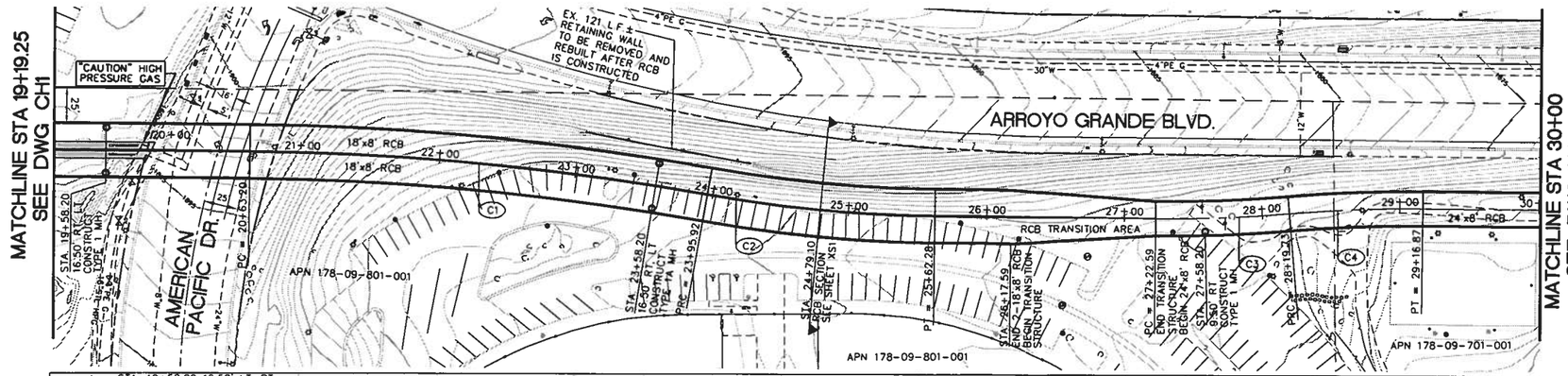
RAILROAD EAST
OUTFALL CHANNEL

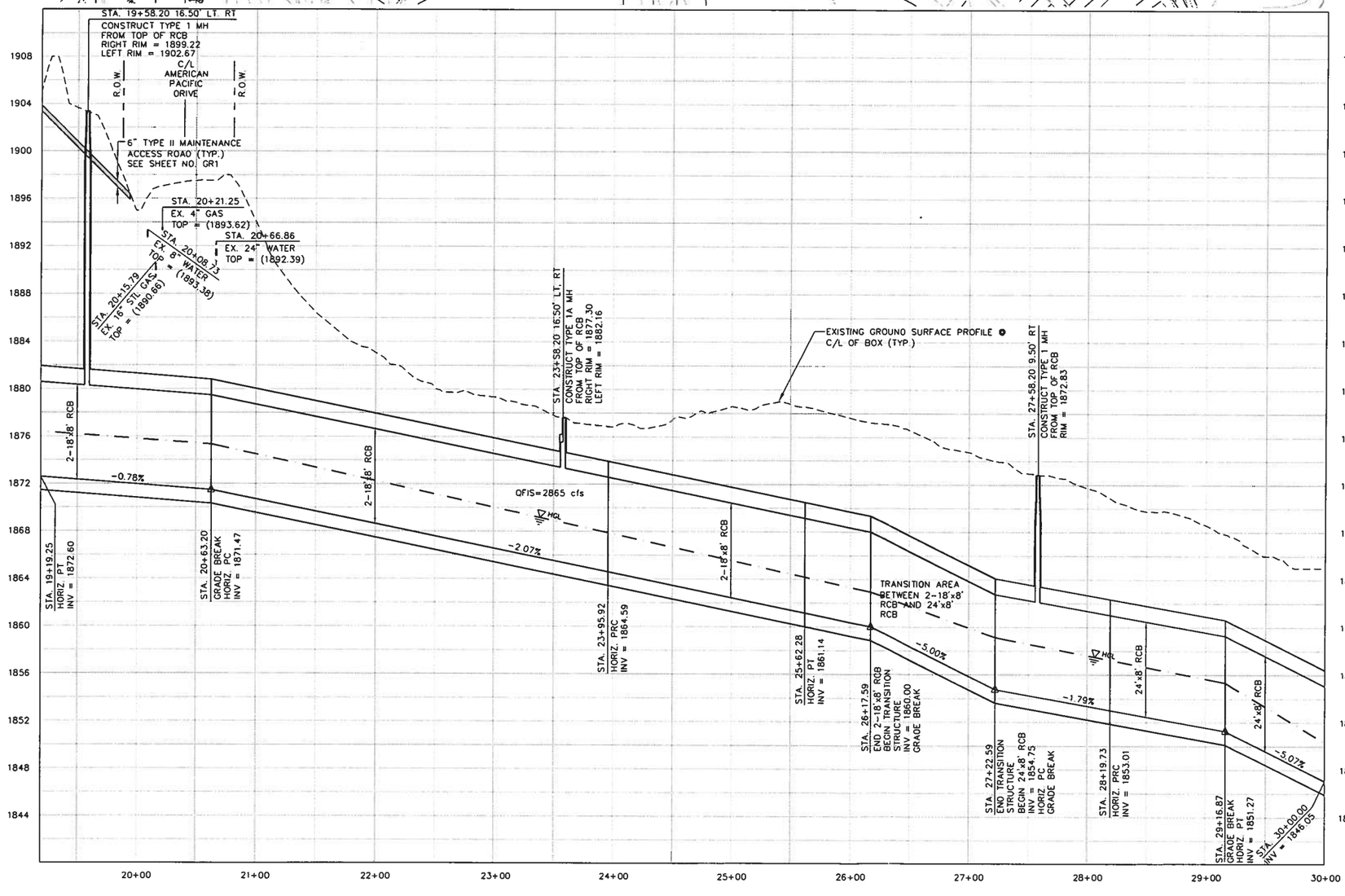
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DESIGNED BY: VTN 11/26/2007
CHECKED BY:
PROJECT NO. 6707
SCALE: HORIZ. 1"=50' VERT. 1"=5'

