RAINBOW VALLEY
Area Drainage Master Plan
Contract FCD 2006C029
Technical Data Notebook
Hydrology Report
Volume I

Submittted to

Flood Control District of Maricopa County

Submittted by

URS

in cooperation with

Dibble Engineering

JE FULLER HYDROLOGY & GEOMORPHOLOGY, INC

October 2010

ERRATA

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For the Document:

Rainbow Valley Area Drainage Master Plan:

Technical Data Notebook

Hydrology Report

October 2010

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Exp date: 6-30-14

Registered Professional Engineer (Civil) CERTIFICATE NO. 37872 M. C. F. McINTOSH Date Signed 10.22.10 ARIZONA, U.S.A.

EXPIRES 9.30.2011

GENERAL

1. **Figure 1, Study Area. Addresses General comment #1 from FEMA review.** Added labels to the Sierra Estrella Mountains, South Maricopa Mountains, and North Maricopa Mountains in Figure 1, Study Area. See attached.

2. **Table 4.1 in Volume 1. Addresses General comment #2 from FEMA review.** Text that refers to "EEC study (2004)" replaced with "EEC study (2006)."

Table 4.1

Comparison of Peak Discharges by Log-Pearson Type III Statistical Analysis

Gage Station	*Drainage Area*	*Cella Barr Study* [1] *(1988)*	*EEC Study (2006)*	*URS (2009)*
USGS Stream Gage 09514200 "Waterman Wash near Buckeye, Ariz" (1964-1999)	*420 sq mi*	*9,000 cfs*	*12,800 cfs*	*12,700 cfs*

[1] *Sources: Reference 16*

RAINFALL

1. **Appendix D.1. Addresses Rainfall comment #1 from the FEMA review.** Figure A.58 and Figure A.60 from the Maricopa County Flood Control Districts Hydrology Drainage Design Manual were added to Appendix D.1. See attached.
2. **Rainfall comparison table located in Appendix D.1. Addresses Rainfall comment #2 from the FEMA review.** The text *"100YR 24HR"* was added to the column labels for the NOAA14 and NOAA2 rainfall comparison.

NOAA 14 VS NOAA2 COMPARISON TABLE

Point ID	*Location*	*Longitude*	*Latitude*	*100YR 24 HR, NOAA 14 Rainfall (in)*	*100YR 24HR NOAA 2 Rainfall (in)*	*Percent Reduction*
1	*Estrella Mountain Ranch*	*-112.482*	*33.338*	*3.42*	*4.18*	*18.2%*
2	*Plains in Basin A*	*-112.520*	*33.264*	*3.44*	*4.16*	*17.3%*
3	*Northern Portion of the Estrella Mountains*	*-112.339*	*33.308*	*3.42*	*4.61*	*25.8%*
4	*Watershed B just upstream of Waterman Wash*	*-112.415*	*33.196*	*3.23*	*4.42*	*26.9%*
5	*Upper Plains between the Mountains in Basin G*	*-112.234*	*33.166*	*3.39*	*4.63*	*26.8%*
6	*Maricopa Mountains in the middle of Basin C*	*-112.397*	*33.083*	*3.40*	*4.43*	*23.3%*
7	*Southern Portion of the Maricopa Mountains*	*-112.360*	*32.940*	*3.65*	*4.52*	*19.2%*
8	*Booth Hills*	*-112.248*	*32.975*	*3.60*	*4.55*	*20.9%*
			Average	3.44	4.44	22.4%

3. **Section 4.2.4. Addresses Rainfall comment #3 from the FEMA review.** Text refers to the USGS PeakFQ results in "*Appendix D.7*" replaced with "*Appendix D.1.*" Updated Section 4.2.4 is provided below.

4.2.4 Statistical Parameters

A 100-year peak discharge was calculated using the USGS PeakFQ flood-frequency software (Reference 17) with data from the USGS stream gage and the guidelines from the Water Resources Council Bulletin 17B (Reference 18). These results were compared with those from the previous studies done on Waterman Wash. Table 4.1 compares the results between the three studies based upon the Log-Pearson Type III statistical analysis (see Appendix D.1).

Table 4.1

Comparison of Peak Discharges by Log-Pearson Type III Statistical Analysis

Gage Station	*Drainage Area*	*Cella Barr Study*[1] *(1988)*	*EEC Study (2006)*	*URS (2009)*
USGS Stream Gage 09514200 "Waterman Wash near Buckeye, Ariz" (1964-1999)	*420 sq mi*	*9,000 cfs*	*12,800 cfs*	*12,700 cfs*

[1] *Sources: Reference 16*

The results of the gage data analysis will be used to check the reasonableness of the peak discharges calculated with HEC-1.

4. **Rainfall Distribution. Addresses Rainfall comment #4 from the FEMA review.** The 6-hour rainfall distribution patterns are selected automatically within the District's DDMSW software. The 6-hour distribution pattern selected by DDMSW for the 90-square mile was based on Pattern 3 and was incorrect for that large of an area. Pattern 4 should have been selected. A test was conducted on one of the 100-year 6-hour models to see how it would impact the results. After manually coding in Pattern 4 for the 90 sq. mile area, there were no changes to the individual basins with the exception of C33. There were only changes for the 6-hour storm for the combination points along Waterman Wash. However, the 24-hour storm generates higher discharges and therefore dominates. The higher discharge is used for the Waterman Wash delineation. Revised 6-hour HEC-1 models have been provided on CD. Revised HEC-1 results, TDN tables 4.3.1 through 4.3.10 have been provided on the CD.

5. **ID Card for 100-year 6-hour models. Addresses Rainfall comment #5 from the FEMA review.** The ID card in the HEC-1 100-year 6-hour models has been updated to reflect a point rainfall of 2.7 inches being used in the model. Revised 6-hour HEC-1 models have been provided.

HEC-1

1. **Sections 4.2.2 and 4.2.2.1. Addresses HEC-1 comments #1 and #2 from the FEMA review.** Remove text in Section 4.2.2 that reads *"The annotation for the concentration points also includes the peak 100-year discharge."* Also in Section 4.2.2, remove the text *" The peak discharges displayed on these maps are the largest flow from either the "with railroad" or the "no railroad" models."*

   Towards the end of Section 4.2.2.1 text, add the following text: "*The annotation for the concentration points and basins also includes the peak 100-year discharge. The peak discharges displayed on these maps are the largest flow from either the 100-year 24-hour model or the 100-year 6-hour model for the "with railroad" or "without railroad" model for existing conditions."* Updated Section's 4.2.2 and 4.2.2.1 are provided below.

4.2.2 Watershed Work Map

The watershed work maps display the updated drainage basin boundaries, flowpaths and concentration points and can be seen on Figure 2, Sheets 1 to 10. These maps illustrate the calculated hydrologic data from the HEC-1 model. The maps also indicate the longest flow path within the sub-basin and the channel route length.

4.2.2.1 Schematics

Schematics of the HEC-1 models are included in Appendix D.9 of this report. As discussed earlier, two models were created for the Waterman Wash watershed, one representing a with railroad scenario, and another representing the without railroad scenario. Since the two models are schematically different at the Union Pacific Railroad, two different schematic maps were created for basins C, D, E, and F. These schematics are provided in Figures 6A through 6X and are separated by major watershed boundaries.

The watershed was divided into 11 major basins (labeled A through J, and X). Within each major basin, the sub-basins were numbered based upon a combination of the major basin letter and a unique number to give each sub-basin its own identifier (e.g., A01).

Concentration points were labeled in accordance with the sub-basin identifiers (e.g., CP A01), except for concentration points along Waterman Wash, which use the identifier "RIV" (e.g., A01RIV). Routes are labeled according to the sub-basin that they are leaving. (For instance, if flows were routed from CP A01 to CP A02, the route would be labeled RCPA01.) Diversions are numbered similarly to concentration points. For example, a diversion at CP A01 would be D A01. The diverted flow carries the "DV" precursor, but when the diverted flow is returned, its identifier is "DR." The annotation for the concentration points and basins also includes the peak 100-year discharge. The peak discharges displayed on these maps are the largest flow from either the 100-year 24-hour model or the 100-year 6-hour model for the "with railroad" or "without railroad" model for existing conditions.

2. **Updated L and Lca parameters. Addresses HEC-1 comments #3 to #6 from the FEMA review.** Lca values were updated to the appropriate lengths for sub-basins D45, E05, H07, and I11. However, the flows from these basins were not used for any tributary floodplain delineations and the impacts to Waterman Wash are negligible. HEC-1 models have been updated.

3. **Section 4.5.2. Addresses HEC-1 comment #8 from the FEMA review.** Add the following text to section 4.5.2. Where section 4.5.2 reads "*This can be explained by the fact that a large portion of the Waterman Wash watershed consists of distributary flow areas.*" Add the following "*In addition to distributary flow landforms, there are large portion of the watershed that consists of sheet flow landforms and disturbed areas.*"

   Where section 4.5.2 reads: "*In addition, the report states that during large floods, most of the peak discharge in the distributary flow areas can be lost to infiltration or attenuation.*" Add the following text "*The same can be said for sheet flow areas where flows are shallow and have low velocities allowing more time for runoff to be lost to infiltration. In addition to sheet flow and distributary flow areas, there is a considerable amount of land that has been disturbed for agricultural purposes. The disturbed areas are predominantly next to Waterman Wash. The agricultural fields have all been leveled to slopes that are less than the historic slopes. This type of disturbed landform exhibits similar characteristics to sheet flow areas where runoff is lost to infiltration.*" An updated section 4.5.2 is provided below:

   4.5.2 Comparison of Results with EEC Study

   The peak runoff values were compared with those from the EEC study and are presented in Table 4.4.

Table 4.4
Comparison of Peak Discharges

Location Description		*EEC HEC-1 Modeled w/RR*	*EEC HEC-1 Modeled w/o RR*	*URS HEC-1 Modeled w/o RR*	*URS HEC-1 Modeled w/ RR*
CP on Waterman Wash, d/s of Land Fill (E49RIV)	*Discharge (cfs)*	*5,830*	*6,090*	*3,525*	*2,800*
	Area (sq mi)	*101*	*86*	*86*	*86*
Confluence of the West Prong at Waterman Wash (B12RIV)	*Discharge (cfs)*	*21,370*	*21,730*	*8,600*	*8,500*
	Area (sq mi)	*263*	*263*	*263*	*263*
Approximately 1 mile south of Buenos Aires Road along Waterman Wash (H80RIV)	*Discharge (cfs)*	*28,070*	*28,310*	*10,900*	*10,800*
	Area (sq mi)	*316*	*316*	*317*	*317*
Confluence with the Gila River (A62RIV)	*Discharge (cfs)*	*28,320*	*28,570*	*11,400*	*11,300*
	Area (sq mi)	*422*	*422*	*422*	*422*

The modeled values in Table 4.4 are lower than those developed by EEC due to several factors. Those factors include NOAA 14 precipitation values, refined land use parameters, percentage effective rock outcrop, and routing and diversion methodology. The routing cross sections have been revised to better reflect distributary-flow conditions. The 25-percent reduction in the 100-year 24-hour rainfall is the largest contributing factor to the reduction in peak discharges. There is an overall reduction in the peak 100-year 24-hour discharge of approximately 45 percent for the updated models.

A comparison analysis of unit peak discharges was conducted to validate the calculated peak discharges for the 100-year 24-hour storm event. The analysis was conducted by comparing the peak discharges calculated with the regional USGS regression equations for the area, flow gauge data for Waterman Wash and effective Flood Insurance Study (FIS) peak discharges for watersheds with similar characteristics. The results of the analysis show that the peak discharges from URS study are reasonable when compared to the peak discharges obtained from USGS regression equations, effective FIS study, and are closer to the peak discharges recorded by the Waterman Wash stream gauge. The results of the analysis are shown in Table 4.5 and Graph 4.G1. A technical memorandum RVADMP Task 9.9 Hydrology – Flood Frequency Comparisons (Reference 20) discussed the comparison of the Region 13 Flood Magnitude curve,

gage data from gage 09514200, and HEC-1 100-year 24-hour flows. The analysis concluded that the URS peak discharges developed from the HEC-1 models are significantly lower than the Region 13 curve. This can be explained by the fact that a large portion of the Waterman Wash watershed consists of distributary flow areas. In addition to distributary flow landforms, there are large portion of the watershed that consists of sheet flow landforms and disturbed areas. The USGS Open File Report 93-419 (page 14, Reference 21) states that distributary flow areas can have a large effect on the flood characteristics of stream and that the magnitude of peak discharges leaving the basin can be significantly reduced in basins with distributary flow areas. In addition, the report states that during large floods, most of the peak discharge in the distributary flow areas can be lost to infiltration or attenuation. The same can be said for sheet flow areas where flows are shallow and have low velocities allowing more time for runoff to be lost to infiltration. In addition to sheet flow and distributary flow areas, there is a considerable amount of land that has been disturbed for agricultural purposes. The disturbed areas are predominantly next to Waterman Wash. The agricultural fields have all been leveled to slopes that are less than the historic slopes. This type of disturbed landform exhibits similar characteristics to sheet flow areas where runoff is lost to infiltration. It is URS' opinion that the peak discharge relation curve overestimates the 100-year peak discharge for Waterman Wash, its tributaries, and concentration points.

LOSS PARAMETERS

1. **Section 4.3.1.6. Addresses Loss Parameters comment #1 from the FEMA review.** Added *Section 4.3.1.6 "Non-Default XKSAT Values"* and the following text:

   ### *4.3.1.6 Non-Default XKSAT Values*

   Through the course of validating the HEC-1 loss parameters developed with the DDMSW software it was determined that the DDMSW software incorrectly adjusts the XKSAT values for vegetated cover. The program failed to adjust XKSAT values of 0.4 or greater corresponding to a classification of sandy loam. The correct procedure would be to not adjust XKSAT values for vegetated cover with values of 1.2 or greater corresponding to a soil texture classification of loamy sand and sand. The vegetated cover adjustment for the XKSAT parameter therefore was done in a separate spreadsheet and the adjusted XKSAT values entered into the DDMSW program as custom values.

2. **Figure 4A. Addresses Loss Parameter comment #2 from the FEMA review.** Updated figure is provided on errata CD.

SPLIT FLOW ANALYSIS

1. **Section 4.1.6. Addresses Split Flow Analysis comment #1 from the FEMA review.** Replace the text in Section 4.1.6 with the following text:

   ### *4.1.6 Flow Split Analysis*

   Many flow splits within the study area will not be analyzed with FLO-2D or the alluvial fan methodology. The remaining flow split locations that were originally analyzed in the previous study, were modeled using Bentley's FlowMaster software to calculate normal depth (Reference 15). The capacity of each flowpath downstream of a flow split was calculated at varying water surface elevations which were specified in the FlowMaster section. Rating tables were made using the section capacity and the specified water surface elevation. From the rating tables HEC-1 diversion (DI and DQ) cards were then developed. Flow split data can be found in Appendix D.4.

2. **FlowMaster Files for H17. Addresses Split Flow Analysis comment #2 from the FEMA review.** The excel rating table for the flow split at H17 should not be used. It is superseded by the rating table from the FLO-2D analysis. The FLO-2D analysis can be found in Appendix D.3.

FLO-2D

1. **Geomorphic Assessment Memorandum. Addresses FLO-2D comment #1 from the FEMA review.** Geomorphic assessment by JE Fuller & Geomorphology (Reference 12) has been provided. Replace the text in Section 4.1.5 with the following text:

4.1.5 Alluvial Fan Analysis

A geomorphic assessment was conducted to identify areas that are subject to different flooding characteristics based on a watershed geomorphic assessment. Initially twenty-five locations on alluvial fan landforms were proposed to be analyzed with the District's alluvial fan methodology, however the alluvial fan analysis task was terminated for this project. Therefore, no alluvial fans were considered for this hydrologic analysis. See the memorandum from JE Fuller & Geomorphology, Inc (Reference 12) in Appendix D.8 for the flow characteristics analysis.

2. **Appendix D.3 Discharges reported on schematics. Addresses FLO-2D comment #3 from the FEMA review.** Add the following table to Appendix D.3. FLO-2D models were created to generate flow split tables to be used in HEC-1. The initial runs of FLO-2D included flows developed with the initial HEC-1 modeling results. These flows in all cases were greater than the actual flows provided with the Final Hydrology HEC-1 flows. The following table has been created for Appendix D.3 as a comparison of the flows applied in FLO-2D and those provided with the final HEC-1 models.

HEC-1 Label and Inflow Concentration Points	*FLO2D Inflow Applied (from initial Waterman Wash FDS Study)*	*URS Final Hydrology Study Provided Without Railroad*	*URS Final Hydrology Study Provided With Railroad*	**Flows Reported on Schematic Drawings (as max flow at cross section)*	*Comments*	*Cross Section Reporting Max Flow*
CPB03	7922	4833	4833	7892	Upper Analyzed Area	1
CPB13	3789	2827	2827	6956	Flow Enters Basin	13
CPE05	2355	1216	1216	2348	Upper Analyzed Area	1
CPG31	5039	1944	1944	5017	Upper Analyzed Area	8
CPG47	2356	599	599	3241	Flow Enters Basin	10
CPH17	1562	776	776	1492	Upper Analyzed Area	1
CPH31	1658	856	856	1641	Upper Analyzed Area	13

* May include discharges of combined flows from upstream splits.

3. **Table 2 on page 7 of Appendix D.3. Addresses FLO-2D comment #6 from FEMA review.** Replace Table 2 with the following table. This table includes the cross section labels which correspond to the source of the discharges used in the rating tables.

CPB03, CPB13

Seven locations were studied for flow splits within this area. ***Table 2*** *below shows the corresponding labels as they relate to the HEC-1 modeling. Flows split at northerly (peak flow of 5000 cfs) and southerly (peak flow of 3993 cfs) at the western boundary of this study area. Flows breaking northerly are distributed by flow splits to watershed boundaries along the northern boundary of the study area (See figures and schematic for CPB03,*

CPB13 in ***Attachment 1****). Flows breaking south continue easterly to Sub Basin B13 and then split at Sub Basins B14 and B05.*

TABLE 2: FLOW SPLITS ANALYZED FOR CPB03, CPB13						
Table	***DT***	***DI***	***DQ***	***Difference***	***DQ X-SEC***	***Difference X-SEC***
Table 1	*DVB03N*	*DB03N*	*B18*	*B16*	*2*	*3*
Table 2	*DVB16*	*DB16*	*B16*	*B18*	*5*	*6*
Table 3	*DVB18*	*DB18*	*B18*	*B13*	*7*	*8*
Table 4	*DVB14*	*DB14*	*B18*	*B14*	*9*	*10*
Table 5	*DVB18B*	*DB18B*	*B16*	*B18*	*11*	*12*
Table 6	*DVB13*	*DB13*	*B14*	*CPB04*	*14*	*15*
Table 7	*DVB19*	*DB19*	*B14*	*CPB14*	*17*	*18*

4. **Appendix D.3 Tables. Addresses comment #7 from the FEMA review.** Rating tables have been updated with the corresponding cross sections. Tables 2,3,4,5 in the report should be replaced with the following tables. These tables include the cross section labels which correspond to the source of the discharges used in the rating tables.

TABLE 2: FLOW SPLITS ANALYZED FOR CPB03, CPB13						
Table	***DT***	***DI***	***DQ***	***Difference***	***DQ X-SEC***	***Difference X-SEC***
Table 1	*DVB03N*	*DB03N*	*B18*	*B16*	*2*	*3*
Table 2	*DVB16*	*DB16*	*B16*	*B18*	*5*	*6*
Table 3	*DVB18*	*DB18*	*B18*	*B13*	*7*	*8*
Table 4	*DVB14*	*DB14*	*B18*	*B14*	*9*	*10*
Table 5	*DVB18B*	*DB18B*	*B16*	*B18*	*11*	*12*
Table 6	*DVB13*	*DB13*	*B14*	*CPB04*	*14*	*15*
Table 7	*DVB19*	*DB19*	*B14*	*CPB14*	*17*	*18*

TABLE 3: FLOW SPLITS ANALYZED FOR CPE05						
Table	***DT***	***DI***	***DQ***	***Difference***	***DQ X-SEC***	***Difference X-SEC***
Table 1	*DVE05*	*CPE05*	*E24*	*E25*	*3*	*2*

TABLE 4: FLOW SPLITS ANALYZED FOR CPG07, CPG31						
Table	**DT**	**DI**	**DQ**	**Difference**	**DQ X-SEC**	**Difference X-SEC**
Table 1	DVG07E	DG07E	G30	G43	2	3
Table 2	DVG07W	DG07W	G47	G43	6	5
Table 3	DVG31W	DG31W	G13	G47	9	10
Table 4	DVG31E	DG31E	G43	G47	10	11
Table 5	DVG13	DG13	G13	G14	13	14
Table 6	DVG47E	DG47E	G14	G47	13, 14	15
Table 7	DVG47	DG47	G32	G43	17	18

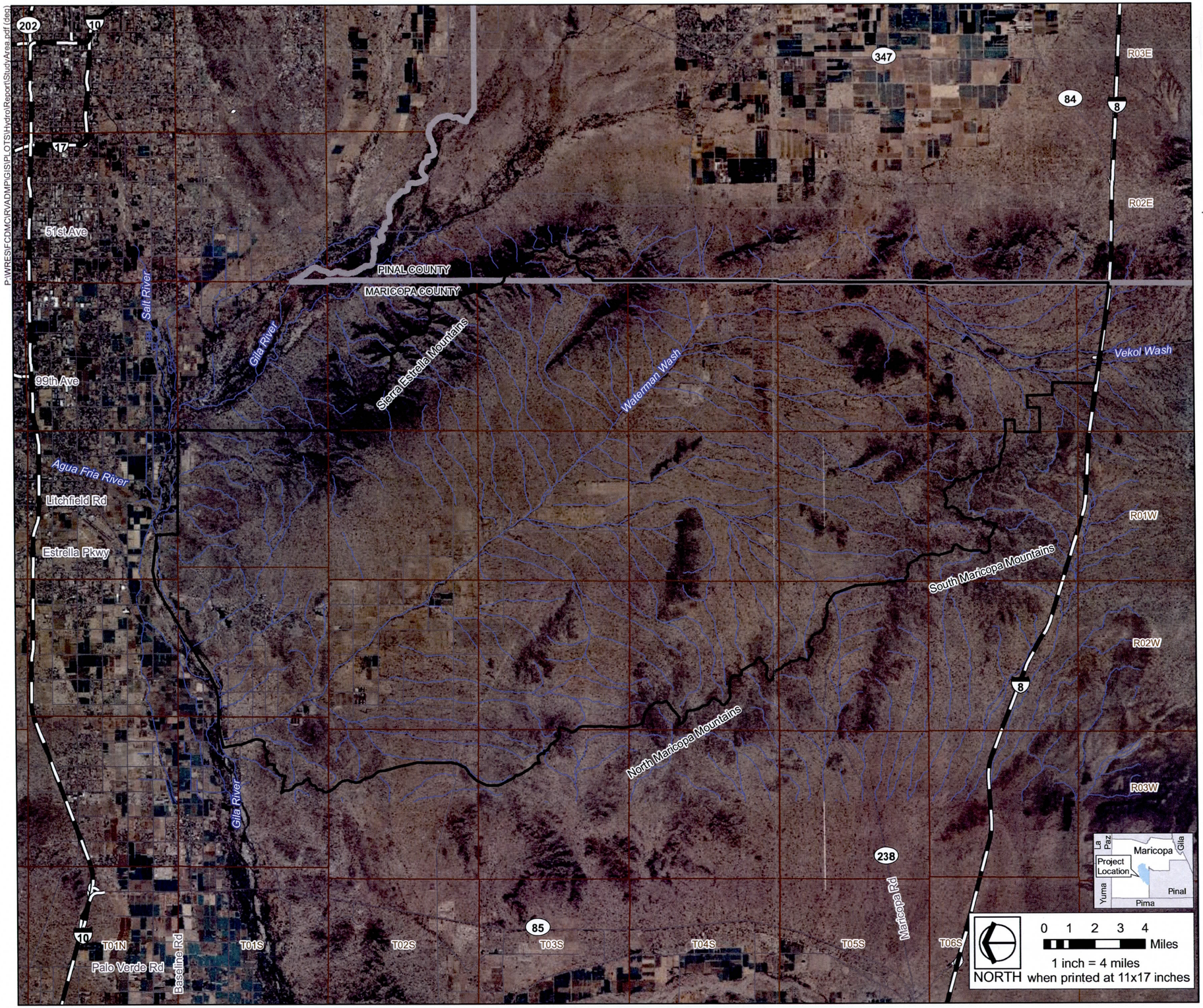
TABLE 5: FLOW SPLITS ANALYZED FOR CPH17, CPH31						
Table	**DT**	**DI**	**DQ**	**Difference**	**DQ X-SEC**	**Difference X-SEC**
Table 1	DVH17	DH17	H32	H30	2	3
Table 2	DVH31	DH31	H32	H33	18	17
Table 3	DVH15A	DH15A	H33	CPH31	14	15
Table 4	DVH31A	DH31A	H32	H31	6	5
Table 5	DVH05	DH05	H33	H31	11	12
Table 6	DVH30A	DH30A	H32	H30	8	9
Table 7	DVH33A	DH33A	H33	H32	20	21

5. **FLO-2D input files.** The infiltration input file, INFIL.DAT, has not been included with the other FLO-2D input files on the CD.

P:\WRES\FCDMC\RVADMP\GIS\PLOTS\HydroReport\StudyArea.pdf (deg)

Rainbow Valley Area Drainage Master Plan Study Area

Figure 1



Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Township and Range Boundary
- Interstate Highway/ Freeway
- Major Road
- River/Stream

Data Sources

Flood Control District of Maricopa County
Base Vector Data, 2008
Arizona State Cartographer's Office
NAIP Imagery, 2007

FIGURE A.58
100-YEAR 6-HOUR RAINFALL ISOPLUVIALS

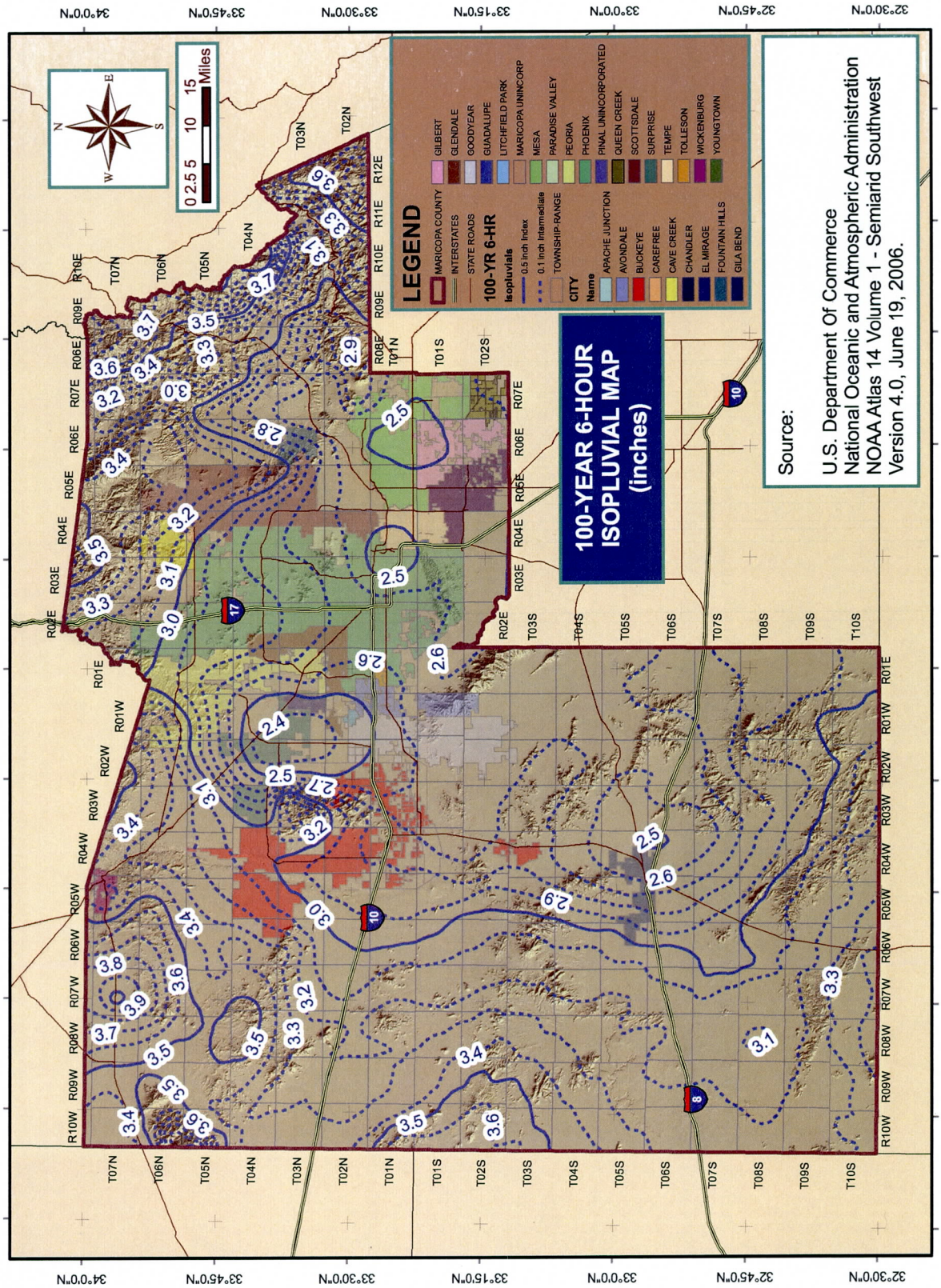


FIGURE A.60
100-YEAR 24-HOUR RAINFALL ISOPLUVIALS

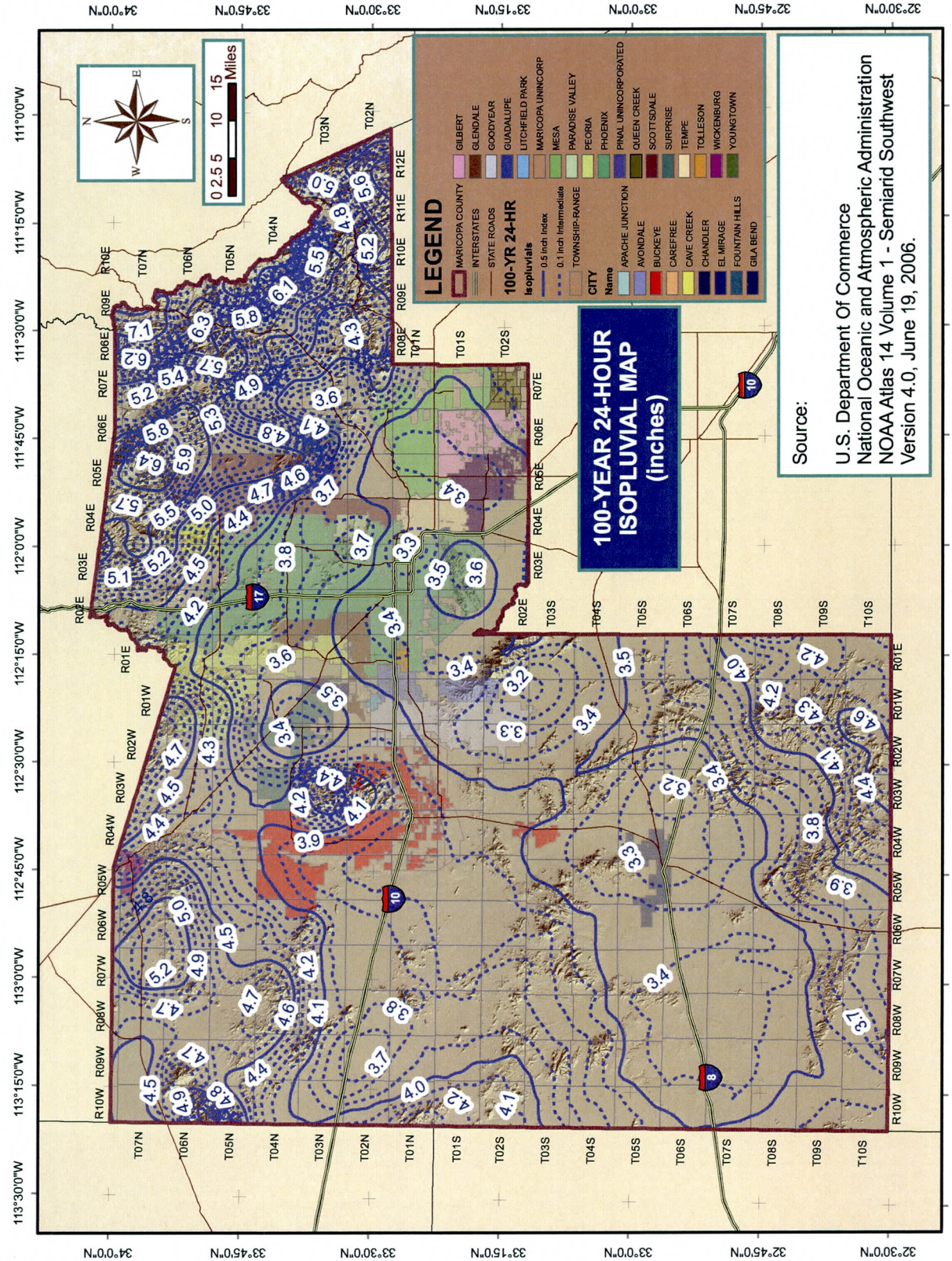
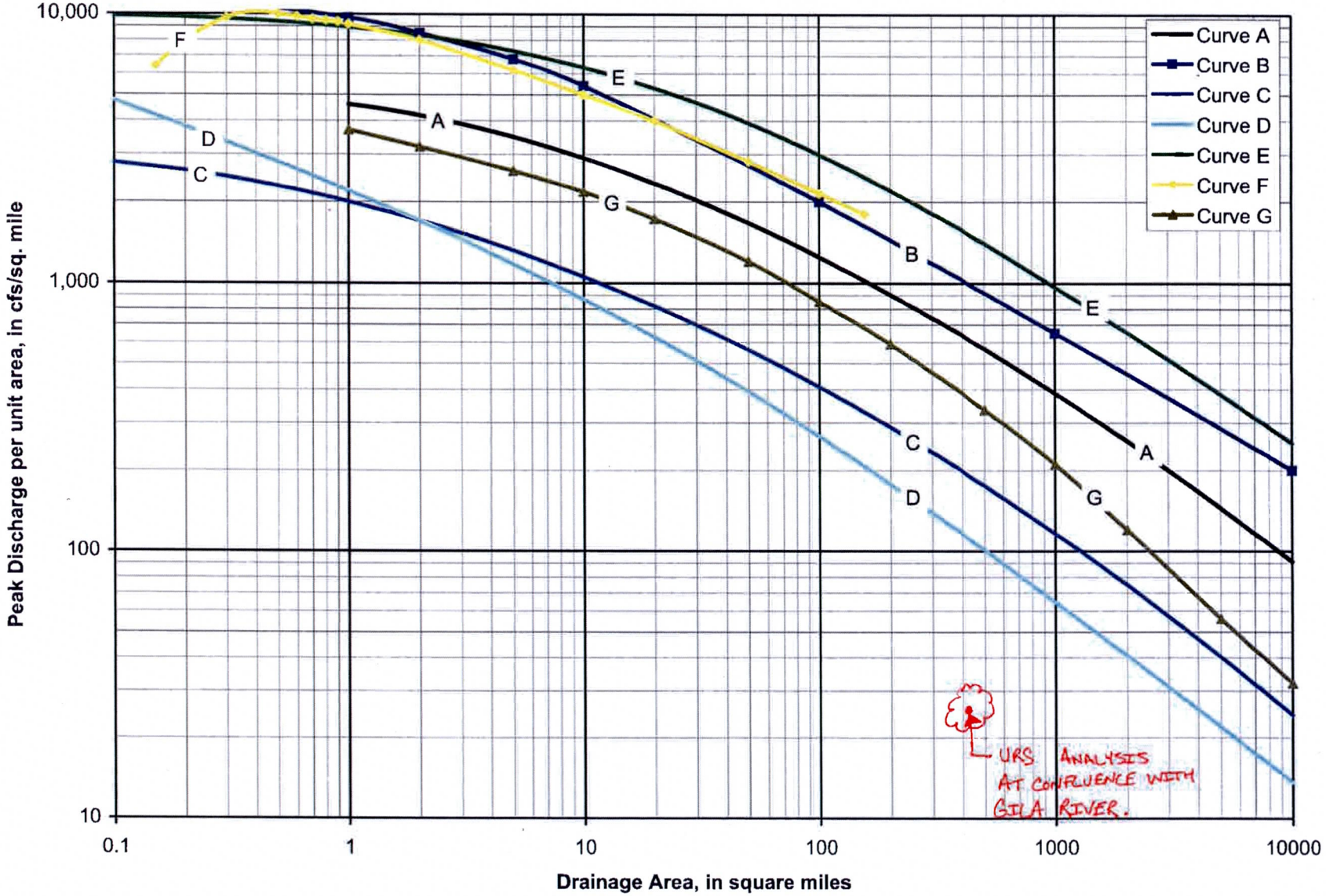


Figure 8.1
UNIT PEAK DISCHARGE RELATIONS AND ENVELOPE CURVES



Technical Memorandum

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Action | Info | File

23445384

From Elliot Silverston

Date June 28, 2011

Subject Draft Hydrology Text, HEC-1 models, FLO-2D models, Watershed Workmaps

General

1. **Please label Sierra Estrella Mountains, South Maricopa Mountains, North Maricopa Mountains in Figure 1 Study Area (TDN Vol IV).**

   The mountain labels were added to Figure 1. Revised Figure 1 is attached with the errata sheet.

2. **Table 4.1 in Volume 1 refers to EEC study (2004) while the reference section has a date of March 2006. Please provide references for both years or correct the year of the study.**

   The date in Table 4.1 has been updated to reflect the 2006 EEC study. Revised Table 4.1 is attached with the errata sheet.

Rainfall

1. **Please include a NOAA 14 screen printout as verification for the 100-year 24-hour and 100-year 6-hour rainfall values provided in Appendix D.1 and used in the modeling. The NOAA 2 table or figure from the EEC study can be included in the reference material.**

   Figure A.58 and Figure A.60 from the Districts hydrology manual have been provided for Appendix D.1. The figures represent the NOAA 14 isopluvial maps for different rainfall events in Maricopa County and what is coded into the DDMSW rainfall database. The figures and pdf file have been included with the errata sheet. A pdf of the NOAA 14 rainfall data is also included.

2. **The return period is missing in the NOAA 14 and NOAA2 rainfall comparison table in Appendix D.1. Please include**

The return period (100yr 24hr) was added to the column labels to the NOAA14 and NOAA2 rainfall comparison. Revised comparison table is attached with the errata sheet.

3. **Section 4.2.4 refers to the USGS PeakFQ results in Appendix D.7. Please correct text to say Appendix D.1, where the results are presented.**

   The text was updated to say "Appendix D.1.". Revised text is attached with the errata sheet.

4. **Please provide an explanation for using rainfall distribution based on Pattern 3 instead of Pattern 4 in JD card for 90 sq. mile (Fig 2.5 of Hydrology Manual) for the 6-hour storm.**

   Pattern 3 was incorrect and is the pattern that DDMSW Version 3.5.2 generated automatically for an area of 90 square miles. A test was conducted on one of the 100-year 6-hour models to see if the results would change, thereby impacting the floodplain delineations. After manually coding in Pattern 4 for the 90 sq. mile area, there were no changes to the individual basins with the exception of C33. There were only changes for the 6-hour storm for the combination points along Waterman Wash. However, the 24-hour storm generates higher discharges and therefore dominates. The higher discharge is used for the Waterman Wash delineation. Revised 6-hour models have been provided. Revised TDN tables 4.3.1 to 4.3.10 have also been provided on the errata CD.

5. **For the 100-year 6-hour HEC-1 models, please correct ID card that refers to a point rainfall of 3.4 inches which is the 100-year 24-hour storm depth. The 100-year 6-hour model is using a point rainfall of 2.7 inches.**

   The ID card in the HEC-1 100-year 6-hour models has been updated to reflect a point rainfall of 2.7 inches being used in the model. Revised 6-hour HEC-1 models have been provided.

HEC-1

1. **Figure 2 has no peak Qs as stated in Sec 4.2.2 . Should be Figures 6 HEC-1 Schematic. Please correct.**

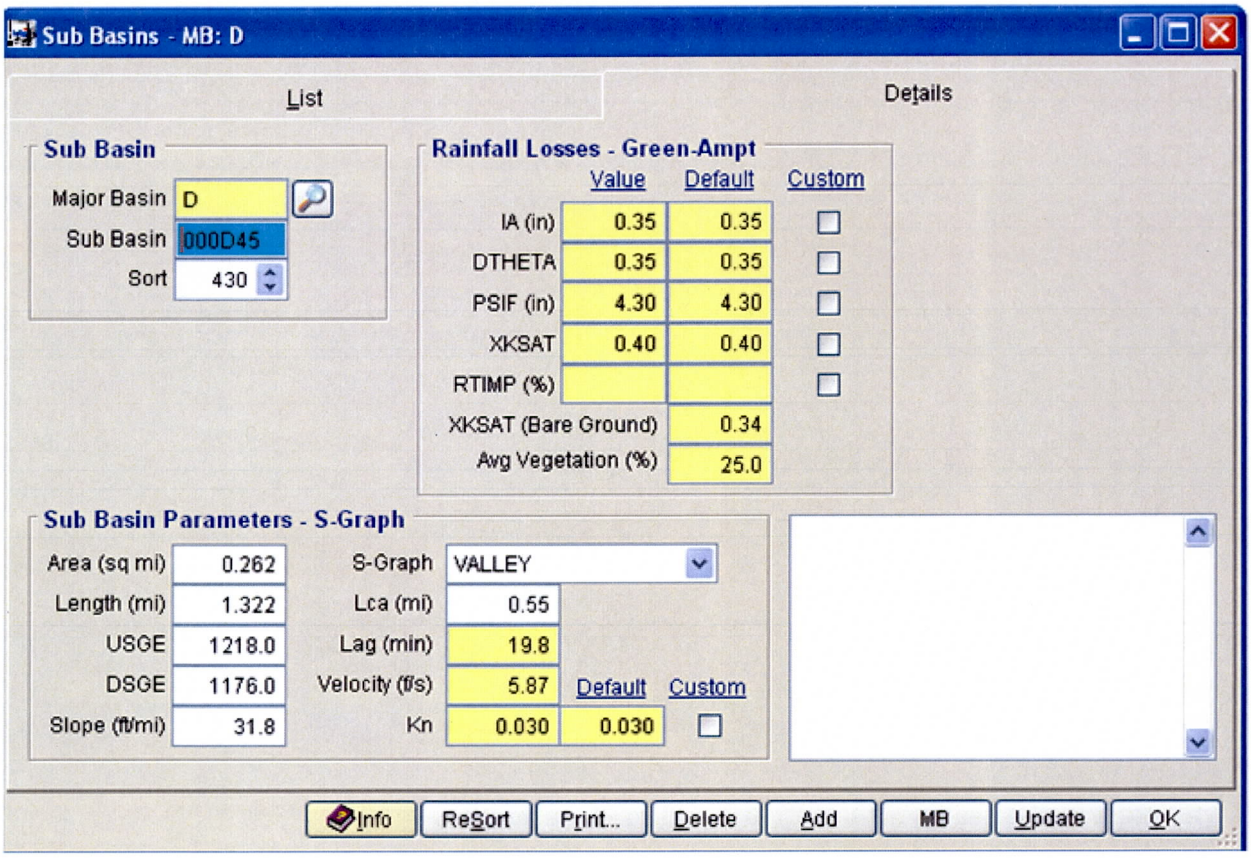
   The text was updated accordingly in Sections 4.2.2 and 4.2.2.1. Revised text is attached with the errata sheet.

2. **Please include a note in the report stating discharge values shown in Figure 6A through Figure 6X are the higher of 100-year 24-hour and 100-year 6-hour with and without railroad for existing conditions.**

   The text was updated accordingly in Section 4.2.2.1. Revised text is attached with the errata sheet.

3. **In sub-basin D45, Lca 5.26 miles is longer than L (1.32 miles). Please Correct.**

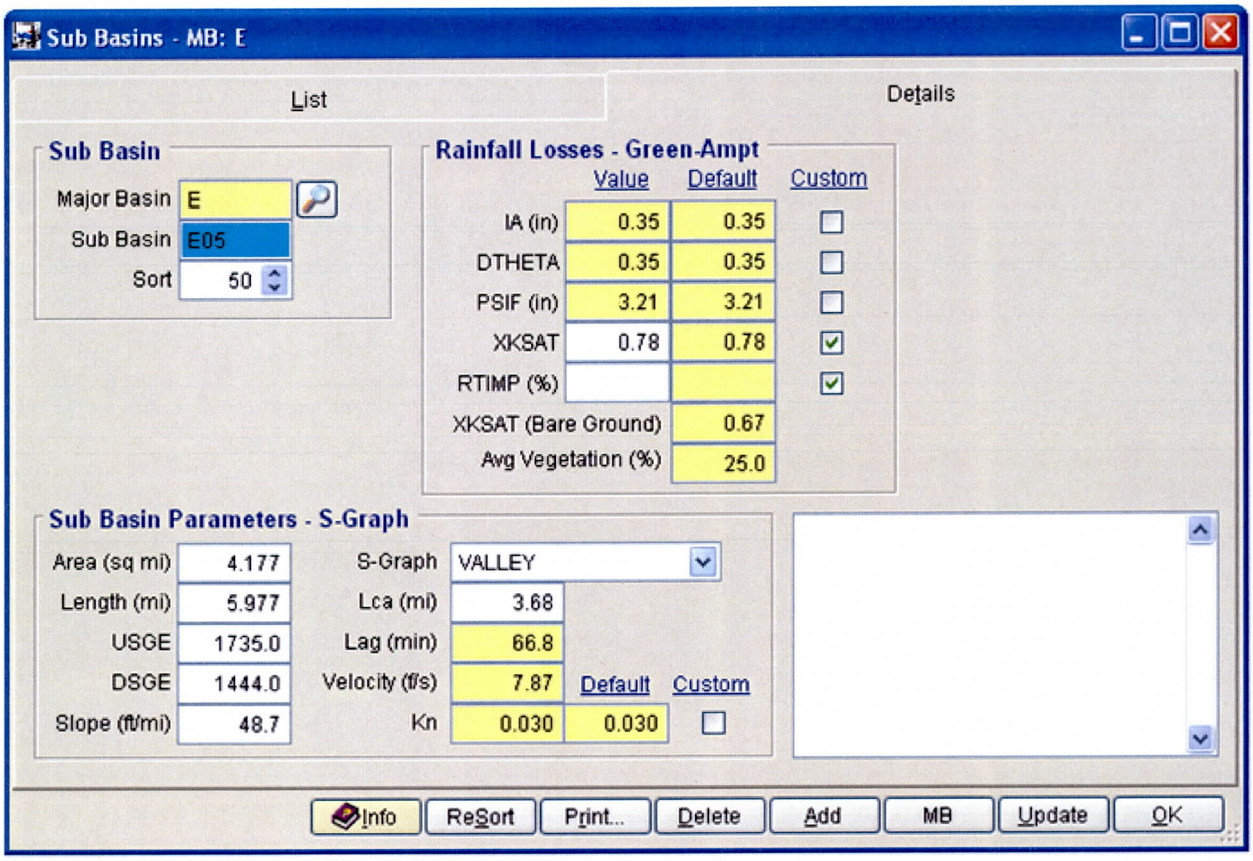
The Lca was changed to the appropriate length.