PROFESSIONAL ENGINEER-STATE OF NEVADA
JEFFREY P. GRIEST
EXP. 12-31-07
CIVIL
No. 17156

SHEET
CH1
OF SHEETS
DRAWING NO.

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GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
3. SEE DRAWING D1 FOR TYPICAL EXCAVATION DETAILS.
4. SEE DRAWINGS S_-S_ & ST1-ST10 FOR STRUCTURAL DETAILS.

CURVE DATA

CURVE NO.	RADIUS	DELTA	LENGTH
C1	2000.00'	09°31'54"	332.72'
C2	1000.00'	09°31'54"	166.36'
C3	1000.00'	05°33'56"	97.14'
C4	1000.00'	05°33'56"	97.14'

90% Submittal
"Not for Construction"
NOVEMBER 2007

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Call before you Overhead
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NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
Call 811 or 1-800-227-2600
1-702-455-7544

REVISION | BY | DATE | REV

CITY OF HENDERSON
240 WATER STREET - 89009
HENDERSON, NEVADA - CLARK COUNTY, NEVADA

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH. (702) 873-7550
FAX (702) 362-2597
WEB SITE: WWW.VTNNV.COM

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STA. 19+19.25 TO STA. 30+00.00

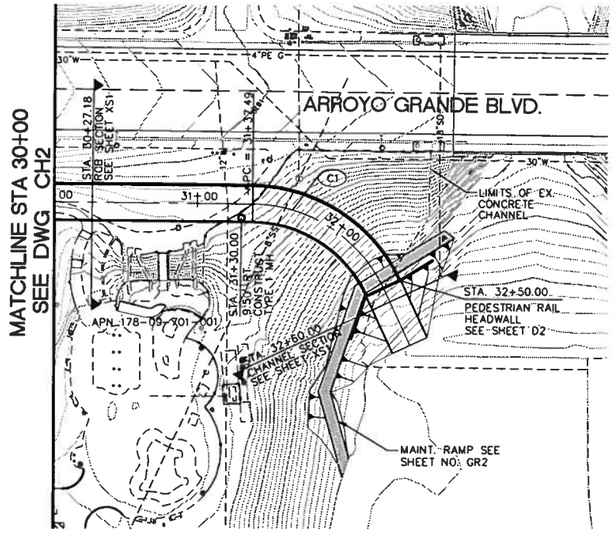
RAILROAD EAST
OUTFALL CHANNEL

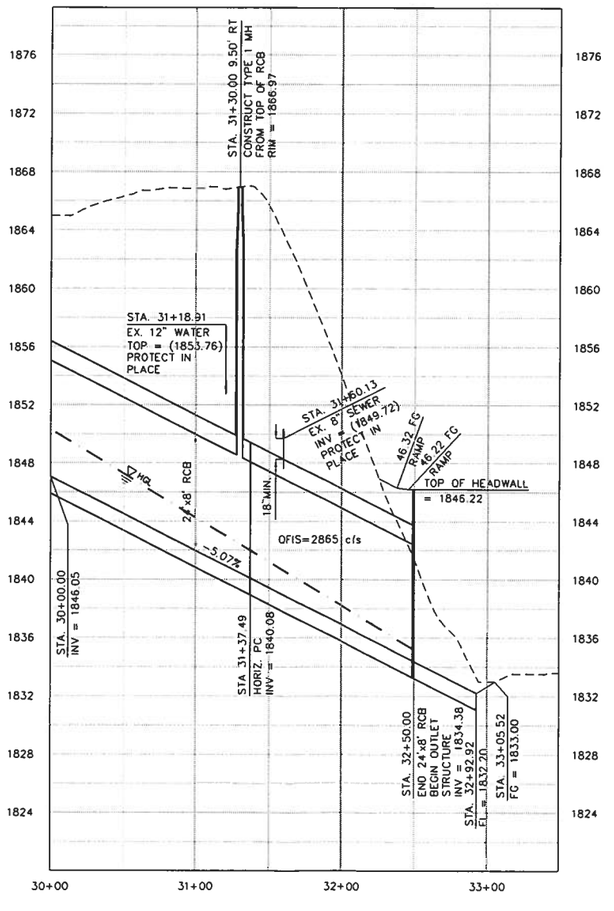
DRAWN BY: KAS 11/26/2007
DESIGNED BY: YTN 11/26/2007
CHECKED BY:
PROJECT NO: 8707
SCALE: 1"=50' HORIZ 1"=5' VERT.

PROFESSIONAL ENGINEER-STATE OF NEVADA
JEFFREY N GRIEST
EXP. 12-31-07
CIVIL
No. 17156

SHEET
CH2
OF SHEETS
DRAWING NO.

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GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.
(VERIFY SCALE - PLANS MAY HAVE BEEN REDUCED)

GENERAL NOTES:

1. CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UTILITY CROSSINGS AND/OR CONFLICTS PRIOR TO EXCAVATION.
2. CONTRACTOR TO PROTECT EXISTING UTILITIES IN PLACE, UNLESS NOTED OTHERWISE.
3. SEE DRAWING D1 FOR TYPICAL EXCAVATION DETAILS.
4. SEE DRAWINGS S_-S_ & ST1-ST10 FOR STRUCTURAL DETAILS.

CURVE DATA

CURVE NO.	RADIUS	DELTA	LENGTH
C1	100.00'	90°00'00"	157.08'

90% Submittal
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NOVEMBER 2007

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NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

Call before you Dig
Avoid cutting underground utility lines. It's easy.
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and
Clark County Water Reclamation
1-702-455-7544

REVISION | BY | DATE | REV

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240 WATER STREET
HENDERSON, NEVADA - 89009
CLARK COUNTY, NEVADA

2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89146-5148
PH (702) 873-7540
FAX (702) 362-2597
WEB SITE WWW.VTN-NV.COM

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RAILROAD EAST
OUTFALL CHANNEL

DRAWN BY: KAS 11/26/2007
DESIGNED BY: VTN 11/26/2007
CHECKED BY:
PROJECT NO: 6207
SCALE: 1"=50' HORIZ. 1"=5' VERT.