$Q_{ORIGINAL}$ = 191cfs (100yr 6hr)
$Q_{REVISED}$ = 353cfs (100yr 6hr)

4. **In sub-basin E05, L and Lca are equal to 5.98 miles. Lca should be smaller than 5.98 miles resulting in a smaller lag and higher peak flow. Please review and correct if necessary.**

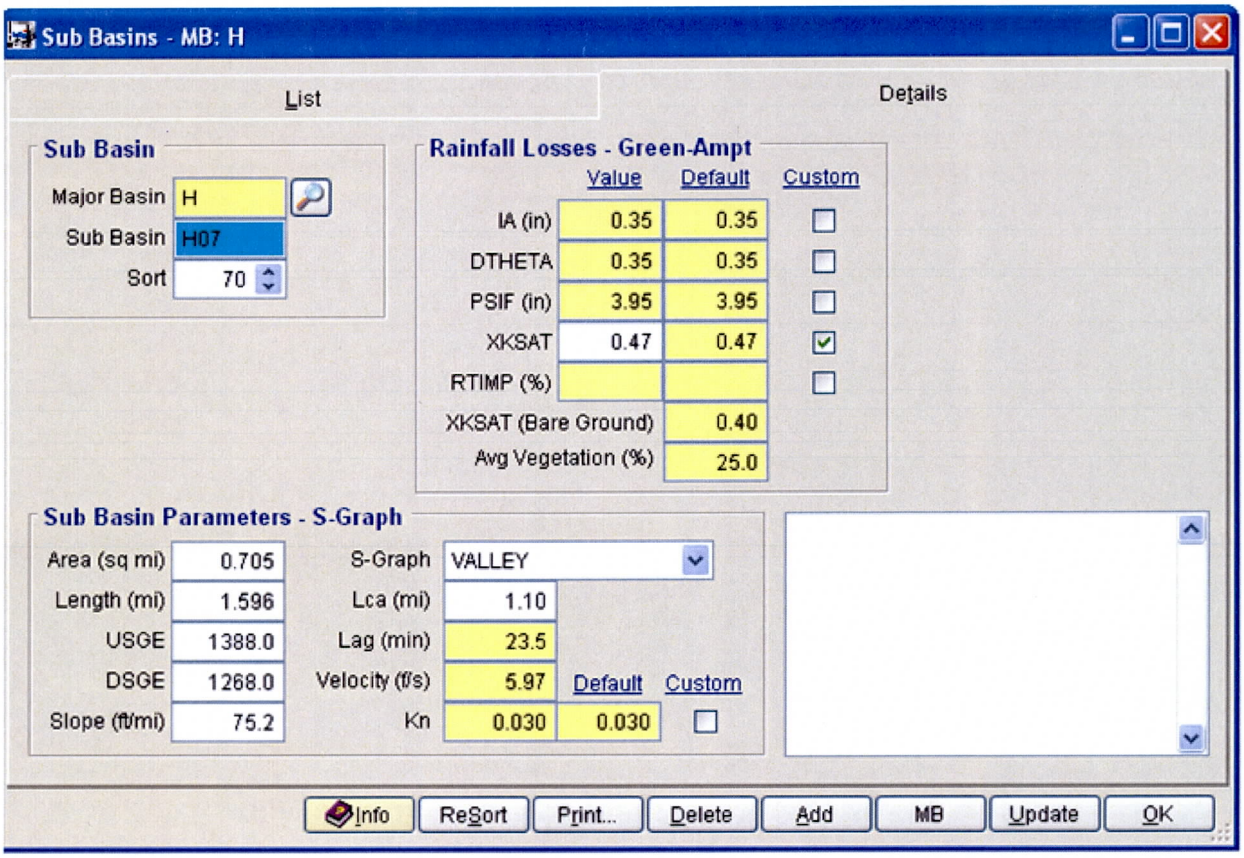
   The Lca was changed to the appropriate length. However, the flows from these basins were not used for any tributary floodplain delineations and the impacts to Waterman Wash are negligible.



$Q_{ORIGINAL}$ = **1014cfs (100yr 24hr)**
$Q_{REVISED}$ = **1159cfs (100yr 24hr)**

5. **In sub-basin H07, L (1.6 miles) and Lca (1.55 miles) are almost equal. Please review and correct if necessary.**

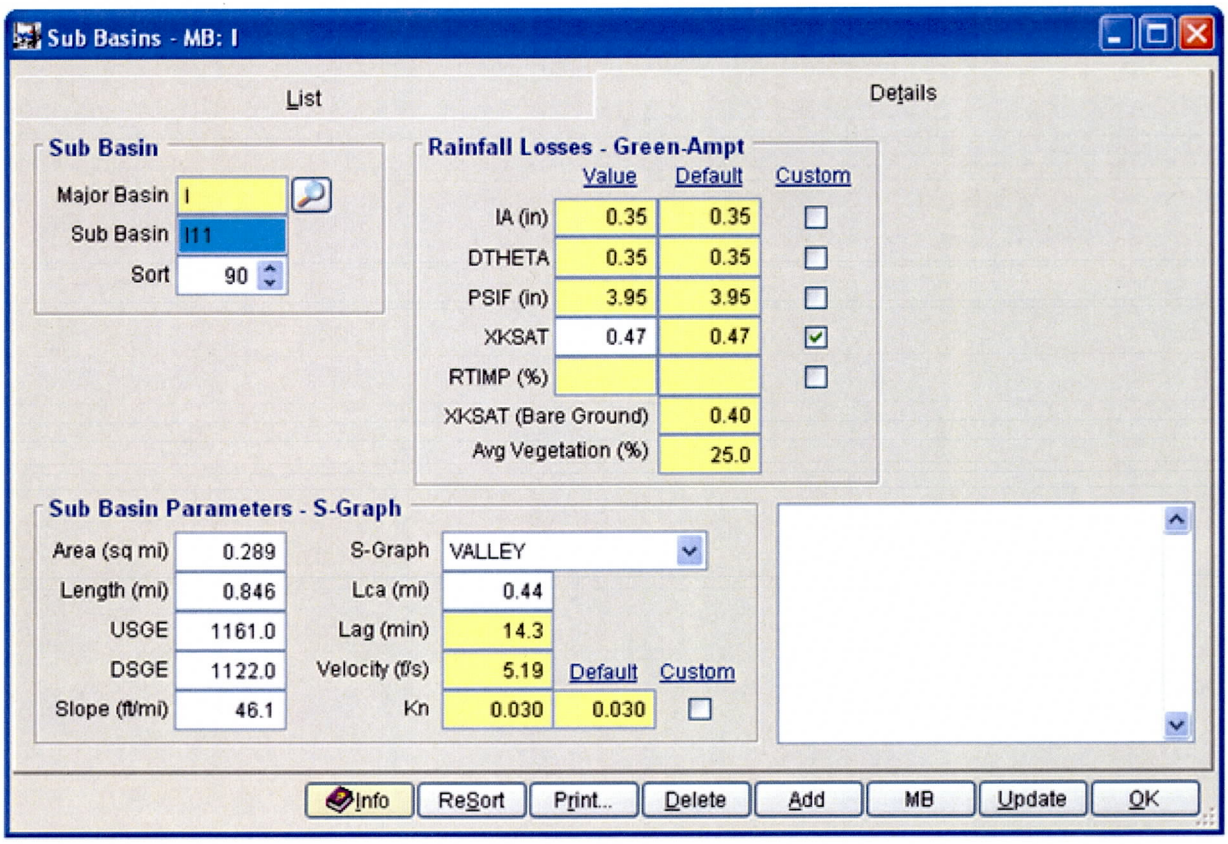
   The Lca was changed to the appropriate length. However, the flows from these basins were not used for any tributary floodplain delineations and the impacts to Waterman Wash are negligible.



$Q_{ORIGINAL}$ = **679cfs (100yr 6hr)**
$Q_{REVISED}$ = **699cfs (100yr 6hr)**

6. **In sub-basin I11, L and Lca are equal. Please review and correct if necessary.**

The Lca was changed to the appropriate length. However, the flows from these basins were not used for any tributary floodplain delineations and the impacts to Waterman Wash are negligible.



$Q_{ORIGINAL}$ = **400cfs (100yr 6hr)**
$Q_{REVISED}$ = **438cfs (100yr 6hr)**

7. **Please update the NSTPS in the RS record of HEC-1 to converge velocities from the latest hydraulic model.**

The velocities from the HEC-1 model along the length of Waterman Wash that was re-modeled as part of this study were compared to the velocities from the HEC-RAS hydraulic model. The difference in average velocity were compared (see table below) and found to be within 0.5ft/s and considered acceptable. Therefore, no changes to NSTPS were made to the HEC-1 model.

	average velocity		
model:	both levee_fail+fldway	HEC-RAS	HEC-1
		(ft/s)	(ft/s)
	Average velocity for Waterman Wash	4.81	4.37
	Average velocity for T1SR2WS32A (I63)	3.88	3.21

8. **Section 4.4 states that 'a memorandum was prepared under separate cover responding to District comments relative to difference in the models, regional regression results and gage statistical results (Appendix D.8)' There is a significant reduction in 100-year discharges from previous studies and explanations have been provided on page 4-23. Please compare discharges to envelope curves (Fig 8.1 in FCDMC Hydrology Manual) as verification of reasonableness.**

The peak unit discharge for Waterman Wash was plotted on Figure 8.1. As expected, the unit peak discharge is lower than the envelope curves. The discussion on page 4-23 states that one of the primary factors for the lower discharges is largely due to the landforms present in the watershed. In addition to distributary flow landforms, there are large portion of the watershed that consists of sheet flow landforms and disturbed areas. The USGS has stated that distributary flow areas can have a large effect on the flood characteristics of the stream and that the magnitude of the peak discharges can be significantly reduced in basins with distributary flow areas. Further, the report states that even during large floods, most of the peak discharge in the distributary flow areas can be lost to infiltration or attenuation. The same can be said for sheet flow areas where flows are shallow and have low velocities allowing more time for runoff to be lost to infiltration. In addition to sheet flow and distributary flow areas, there is a considerable amount of land that has been disturbed for agricultural purposes. The disturbed areas are predominantly next to Waterman Wash. The agricultural fields have all been leveled to slopes that are less than the historic slopes. This type of disturbed landform exhibits similar characteristics to sheet flow areas where runoff is lost to infiltration. Considering the flow characteristics just described and the additional technical memorandum validating the results (Appendix D.8), URS is of the opinion that the curves presented in Figure 8.1 would overestimate

the peak discharges for the Waterman Wash watershed and that revised peak discharges for Waterman Wash are reasonable.

Loss Parameters

1. **Please include a brief note on non-default XKSAT values used.**

   Text was added to the special problems section as 4.3.1.6 Non-Default XKSAT Values. Revised text is attached with the errata sheet.

2. **Please reprint a legend of land use so that its colors relate better to the colors in Figures 4A. the dark green and grey of the figures do not show up in the legend. Alternatively, predominant land use descriptions can be included in the figures as has been done in the soil maps.**

   The colors on the figures showing the land uses are transparent and overlayed on an aerial image which affects the color shading. Figure 4A (legend sheet) has been updated so the colors appear the same. The reprinted Figure 4A has been included with the errata sheet.

Split Flow Analysis

1. **In Section 4.1.6 Flow Split Analysis, please describe the proportioning of flow at flow splits and how the FlowMaster results were used to obtain the HEC-1 diversion cards. Also, please provide a description of how HEC-1 diversion relationships were obtained for situations when flows exceeded channel capacity.**

   Text was added to the Section as 4.1.6 Flow Split Analysis. Revised text is attached with the errata sheet.

2. **Please include digital FlowMaster files or printouts of FlowMaster rating tables as verification for diversion card data.**

   Excel files of the rating tables and digital FlowMaster files are provided on the TDN CD located in Volume 4.

3. **H17 table shows inflow = outflow in Appendix D.4. The table values do not match diversion DH17 node in HEC-1. Please include an explanation.**

   The diversion cards for DH17 were initially calculated using Flowmaster. However, it was later selected as a location for a FLO-2D model so the diversion cards were superseded by the FLO-2D results. The Flowmaster results and related spreadsheets for the diversion locations that have been superseded by FLO-2D models will be pulled from the Appendix

data. Please refer to the FLO-2D results for the correct DI/DQ HEC-1 cards. This will be noted in the errata sheet.

FLO-2D

1. **Please include memorandum from JE Fuller & Geomorphology, Inc. (Reference 12) on geomorphic assessment of the project area mentioned on page 4-3 in the final TDN for completeness. Or refer to the geomorphic memorandum dated October 5, 2010 by JE Fuller & Geomorphology, Inc. included in Appendix D.8.**

   A reference was added to section 4.1.5 for the memorandum from JE Fuller Geomorphology, Inc in Appendix D.8. The reference has also been provided with the errata sheet.

2. **The Manning's n value of 0.04 used appears to be at the lower end of overland flow n values reported in Table 1 of the FLO-2D Reference Manual. Please ensure that this value is consistent with the Manning's n value report prepared as part of the TDN and finalized with FCDMC input.**

   FLO-2D models were created for CPH17, CPH31, CPG31, CPG07, CPB03, CPB13, and CPE06. Of these areas only CPH17, CPH31, CPB03, CPB13 were near floodplains that were re-delineated as part of this study. The Manning's n value report submitted as part of this TDN has n-values that range from .045 in the overbanks to .029 in the channel for the floodplains near the FLO-2D modeled areas. For the remainder of the areas the Manning's n-value was based on a site-visit, aerials, and photos to quantify the roughness coefficient.

3. **The Dibble Technical Memorandum in Appendix D.3 says on page 4 under 'Inflow Elements' that 100-year 24-hour discharges were used as inflow hydrographs. Peak discharge values in Appendix D.3 schematics could not be verified against the 100-year 24-hour with and without railroad HEC-1 models. Please include a table with FLO-2D input node and corresponding HEC-1 model name and HEC-1 node used for the inflow hydrographs.**

   FLO-2D models were created to generate flow split tables to be used in HEC-1. The initial runs of FLO-2D included flows developed with the initial HEC-1 modeling results. These flows in all cases were greater than the actual flows provided with the Final Hydrology HEC-1 flows. A table has been created as a comparison of the flows applied in FLO-2D and those provided with the final HEC-1 models. Since the flows applied in FLO-2D are greater than those generated in the most recent HEC-1 modeling, sufficient data has been obtained from the FLO-2D models to generate rating tables for use with diversion cards and HEC-1.

4. **Please ensure that the discharges reported in the network schematics in Appendix D.3 and the FLO-2D INFLOW.DAT discharges match. For example, for Basin E05 (CPE05), the schematic discharge is 2346 cfs, the HEC-1 100-year 24-hr discharge is**

1125 cfs (same for both with and without railroad), and the INFLOW.DAT peak discharge is 2355 (for inflow node 4004).

Discharges from the network at inflow node locations vary slightly from those discharges shown in the schematic at discharge locations. This is due in part to attenuation in the floodplain from the point where the inflow is applied and the location where the cross section is applied to determine peak flows. Peak flows shown in the schematic at cross section locations are derived from the HYCROSS.out file as a result from the FLO-2D models. The HYCROSS.out file defines the maximum discharge that crosses any given cross section and is therefore shown on the schematic to indicate the results of the FLO-2D models. As discussed in response 3, the initial runs of FLO-2D included flows developed with the initial HEC-1 modeling results. In all cases, these flows were greater than the actual flows provided with the Final Hydrology HEC-1 flows.

5. **The Dibble Technical Memorandum in Appendix D.3 says on page 4 under 'Inflow Elements' that 'Inflow element locations will be revised with updated hydrographs once review comments are provided for the hydrology of the Rainbow Valley ADMS'. Please update FLO-2D models with the final HEC-1 hydrographs. Also update the HEC-1 diversion cards with the changed FLO-2D results.**

   The text has been updated to state that initial FLO-2D models will use the initial hydrology provided by URS. The flows from these models sufficiently defines the rating tables used for HEC-1 since the flows applied in FLO-2D inflow.dat files were greater than those of the final HEC-1 models, it was believed sufficient for use with HEC-1 models and diversion cards.

6. **The flow split Table 2 on page 7 and Table 5 on page 8 in Appendix D.3 have the same DT, DI and DQ values. It appears that Table 2 values need to be different. Please correct.**

   These tables will be updated with the correct and appropriate values as referenced in the tables. The updated tables will be provided with the errata sheet.

7. **In Appendix D.3 rating tables, please include the floodplain cross-section numbers of the discharges in the table as a footnote to the table. This will clearly indicate the source of the discharges.**

   Cross section numbers will be included with the discharge table as a column to the table. The updated tables will be provided with the errata sheet.

8. **If infiltration is not being used, please do not include INFIL.DAT file in data file.**

   The INFIL.DAT data file will not be included since it is not being used in the FLO-2D models.

Memorandum JE Fuller/ Hydrology & Geomorphology, Inc.

DATE: June 14, 2011

TO: Elliot Silverston, P.E.; Marc McIntosh, P.E.

FROM: Mike Kellogg, R.G.

RE: Rainbow Valley ADMP Task 9.2.8

Introduction

Task 9.2 of the Rainbow Valley Area Drainage Master Plan (RVADMP) requires that a reconnaissance level geomorphic overview of the watershed study area be performed to identify the varying flood hazards. The geomorphic overview was performed by interpreting features observed on digital, orthorectified color aerial photographs, Arizona Geological Survey (AZGS) surficial mapping, and digital topography. Specifically, Task 9.2.2 includes the following:

- Development of a flow characteristics map to identify portions of the study area that are subject to alluvial fan flooding, distributary flow, sheet flooding, ponding, and riverine flooding based on a watershed geomorphic assessment. This includes a GIS map showing coverages for each flow characteristic type and a polygon showing mountain areas where the land slope exceeds 15% using a digital elevation model provided by the District. This map will be used to identify appropriate tools for hydrology and floodplain delineation.

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The deliverables for the geomorphic overview component (Task 9.2.8) includes the following:

- A brief written technical memorandum of the geomorphic landforms in the study area, with particular emphasis on areas potentially subject to alluvial fan flooding, stable distributary flow, sheet flow, and ponding. The technical memorandum shall be coordinated with the GIS coverages showing the approximate areal boundaries of the specific hazard types.

GIS Shapefiles. The following shapefiles are provided as attachments to this memorandum:

- A GIS shapefile showing the approximate boundaries of the specific landform hazard types.
- GIS data showing mountain areas where the land slope exceeds 15%, using a digital elevation model provided by the District.

Methodology

The landform-flood hazard type delineation was done using the following data sets:

- Flow Bifurcations
- Channel Pattern
- Topography
- NRCS Soils Mapping
- AZGS Surficial Geologic Mapping
- Existing Floodplain Delineations

Flow Bifurcations[1]. The distribution of bifurcation points, as shown in Figure 1, can be used to identify distributary flow areas and alluvial fans. For the RVADMP study area, most of the mapped bifurcations occur on the piedmont surfaces, with a fewer number occurring on the major rivers and tributaries.

Channel Pattern. Aerial photographs indicate the two primary channel patterns within the RVADMP study area are 1) distributary and 2) tributary. The distributary pattern is dominant within most of the piedmont slopes while the tributary pattern is dominant within and near the base of the mountains. The major river and tributary drainages are characterized by a low sinuosity channel pattern.

Topography. Available watershed topography included the District's 10-foot contour interval mapping (Figure 2), 2-foot contour interval mapping, and the USGS topographic quadrangle maps. Topographic data were used to identify areas of steep slopes (darkened areas on Figure 2 due to close contour spacing), as well as alluvial fans (radial contours) and sheet flow areas (low crenulation planar surfaces).

NRCS Soils Mapping. NRCS soils unit mapping (Figure 3) were used to identify broad areas of similar soils type. However, the NRCS soil landform descriptions correlated poorly with actual landform characteristics in the study area.

AZGS Surficial Geologic Mapping. AZGS mapping for the RVADMP study area (Figure 4) was used to identify older versus younger geomorphic surfaces, distinguish piedmont alluvium from areas underlain by shallow bedrock, identify distributary versus tributary channel patterns, and identify areas of sheet flow.

Existing Floodplain Delineations. A number of floodplain delineations were previously completed by the District (Figure 5). These floodplains were used to identify the major rivers and tributaries within the study area.

Landform Slope. A landform slope analysis was performed using the District's 10-foot contour interval digital topography. The primary purpose of this analysis was to identify slopes greater than 15%. The 10-foot topography provided sufficient resolution and was

[1] A channel bifurcation is where a stream channel divides into two or more flow paths in the downstream direction.

available for the entire study area. The 2-foot topography was not available for the entire study area, thus was not included. Figure 6 shows the result of the analysis.

Landform Delineation

The data sets and information described above were used to define the following types of landforms in the RVADMP study area:

- Mountain Slope Areas (> 15% slope)
- Piedmont Areas with Tributary Drainage Systems
- Piedmont Areas with Distributary Drainage Systems
- Alluvial Fans
- Sheet Flow/Unconfined Flow Areas
- Major Riverine Floodplains
- Disturbed Areas
- Ponding Areas

The landform map for the RVADMP study area is shown in Figure 7.

Mountain Slope Areas. The Mountain Slope Area landform consists of steep mountainous terrain underlain by shallow or exposed bedrock. Mountain slope areas were identified from the aerial photographs, topographic maps and AZGS geologic maps. The Mountain Slope Area landform unit was observed primarily within the northeast and southwest quarters with other, smaller mountain areas distributed throughout (Figure 7). The channels in the Mountain Slope Area landform consist of well-defined, low sinuosity tributary streams located in bedrock or mountain canyons.

Piedmont[1] Areas with Tributary Drainage Systems. This landform unit consists of mildly sloping alluvial surfaces with dendritic tributary drainage networks. Piedmont areas with tributary systems were identified from aerial photographs, the bifurcation delineations, topographic maps, NRCS soils maps, and AZGS geologic maps. The Piedmont Area with Tributary Drainage System landform occurs as a buffer between the Mountain Slope Landform and the low-sloping piedmont or alluvial plain. The watercourses in the Piedmont Areas with Tributary Drainage Systems landform consist of moderately steep, well-defined channels with narrow floodplains.

Piedmont Areas with Distributary Drainage Systems. This landform unit consists of mild-to-low sloping alluvial surfaces with distributary[2] drainage networks. Piedmont areas with distributary systems were identified from aerial photographs, the bifurcation delineation, topographic maps, NRCS soils maps, and AZGS geologic maps. The Piedmont Area with Distributary Drainage System landform was the dominant landform within the study area. Both stable and unstable distributary drainage patterns were observed. In general, the

[1] The piedmont is a sloping landform located at the base of a mountain and is usually composed of or mantled by unconsolidated alluvium.

[2] Distributary flow areas have channels that branch and split in the downstream direction.

western piedmont sloping off of the Maricopa Mountains was identified as a stable distributary system. The stable distributary network is being actively created through the process of stream capture rather than the avulsion dominated processes on active distributary systems. The distributary portion of the Sierra Estrella Mountain piedmont is an active, unstable distributary system.

Alluvial Fans. Alluvial fans are characterized by specific landform characteristics relating to their composition, morphology, and location. Alluvial fans are composed of eroded rock material transported and deposited from the upstream watershed. Alluvial fans have the shape of a fan, either partially or fully extended, with a radial pattern of topographic contours. Alluvial fans are located near a topographic break, which may be expressed either laterally or vertically. Alluvial fan areas were identified from aerial photographs, the bifurcation delineations, topographic maps, and AZGS geologic maps. The reconnaissance level landform identification process used roughly corresponds to the Level 1 procedure outlined in the District's Piedmont Flood Hazard Assessment Manual. The Alluvial Fan landform occurs within the Piedmont Area landform. Potential alluvial fans were identified throughout the study area; however 25 fans were selected for detailed analysis in the RVADMP study. The 25 fans are identified in Figure 7 by a red star located at the fan apex.

Sheet Flow/Unconfined Flow Areas. Sheet and unconfined flow occurs where there is no well-developed or defined drainage network to convey the majority of floodwater. The term "sheet flow" refers to any form of unconfined runoff that occurs over a broad, expansive area. This broad definition of sheet flow incorporates several more narrowly defined flow types, including natural (classic) sheet flow, urban sheet flow, agricultural sheet flow, overland flow, perched flow, anastomosing flow, and distributary flow. Although sheet flow is the dominant process on high, geologically old swales, these individual landforms were not specifically identified as sheet flow due to their scale. Large sheet flow areas were identified within the study area and are shown on Figure 7.