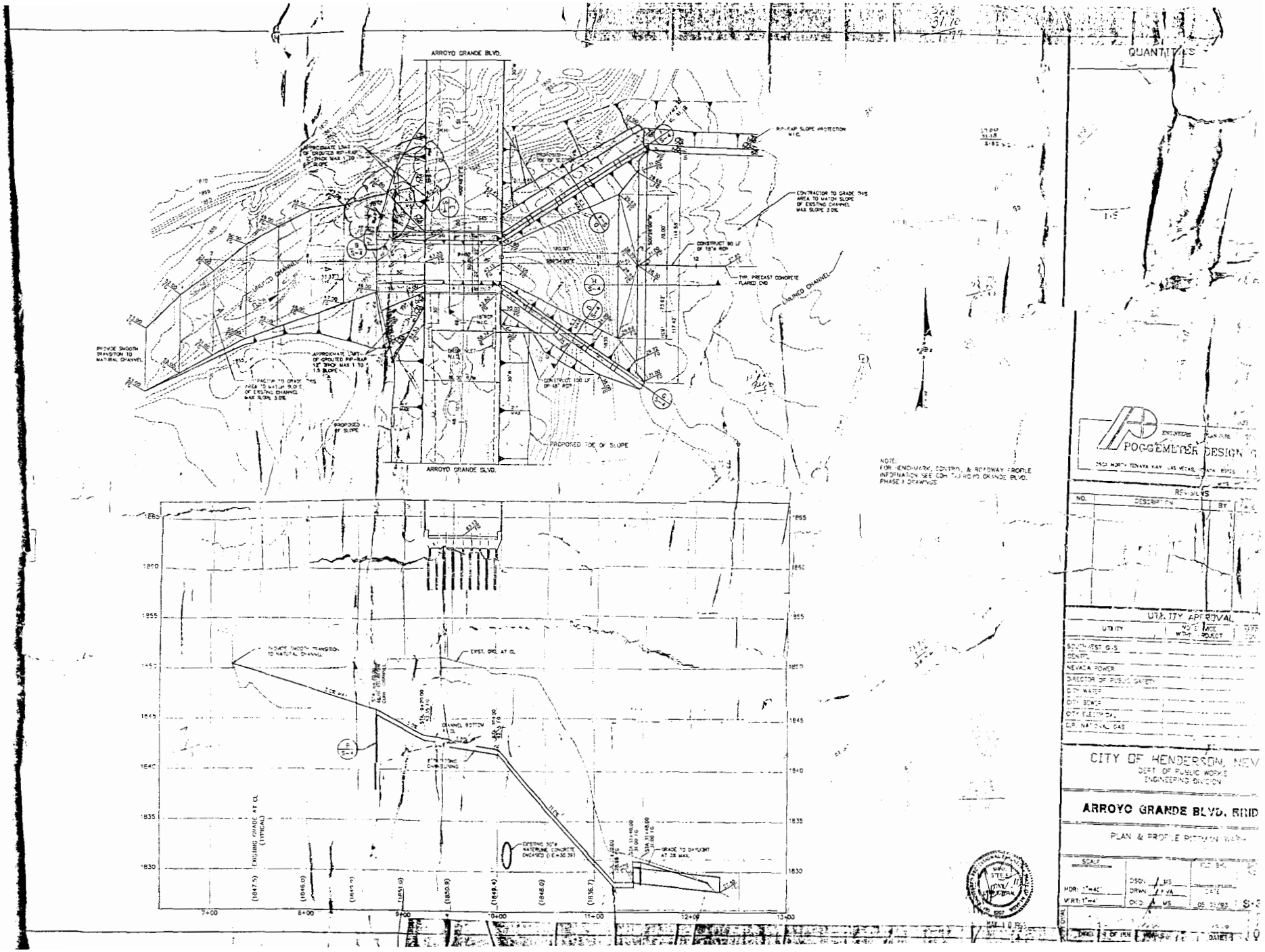
PROFESSIONAL ENGINEER-STATE OF NEVADA
JEFFREY N. GRIEST
EXP. 12-31-07
CIVIL
No. 17156

SHEET
CH3
OF SHEETS
DRAWING NO.

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ARROYO GRANDE BOULEVARD BRIDGE
AS-BUILTS

PLAN AND PROFILE



QUANTITIES

POGGEMEYER DESIGN G

REVISIONS

NO.	DESCRIPTION	BY	DATE

UTILITY APPROVAL

UTILITY	NOTIFIED WITH	ACCEPTED PROJECT	DATE
SOUTHWEST G.S.			
CENTEL			
NEVADA POWER			
DIRECTOR OF PUBLIC SAFETY			
CITY WATER			
CITY SEWER			
CITY TRAFFIC DEPT.			
CLARK NATURAL GAS			

CITY OF HENDERSON, NEV
DEPT. OF PUBLIC WORKS
ENGINEERING DIVISION

ARROYO GRANDE BLVD. STRO

PLAN & PROFILE BETWEEN WIGW

SCALE		FILE NO.
HOR: 1"=40'	DSGN: MS	
VERT: 1"=4'	DRWN: VA	DATE
	CKD: MS	05/31/93

SHEET 3 OF [illegible]

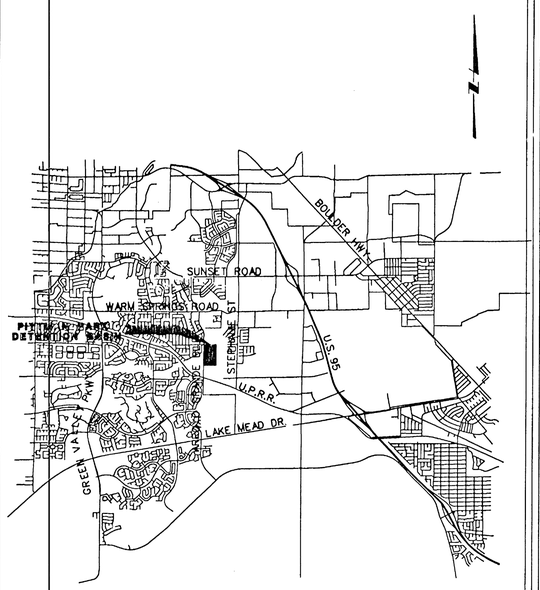
PITTMAN PARK DETENTION BASIN
AS-BUILTS

CHANNEL PLAN AND PROFILE

PITTMAN PARK DETENTION BASIN

FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
CONTRACT NO. 97-98*24

LOCATION MAP



CITY OF HENDERSON
CLARK COUNTY, NEVADA
DEPARTMENT OF PUBLIC WORKS

LABOR BOARD BID NO. - PWP-CL-1998-406

PREPARED BY:
MONTGOMERY WATSON

MAYOR	CITY COUNCIL	CITY MANAGER
JAMES B. GIBSON	ARTHUR A. HAFEN	PHILIP D. SPEIGHT
	JACK CLARK	
	AMANDA M. CYPHERS	
	DAVID A. WOOD	