Major Riverine Floodplains. A floodplain is a planar surface adjacent to a watercourse that is periodically inundated by flood water. Floodplains consist of relatively fine-grained, unconsolidated alluvium recently deposited by the watercourse. Floodplains were identified from aerial photographs, the bifurcation delineations, topographic mapping, AZGS mapping, and maps of existing and pending FEMA floodplain delineations. Of the watercourses in the RVADMP, only Waterman Wash and it major tributaries were large enough to be mapped as a distinct landform at the mapping scale used.

Ponding. Areas of ponding were identified throughout the study area, primarily as stockponds. Although minor ponding likely occurs on the upstream side of roadway, railroad, and other levee-like structures, they were not individually identified at the scale of mapping for this study.

Flood Diversion/Detention Structures. Several large flood diversion/detention structures were identified in the southeast portion of the study area.

Landscape Characteristics

The District has identified and delineated landscape characteristic zones within the RVADMP study area. A comparison of the flow characteristics developed for this study with the District's landscape characteristics provides valuable information to planners. Figure 8 shows the flow and landscape characteristics plotted together. The figure shows a strong correlation between the units. Table 1 lists the landscape characteristics and the approximate corresponding flow characteristics.

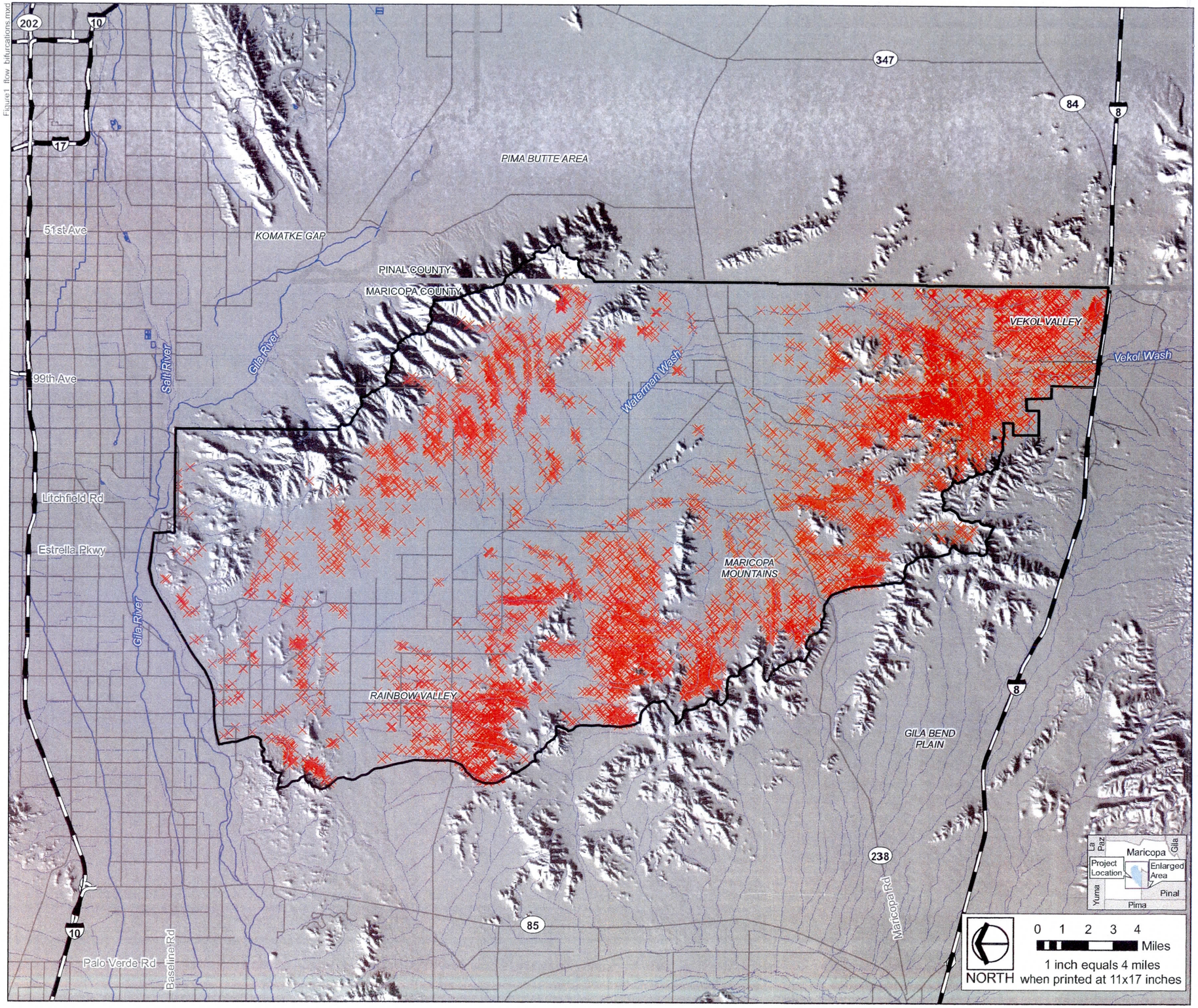
Table 1. Landscape and Flow Characteristics Comparison

Landscape Characteristic	Flow Characteristic
River Channel	Major River and Tributary Flooding
River Terrace	Major River and Tributary Flooding
Valley Wash	Major River and Tributary Flooding
Valley Plain	Sheet Flooding
Arroyo	Major River and Tributary Flooding
Foothills	Tributary Flooding
Lower Bajada	Distributary Flooding
Upper Bajada	Tributary Flooding
Mountains	Mountains

Figure1 flow bifurcations.mxd

Rainbow Valley Area Drainage Master Plan Flow Bifurcations

Figure 1



Project Features

- Flow Bifurcations

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

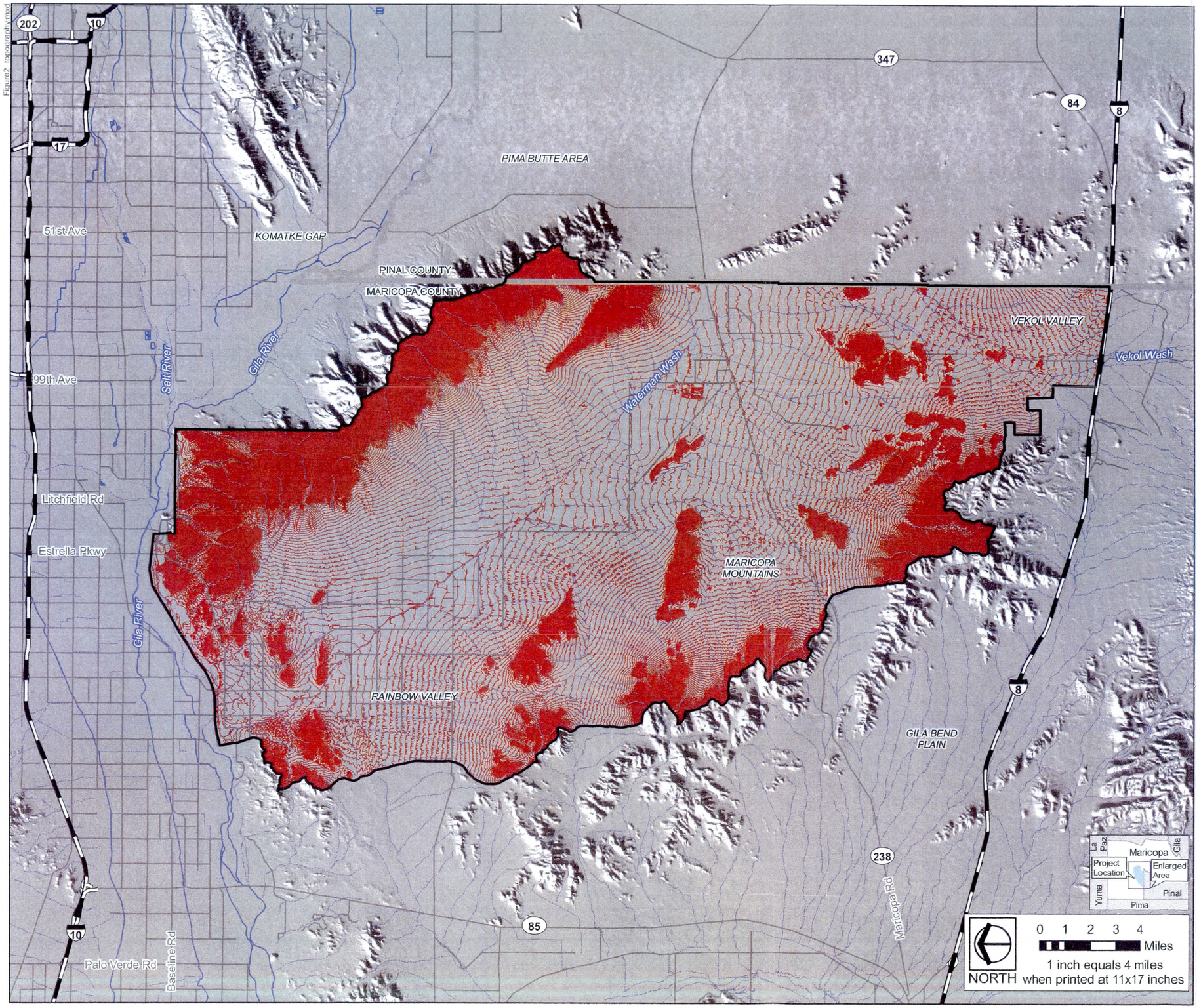
Data Sources

JE Fuller/Hydrology & Geomorphology flow bifurcation data (2008).

Figure2_topography.mxd

Rainbow Valley Area Drainage Master Plan Topography

Figure 2



Project Features

- Elevation Contours (contour interval 10-feet)

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

Data Sources

Flood Control District of Maricopa County:
County- Wide 10-foot contour interval digital topography (December 2000).

Figure3_soils.mxd

Rainbow Valley
Area Drainage Master Plan
National Resource Conservation Service Soils

Figure 3

PIMA BUTTE AREA
KOMATKE GAP
PINAL COUNTY
MARICOPA COUNTY
VEKOL VALLEY
MARICOPA MOUNTAINS
RAINBOW VALLEY
GILA BEND PLAIN
51st Ave
99th Ave
Litchfield Rd
Estrella Pkwy
Palo Verde Rd
Baseline Rd
Salt River
Gila River
Waterman Wash
Vekol Wash
Maricopa Rd
202
10
17
347
84
8
238
85

0 1 2 3 4 Miles

1 inch equals 4 miles when printed at 11x17 inches

NORTH

Project Features

Note: Unit descriptions are available from District GIS information and are not repeated here as there are over hundred individual units represented. The objective of this illustration is to highlight the location of large areas of uniform soil types.

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

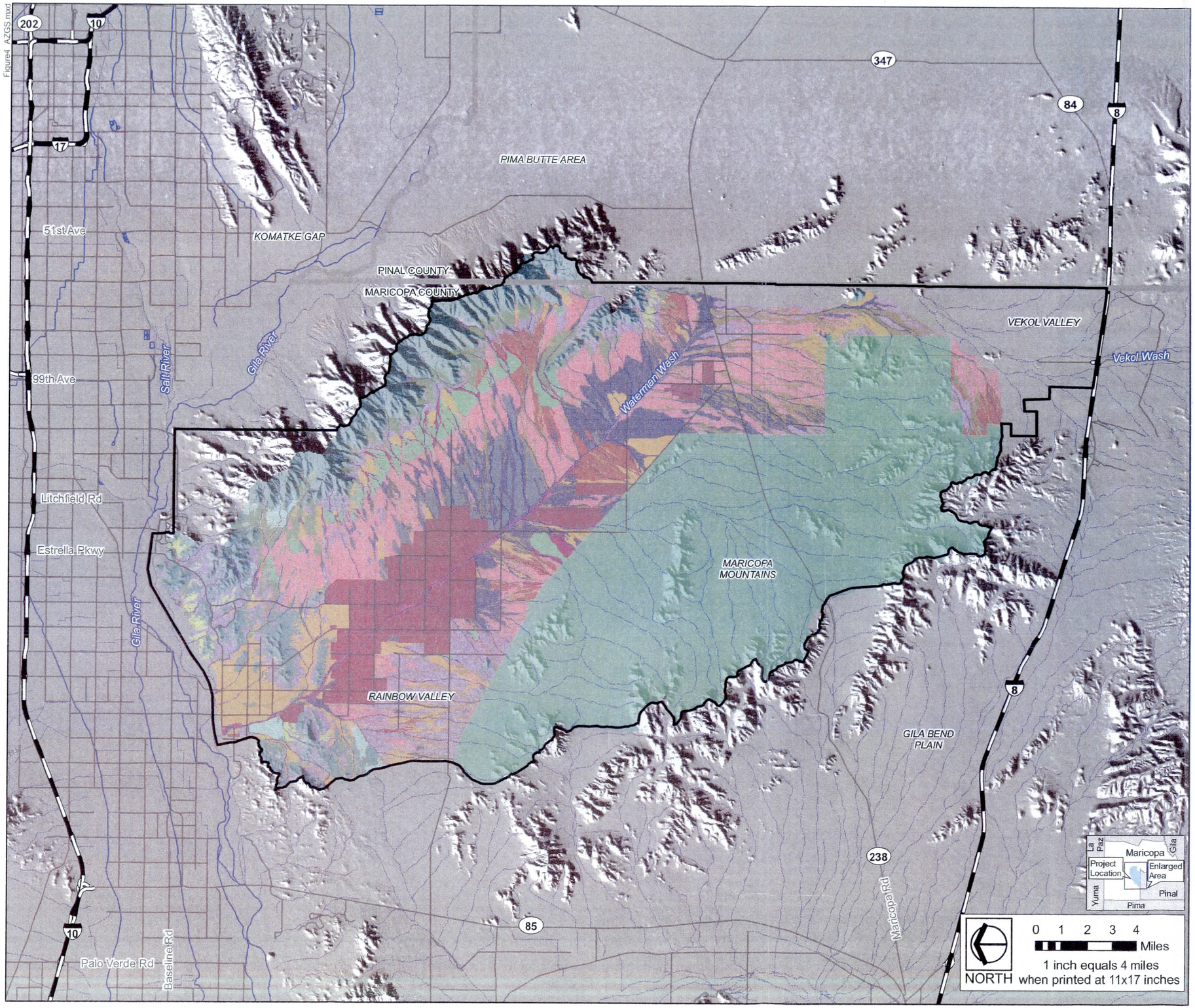
Data Sources

National Resource Conservation Service Digital Soils Mapping Sources:
1. Gila Bend-Ajo Area, Arizona, Parts of Maricopa and Pima Counties (NRCS Area Symbol AZ653)
2. Gila River Indian Reservation, Parts of Maricopa and Pinal Counties, Arizona (NRCS Area Symbol AZ 658)
3. Maricopa County, Arizona, Central Part (NRCS Area Symbol AZ651)

Figure4_AZGS.mxd

Rainbow Valley
Area Drainage Master Plan
Arizona Geological Survey Geologic Mapping

Figure 4



Project Features

- Active alluvial fans
- Active channels, bars and low terraces
- Active swales and sheetflood areas
- Agricultural Land
- Bedrock, undivided
- Channels of large tributary washes
- Colluvium and talus
- Early Pleistocene alluvium
- Existing channels and drainageway associated with active alluvial fans
- Holocene alluvium, undivided
- Holocene and Pleistocene alluvium on piedmont slopes
- Inactive Holocene alluvial fans and terraces
- Late Pleistocene alluvium
- Middle Pleistocene alluvium
- Mixed Holocene alluvial and eolian deposits on lower piedmont slopes
- Modern river channels
- Modern river terraces and bars
- Pleistocene and Holocene oninactive alluvial fans and piedmont slopes
- River terraces
- Sonoran National Monument
- Tertiary sediment, undivided
- Ditches
- Tanks

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

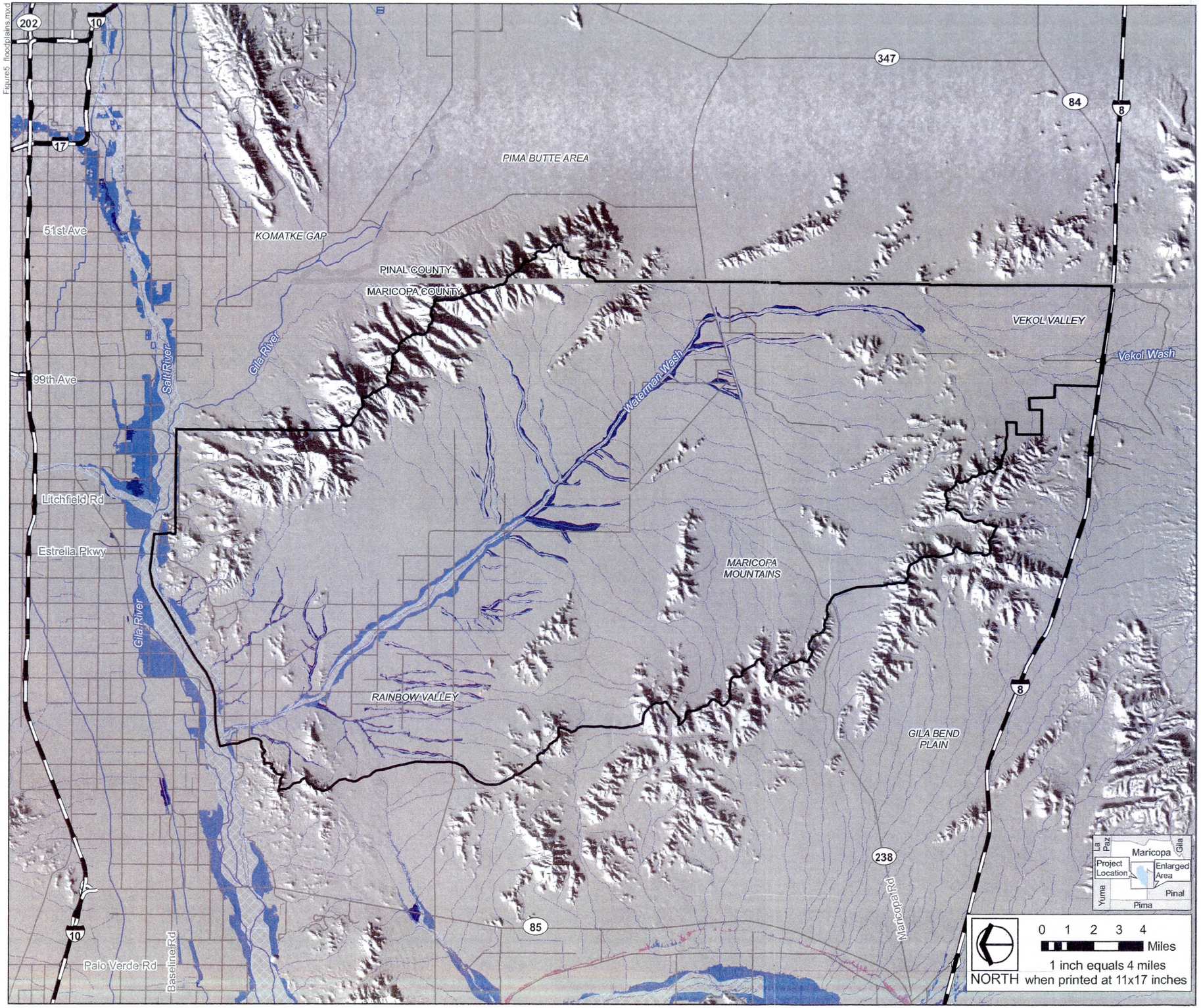
Data Sources

Arizona Geological Survey Digital Geologic Maps:
1. Geologic Map for the Buckeye 7.5' Quadrangle, Maricopa County, Arizona (AZGS DGM-15).
2. Geologic Map for the Avondale SW 7.5' Quadrangle, Maricopa County, Arizona (AZGS DGM-16).

Figure5_floodplains.mxd

Rainbow Valley
Area Drainage Master Plan
Mapped Floodplains

Figure 5



Project Features

Flood Zones

- Floodway
- Administrative Floodway
- 100-year flood with base flood elevations
- 100-year flood with no base flood elevations
- 100-year shallow flooding (depths >1<3 feet)

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

Data Sources

Flood Control District of Maricopa County Digital Floodplain Dataset:

1. Salt/Gila River Master Plan (1991)
2. Waterman Wash FDS (1989) (2005)

Figure6 slope.mxd

Rainbow Valley Area Drainage Master Plan Slope Analysis

Figure 6

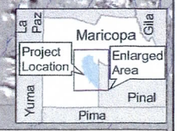
PIMA BUTTE AREA
KOMATKE GAP
PINAL COUNTY
MARICOPA COUNTY
VEKOL VALLEY
Vekol Wash
Waterman Wash
Gila River
Salt River
51st Ave
99th Ave
Litchfield Rd
Estrella Pkwy
Gila River
RAINBOW VALLEY
MARICOPA MOUNTAINS
GILA BEND PLAIN
Maricopa Rd
Palo Verde Rd
Baseline Rd
202
10
17
347
84
8
238
85

Project Features

- 0 % slope
- 1 - 2 % slope
- 3 - 4 % slope
- 5 - 6 % slope
- 7 - 8 % slope
- 9 - 10 % slope
- 11 - 12 % slope
- 13 - 15 % slope
- >15 % slope

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams



0 1 2 3 4 Miles

1 inch equals 4 miles when printed at 11x17 inches

NORTH

Data Sources

Flood Control District of Maricopa County:
County- Wide 10-foot contour interval digital topography (December 2000).

Figure7_flow_characteristics.mxd

Rainbow Valley
Area Drainage Master Plan
Flow Characteristics

Figure 7

PIMA BUTTE AREA
KOMATKE GAP
PINAL COUNTY
MARICOPA COUNTY
VEKOL VALLEY
RAINBOW VALLEY
MARICOPA MOUNTAINS
GILA BEND PLAIN
Waterman Wash
Vekol Wash
Gila River
Salt River
51st Ave
99th Ave
Litchfield Rd
Estrella Pkwy
Palo Verde Rd
Baseline Rd
Maricopa Rd
202
10
17
347
84
8
85
238

Project Features

- Alluvial fans selected for floodplain delineation

Flow Characteristics

- Alluvial Fan Flooding
- Disturbed Area
- Flood Retarding Structure
- Major River and Tributary Flooding
- Mountains
- Piedmont Distributary Flooding
- Piedmont Tributary Flooding
- Sheet Flooding
- Stockpond

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

Data Sources

JE Fuller/Hydrology & Geomorphology alluvial fan identification and flow characteristics assessment (2008).

La Paz | Maricopa | Gila | Yuma | Pinal | Pima
Project Location
Enlarged Area

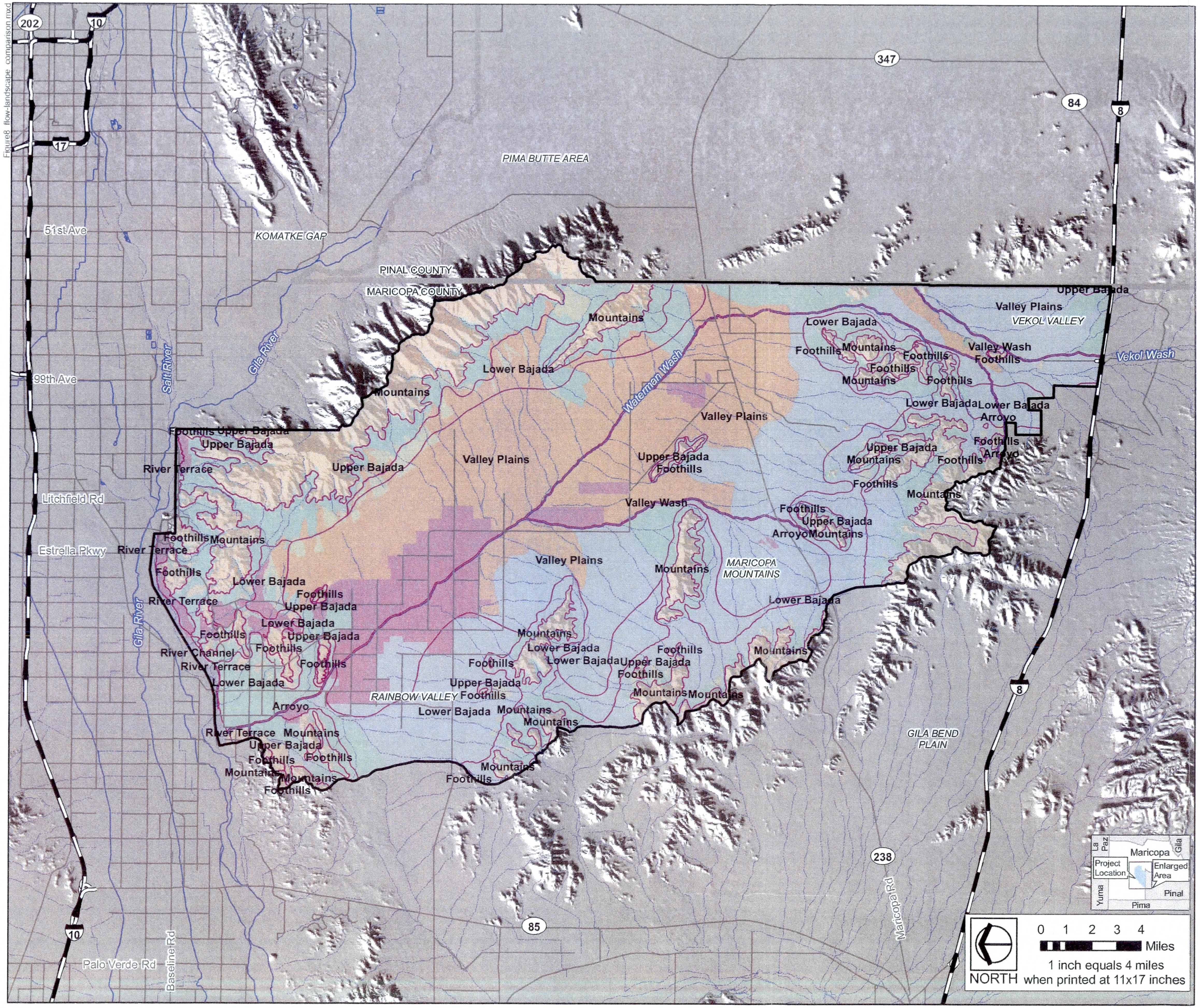
NORTH

0 1 2 3 4 Miles

1 inch equals 4 miles when printed at 11x17 inches

Rainbow Valley
Area Drainage Master Plan
Landscape and Flow Characteristics Comparison

Figure 8



Project Features

District Landscape Characteristic Zones

Flow Characteristics

- Alluvial Fan Flooding
- Disturbed Area
- Flood Retarding Structure
- Major River and Tributary Flooding
- Mountains
- Piedmont Distributary Flooding
- Piedmont Tributary Flooding
- Sheet Flooding
- Stockpond

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highways/ Freeways
- State Highways
- Perennial Streams
- Intermittent Streams

Data Sources

Flood Control District of Maricopa County Landscape Inventory & Analysis (LIA) (2008).

JE Fuller/Hydrology & Geomorphology flow characteristics assessment (2008).

Rainbow Valley Area Drainage Master Plan:

Technical Data Notebook

Hydrology Report

Volume 1 of 4

Prepared for:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Prepared by:

URS CORPORATION

October 2010

Exp Date : 6-30-11

EXPIRES 9.30.2011

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DISKETTES DIGITAL DATA FILES

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1.0 INTRODUCTION

1.1 PURPOSE

The information and analysis presented in this report is part of the scope of work for the Rainbow Valley Area Drainage Master Plan (RVADMP) being prepared for the Flood Control District of Maricopa County (District) under Contract FCD 2006C029. This report presents and summarizes the Hydrology Analysis Task (Task 9) and the Floodplain Delineation Task (Task 11) for the project. The methodology, assumptions, problems, and solutions encountered during the hydrologic model development, hydraulic analysis and floodplain delineation are presented in this report.

1.2 AUTHORITY

This study is being conducted for the District under Contract No. FCD 2006-C029. Burke Lokey, Project Manager, has acknowledged and accepted this study on behalf of the District.

1.3 PROJECT DESCRIPTION

The study area is generally bounded by the Sierra Estrella Mountains on the east, Gila River on the north, the South Maricopa Mountains on the south, and the North Maricopa Mountains on the west. The study area is shown on the Location Map, Figure 1. The study area is approximately 515 square miles. Portions are located in the City of Avondale, City of Goodyear, and the Town of Buckeye. A large part of the study area is in unincorporated Maricopa County. There are portions of the study area that are controlled by federal, state, county, and Indian interests.

The study area includes part or all of the following Townships: 1N-1W, 1N-2W, 1S-1W to 1S-3W, 2S-1W to 2S-3W, 1S-1E, 3S-1W to 3S-3W, 3S-1E, 3S-2E, 4S-1W to 4S-3W, 4S-1E, 5S-1W, 5S-2W, 5S-1E, 6S-1W, 6S-1E, and 7S-1E.

A majority of the study area is undeveloped, but there are many proposed developments that will change the drainage characteristics in the near future. A purpose of the RVADMP is to guide the development of the study area by analyzing drainage problems in the watershed and formulating solutions that will mitigate these problems. These solutions may be incorporated into the proposed developments so that future and existing developments will be protected from flood hazards.

1.4 METHODOLOGY

1.4.1 Previous Studies

The most recent hydrology developed for this project was done by Engineering and Environmental Consultants (EEC) for the Waterman Wash Floodplain Delineation Study (Reference 1). This model used 10-foot contour mapping to delineate basins and the National Oceanic and Atmospheric Administration (NOAA) 2 atlas for rainfall (Reference 2). The models created for this study were reviewed by URS Corporation (URS) in the initial stages of the RVADMP. The concerns, and discrepancies, and proposed procedures for making revisions in that model were presented in the Initial Hydrology Memorandum (Reference 3). This memorandum included recommendations for developing the revised hydrologic model that will be used in the Area Drainage Master Plan. These recommendations were as follows:

- Precipitation data will be updated using the NOAA 14 isopluvials in lieu of the NOAA 2 isopluvials used in the EEC model.
- Update the other existing flow split locations with the new 2-foot contour interval mapping. The contributing areas upstream of the splits will be updated to a percentage based on the proportionate conveyance capacity and amount of flow at the diversion.
- Incorporate the results of a FLO-2D (Reference 4) analysis that was done for some of the flow split locations into the model. The FLO-2D locations are identified in the FLO-2D Selection Memorandum. The memorandum is included in Appendix D.3.
- The routing will be modified so there are no vertical walls in the cross section unless it is an actual condition. A gradual slope in the routing cross-section overbanks would more accurately model attenuation and storage in the routing reach.
- Re-delineate drainage basins in the Estrella Mountain Ranch area based on the new development and the more detailed 2-foot contour interval mapping.
- The drainage basin delineations and flow routes in the updated models need to be revised with the new 2-foot contour interval mapping where possible.
- New drainage basins will be delineated at the apex of the 25 alluvial fans that will be studied by JE Fuller.
- Transmission losses will not be included in the updated models because there are not sufficient gage data to calibrate the model.

1.5 RESULTS

The maximum peak discharges obtained from the hydrology study were used in the hydraulic analysis and flood plain mapping for the 13 streams mentioned in Table 2.1. The peak discharges obtained from the study were compared with the previous EEC study and regional regression equation. Based on the comparison the URS study discharges were significantly lower than the previous EEC study and regression equations. Details of the discussion on peak discharges are summarized in Chapter 4, Hydrology Section.

2.0 FEMA FORMS

2.1 STUDY DOCUMENTATION ABSTRACT FOR FEMA SUBMITTALS

2.1.1 Date Study Accepted

To be filled in upon acceptance by FEMA

2.1.2 Study Contractor

URS Corporation
7720 N. 16th Street, Suite 100
Phoenix, Arizona 85020
Tel: 602-371-1100
Fax: 602-371-1615

Contacts: Elliot Silverston, PhD., P.E.
Marc McIntosh, P.E..

URS Contract Number: 2006C029

List of Subcontractors:

Dibble Corporation
7500 North Dreamy Draw Drive, Suite 200
Phoenix, AZ 85020
(602) 957-1155
Dan Frank, P.E

J.E. Fuller Hydrology & Geomorphology, Inc.
8400 S. Kyrene Road, Suite 201
Tempe, Arizona
(480)752-2124
Brian J. Fry, P.E., CFM

2.1.3 FEMA Technical Review Contractor

Michael Baker Jr., Inc.
3601 Eisenhower Avenue
Alexandria, Virginia 22304-6425
Phone: 70.3960.8800
Fax: 703.960.9125

2.1.4 FEMA Regional Reviewer

2.1.5 State Technical Reviewer

2.1.6 Local Technical Reviewer

Flood Control District of Maricopa County
2801 W. Durango Street
Phoenix, Arizona 85009
Tel: 602-506-1501
Contact: Richard Harris, P.E.

2.1.7 Reach Description

Revisions to the existing FIRM maps can be found in the Map Section of Book 1.

T2S2WS7B – a meandering southwestern desert wash that converges with T2S2WS17B. Located on FIRM Panel 04013C2550G.

T2S2WS17B – a meandering southwestern desert wash that terminates at Waterman Wash. Located on FIRM Panel 04013C2550G.

T3S1WS4A – a meandering southwestern desert wash that connects the existing T3S1WS4A wash with Waterman Wash. Located on FIRM Panels 04013C2950G and 04013C2925G.

T3S1WS4B – a meandering southwestern desert wash that connects the existing T3S1WS4B wash with Waterman Wash. Located on FIRM Panels 04013C2950G and 04013C2925G.

F03 – a meandering southwestern desert wash that converges with the western end of Waterman Wash. Located on FIRM Panel 04013C3575D and 04013C3600D.

F05 – a meandering southwestern desert wash that converges with F03 upstream of the confluence with the west end of Waterman Wash. Located on FIRM Panel 04013C3575D and 04013C3600D.

F25 – a meandering southwestern desert wash the converges with T4S1ES15A wash. Located on FIRM Panels 04013C3350D and 04013C3325D.

X07 – a meandering incised wash that is channelized through the parking lot at Phoenix International Raceway and empties into the Gila River. Located on FIRM Panels 04013C2555F and 04013C2090F.

X06 – a meandering defined wash that empties into the Gila River just west of the Phoenix International Raceway. Located on FIRM panels 04013C2555F and 04013C2090F.

X04 – a well defined southwestern desert wash that outfalls to the Gila River. Located on FIRM Panels 04013C2555F and 04013C2090H.

X02A – a meandering southwestern desert wash that converges with X02. Located on FIRM Panels 04013C2555F.

X02 – a meandering southwestern desert wash that outfalls to the Gila River. Located on FIRM Panels 04013C2555F and 04013C2090H.

I63 (T1S2WS32A) – a southwestern desert wash that converges with 1S2WS31A (I71) and outfalls into Waterman Wash. Located on FIRM Panel 04013C2550G.

West Prong of Waterman Wash – a well defined meandering wash with upto a 100ft channel bottom width. Located on FIRM Panel 04013C2950G.

Waterman Wash – a 16 mile re-delineation of the existing floodplain for Waterman Wash starting at the outfall into the Gila River and ending just upstream of the West Prong of Waterman Wash confluence. The wash is well developed and incised with a bottom width of approximately 30'. Located on FIRM Panels 04013C2950G, 04013C2925G, 04013C2550G, 04013C2530G, 04013C2520G, and 04013C2510G.

2.1.8 USGS Quad Sheets

7.5 minute Series (Topographic)

1973	Aerial Photographs taken in 1972
1973	Aerial Photographs taken in 1972

2.1.9 Unique Conditions and Problems

There are several unique conditions that complicate this study. Supporting Hydrologic data can be found in Section 4.3.1 and calculations in Appendix D. Hydraulic data can be found in Section 5.7.1 and calculations in Appendix E.

- Diversions and split flows were common due to areas having braided channel networks.
- Alternate Flow Conditions (with and without Railroad embankment). From a comparison between the "with railroad" and the "without railroad" HEC-1 models, the higher discharge at each concentration point was applied to the hydraulics. This is covered in detail in Section 4 of this report.

2.1.10 Coordination of Peak Discharges

The peak discharges were taken from the hydrology of this study.

Table 2.1
Summary of Study Washes

1	F03
2	F05
3	T1S2WS32A (I63)
4	T2S2WS7B
5	T2S2WS17B
6	T3S1WS4A
7	T3S1WS4B
8	X02
9	X04
10	X06
11	X07
12	Waterman Wash
13	Westprong of Waterman Wash

2.2 FEMA FORMS

This section will be provided upon completion of the floodplain delineations.

3.0 MAPPING AND SURVEY INFORMATION

3.1 FIELD SURVEY INFORMATION

Field surveys were conducted to supplement aerial topographic mapping and to collect data on drainage structures. This surveying was performed by:

URS Corporation
7720 North 16th Street, Suite 100
Phoenix, AZ 85020
(602) 861-7463

Robert Pecha, R.L.S., Registration No. 21080

3.1.1 Field Survey Information

The initial survey was completed from July 8 to July 30, 2008 and supplemented on September 8 to September 24, 2008 for topographic data for the Union Pacific Railroad. Additional survey was completed on November 19, 2008 to December 1, 2008 for the areas that were modeled with FLO-2D. Structure surveys were completed for three culvert crossings of Vineyard Road and for the Rainbow Valley Road bridge over Waterman Wash from February 4 through February 8, 2010.

The survey data for this project are presented on the North American Datum of 1983 (NAD83) 1992 epoch Central Zone of Arizona State Plane Coordinate system in Grid. Elevations are referenced to the North American Vertical Datum of 1988 (NAVD88). Documentation for the field survey can be found in Appendix C.

3.1.2 Horizontal and Vertical Control

URS recovered 16 Maricopa County Department of Transportation (MCDOT) Geodetic Densification and Cadastral Survey (GDACS) control monuments with coordinates published by MCDOT and one National Geodetic Survey (NGS) point, designation TTZW9. The same monuments that were used for horizontal control have a vertical component provided by MCDOT. Please refer to NGS data sheets for specific published information.

3.1.3 Survey Procedures – Real Time Kinematic (RTK) method

For each field visit, a base station was set up on a control point with a radio link to a second (rover) receiver. Two other control points were then observed for positional comparison and adjustment to determine the consistency with published data. Field data were then collected, and

sketches drawn up when applicable. The field data were downloaded and verified with GDACS and NGS published information.

3.1.4 Equipment

The observed field measurements were performed using Leica 500 and 1200 series RTK GPS receivers and Pacific Crest Radios, and Leica 1100 series total stations. Leica Ski-Pro 4.1 software was used to process and check field data.

3.2 MAPPING

The District provided the aerial imagery and topographic mapping for the study area. Aerial photographs from 2006 were provided for the entire study area and aerial photographs from 2007 were provided for a portion of the study area. The 10-foot contour interval mapping that was used in the EEC study was provided for the entire study area. The 2-foot contour interval and 4-foot contour interval mapping was provided for a portion of the study area that included Waterman Wash and tributaries.

The 10-foot contour interval mapping was prepared as part of the countywide mapping project using orthophotographic methods for 1" = 500' horizontal scale by Landata Airborne Systems, Inc. More detailed topographic mapping was subsequently obtained for the Rainbow Valley area for the RVADMP. General Dynamics conducted the mapping project for the RVADMP, which covered over 300 square miles in Rainbow Valley, west of the Estrella Mountains from the Gila River to a point approximately 10 miles south of Maricopa Road. The northern 260+ square miles were mapped at and to National Map Accuracy Standards for 1"=200', 2-foot contour interval. The southern-most 40 square miles were mapped at and to meet National Map Accuracy Standards for 1"=200', 4-foot contour interval. The 2-foot and 4-foot mapping project was conducted under Contract FCD2003C067.

As directed by the District, GDACS control points were to be used as both a horizontal and vertical basis for the 2-foot and 4-foot aerial survey. The project area was divided into smaller survey areas denoted as Areas 1 through 13. Areas 9 and 11 did not have sufficient GDACS control to conduct a survey. Area 9 control was based on NGS data. Area 11 control was based on a point set by the surveying contractor. A figure for the limits of the aerial mapping, excerpts from the mapping TDN for the 2-foot and 4-foot contour interval mapping, and a figure for the control survey areas can be found in Appendix C.

The vertical datum for the Geodetic Densification and Cadastral Survey (GDACS) system (taken from MCDOT) is based on the North American Vertical Datum (NAVD) of 1988. The

horizontal datum is based on the North American Datum (NAD) of 1983 Arizona State Plane Coordinate System – Central Zone.

3.3 WATERSHED MAPPING

3.3.1 Soils Map

Digital soils information was provided by the District's GIS Department. Three different soil surveys from the Natural Resources Conservation Service (NRCS) were used by the District in preparing the soil map coverage. The soil surveys used were the Soil Survey of Central Maricopa, Arizona; the Soil Survey for the Gila River Indian Reservation (Reference 5), Parts of Maricopa and Pinal Counties (Reference 6), and the Soil Survey for the Gila Bend–Ajo Area, Parts of Maricopa and Pima Counties, Arizona (Reference 7).

3.3.2 Land Use Map (Existing Condition)

The existing land use information was obtained from the 2006 and 2007 aerial photos provided by the District and the Maricopa Association of Governments (MAG) land use plan. In areas where the aerial maps did not clearly identify a specific land use, field investigation was performed to verify the land use.

3.3.3 Land Use Map (Ultimate Developed Condition)

The ultimate developed condition land use map was created by MAG and provided to URS as a shapefile by the District. This information includes the future land use plan for the City of Goodyear.

4.0 HYDROLOGY

4.1 METHOD DESCRIPTION

4.1.1 Hydrology Model

The U.S. Army Corps of Engineers' HEC-1 computer hydrograph program version 4.1 was used to evaluate hydrology at various concentration points (Reference 8). The HEC-1 input data were generated from contour maps, aerial photographs, the ArcGIS program (Reference 9), and the District's Drainage Design Management System for Windows (DDMSW) version 3.5.2 (Reference 10). The 100-year, 24-hour storm was the primary design event used to model the watershed. However, the 100-year 6-hour and 10-year 24-hour and 6-hour storm events were also modeled and the results included in this document. The HEC-1 models were created for existing and future conditions. The Green and Ampt methodology was used to calculate loss parameters. The S-graph method was selected as the unit hydrograph for Waterman Wash since it is a major watercourse with a contributing watershed of 422 square miles.

Major sub-watershed boundaries were selected based on hydrologic isolation from the rest of the watershed. Sub-basins were located within the sub-watersheds at concentration points of interest, confluences of two or more sub-basins, apexes of alluvial fans that would be analyzed, or at locations of flow split. The basin information is shown on Figure 2, Sheets 1 to 10.

Two HEC-1 models were prepared for the Waterman Wash study area. In the first model, the Union Pacific Railroad acts as a levee (with railroad). In this model, the low flow is routed through the railroad structures while excess runoff is diverted eastward along the railroad embankment. The diverted flows are eventually conveyed into non-engineered storage ponds. These ponds are created at local low points upstream of the railroad embankment. The ponded water flows under the railroad through structures of various sizes along the railroad tracks. In the second model (no railroad), the levee created by the Union Pacific Railroad embankment is ignored. Runoff continues along the historic flow paths without stormwater being diverted at the railroad embankments and structures.

A third hydrological model was created for the drainage basins in the northeastern portion of the study area that drains directly into the Gila River. This area was expanded from the EEC study and now includes additional area in the City of Avondale.

4.1.2 Soil

The soil data provided by the District were used with DDMSW to update the Green and Ampt parameters. XKSAT values from the "Waterman Wash and Tributaries Floodplain Delineation Study" were used to supplement the default values from the District for the areas covered by the

USDA titled "Soil Survey of Gila Bend-Ajo Area, Arizona, Parts of Maricopa and Pima Counties" and the USDA titled "Soils Survey of Gila River Indian Reservation, Parts of Maricopa and Pinal Counties". XKSAT values were modified for certain soil types in the Gila River Indian Reservation soil survey and the Gila Bend – Ajo Area Parts of Maricopa and Pima Counties soil survey. These changes were based on the information obtained from "Saturated Hydraulic conductivity (XKSAT) Estimated Values of the Soil Survey of Gila Bend – Ajo area, Arizona, Parts of Maricopa and Pinal Counties", provided by the District. Additionally the percentage of effective rock outcrop was adjusted based on the aerial topography and percent effectiveness of the rock outcrop with respect to the drainage pattern of the sub-basin. This affected the effective impervious area (RTIMP) calculated by DDMSW. The soils data are based on the digital data available from the NRCS. The graphical representation of the soils within the Waterman Wash watershed is shown in Figure 3A and 3B, Sheets 1 to 10. The soil data can be found in Appendix D.2.

4.1.3 Land Use

The land use data for existing and future conditions were provided by the District. Land use for existing conditions was assigned based on the MAG's current land use plan from 2008, aerial photographs dated 2006-2007, and field investigations from 2008-2009. The existing land use data that the District provided were updated to reflect current conditions. The desert areas had significant variations in vegetation, so representative vegetative cover percentages were assigned to typical areas following field reconnaissance. The vegetative cover for other land uses was identified from aerial photographs. These areas were assigned vegetative cover percentages based on their land uses in accordance with the *Drainage Design Manual for Maricopa County, Arizona: Volume I – Hydrology* (Reference 11).

The existing and future land use data can be found in Appendix D.2 and on Figures 4 and 5, Sheets 1 to 10.

4.1.4 FLO-2D Analysis

The scope of work for the hydrologic analysis included the use of a two-dimensional flood routing model to determine flow paths for a limited number of flow split locations. With concurrence from the District, four flow split locations were selected and analyzed with a two-dimensional model. The purpose of using a two-dimensional model to analyze flow splits was to help determine the predominant flowpaths downstream of a flow split and their associated flow magnitude. The FLO-2D Version 2007.06 was used to conduct the two-dimensional model analysis in four flow areas.

The memorandum from JE Fuller/Hydrology & Geomorphology, Inc. (Reference 12) provided a geomorphic assessment of the project area. From this memorandum, areas of distributary flow, which are areas that have channels that branch and split in the downstream direction, were identified. The distributary flow locations, also known as flow split locations, were analyzed based on upstream flow magnitude, whether the split was located on an alluvial fan, and whether the area downstream of the split would be developed. The criteria and selection process for the flow splits that were analyzed are further described in the FLO-2D selection meeting minutes (Reference 12).

Output from the FLO-2D analyses was used to develop rating tables for the diversion cards used in the HEC-1 models. The results of the FLO-2D analysis and a discussion of the modeling approach are included in the FLO-2D analysis memorandum from Dibble Engineering (Reference 13). The memorandum is included in Appendix D.3.

4.1.5 Alluvial Fan Analysis

Twenty-five alluvial fans were selected to be analyzed with the District's alluvial fan methodology. Drainage basins were delineated for the apex of each alluvial fan so that a hydrograph could be generated. The analysis of alluvial fans only proceeded to stage 2 as part of this project.

4.1.6 Flow Split Analysis

Many flow splits within the study area will not be analyzed with FLO-2D or the alluvial fan methodology. The remaining flow split locations that were originally analyzed in the previous study, were modeled using Bentley's FlowMaster software to calculate normal depth (Reference 15). The capacity of each flowpath downstream of a flow split was calculated so that a rating table could be developed to determine the amount of flow for each direction within the split. HEC-1 diversion (DI and DQ) cards were then developed from the rating tables. Flow split data can be found in Appendix D.4.

4.1.7 Union Pacific Railroad

As discussed in Section 4.1.1, two different hydrological models were created for the Waterman Wash study area. The first model (with railroad) incorporated the Union Pacific Railroad and the effects the railroad has on diversions and storage of runoff. The trestle crossings over the washes in the watershed were replaced with smooth steel pipe, prestressed concrete box (PCB) girder bridge, and smooth steel pipe/corrugated steel pipe combination crossings in the early stages of our analysis. This information was updated and incorporated into the revised hydrologic model for the with railroad condition. The second model (no railroad) assumed that the Union Pacific

Railroad would fail (not be present as a levee) during a 100-year storm event and would have no effect on the hydrology.