DIRECTOR OF PUBLIC WORKS
MARK T. CALHOUN

PROFESSIONAL ENGINEER STATE OF NEVADA JOHN D. CLARK CIVIL No. 11504 4-8-98

AS-BUILT

INDEX OF SHEETS

SHEET	DESCRIPTION
G-1	ABBREVIATIONS AND SYMBOLS
G-2	GENERAL NOTES
G-3	PITTMAN PARK DETENTION BASIN WATERSHED
G-4	HYDROLOGIC INFORMATION AND CAPACITY CURVES
GEO-1	GEOTECHNICAL TESTING LOCATIONS PLAN VIEW
GEO-2	GEOTECHNICAL TESTING PROFILE
C-1	HORZ. CONTROL PLAN
C-2	GRADING PLAN
C-3	GRADING PLAN
C-4	CHANNEL PLAN AND PROFILE
C-5	TRANSITION STRUCTURE CROSS SECTIONS
C-6	DROP STRUCTURE
C-7	MISC. CROSS SECTIONS AND DETAILS
C-8	TRANSITION STRUCTURE/SANTIAGO BRIDGE
C-9	EMBANKMENT PROFILE AND WEST RETAINING WALL PROFILE
C-10	ACCESS GATE AND MISC. DETAILS
C-11	OUTLET STRUCTURE
C-12	USGS GAGING STATION
S-1	STRUCTURAL PLAN
S-2	STRUCTURAL DETAILS
S-3	SECTIONS AND DETAILS
S-4	WINGWALL SECTIONS AND DETAILS
S-5	RETAINING WALL ELEVATIONS
S-6	STRUCTURAL SECTIONS

APPROVAL

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS	Mark T. Calhoun	4/14/98
FLOOD CONTROL COORDINATOR	Carl Chinn	4-8-98
UTILITY SERVICES MANAGER	for James B. Fortin	4/14/98
ENGINEERING SERVICES MANAGER	Kevin A. Hill	4/8/98
SURVEY / RIGHT OF WAY	Thomas Dale	4/8/98
NEW DEVELOPMENT	R. Cross	4-8-98
FIRE PROTECTION	Thomas A. Noble for J.F.M.	4-16-98

AGENCY APPROVAL

AGENCY	NO SERVICE	REVIEWED BY	DATE
C.C.R.F.C.D.		[illegible]	3/31/98
NEVADA POWER		Lynda Bartlett	3.17.98
SPRINT CENTRAL TELE. CO.		[illegible]	3/98
S.W. GAS		[illegible]	3/17/98
PRIME CABLE		Kimberly Gramelli Hunt	3-17-98

REVISIONS

No.	DESCRIPTION	BY	DATE	APPROVAL

PITTMAN PARK DETENTION BASIN
FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

PROJECT No. 1327182

DATE : APRIL 1998

DRAWING No.

SHEET No. 1

05303

SANTIAGO AVE

EXISTING 42" DISCHARGE PIPE

TRANSITION STRUCTURE SEE SHEET C-8,S-1 FOR DETAILS

USGS GAGING STATION SEE SHEET C-7 FOR DETAILS

OUTLET STRUCTURE SEE SHEET C-11,S-1 FOR DETAIL

ACCESS GATE SEE SHEET C-10 FOR DETAILS

18" RCP STUB

BERM EL 1837.5

ACCESS ROAD

N 4,878.4547
E 6,192.6473

N 4,885.1124
E 6,031.0352
INV EL 1820.50
STA 10+18.79
END OVER-FLOW WEIR

N 4,889.662
E 6,196.7390

LIMITS OF OVERFLOW WEIR PROTECTION SEE SHEET G-9 FOR DETAILS

PROPERTY LINE

PITTMAN WASH

WEIR EL 1833.0
ULTIMATE WEIR EL 1834.0

STA 6+79.55
BEGIN OVER-FLOW WEIR

N 4,470.7273
E 6,234.3144
EL 1823.0

4' CONCRETE SWALE (TYP)

N 4,468.0083
E 5,923.8658
EL 1823.0

ACCESS RAMP

LOW FLOW CHANNEL

TOW 1829

TOW 1831

NEW RETAINING WALL

NEW RETAINING WALL SEE SHEET S-1 FOR DETAILS

EXIST 12" REUSE WATER LINE PROTECT IN PLACE

DROP STRUCTURE SEE SHEET S-1 FOR DETAILS

6" HDPE PERFORATED SUB-DRAIN

8" PVC GROUNDWATER DRAIN LINE

AS-BUILT

NOTE: TOPOGRAPHIC INFORMATION SHOWN REFLECTS CONDITIONS AS OF MARCH, 1997. THE CONTRACTOR SHALL REMOVE ANY STOCKPILED MATERIAL IN THE WORKING ZONE, REGARDLESS IF IT IS SHOWN IN THESE DRAWINGS OR NOT.