In the "with railroad" model, 45 structures exist for the conveyance of stormwater at the railroad embankment. For each structure, a model was created in CulvertMaster. There is no option within Culvert Master to select smooth steel pipe (SSP) which is what the majority of the crossing were replaced with. To model an SSP the Corrugated Steel Pipe (CSP) option was selected and then a custom Manning's n value of .012 was used to simulate a SSP. There are several instances along the tracks where a combination of SSP and CSP pipes were used for the new crossings. In these instances the CSP option was selected with a Manning's n value of .024 and another culvert was added to the model at this location using the CSP option with a custom Manning's n value of .012. For the other crossings where the Prestressed Concrete Box (PCB) Girder Bridge with concrete ties was used, the Manning's n value ranges from .013 to .018. In the HEC-1 model, the flow through the structure and over the rail embankment was diverted downstream, and the flow along the dike was routed along the embankment to the next downstream structure. Culvert and diversion data can be found in Appendix D.6.

4.1.8 Vekol Wash

The scope of work for the RVADMP (Task 9.9.1.4) states that the potential flow split from Vekol Wash into Waterman Wash will be analyzed. Vekol Wash originates in the Sand Tank Mountains south of the Waterman Wash watershed. Vekol Wash is parallel to Waterman Wash where both watercourses flow in a northeastern direction. The aerial imagery and United States Geological Survey (USGS) topographic mapping shows that there is a possibility for split flows in this area.

A field review was conducted by District and URS staff on August 20, 2008. The goal of the field review was to field evaluate the extent of inter-basin diversion of flow between Vekol Wash and Waterman Wash in the stock pond areas between Waterman Wash and Vekol Wash. The stock ponds are located in Sections 2, 3, 10, and 11, Township 6 South, and Range 1 East; Sections 25, 26, 35, and 36, Township 5 South, Range 1 East; and Section 30, Township 5 South, Range 2 East of the Gila and Salt River Base and Meridian in Maricopa County, Arizona. The westernmost stock pond is the most significant of all the structures identified on the aerial imagery and observed in the field. A Bureau of Land Management (BLM) monument was found that was stamped with an identification of "Vekol Dam" and was dated 1986. Vekol Dam impounds runoff from a tributary to Vekol Wash. Vekol Wash is approximately 1,000 feet south of Vekol Dam.

The results from the field reconnaissance showed that Vekol Dam has an existing breach that has a flow path conveying flow from Vekol Dam to Vekol Wash rather than down the historic flowpath. The topography separating Vekol Wash and Waterman Wash prevents flows from commingling. The historic flow path for the Vekol Wash tributary is diverted to Vekol Wash due to the dam breach. The flow that would be conveyed in the Vekol Wash tributary downstream of Vekol Dam is directed toward additional impoundments downstream of Vekol Dam. These impoundments direct flow back into Vekol Wash. There were no flow splits found along the watershed divide between Waterman Wash and the Vekol Wash tributary. Any flow that could potentially break out into Waterman Wash would be in the form of sheet flow and would be difficult to quantify. It is also doubtful that there would be coincident peak flows in the Vekol Wash tributary and Waterman Wash. Therefore, the recommended diversion of flow from the Vekol Wash watershed into Waterman Wash is estimated as zero. The technical memorandum summarizing the details of the Vekol Wash diversion evaluation is in Appendix D.8.

4.2 PARAMETER ESTIMATION

4.2.1 Drainage Area Boundary

The majority of the study area is within unincorporated Maricopa County, but a portion of the study area is within the cities of Goodyear and Avondale and the Town of Buckeye. The project is generally located south of the Gila River and in between the Maricopa and Sierra Estrella Mountains. The entire RVADMP study area is approximately 515 square miles. The Waterman Wash watershed comprises the majority of the study area at approximately 422 square miles as shown in Figure 2, Sheets 1 to 10. Figure 2 can be found in Appendix D.9.

4.2.2 Watershed Work Map

The watershed work maps display the updated drainage basin boundaries, flowpaths and concentration points and can be seen on Figure 2, Sheets 1 to 10. The annotation for the concentration points also includes the peak 100-year discharge. These maps illustrate the calculated hydrologic data from the HEC-1 model. The peak discharges displayed on these maps are the largest flow from either the "with railroad" or the "no railroad" models. The maps also indicate the longest flow path within the sub-basin and the channel route length.

4.2.2.1 Schematics

Schematics of the HEC-1 models are included in Appendix D.9 of this report. As discussed earlier, two models were created for the Waterman Wash watershed, one representing a with railroad scenario, and another representing the without railroad scenario. Since the two models are schematically different at the Union Pacific Railroad, two different schematic maps were

created for basins C, D, E, and F. These schematics are provided in Figures 6A through 6X and are separated by major watershed boundaries.

The watershed was divided into 11 major basins (labeled A through J, and X). Within each major basin, the sub-basins were numbered based upon a combination of the major basin letter and a unique number to give each sub-basin its own identifier (e.g., A01). Concentration points were labeled in accordance with the sub-basin identifiers (e.g., CP A01), except for concentration points along Waterman Wash, which use the identifier "RIV" (e.g., A01RIV). Routes are labeled according to the sub-basin that they are leaving. (For instance, if flows were routed from CP A01 to CP A02, the route would be labeled RCPA01.) Diversions are numbered similarly to concentration points. For example, a diversion at CP A01 would be D A01. The diverted flow carries the "DV" precursor, but when the diverted flow is returned, its identifier is "DR."

4.2.3 Gage Data

A USGS stream gage is located on Waterman Wash approximately 3.5 miles upstream of its confluence with the Gila River near the intersection of Ray Road and Airport Road. The gage identification is "09514200 – Waterman Wash near Buckeye, Ariz." This stream gage was in operation from 1964 to 1999 and has 35 years of collected data.

The District has two rain sensors in Waterman Wash. The downstream sensor is at the confluence of Waterman Wash and the Gila River (6880). The other sensor is located where Waterman Wash crosses Rainbow Valley Road (6830). A stream gage that began operation in 1999 is also located where Rainbow Valley Road meets Waterman Wash (6833). This stream gage has seen only relatively minor flows since it started operation.

URS attempted to conduct a statistical analysis using the District's stream gage data and determined that there were insufficient data to provide reliable results. This conclusion is consistent with the previous evaluation conducted by EEC (Reference 1).

4.2.4 Statistical Parameters

A 100-year peak discharge was calculated using the USGS PeakFQ flood-frequency software (Reference 17) with data from the USGS stream gage and the guidelines from the *Water Resources Council Bulletin 17B* (Reference 18). These results were compared with those from the previous studies done on Waterman Wash. Table 4.1 compares the results between the three studies based upon the Log-Pearson Type III statistical analysis (see Appendix D.7).

Table 4.1

Comparison of Peak Discharges by Log-Pearson Type III Statistical Analysis

Gage Station	Drainage Area	Cella Barr Study [1] (1988)	EEC Study (2004)	URS (2009)
USGS Stream Gage 09514200 "Waterman Wash near Buckeye, Ariz" (1964-1999)	420 sq mi	9,000 cfs	12,800 cfs	12,700 cfs

[1] Sources: Reference 16

The results of the gage data analysis will be used to check the reasonableness of the peak discharges calculated with HEC-1.

4.2.5 Precipitation

The EEC study used the NOAA 2 atlas, which gives higher rainfall values for the project area than the NOAA 14 atlas (Reference 19). The EEC study used a value of 4.40 inches for the 100-year, 24-hour rainfall in the study area. The new NOAA 14 atlas shows values ranging from 3.20 inches to 3.70 inches for the 100-year, 24-hour rainfall. The average NOAA 14 rainfall for the Waterman Wash watershed is 3.44 inches, which is approximately 22 percent less than the average NOAA 2 rainfall. The EEC study also used the NOAA 14 atlas in its hydrologic models to determine the differences in flow throughout the watershed. These models were prepared by EEC for comparison discharges only and were not used in floodplain delineations.

URS modeled the 100-year frequency, 6-hour duration and 10-year frequency, 24-hour and 6-hour duration rainfall events also. A comparison of the rainfall amounts for NOAA 2 and NOAA 14 are shown in Appendix D.1.

4.2.6 Physical Parameters

The following sections discuss how the physical parameters were calculated for each drainage basin within the study area. The summary output tables containing this information are included in Appendix D.2.

4.2.7 Rainfall Losses

Using the District's DDMSW software, the Green and Ampt rainfall loss method was applied to calculate the rainfall infiltration losses for the hydrologic models. The soil and land use parameters were calculated using the data provided by the District.

4.2.8 Unit Hydrograph

The S-graph unit hydrograph was used in the revised hydrologic models because Waterman Wash is considered to be a major watercourse. The contributing area to this watershed is

422 square miles. The watershed was split into nine major basins based on the model developed in the EEC study. Two additional major basins that drain into the Gila River also used the S-graph unit hydrograph. These major basins contain many smaller sub-basins ranging in area from 20 acres to 15 square miles. The study area consists primarily of undeveloped desert interspersed with residential and agricultural land use near the lower reaches of the watershed and the community of Mobile. Each basin was assigned one of the four S-graph types: Phoenix Valley, Phoenix Mountain, Desert/Rangeland, or Agriculture. The S-graph selected for the drainage basin was based on the predominant land use within the basin.

4.2.9 Time of Concentration and Lag Time

The basin lag time was calculated using the following equation:

$$Lag = C\{(L \times L_{ca})/S^{0.5}\}^{m}$$

Where: L = length of longest watercourse (in miles)

L_{ca} = length along the watercourse to a point opposite the centroid (in miles)

S = watercourse slope (feet/mile)

C = 24 Kn and m = 0.38 (U.S. Army Corps of Engineers 1982)

or C = 26 Kn and m = 0.33 (Bureau of Reclamation 1987)

where Kn = variable dependant on the selection of S-graph type

The watershed included mountain, foothill, and valley runoff, and some drainage basins had all three types of runoff. The DDMSW program automatically calculates the adjusted watercourse slope when the natural slope exceeds the maximum allowable slope of 313 feet/mile.

4.2.10 Number of Routing Steps

The normal-depth routing method developed in the EEC study was used in the updated hydrologic models. This method involves setting the number of routing steps to one and running the model to calculate discharges. The discharges for the routes were then used with the cross-section information to calculate velocities in the routing sections. The number of routing steps (NSTPS) was then calculated using the following equation:

$$NSTPS = (L/V_{avg})(NMIN)$$

Where: L = reach length (in feet)

Vavg = velocity of flood wave (in feet/minute)

NMIN = hydrograph computation time interval (in minute)

The lengths of the routes were taken from hydrology maps, the normal depth equation produced the velocities, and 10 minutes (minimum compatible time interval) was used as the value of NMIN. The updated NSTPS were then input into the model and the model was rerun. This process continued until the NSTPS no longer fluctuated. If the NSTPS fluctuated between two numbers without converging, the smaller number was used. This methodology was applied to the new routes created for the new Basin X and any updated basins. The new data have been included in Appendix D.5.

4.3 PROBLEMS ENCOUNTERED DURING THE STUDY

4.3.1 Special Problems and Solutions

4.3.1.1 Area Reduction Factors

The HEC-1 model used the multiple storm utility (JD card) to calculate area reductions. The model tracks the contributing cumulative area and automatically calculates the reduction. When flow splits are used in the model, the contributing area is assigned to the main hydrograph, but no area is associated with the flow split. To account for aerial reduction, the contributing area related to each concentration point downstream of the flow split was hard-coded based on the flow split amount (as discussed in the Initial Hydrology Memo, Reference 3). The EEC model hard-coded the entire contributing area into both hydrographs, which resulted in an overestimation of the contributing area.

4.3.1.2 Routing Cross Section

Several areas experience sheet flow, due to the topography (flat slopes) in the watershed. It was difficult to contain the upstream contributing flow in the cross sections representing the sheet flow areas. The previous EEC model used vertical walls to contain this flow, but it was determined that a gradual slope in the routing cross-section overbanks would more accurately model attenuation and storage in the routing reach. Three typical routing cross sections were used in the revised models for the routes in the sheet flow areas: typical sheet flow route, typical sheet flow farmfield, and typical sheet flow small wash.

4.3.1.3 Kn Values

The previous EEC study used DDMSW version 2.1.0, which is an older version of that software. The Kn values from the EEC models were based on the 12 land use categories from that version of DDMSW. The updated model Kn values are based on 27 land use categories used in DDMSW version 4.1.9. As such, there are more values to choose from when DDMSW assigns a Kn value to a sub-basin for the lag time calculation, which results in a more refined Kn value. For example, the EEC model had one Kn value, 0.05, for medium-density residential use, whereas

the current model offers three Kn values that range from 0.02 to 0.05. The Kn values used for the URS analysis was based on the land use shapefile overlayed on the drainage basin shapefile. DDMSW then assigned the Kn value for each land use based on the updated lookup table provided by the District.

4.3.1.4 Agricultural Land Use

Many fallow farm fields are located within the watershed. A fallow field is not an active agricultural field and it is not irrigated. Those fields were assigned a desert-type land use. If a field showed no evidence of being plowed, seeded, or maintained, it was considered to be fallow.

4.3.1.5 Retention Basin Volume for Future Land Use Condition

Existing and future retention basin volumes were evaluated during the course of the future condition analysis. If the future land use data showed development within the City of Goodyear limits, then the 100-year 6-hour volume was diverted out of the affected sub-basin for the area of the sub-basin that is to be developed. If the future land use data showed development within unincorporated Maricopa County, then the 100-year 2-hour volume was diverted out of the affected sub-basin for the area of the sub-basin that is to be developed. There are areas within Basin J that have existing developments. These developments are part of Estrella Mountain Ranch or Kings Ranch. These developments have retention waivers that allow the developer to reduce the required retention and only provide the first flush retention volume. The first flush volumes do not have an impact to the peak discharge for the 100-year storm event. Therefore, the retention was removed for any areas within Basin J that are covered by the retention waiver.

4.3.2 Modeling Warning and Error Messages

The HEC-1 model output did not generate any error messages for either existing or future conditions. Warning messages generated by the HEC-1 models were examined to make sure they did not affect the models.

The warning messages encountered for the existing condition HEC-1 models were as follows:

- WARNING — MODIFIED PULS ROUTING MAY BE NUMERICALLY UNSTABLE FOR FLOWS BETWEEN (*Value*) TO (*Value*)

The hydrographs for basins that produced this warning were examined. They showed no signs of instability and were therefore ignored.

4.4 CALIBRATION

There are no real time flood events that could be used to calibrate the HEC-1 model with precipitation and stream gage data. The existing conditions models were validated by comparing estimated discharge from regional regression, the Cella-Barr HEC-1 model, the EEC HEC-1 model, stream gauge data for Waterman Wash and the revised HEC-1 model created for this ADMP. The previous existing conditions models were developed using the NOAA 2 rainfall with HYDRO 40 depth-area reduction in the first iteration and the NOAA 14 rainfall with NOAA 2 depth-area reduction for a second iteration. Table 4.2 gives the results of the calibration efforts. A memorandum was prepared under separate cover responding to District comments relative to differences in the models, regional regression results and gage statistical results (Appendix D.8.).

Table 4.2
Calibration Summary Table

Location	Regional Regression			Cella Barr	EEC*	URS*
	Upper Limit [cfs]	Q_{100} [cfs]	Lower Limit [cfs]	Q_{100} [cfs]	Q_{100} [cfs]	Q_{100} [cfs]
Confluence with Gila River (Area = 422 mi^2)	33,000	22,300	11,600	31,000	28,000	11,300
Confluence at the West Prong (Area = 263 mi^2)	28,300	19,100	9,900	22,400	21,900	8,500
CP just downstream of Landfill (Area = 86 mi^2)	18,600	12,600	6,600	8,700	5,600	2,800

* with railroad model

4.5 FINAL RESULTS

4.5.1 Hydrologic Analysis Results

The resulting discharges for the two existing conditions models (with and without railroad embankment) can be found in Tables 4.3.1 through 4.3.5. The maximum flow, Table 4.3.1, from the with and without railroad 100 year 24-hr and 100 year 6-hour models was used for the HIS and Hydrology exhibit submittals. Approximately 65 percent of the concentration point discharge values are the same in the two models. For the concentration points that had different discharges, approximately 55 percent of the discharge values were greater in the "with railroad" model. The discharges from the future condition models are summarized in Tables 4.3.6 through 4.3.10.

Discharges for the Existing Conditions 100-year 24-hour model and the 100-year 6-hour model were compared to determine which would be the controlling model. The 100-year 24-hour models were the more significant event for all basins when comparing the unit peak discharges at selected downstream locations.

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Discharges for the Existing Conditions 100-year 24-hour model and the 100-year 6-hour model were compared to determine which would be the controlling model. The 100-year 24-hour models were the more significant event for all basins when comparing the unit peak discharges at selected downstream locations.

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPA52	1676	CPA52	659	CPA52	1653	CPA52	641	1676	24 with RR
CPA52A	1113	CPA52A	303	CPA52A	1152	CPA52A	313	1152	24 Without RR
CPA54	1152	CPA54	730	CPA54	1152	CPA54	730	1152	24 with RR
CPA55	2051	CPA55	695	CPA55	2025	CPA55	681	2051	24 with RR
CPA55A	889	CPA55A	481	CPA55A	889	CPA55A	481	889	24 with RR
CPA56	1795	CPA56	707	CPA56	1797	CPA56	707	1797	24 Without RR
CPA59	2454	CPA59	1999	CPA59	2454	CPA59	1999	2454	24 with RR
CPA60	2712	CPA60	2241	CPA60	2712	CPA60	2241	2712	24 with RR
CPA63	995	CPA63	631	CPA63	1001	CPA63	628	1001	24 Without RR
CPA63A	597	CPA63A	411	CPA63A	597	CPA63A	411	597	24 with RR
CPA64	1201	CPA64	319	CPA64	1157	CPA64	306	1201	24 with RR
CPA65	1492	CPA65	477	CPA65	1400	CPA65	445	1492	24 with RR
CPB03	4833	CPB03	608	CPB03	4833	CPB03	608	4833	24 with RR
CPB05	882	CPB05	642	CPB05	882	CPB05	642	882	24 with RR
CPB07	358	CPB07	347	CPB07	358	CPB07	347	358	24 with RR
CPB08	318	CPB08	299	CPB08	318	CPB08	299	318	24 with RR
CPB09	4356	CPB09	533	CPB09	4400	CPB09	533	4400	24 Without RR
CPB10	644	CPB10	394	CPB10	644	CPB10	394	644	24 with RR
CPB11	710	CPB11	463	CPB11	710	CPB11	463	710	24 with RR
CPB12	4617	CPB12	551	CPB12	4657	CPB12	550	4657	24 Without RR
CPB12A	612	CPB12A	375	CPB12A	612	CPB12A	378	612	24 with RR
CPB13	2827	CPB13	427	CPB13	2827	CPB13	427	2827	24 with RR
CPB14	1570	CPB14	413	CPB14	1570	CPB14	413	1570	24 with RR
CPB16	905	CPB16	314	CPB16	905	CPB16	314	905	24 with RR
CPB18	346	CPB18	297	CPB18	346	CPB18	297	346	24 with RR
CPB19	374	CPB19	458	CPB19	374	CPB19	458	458	6 with RR
CPB21	1570	CPB21	366	CPB21	1570	CPB21	366	1570	24 with RR
CPB24	414	CPB24	523	CPB24	414	CPB24	523	523	6 with RR
CPB24A	209	CPB24A	307	CPB24A	209	CPB24A	307	307	6 with RR
CPB25	422	CPB25	408	CPB25	422	CPB25	408	422	24 with RR
CPB26	284	CPB26	241	CPB26	284	CPB26	241	284	24 with RR
CPB29	512	CPB29	488	CPB29	512	CPB29	488	512	24 with RR
CPB33	598	CPB33	245	CPB33	598	CPB33	245	598	24 with RR
CPB33A	214	CPB33A	260	CPB33A	214	CPB33A	260	260	6 with RR
CPB34	344	CPB34	516	CPB34	344	CPB34	516	516	6 with RR
CPB35	535	CPB35	427	CPB35	535	CPB35	427	535	24 with RR
CPB35A	416	CPB35A	427	CPB35A	416	CPB35A	427	427	6 with RR
CPB36	208	CPB36	307	CPB36	208	CPB36	307	307	6 with RR
CPB37	260	CPB37	325	CPB37	260	CPB37	325	325	6 with RR
CPB38	796	CPB38	305	CPB38	796	CPB38	305	796	24 with RR
CPB39	858	CPB39	279	CPB39	858	CPB39	279	858	24 with RR
CPB39A	809	CPB39A	282	CPB39A	809	CPB39A	282	809	24 with RR
CPB41	457	CPB41	554	CPB41	457	CPB41	554	554	6 with RR
CPB43	179	CPB43	256	CPB43	179	CPB43	256	256	6 with RR
CPB44	297	CPB44	391	CPB44	297	CPB44	391	391	6 with RR
CPB45	1306	CPB45	408	CPB45	1306	CPB45	408	1306	24 with RR
CPB46	647	CPB46	527	CPB46	647	CPB46	527	647	24 with RR
CPB47	573	CPB47	473	CPB47	573	CPB47	473	573	24 with RR
CPB48	508	CPB48	423	CPB48	508	CPB48	423	508	24 with RR
CPB50	378	CPB50	447	CPB50	378	CPB50	447	447	6 with RR
CPB54	820	CPB54	223	CPB54	820	CPB54	223	820	24 with RR
CPB56	249	CPB56	308	CPB56	249	CPB56	308	308	6 with RR
CPB57	136	CPB57	206	CPB57	136	CPB57	206	206	6 with RR
CPB58	387	CPB58	436	CPB58	387	CPB58	436	436	6 with RR
CPB59	1286	CPB59	352	CPB59	1286	CPB59	352	1286	24 with RR
CPB60	935	CPB60	242	CPB60	935	CPB60	242	935	24 with RR
CPB61	832	CPB61	663	CPB61	832	CPB61	663	832	24 with RR
CPB65	1016	CPB65	287	CPB65	1016	CPB65	287	1016	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
A01	3687	A01	928	A01	3687	A01	928	3687	24 with RR
A03	462	A03	483	A03	462	A03	483	483	6 with RR
A04	464	A04	608	A04	464	A04	608	608	6 with RR
A05	1046	A05	605	A05	1046	A05	605	1046	24 with RR
A06	434	A06	440	A06	434	A06	440	440	6 with RR
A07	265	A07	405	A07	265	A07	405	405	6 with RR
A08	781	A08	485	A08	781	A08	485	781	24 with RR
A09	378	A09	472	A09	378	A09	472	472	6 with RR
A10	621	A10	700	A10	621	A10	700	700	6 with RR
A11	843	A11	627	A11	843	A11	627	843	24 with RR
A12	785	A12	848	A12	785	A12	848	848	6 with RR
A13	568	A13	722	A13	568	A13	722	722	6 with RR
A14	712	A14	818	A14	712	A14	818	818	6 with RR
A15	625	A15	704	A15	625	A15	704	704	6 with RR
A16	321	A16	419	A16	321	A16	419	419	6 with RR
A17	447	A17	569	A17	447	A17	569	569	6 with RR
A18	571	A18	682	A18	571	A18	682	682	6 with RR
A19	438	A19	576	A19	438	A19	576	576	6 with RR
A20	319	A20	423	A20	319	A20	423	423	6 with RR
A21	731	A21	807	A21	731	A21	807	807	6 with RR
A22	273	A22	365	A22	273	A22	365	365	6 with RR
A23	131	A23	195	A23	131	A23	195	195	6 with RR
A24	588	A24	526	A24	588	A24	526	588	24 with RR
A25	135	A25	198	A25	135	A25	198	198	6 with RR
A26	369	A26	515	A26	369	A26	515	515	6 with RR
A27	629	A27	660	A27	629	A27	660	660	6 with RR
A28	426	A28	587	A28	426	A28	587	587	6 with RR
A29	532	A29	517	A29	532	A29	517	532	24 with RR
A30	380	A30	478	A30	380	A30	478	478	6 with RR
A31	407	A31	522	A31	407	A31	522	522	6 with RR
A32	850	A32	905	A32	850	A32	905	905	6 with RR
A33	291	A33	370	A33	291	A33	370	370	6 with RR
A34	394	A34	505	A34	394	A34	505	505	6 with RR
A35	778	A35	900	A35	778	A35	900	900	6 with RR
A36	408	A36	544	A36	408	A36	544	544	6 with RR
A37	991	A37	1035	A37	991	A37	1035	1035	6 with RR
A38	596	A38	804	A38	596	A38	804	804	6 with RR
A39	629	A39	850	A39	629	A39	850	850	6 with RR
A40	702	A40	947	A40	702	A40	947	947	6 with RR
A41	524	A41	608	A41	524	A41	608	608	6 with RR
A42	590	A42	690	A42	590	A42	690	690	6 with RR
A43	640	A43	864	A43	640	A43	864	864	6 with RR
A44	513	A44	678	A44	513	A44	678	678	6 with RR
A45	648	A45	854	A45	648	A45	854	854	6 with RR
A46	241	A46	323	A46	241	A46	323	323	6 with RR
A47	840	A47	998	A47	840	A47	998	998	6 with RR
A48	1194	A48	1336	A48	1194	A48	1336	1336	6 with RR
A49	701	A49	849	A49	701	A49	849	849	6 with RR
A50	321	A50	361	A50	321	A50	361	361	6 with RR
A51	742	A51	760	A51	742	A51	760	760	6 with RR
A52	244	A52	326	A52	244	A52	326	326	6 with RR
A53	761	A53	554	A53	761	A53	554	761	24 with RR
A54	403	A54	562	A54	403	A54	562	562	6 with RR
A55	460	A55	605	A55	460	A55	605	605	6 with RR
A56	1367	A56	1287	A56	1367	A56	1287	1367	24 with RR
A57	1186	A57	1232	A57	1186	A57	1232	1232	6 with RR
A58	1503	A58	1368	A58	1503	A58	1368	1503	24 with RR
A59	1229	A59	1295	A59	1229	A59	1295	1295	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
A60	1561	A60	1490	A60	1561	A60	1490	1561	24 with RR
A61	1451	A61	1346	A61	1451	A61	1346	1451	24 with RR
A62	287	A62	387	A62	287	A62	387	387	6 with RR
A63	583	A63	741	A63	583	A63	741	741	6 with RR
A64	251	A64	343	A64	251	A64	343	343	6 with RR
A65	478	A65	660	A65	478	A65	660	660	6 with RR
B01	1623	B01	410	B01	1623	B01	410	1623	24 with RR
B02	1647	B02	746	B02	1647	B02	746	1647	24 with RR
B03	4071	B03	771	B03	4071	B03	771	4071	24 with RR
B04	566	B04	648	B04	566	B04	648	648	6 with RR
B05	415	B05	542	B05	415	B05	542	542	6 with RR
B06	501	B06	650	B06	501	B06	650	650	6 with RR
B07	358	B07	475	B07	358	B07	475	475	6 with RR
B08	112	B08	152	B08	112	B08	152	152	6 with RR
B09	148	B09	208	B09	148	B09	208	208	6 with RR
B10	504	B10	654	B10	504	B10	654	654	6 with RR
B11	220	B11	294	B11	220	B11	294	294	6 with RR
B12	244	B12	319	B12	244	B12	319	319	6 with RR
B13	170	B13	234	B13	170	B13	234	234	6 with RR
B14	326	B14	437	B14	326	B14	437	437	6 with RR
B15	539	B15	678	B15	539	B15	678	678	6 with RR
B16	596	B16	705	B16	596	B16	705	705	6 with RR
B17	52	B17	72	B17	52	B17	72	72	6 with RR
B18	349	B18	458	B18	349	B18	458	458	6 with RR
B19	343	B19	458	B19	343	B19	458	458	6 with RR
B20	182	B20	249	B20	182	B20	249	249	6 with RR
B21	258	B21	354	B21	258	B21	354	354	6 with RR
B22	529	B22	729	B22	529	B22	729	729	6 with RR
B23	210	B23	329	B23	210	B23	329	329	6 with RR
B24	209	B24	307	B24	209	B24	307	307	6 with RR
B25	222	B25	332	B25	222	B25	332	332	6 with RR
B26	216	B26	318	B26	216	B26	318	318	6 with RR
B27	639	B27	751	B27	639	B27	751	751	6 with RR
B28	266	B28	403	B28	266	B28	403	403	6 with RR
B29	514	B29	580	B29	514	B29	580	580	6 with RR
B30	272	B30	413	B30	272	B30	413	413	6 with RR
B31	130	B31	196	B31	130	B31	196	196	6 with RR
B32	34	B32	51	B32	34	B32	51	51	6 with RR
B33	188	B33	272	B33	188	B33	272	272	6 with RR
B34	80	B34	118	B34	80	B34	118	118	6 with RR
B35	157	B35	230	B35	157	B35	230	230	6 with RR
B36	196	B36	261	B36	196	B36	261	261	6 with RR
B37	102	B37	137	B37	102	B37	137	137	6 with RR
B38	328	B38	429	B38	328	B38	429	429	6 with RR
B39	297	B39	414	B39	297	B39	414	414	6 with RR
B40	114	B40	167	B40	114	B40	167	167	6 with RR
B41	285	B41	389	B41	285	B41	389	389	6 with RR
B42	188	B42	256	B42	188	B42	256	256	6 with RR
B43	178	B43	232	B43	178	B43	232	232	6 with RR
B44	298	B44	403	B44	298	B44	403	403	6 with RR
B45	635	B45	713	B45	635	B45	713	713	6 with RR
B46	651	B46	708	B46	651	B46	708	708	6 with RR
B47	298	B47	394	B47	298	B47	394	394	6 with RR
B48	508	B48	658	B48	508	B48	658	658	6 with RR
B49	251	B49	333	B49	251	B49	333	333	6 with RR
B50	232	B50	311	B50	232	B50	311	311	6 with RR
B52	428	B52	571	B52	428	B52	571	571	6 with RR
B53	442	B53	596	B53	442	B53	596	596	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
B54	254	B54	340	B54	254	B54	340	340	6 with RR
B55	74	B55	106	B55	74	B55	106	106	6 with RR
B56	178	B56	239	B56	178	B56	239	239	6 with RR
B57	104	B57	140	B57	104	B57	140	140	6 with RR
B58	194	B58	268	B58	194	B58	268	268	6 with RR
B59	640	B59	863	B59	640	B59	863	863	6 with RR
B60	133	B60	146	B60	133	B60	146	146	6 with RR
B61	840	B61	1021	B61	840	B61	1021	1021	6 with RR
B62	96	B62	129	B62	96	B62	129	129	6 with RR
B63	73	B63	100	B63	73	B63	100	100	6 with RR
B64	98	B64	132	B64	98	B64	132	132	6 with RR
B65	237	B65	319	B65	237	B65	319	319	6 with RR
C01	328	C01	513	C01	328	C01	513	513	6 with RR
C02	117	C02	179	C02	117	C02	179	179	6 with RR
C03	229	C03	351	C03	229	C03	351	351	6 with RR
C04	183	C04	284	C04	183	C04	284	284	6 with RR
C05	185	C05	282	C05	185	C05	282	282	6 with RR
C06	248	C06	365	C06	248	C06	365	365	6 with RR
C07	684	C07	662	C07	684	C07	662	684	24 with RR
C08	518	C08	599	C08	518	C08	599	599	6 with RR
C09	107	C09	158	C09	107	C09	158	158	6 with RR
C10	308	C10	439	C10	308	C10	439	439	6 with RR
C11	171	C11	254	C11	171	C11	254	254	6 with RR
C12	161	C12	240	C12	161	C12	240	240	6 with RR
C13	328	C13	476	C13	328	C13	476	476	6 with RR
C14	157	C14	232	C14	157	C14	232	232	6 with RR
C15	109	C15	148	C15	109	C15	148	148	6 with RR
C16	106	C16	154	C16	106	C16	154	154	6 with RR
C17	116	C17	165	C17	116	C17	165	165	6 with RR
C18	103	C18	140	C18	103	C18	140	140	6 with RR
C19	262	C19	368	C19	262	C19	368	368	6 with RR
C20	294	C20	431	C20	294	C20	431	431	6 with RR
C21	395	C21	593	C21	395	C21	593	593	6 with RR
C22	627	C22	757	C22	627	C22	757	757	6 with RR
C23	387	C23	590	C23	387	C23	590	590	6 with RR
C24	142	C24	208	C24	142	C24	208	208	6 with RR
C25	90	C25	131	C25	90	C25	131	131	6 with RR
C26	88	C26	129	C26	88	C26	129	129	6 with RR
C27	219	C27	307	C27	219	C27	307	307	6 with RR
C28	85	C28	114	C28	85	C28	114	114	6 with RR
C29	358	C29	494	C29	358	C29	494	494	6 with RR
C30	265	C30	363	C30	265	C30	363	363	6 with RR
C31	86	C31	126	C31	86	C31	126	126	6 with RR
C33	7839	C33	1535	C33	7839	C33	1535	7839	24 with RR
C34	381	C34	442	C34	381	C34	442	442	6 with RR
C35	3427	C35	1371	C35	3427	C35	1371	3427	24 with RR
C36	1614	C36	1008	C36	1614	C36	1008	1614	24 with RR
C37	804	C37	673	C37	804	C37	673	804	24 with RR
C38	337	C38	442	C38	337	C38	442	442	6 with RR
C39	93	C39	143	C39	93	C39	143	143	6 with RR
C40	124	C40	185	C40	124	C40	185	185	6 with RR
C41	62	C41	93	C41	62	C41	93	93	6 with RR
C42	96	C42	138	C42	96	C42	138	138	6 with RR
C43	160	C43	243	C43	160	C43	243	243	6 with RR
C44	203	C44	269	C44	203	C44	269	269	6 with RR
C45	145	C45	197	C45	145	C45	197	197	6 with RR
C46	196	C46	267	C46	196	C46	267	267	6 with RR
C47	671	C47	742	C47	671	C47	742	742	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
C48	269	C48	361	C48	269	C48	361	361	6 with RR
C49	219	C49	297	C49	219	C49	297	297	6 with RR
C51	97	C51	131	C51	97	C51	131	131	6 with RR
C52	90	C52	120	C52	90	C52	120	120	6 with RR
C53	91	C53	122	C53	91	C53	122	122	6 with RR
D01	1101	D01	582	D01	1101	D01	582	1101	24 with RR
D02	422	D02	629	D02	422	D02	629	629	6 with RR
D03	232	D03	353	D03	232	D03	353	353	6 with RR
D04	122	D04	192	D04	122	D04	192	192	6 with RR
D05	724	D05	493	D05	724	D05	493	724	24 with RR
D06	456	D06	432	D06	456	D06	432	456	24 with RR
D07	497	D07	523	D07	497	D07	523	523	6 with RR
D08	192	D08	285	D08	192	D08	285	285	6 with RR
D09	372	D09	519	D09	372	D09	519	519	6 with RR
D10	468	D10	549	D10	468	D10	549	549	6 with RR
D11	296	D11	415	D11	296	D11	415	415	6 with RR
D12	111	D12	163	D12	111	D12	163	163	6 with RR
D13	594	D13	777	D13	594	D13	777	777	6 with RR
D15	489	D15	607	D15	489	D15	607	607	6 with RR
D17	425	D17	515	D17	425	D17	515	515	6 with RR
D18	257	D18	377	D18	257	D18	377	377	6 with RR
D19	186	D19	272	D19	186	D19	272	272	6 with RR
D20	98	D20	143	D20	98	D20	143	143	6 with RR
D21	70	D21	100	D21	70	D21	100	100	6 with RR
D22	2419	D22	1272	D22	2419	D22	1272	2419	24 with RR
D23	436	D23	542	D23	436	D23	542	542	6 with RR
D24	295	D24	414	D24	295	D24	414	414	6 with RR
D25	681	D25	635	D25	681	D25	635	681	24 with RR
D26	830	D26	801	D26	830	D26	801	830	24 with RR
D27	234	D27	306	D27	234	D27	306	306	6 with RR
D28	1036	D28	973	D28	1036	D28	973	1036	24 with RR
D29	1506	D29	736	D29	1506	D29	736	1506	24 with RR
D30	322	D30	445	D30	322	D30	445	445	6 with RR
D31	385	D31	490	D31	385	D31	490	490	6 with RR
D32	414	D32	567	D32	414	D32	567	567	6 with RR
D33	446	D33	559	D33	446	D33	559	559	6 with RR
D34	1358	D34	1452	D34	1358	D34	1452	1452	6 with RR
D35	640	D35	659	D35	640	D35	659	659	6 with RR
D36	247	D36	325	D36	247	D36	325	325	6 with RR
D37	231	D37	309	D37	231	D37	309	309	6 with RR
D38	318	D38	425	D38	318	D38	425	425	6 with RR
D39	270	D39	358	D39	270	D39	358	358	6 with RR
D40	263	D40	354	D40	263	D40	354	354	6 with RR
D41	317	D41	426	D41	317	D41	426	426	6 with RR
D42	229	D42	314	D42	229	D42	314	314	6 with RR
D43	170	D43	233	D43	170	D43	233	233	6 with RR
D44	304	D44	412	D44	304	D44	412	412	6 with RR
D45	142	D45	191	D45	142	D45	191	191	6 with RR
D46	81	D46	109	D46	81	D46	109	109	6 with RR
D47	44	D47	62	D47	44	D47	62	62	6 with RR
E01	1779	E01	807	E01	1779	E01	807	1779	24 with RR
E02	2379	E02	476	E02	2379	E02	476	2379	24 with RR
E03	1020	E03	609	E03	1020	E03	609	1020	24 with RR
E04	944	E04	646	E04	944	E04	646	944	24 with RR
E05	1014	E05	411	E05	1014	E05	411	1014	24 with RR
E06	655	E06	686	E06	655	E06	686	686	6 with RR
E07	441	E07	459	E07	441	E07	459	459	6 with RR
E08	430	E08	475	E08	430	E08	475	475	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
E09	229	E09	352	E09	229	E09	352	352	6 with RR
E10	94	E10	132	E10	94	E10	132	132	6 with RR
E11	967	E11	550	E11	967	E11	550	967	24 with RR
E12	625	E12	676	E12	625	E12	676	676	6 with RR
E13	762	E13	730	E13	762	E13	730	762	24 with RR
E14	655	E14	795	E14	655	E14	795	795	6 with RR
E15	614	E15	692	E15	614	E15	692	692	6 with RR
E16	525	E16	635	E16	525	E16	635	635	6 with RR
E17	570	E17	488	E17	570	E17	488	570	24 with RR
E18	445	E18	555	E18	445	E18	555	555	6 with RR
E19	301	E19	420	E19	301	E19	420	420	6 with RR
E20	271	E20	363	E20	271	E20	363	363	6 with RR
E21	225	E21	328	E21	225	E21	328	328	6 with RR
E22	596	E22	637	E22	596	E22	637	637	6 with RR
E23	237	E23	307	E23	237	E23	307	307	6 with RR
E24	188	E24	251	E24	188	E24	251	251	6 with RR
E25	744	E25	699	E25	744	E25	699	744	24 with RR
E26	240	E26	314	E26	240	E26	314	314	6 with RR
E27	127	E27	167	E27	127	E27	167	167	6 with RR
E28	197	E28	258	E28	197	E28	258	258	6 with RR
E29	394	E29	509	E29	394	E29	509	509	6 with RR
E30	432	E30	546	E30	432	E30	546	546	6 with RR
E31	281	E31	381	E31	281	E31	381	381	6 with RR
E32	245	E32	345	E32	245	E32	345	345	6 with RR
E33	49	E33	70	E33	49	E33	70	70	6 with RR
E34	234	E34	309	E34	234	E34	309	309	6 with RR
E35	397	E35	529	E35	397	E35	529	529	6 with RR
E36	173	E36	236	E36	173	E36	236	236	6 with RR
E37	221	E37	297	E37	221	E37	297	297	6 with RR
E38	447	E38	602	E38	447	E38	602	602	6 with RR
E41	471	E41	577	E41	471	E41	577	577	6 with RR
E42	642	E42	725	E42	642	E42	725	725	6 with RR
E43	602	E43	741	E43	602	E43	741	741	6 with RR
E44	488	E44	627	E44	488	E44	627	627	6 with RR
E45	392	E45	531	E45	392	E45	531	531	6 with RR
E46	303	E46	405	E46	303	E46	405	405	6 with RR
E47	607	E47	807	E47	607	E47	807	807	6 with RR
E48	763	E48	887	E48	763	E48	887	887	6 with RR
E49	163	E49	231	E49	163	E49	231	231	6 with RR
E50	1026	E50	1269	E50	1026	E50	1269	1269	6 with RR
E51	886	E51	931	E51	886	E51	931	931	6 with RR
E52	301	E52	405	E52	301	E52	405	405	6 with RR
E53	97	E53	141	E53	97	E53	141	141	6 with RR
E54	131	E54	174	E54	131	E54	174	174	6 with RR
F01	700	F01	481	F01	700	F01	481	700	24 with RR
F01A	303	F01A	468	F01A	303	F01A	468	468	6 with RR
F02	268	F02	414	F02	268	F02	414	414	6 with RR
F02A	488	F02A	673	F02A	488	F02A	673	673	6 with RR
F03	660	F03	493	F03	660	F03	493	660	24 with RR
F04	694	F04	375	F04	694	F04	375	694	24 with RR
F05	1132	F05	539	F05	1132	F05	539	1132	24 with RR
F06	623	F06	675	F06	623	F06	675	675	6 with RR
F07	1456	F07	563	F07	1456	F07	563	1456	24 with RR
F08	532	F08	618	F08	532	F08	618	618	6 with RR
F09	1029	F09	669	F09	1029	F09	669	1029	24 with RR
F10	1242	F10	721	F10	1242	F10	721	1242	24 with RR
F11	628	F11	514	F11	628	F11	514	628	24 with RR
F12	242	F12	365	F12	242	F12	365	365	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
F13	207	F13	313	F13	207	F13	313	313	6 with RR
F14	301	F14	450	F14	301	F14	450	450	6 with RR
F15	568	F15	671	F15	568	F15	671	671	6 with RR
F16	133	F16	179	F16	133	F16	179	179	6 with RR
F17	746	F17	754	F17	746	F17	754	754	6 with RR
F18	376	F18	503	F18	376	F18	503	503	6 with RR
F19	644	F19	757	F19	644	F19	757	757	6 with RR
F20	615	F20	735	F20	615	F20	735	735	6 with RR
F21	458	F21	597	F21	458	F21	597	597	6 with RR
F22	342	F22	458	F22	342	F22	458	458	6 with RR
F23	531	F23	665	F23	531	F23	665	665	6 with RR
F24	612	F24	726	F24	612	F24	726	726	6 with RR
F25	1416	F25	1117	F25	1416	F25	1117	1416	24 with RR
F26	396	F26	521	F26	396	F26	521	521	6 with RR
F27	602	F27	746	F27	602	F27	746	746	6 with RR
F28	461	F28	617	F28	461	F28	617	617	6 with RR
F29	524	F29	668	F29	524	F29	668	668	6 with RR
F31	309	F31	413	F31	309	F31	413	413	6 with RR
F32	263	F32	342	F32	263	F32	342	342	6 with RR
F33	452	F33	606	F33	452	F33	606	606	6 with RR
F34	467	F34	588	F34	467	F34	588	588	6 with RR
F35	496	F35	605	F35	496	F35	605	605	6 with RR
F36	211	F36	283	F36	211	F36	283	283	6 with RR
G01	871	G01	809	G01	871	G01	809	871	24 with RR
G02	1563	G02	1298	G02	1563	G02	1298	1563	24 with RR
G03	1941	G03	1510	G03	1941	G03	1510	1941	24 with RR
G04	1891	G04	1426	G04	1891	G04	1426	1891	24 with RR
G05	668	G05	473	G05	668	G05	473	668	24 with RR
G06	2280	G06	1685	G06	2280	G06	1685	2280	24 with RR
G07	1133	G07	1129	G07	1133	G07	1129	1133	24 with RR
G08	317	G08	436	G08	317	G08	436	436	6 with RR
G09	436	G09	542	G09	436	G09	542	542	6 with RR