SEE SHEET C-3

REVISIONS: 1 GAGING STATION RELOCATED 2 ACCESS DRIVEWAY & RAMP RELOCATED 3 ACCESS RAMP TO EAST SIDE OF LEVEE ADDED 4 ADDED 18" RCP STUB 5 GROUTED RIP RAP 6 ADDED 8" PVC GROUND WATER DRAIN LINE 7 STREET LIGHTS ADDED - SEE SHEET C-13 8 AS-BUILT JRE 4/99

DRAWN BY:
CHECKED BY:
RECOMMENDED BY: R.P.E. NO. DATE
ACCEPTED BY: R.P.E. NO. DATE

JOHN R. CLARK — STATE OF NEVADA — PROFESSIONAL ENGINEER — CIVIL — No. 11504 — 4/16/99

VERIFY SCALE
1/2 0 1/2
BAR REPRESENTS ONE INCH ON ORIGINAL INCHES ON ORIGINAL

CITY OF HENDERSON

PITTMAN PARK DETENTION BASIN

GRADING PLAN

SCALE 1"=40'

SHEET NUMBER C-2

SHEET 9 OF 25

MONTGOMERY WATSON
Las Vegas, Nevada

MONTGOMERY WATSON
3301 W. SAHARA AVENUE, SUITE 370
LAS VEGAS, NEVADA 89102
(702) 878-8000

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05303

SEE SHEET C-2

F C-11 METAL FENCE

C-5 5

C-5 6

8 C-7

S=0.5%

NEW RETAINING WALL SEE SHEET S-5 FOR DETAILS

G C-11 6" HDPE PERFORATED SUB-DRAIN

D S-3 LOW FLOW CHANNEL

EXIST "C" CONCRETE STRUCTURE

EXIST 18" RCP

1 EXTEND 18" RCP SEE PROFILE ON SHEET C-4

7 C-7

S=0.5%

G C-11 6" HDPE PERFORATED SUB-DRAIN

NEW RETAINING WALL SEE SHEET S-5 FOR DETAILS

4

PITTMAN WASH

S=0.5%

LOW FLOW CHANNEL D S-3

6" PVC GROUND WATER DRAIN LINE 4

6" HDPE PERFORATED SUB-DRAIN G C-11

LEVEE EL 1838.0

TOW 1829.0

RETAINING WALL F C-10

TOW 1831.0

TOW 1829.0

H C-11

NEW RETAINING WALL SEE SHEET S-1 FOR DETAILS

3

METAL FENCE F C-11

FUTURE AMPHITHEATER

EXIST 12" REUSE WATER LINE PROTECT IN PLACE

12" W

NOTE: TOPOGRAPHIC INFORMATION SHOWN REFLECTS CONDITIONS AS OF MARCH, 1997. THE CONTRACTOR SHALL REMOVE ANY STOCKPILED MATERIAL IN THE WORKING ZONE, REGARDLESS IF IT IS SHOWN IN THESE DRAWINGS OR NOT.

AS-BUILT

4 AS-BUILT JRE 4/99

3 REVISED 18" RCP ALIGNMENT & PROFILE, ADDED SEDIMENT RISER

2 REVISED 12" RCP STORM DRAIN OUTLET

1 ADDED RETAINING WALL AROUND ELECT. PEDASTAL

4 ADDED 8" PVC DRAIN LINE

CITY OF HENDERSON

VERIFY SCALE

1/2 0 1/2 1

BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

MONTGOMERY WATSON

Las Vegas, Nevada

MONTGOMERY WATSON 3074 WEST CHARLESTON BLVD LAS VEGAS, NV 89102 (702) 878-9048

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PITTMAN PARK DETENTION BASIN

GRADING PLAN

SCALE 1"=40'

17:06

07-APR-1998

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CHECKED BY:

RECOMMENDED BY: R.P.E. NO. DATE

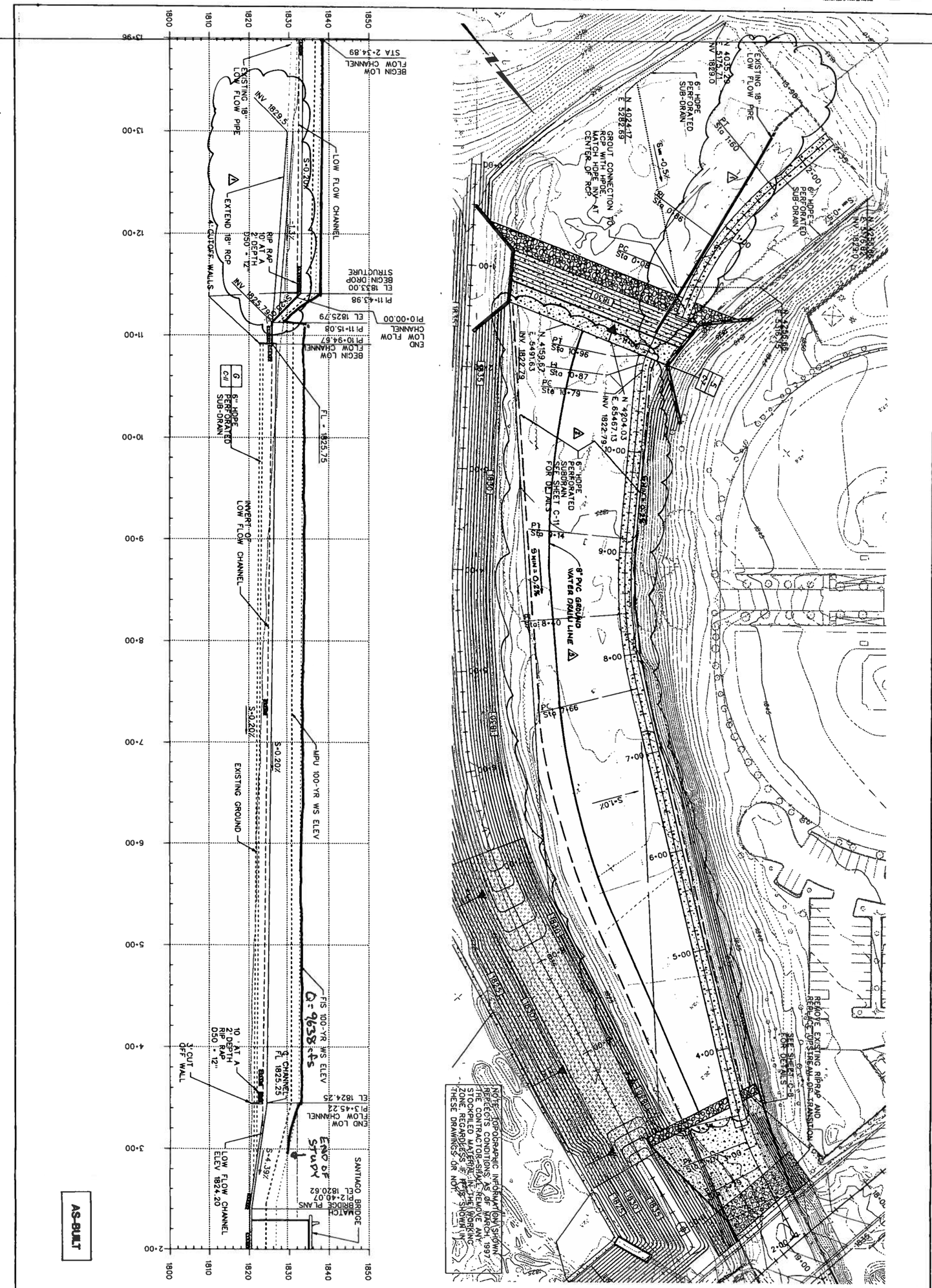
ACCEPTED BY: R.P.E. NO. DATE

PROFESSIONAL ENGINEER-STATE OF NEVADA JOHN R. CLARK CIVIL No 11504 4-8-98

SHEET NUMBER C-3

SHEET 10 OF 25

05303



REVISIONS: 1 REVISED 18" RCP ALIGNMENT 2 REVISED 6" HDPE SUBDRAIN ALIGNMENT 3 ADDED 8" PVC GROUND WATER DRAIN LINE 4 AS-BUILT JRE 4/99

DRAWN BY:
CHECKED BY:
RECOMMENDED BY: R.P.E. NO. DATE
ACCEPTED BY: R.P.E. NO. DATE

PITTMAN PARK DETENTION BASIN

CHANNEL PLAN AND PROFILE

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SCALE HORZ: 1"=10' VERT: 1"=2'

VERIFY SCALE

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BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

CITY OF HENDERSON

MONTGOMERY WATSON

Las Vegas, Nevada

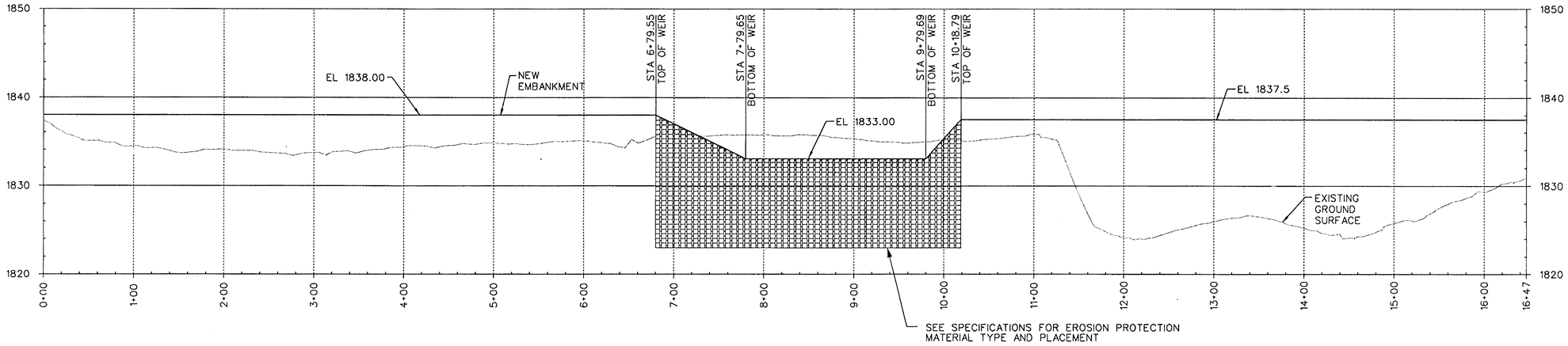
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SHEET NUMBER C-4

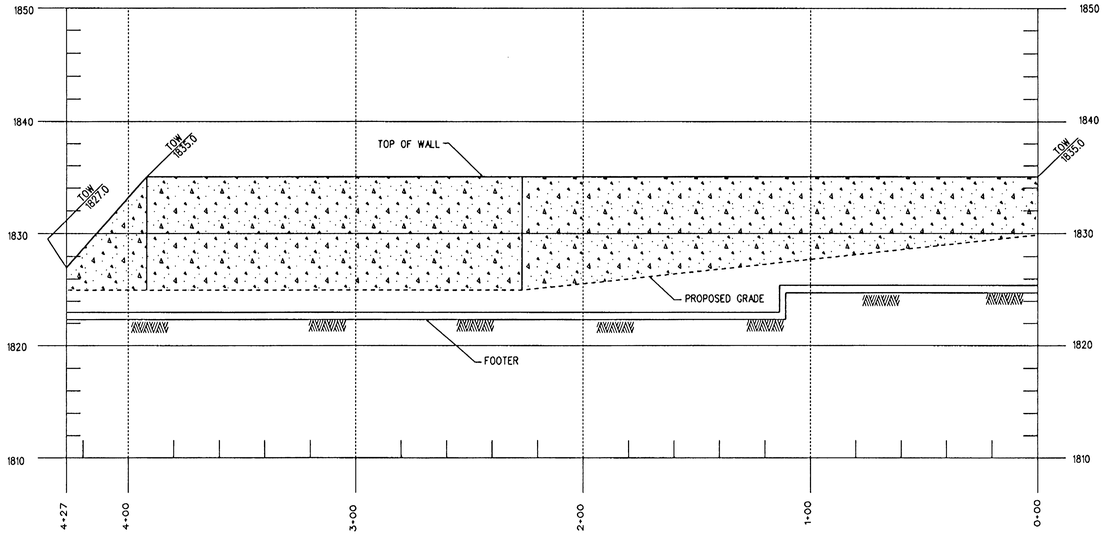
SHEET 11 OF 25

05303



PROFILE ALONG EMBANKMENT

SCALE:
H: 1" = 60'
V: 1" = 6'



PROFILE ALONG EAST RETAINING WALL

SCALE:
H: 1" = 30'
V: 1" = 6'

AS-BUILT

CITY OF HENDERSON

MONTGOMERY WATSON
Las Vegas, Nevada

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VERIFY SCALE

1/2 0 1/2 1

BAR REPRESENTS ONE AND ONE-HALF INCHES ON ORIGINAL

PITTMAN PARK DETENTION BASIN
EMBANKMENT PROFILE AND
WEST RETAINING WALL PROFILE

SCALE: SEE DWG

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	DRAWN BY:	CHECKED BY:	RECOMMENDED BY:	ACCEPTED BY:
AS-BUILT	JRE 4/99		R.P.E. NO. DATE	R.P.E. NO. DATE

REVISIONS: 1 AS-BUILT JRE 4/99

PROFESSIONAL ENGINEER STATE OF NEVADA
JOSEPH R. ERK
CIVIL
No. 11504
4-8-98

SHEET NUMBER
C-9

SHEET 16 OF 25

05303

Conditional Letter of Map Revision **Railroad East Outfall Channel**

Appendix E
Data CD



vtn



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