G10	338	G10	465	G10	338	G10	465	465	6 with RR
G11	486	G11	634	G11	486	G11	634	634	6 with RR
G12	646	G12	709	G12	646	G12	709	709	6 with RR
G13	356	G13	488	G13	356	G13	488	488	6 with RR
G14	148	G14	203	G14	148	G14	203	203	6 with RR
G16	1067	G16	1021	G16	1067	G16	1021	1067	24 with RR
G17	667	G17	870	G17	667	G17	870	870	6 with RR
G18	381	G18	526	G18	381	G18	526	526	6 with RR
G19	616	G19	805	G19	616	G19	805	805	6 with RR
G20	222	G20	318	G20	222	G20	318	318	6 with RR
G21	1170	G21	778	G21	1170	G21	778	1170	24 with RR
G22	602	G22	604	G22	602	G22	604	604	6 with RR
G23	654	G23	628	G23	654	G23	628	654	24 with RR
G24	192	G24	292	G24	192	G24	292	292	6 with RR
G25	177	G25	273	G25	177	G25	273	273	6 with RR
G26A	563	G26A	609	G26A	563	G26A	609	609	6 with RR
G26B	128	G26B	195	G26B	128	G26B	195	195	6 with RR
G27	803	G27	695	G27	803	G27	695	803	24 with RR
G28	252	G28	352	G28	252	G28	352	352	6 with RR
G29	2163	G29	1494	G29	2163	G29	1494	2163	24 with RR
G30	2326	G30	1561	G30	2326	G30	1561	2326	24 with RR
G31	201	G31	275	G31	201	G31	275	275	6 with RR
G32	867	G32	909	G32	867	G32	909	909	6 with RR
G33	595	G33	724	G33	595	G33	724	724	6 with RR
G34	220	G34	302	G34	220	G34	302	302	6 with RR
G35	414	G35	560	G35	414	G35	560	560	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
G36	624	G36	692	G36	624	G36	692	692	6 with RR
G37	344	G37	469	G37	344	G37	469	469	6 with RR
G38	274	G38	375	G38	274	G38	375	375	6 with RR
G39	386	G39	469	G39	386	G39	469	469	6 with RR
G40	931	G40	878	G40	931	G40	878	931	24 with RR
G41	342	G41	471	G41	342	G41	471	471	6 with RR
G42	434	G42	543	G42	434	G42	543	543	6 with RR
G43	1232	G43	1010	G43	1232	G43	1010	1232	24 with RR
G44	292	G44	435	G44	292	G44	435	435	6 with RR
G45	1098	G45	983	G45	1098	G45	983	1098	24 with RR
G46	1132	G46	1099	G46	1132	G46	1099	1132	24 with RR
G47	134	G47	184	G47	134	G47	184	184	6 with RR
G48	2282	G48	2151	G48	2282	G48	2151	2282	24 with RR
H01	1538	H01	1383	H01	1538	H01	1383	1538	24 with RR
H02	1954	H02	1946	H02	1954	H02	1946	1954	24 with RR
H03	2417	H03	2240	H03	2417	H03	2240	2417	24 with RR
H04	852	H04	863	H04	852	H04	863	863	6 with RR
H05	1338	H05	1289	H05	1338	H05	1289	1338	24 with RR
H06	743	H06	699	H06	743	H06	699	743	24 with RR
H07	548	H07	679	H07	548	H07	679	679	6 with RR
H08	973	H08	1125	H08	973	H08	1125	1125	6 with RR
H09	1336	H09	1474	H09	1336	H09	1474	1474	6 with RR
H10	571	H10	778	H10	571	H10	778	778	6 with RR
H11	290	H11	399	H11	290	H11	399	399	6 with RR
H12	400	H12	606	H12	400	H12	606	606	6 with RR
H13	464	H13	629	H13	464	H13	629	629	6 with RR
H14	507	H14	602	H14	507	H14	602	602	6 with RR
H15A	602	H15A	822	H15A	602	H15A	822	822	6 with RR
H15B	479	H15B	644	H15B	479	H15B	644	644	6 with RR
H16	344	H16	473	H16	344	H16	473	473	6 with RR
H17	459	H17	632	H17	459	H17	632	632	6 with RR
H18	453	H18	624	H18	453	H18	624	624	6 with RR
H20	484	H20	665	H20	484	H20	665	665	6 with RR
H22	1483	H22	1393	H22	1483	H22	1393	1483	24 with RR
H23	564	H23	700	H23	564	H23	700	700	6 with RR
H24	449	H24	620	H24	449	H24	620	620	6 with RR
H25	344	H25	475	H25	344	H25	475	475	6 with RR
H26	554	H26	671	H26	554	H26	671	671	6 with RR
H27	372	H27	511	H27	372	H27	511	511	6 with RR
H28	670	H28	819	H28	670	H28	819	819	6 with RR
H29	643	H29	701	H29	643	H29	701	701	6 with RR
H30	458	H30	629	H30	458	H30	629	629	6 with RR
H31	391	H31	539	H31	391	H31	539	539	6 with RR
H32	569	H32	702	H32	569	H32	702	702	6 with RR
H33	718	H33	768	H33	718	H33	768	768	6 with RR
H34	448	H34	620	H34	448	H34	620	620	6 with RR
H35	1204	H35	1122	H35	1204	H35	1122	1204	24 with RR
H36	454	H36	624	H36	454	H36	624	624	6 with RR
H37	601	H37	801	H37	601	H37	801	801	6 with RR
H38	524	H38	727	H38	524	H38	727	727	6 with RR
H39	416	H39	574	H39	416	H39	574	574	6 with RR
H40	463	H40	636	H40	463	H40	636	636	6 with RR
H41	331	H41	457	H41	331	H41	457	457	6 with RR
H42	362	H42	493	H42	362	H42	493	493	6 with RR
H43	242	H43	333	H43	242	H43	333	333	6 with RR
H44	519	H44	689	H44	519	H44	689	689	6 with RR
H45	275	H45	377	H45	275	H45	377	377	6 with RR
H46	336	H46	462	H46	336	H46	462	462	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
H47	414	H47	571	H47	414	H47	571	571	6 with RR
H48	308	H48	420	H48	308	H48	420	420	6 with RR
H49	382	H49	526	H49	382	H49	526	526	6 with RR
H50	388	H50	500	H50	388	H50	500	500	6 with RR
H51	332	H51	458	H51	332	H51	458	458	6 with RR
H52	230	H52	315	H52	230	H52	315	315	6 with RR
H53	293	H53	401	H53	293	H53	401	401	6 with RR
H54	232	H54	318	H54	232	H54	318	318	6 with RR
H55	340	H55	467	H55	340	H55	467	467	6 with RR
H56	361	H56	494	H56	361	H56	494	494	6 with RR
H57	393	H57	538	H57	393	H57	538	538	6 with RR
H58	306	H58	420	H58	306	H58	420	420	6 with RR
H59	414	H59	572	H59	414	H59	572	572	6 with RR
H60	442	H60	593	H60	442	H60	593	593	6 with RR
H61	383	H61	528	H61	383	H61	528	528	6 with RR
H62	509	H62	702	H62	509	H62	702	702	6 with RR
H63	185	H63	254	H63	185	H63	254	254	6 with RR
H65	336	H65	463	H65	336	H65	463	463	6 with RR
H66	330	H66	406	H66	330	H66	406	406	6 with RR
H67	181	H67	247	H67	181	H67	247	247	6 with RR
H68	346	H68	475	H68	346	H68	475	475	6 with RR
H69	485	H69	654	H69	485	H69	654	654	6 with RR
H70	382	H70	526	H70	382	H70	526	526	6 with RR
H71	698	H71	887	H71	698	H71	887	887	6 with RR
H72	473	H72	652	H72	473	H72	652	652	6 with RR
H73	308	H73	428	H73	308	H73	428	428	6 with RR
H74	650	H74	764	H74	650	H74	764	764	6 with RR
H75	974	H75	1177	H75	974	H75	1177	1177	6 with RR
H76	738	H76	887	H76	738	H76	887	887	6 with RR
H77	312	H77	428	H77	312	H77	428	428	6 with RR
H78	523	H78	722	H78	523	H78	722	722	6 with RR
H79	680	H79	916	H79	680	H79	916	916	6 with RR
H80	197	H80	275	H80	197	H80	275	275	6 with RR
H81	396	H81	539	H81	396	H81	539	539	6 with RR
H82	667	H82	899	H82	667	H82	899	899	6 with RR
H83	231	H83	294	H83	231	H83	294	294	6 with RR
H84	1057	H84	1271	H84	1057	H84	1271	1271	6 with RR
H85	1277	H85	1423	H85	1277	H85	1423	1423	6 with RR
H86	1289	H86	1407	H86	1289	H86	1407	1407	6 with RR
I03	1035	I03	1139	I03	1035	I03	1139	1139	6 with RR
I04	428	I04	592	I04	428	I04	592	592	6 with RR
I05	235	I05	319	I05	235	I05	319	319	6 with RR
I06	548	I06	759	I06	548	I06	759	759	6 with RR
I07	206	I07	282	I07	206	I07	282	282	6 with RR
I08	809	I08	955	I08	809	I08	955	955	6 with RR
I09	346	I09	477	I09	346	I09	477	477	6 with RR
I10	524	I10	723	I10	524	I10	723	723	6 with RR
I11	292	I11	400	I11	292	I11	400	400	6 with RR
I12	705	I12	949	I12	705	I12	949	949	6 with RR
I13	718	I13	955	I13	718	I13	955	955	6 with RR
I14	460	I14	613	I14	460	I14	613	613	6 with RR
I15A	450	I15A	621	I15A	450	I15A	621	621	6 with RR
I15B	391	I15B	536	I15B	391	I15B	536	536	6 with RR
I16	537	I16	744	I16	537	I16	744	744	6 with RR
I17A	167	I17A	226	I17A	167	I17A	226	226	6 with RR
I17B	142	I17B	190	I17B	142	I17B	190	190	6 with RR
I17C	266	I17C	353	I17C	266	I17C	353	353	6 with RR
I18	720	I18	908	I18	720	I18	908	908	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
I19	385	I19	532	I19	385	I19	532	532	6 with RR
I20	608	I20	781	I20	608	I20	781	781	6 with RR
I21	586	I21	788	I21	586	I21	788	788	6 with RR
I22	630	I22	847	I22	630	I22	847	847	6 with RR
I23	545	I23	723	I23	545	I23	723	723	6 with RR
I24	231	I24	312	I24	231	I24	312	312	6 with RR
I25	382	I25	510	I25	382	I25	510	510	6 with RR
I26A	613	I26A	802	I26A	613	I26A	802	802	6 with RR
I26B	94	I26B	126	I26B	94	I26B	126	126	6 with RR
I27	457	I27	627	I27	457	I27	627	627	6 with RR
I28	475	I28	659	I28	475	I28	659	659	6 with RR
I29	402	I29	558	I29	402	I29	558	558	6 with RR
I30	466	I30	644	I30	466	I30	644	644	6 with RR
I31	381	I31	530	I31	381	I31	530	530	6 with RR
I32	709	I32	956	I32	709	I32	956	956	6 with RR
I33	703	I33	948	I33	703	I33	948	948	6 with RR
I34	362	I34	486	I34	362	I34	486	486	6 with RR
I35	609	I35	809	I35	609	I35	809	809	6 with RR
I36	295	I36	397	I36	295	I36	397	397	6 with RR
I37	656	I37	867	I37	656	I37	867	867	6 with RR
I38	204	I38	273	I38	204	I38	273	273	6 with RR
I39	243	I39	327	I39	243	I39	327	327	6 with RR
I40	460	I40	633	I40	460	I40	633	633	6 with RR
I41	519	I41	718	I41	519	I41	718	718	6 with RR
I42	467	I42	644	I42	467	I42	644	644	6 with RR
I43	491	I43	664	I43	491	I43	664	664	6 with RR
I44A	710	I44A	913	I44A	710	I44A	913	913	6 with RR
I44B	334	I44B	451	I44B	334	I44B	451	451	6 with RR
I45	406	I45	557	I45	406	I45	557	557	6 with RR
I46	504	I46	694	I46	504	I46	694	694	6 with RR
I47	387	I47	531	I47	387	I47	531	531	6 with RR
I48	375	I48	512	I48	375	I48	512	512	6 with RR
I49	657	I49	882	I49	657	I49	882	882	6 with RR
I50	953	I50	1215	I50	953	I50	1215	1215	6 with RR
I51	153	I51	213	I51	153	I51	213	213	6 with RR
I52	388	I52	555	I52	388	I52	555	555	6 with RR
I53	544	I53	766	I53	544	I53	766	766	6 with RR
I54	422	I54	611	I54	422	I54	611	611	6 with RR
I55	271	I55	376	I55	271	I55	376	376	6 with RR
I56	461	I56	648	I56	461	I56	648	648	6 with RR
I57	272	I57	359	I57	272	I57	359	359	6 with RR
I58A	200	I58A	260	I58A	200	I58A	260	260	6 with RR
I58B	531	I58B	680	I58B	531	I58B	680	680	6 with RR
I59	171	I59	226	I59	171	I59	226	226	6 with RR
I60A	1084	I60A	1219	I60A	1084	I60A	1219	1219	6 with RR
I60B	200	I60B	264	I60B	200	I60B	264	264	6 with RR
I60C	289	I60C	393	I60C	289	I60C	393	393	6 with RR
I61	417	I61	564	I61	417	I61	564	564	6 with RR
I62	548	I62	741	I62	548	I62	741	741	6 with RR
I63	350	I63	470	I63	350	I63	470	470	6 with RR
I64	420	I64	543	I64	420	I64	543	543	6 with RR
I65	394	I65	527	I65	394	I65	527	527	6 with RR
I66	1109	I66	1258	I66	1109	I66	1258	1258	6 with RR
I67	1172	I67	1293	I67	1172	I67	1293	1293	6 with RR
I68	375	I68	506	I68	375	I68	506	506	6 with RR
I69	231	I69	307	I69	231	I69	307	307	6 with RR
I70	454	I70	603	I70	454	I70	603	603	6 with RR
I71	533	I71	723	I71	533	I71	723	723	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
I72	277	I72	370	I72	277	I72	370	370	6 with RR
J01	7284	J01	4865	J01	7284	J01	4865	7284	24 with RR
J04	502	J04	684	J04	502	J04	684	684	6 with RR
J06	383	J06	554	J06	383	J06	554	554	6 with RR
J07	472	J07	675	J07	472	J07	675	675	6 with RR
J08	155	J08	208	J08	155	J08	208	208	6 with RR
J10	323	J10	449	J10	323	J10	449	449	6 with RR
J11	270	J11	372	J11	270	J11	372	372	6 with RR
J12	426	J12	598	J12	426	J12	598	598	6 with RR
J13	758	J13	897	J13	758	J13	897	897	6 with RR
J14	1930	J14	1679	J14	1930	J14	1679	1930	24 with RR
J15	678	J15	878	J15	678	J15	878	878	6 with RR
J16	322	J16	436	J16	322	J16	436	436	6 with RR
J17	437	J17	590	J17	437	J17	590	590	6 with RR
J18	748	J18	861	J18	748	J18	861	861	6 with RR
J19	124	J19	167	J19	124	J19	167	167	6 with RR
J20	1111	J20	1361	J20	1111	J20	1361	1361	6 with RR
J21	351	J21	465	J21	351	J21	465	465	6 with RR
J22	1412	J22	1473	J22	1412	J22	1473	1473	6 with RR
J23	383	J23	514	J23	383	J23	514	514	6 with RR
J24	320	J24	426	J24	320	J24	426	426	6 with RR
J25	703	J25	937	J25	703	J25	937	937	6 with RR
J26	962	J26	1295	J26	962	J26	1295	1295	6 with RR
J27	1015	J27	1083	J27	1015	J27	1083	1083	6 with RR
J28	753	J28	855	J28	753	J28	855	855	6 with RR
J29A	340	J29A	453	J29A	340	J29A	453	453	6 with RR
J29B	219	J29B	292	J29B	219	J29B	292	292	6 with RR
J29C	1284	J29C	1417	J29C	1284	J29C	1417	1417	6 with RR
J29D	694	J29D	923	J29D	694	J29D	923	923	6 with RR
J30	492	J30	658	J30	492	J30	658	658	6 with RR
J31	651	J31	874	J31	651	J31	874	874	6 with RR
J32	480	J32	651	J32	480	J32	651	651	6 with RR
J33	1758	J33	1771	J33	1758	J33	1771	1771	6 with RR
J34	811	J34	1108	J34	811	J34	1108	1108	6 with RR
J35	848	J35	1073	J35	848	J35	1073	1073	6 with RR
J36	535	J36	707	J36	535	J36	707	707	6 with RR
J37	606	J37	721	J37	606	J37	721	721	6 with RR
J38	2121	J38	1963	J38	2121	J38	1963	2121	24 with RR
J39	793	J39	892	J39	793	J39	892	892	6 with RR
J40	1120	J40	1269	J40	1120	J40	1269	1269	6 with RR
J41	364	J41	487	J41	364	J41	487	487	6 with RR
J42	342	J42	464	J42	342	J42	464	464	6 with RR
J43A	458	J43A	624	J43A	458	J43A	624	624	6 with RR
J43B	171	J43B	227	J43B	171	J43B	227	227	6 with RR
J43C	225	J43C	305	J43C	225	J43C	305	305	6 with RR
J44	273	J44	370	J44	273	J44	370	370	6 with RR
J45	491	J45	653	J45	491	J45	653	653	6 with RR
J46	617	J46	791	J46	617	J46	791	791	6 with RR
J47	509	J47	673	J47	509	J47	673	673	6 with RR
J48	854	J48	977	J48	854	J48	977	977	6 with RR
J49	186	J49	253	J49	186	J49	253	253	6 with RR
J50	805	J50	1045	J50	805	J50	1045	1045	6 with RR
J51	292	J51	388	J51	292	J51	388	388	6 with RR
J52	94	J52	128	J52	94	J52	128	128	6 with RR
J53	88	J53	118	J53	88	J53	118	118	6 with RR
J54	351	J54	489	J54	351	J54	489	489	6 with RR
X01	2101	X01	2046	X01	2101	X01	2046	2101	24 with RR
X02	1847	X02	1857	X02	1847	X02	1857	1857	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
X03	1715	X03	1870	X03	1715	X03	1870	1870	6 with RR
X04	1229	X04	1393	X04	1229	X04	1393	1393	6 with RR
X05	363	X05	472	X05	363	X05	472	472	6 with RR
X06	1354	X06	1498	X06	1354	X06	1498	1498	6 with RR
X07	2459	X07	2288	X07	2459	X07	2288	2459	24 with RR
X08	722	X08	977	X08	722	X08	977	977	6 with RR
X09	658	X09	888	X09	658	X09	888	888	6 with RR
X10	425	X10	574	X10	425	X10	574	574	6 with RR
X11	470	X11	644	X11	470	X11	644	644	6 with RR
X12	406	X12	554	X12	406	X12	554	554	6 with RR
X13	3580	X13	2774	X13	3580	X13	2774	3580	24 with RR
X14	233	X14	321	X14	233	X14	321	321	6 with RR
X15	330	X15	452	X15	330	X15	452	452	6 with RR
X16	506	X16	695	X16	506	X16	695	695	6 with RR
X17	888	X17	1183	X17	888	X17	1183	1183	6 with RR
X18	667	X18	899	X18	667	X18	899	899	6 with RR
CPA03	1617	CPA03	557	CPA03	1501	CPA03	506	1617	24 with RR
CPA06	432	CPA06	343	CPA06	432	CPA06	343	432	24 with RR
CPA07	301	CPA07	375	CPA07	301	CPA07	375	375	6 with RR
CPA08	923	CPA08	404	CPA08	907	CPA08	391	923	24 with RR
CPA10	613	CPA10	453	CPA10	613	CPA10	453	613	24 with RR
CPA11	834	CPA11	336	CPA11	834	CPA11	336	834	24 with RR
CPA14	705	CPA14	544	CPA14	705	CPA14	544	705	24 with RR
CPA15	619	CPA15	512	CPA15	619	CPA15	512	619	24 with RR
CPA16	818	CPA16	701	CPA16	818	CPA16	701	818	24 with RR
CPA17	455	CPA17	385	CPA17	446	CPA17	377	455	24 with RR
CPA18	784	CPA18	411	CPA18	761	CPA18	411	784	24 with RR
CPA19	551	CPA19	318	CPA19	546	CPA19	318	551	24 with RR
CPA19A	433	CPA19A	375	CPA19A	433	CPA19A	375	433	24 with RR
CPA20	321	CPA20	303	CPA20	321	CPA20	303	321	24 with RR
CPA21	728	CPA21	602	CPA21	728	CPA21	601	728	24 with RR
CPA22	272	CPA22	301	CPA22	272	CPA22	301	301	6 with RR
CPA24	781	CPA24	346	CPA24	780	CPA24	346	781	24 with RR
CPA26	502	CPA26	235	CPA26	480	CPA26	231	502	24 with RR
CPA27	928	CPA27	459	CPA27	928	CPA27	459	928	24 with RR
CPA27A	631	CPA27A	343	CPA27A	631	CPA27A	343	631	24 with RR
CPA29	848	CPA29	297	CPA29	851	CPA29	330	851	24 Without RR
CPA30	1217	CPA30	337	CPA30	1200	CPA30	331	1217	24 with RR
CPA30A	547	CPA30A	226	CPA30A	543	CPA30A	226	547	24 with RR
CPA32	844	CPA32	707	CPA32	844	CPA32	707	844	24 with RR
CPA32A	845	CPA32A	741	CPA32A	845	CPA32A	741	845	24 with RR
CPA33	682	CPA33	502	CPA33	680	CPA33	500	682	24 with RR
CPA33A	363	CPA33A	237	CPA33A	357	CPA33A	234	363	24 with RR
CPA34	388	CPA34	310	CPA34	388	CPA34	310	388	24 with RR
CPA35	918	CPA35	649	CPA35	918	CPA35	649	918	24 with RR
CPA37	1122	CPA37	853	CPA37	1122	CPA37	853	1122	24 with RR
CPA39	629	CPA39	699	CPA39	629	CPA39	699	699	6 with RR
CPA41	521	CPA41	500	CPA41	521	CPA41	500	521	24 with RR
CPA42	607	CPA42	739	CPA42	607	CPA42	739	739	6 with RR
CPA43	752	CPA43	789	CPA43	752	CPA43	789	789	6 with RR
CPA44	646	CPA44	754	CPA44	646	CPA44	754	754	6 with RR
CPA45	939	CPA45	763	CPA45	939	CPA45	763	939	24 with RR
CPA46	248	CPA46	327	CPA46	248	CPA46	327	327	6 with RR
CPA47	829	CPA47	560	CPA47	829	CPA47	560	829	24 with RR
CPA49	1457	CPA49	1080	CPA49	1457	CPA49	1080	1457	24 with RR
CPA50	1115	CPA50	737	CPA50	1107	CPA50	732	1115	24 with RR
CPA51	1120	CPA51	702	CPA51	1114	CPA51	698	1120	24 with RR
CPA51A	738	CPA51A	621	CPA51A	738	CPA51A	621	738	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPA52	1676	CPA52	659	CPA52	1653	CPA52	641	1676	24 with RR
CPA52A	1113	CPA52A	303	CPA52A	1152	CPA52A	313	1152	24 Without RR
CPA54	1152	CPA54	730	CPA54	1152	CPA54	730	1152	24 with RR
CPA55	2051	CPA55	695	CPA55	2025	CPA55	681	2051	24 with RR
CPA55A	889	CPA55A	481	CPA55A	889	CPA55A	481	889	24 with RR
CPA56	1795	CPA56	707	CPA56	1797	CPA56	707	1797	24 Without RR
CPA59	2454	CPA59	1999	CPA59	2454	CPA59	1999	2454	24 with RR
CPA60	2712	CPA60	2241	CPA60	2712	CPA60	2241	2712	24 with RR
CPA63	995	CPA63	631	CPA63	1001	CPA63	628	1001	24 Without RR
CPA63A	597	CPA63A	411	CPA63A	597	CPA63A	411	597	24 with RR
CPA64	1201	CPA64	319	CPA64	1157	CPA64	306	1201	24 with RR
CPA65	1492	CPA65	477	CPA65	1400	CPA65	445	1492	24 with RR
CPB03	4833	CPB03	608	CPB03	4833	CPB03	608	4833	24 with RR
CPB05	882	CPB05	642	CPB05	882	CPB05	642	882	24 with RR
CPB07	358	CPB07	347	CPB07	358	CPB07	347	358	24 with RR
CPB08	318	CPB08	299	CPB08	318	CPB08	299	318	24 with RR
CPB09	4356	CPB09	533	CPB09	4400	CPB09	533	4400	24 Without RR
CPB10	644	CPB10	394	CPB10	644	CPB10	394	644	24 with RR
CPB11	710	CPB11	463	CPB11	710	CPB11	463	710	24 with RR
CPB12	4617	CPB12	551	CPB12	4657	CPB12	550	4657	24 Without RR
CPB12A	612	CPB12A	375	CPB12A	612	CPB12A	378	612	24 with RR
CPB13	2827	CPB13	427	CPB13	2827	CPB13	427	2827	24 with RR
CPB14	1570	CPB14	413	CPB14	1570	CPB14	413	1570	24 with RR
CPB16	905	CPB16	314	CPB16	905	CPB16	314	905	24 with RR
CPB18	346	CPB18	297	CPB18	346	CPB18	297	346	24 with RR
CPB19	374	CPB19	458	CPB19	374	CPB19	458	458	6 with RR
CPB21	1570	CPB21	366	CPB21	1570	CPB21	366	1570	24 with RR
CPB24	414	CPB24	523	CPB24	414	CPB24	523	523	6 with RR
CPB24A	209	CPB24A	307	CPB24A	209	CPB24A	307	307	6 with RR
CPB25	422	CPB25	408	CPB25	422	CPB25	408	422	24 with RR
CPB26	284	CPB26	241	CPB26	284	CPB26	241	284	24 with RR
CPB29	512	CPB29	488	CPB29	512	CPB29	488	512	24 with RR
CPB33	598	CPB33	245	CPB33	598	CPB33	245	598	24 with RR
CPB33A	214	CPB33A	260	CPB33A	214	CPB33A	260	260	6 with RR
CPB34	344	CPB34	516	CPB34	344	CPB34	516	516	6 with RR
CPB35	535	CPB35	427	CPB35	535	CPB35	427	535	24 with RR
CPB35A	416	CPB35A	427	CPB35A	416	CPB35A	427	427	6 with RR
CPB36	208	CPB36	307	CPB36	208	CPB36	307	307	6 with RR
CPB37	260	CPB37	325	CPB37	260	CPB37	325	325	6 with RR
CPB38	796	CPB38	305	CPB38	796	CPB38	305	796	24 with RR
CPB39	858	CPB39	279	CPB39	858	CPB39	279	858	24 with RR
CPB39A	809	CPB39A	282	CPB39A	809	CPB39A	282	809	24 with RR
CPB41	457	CPB41	554	CPB41	457	CPB41	554	554	6 with RR
CPB43	179	CPB43	256	CPB43	179	CPB43	256	256	6 with RR
CPB44	297	CPB44	391	CPB44	297	CPB44	391	391	6 with RR
CPB45	1306	CPB45	408	CPB45	1306	CPB45	408	1306	24 with RR
CPB46	647	CPB46	527	CPB46	647	CPB46	527	647	24 with RR
CPB47	573	CPB47	473	CPB47	573	CPB47	473	573	24 with RR
CPB48	508	CPB48	423	CPB48	508	CPB48	423	508	24 with RR
CPB50	378	CPB50	447	CPB50	378	CPB50	447	447	6 with RR
CPB54	820	CPB54	223	CPB54	820	CPB54	223	820	24 with RR
CPB56	249	CPB56	308	CPB56	249	CPB56	308	308	6 with RR
CPB57	136	CPB57	206	CPB57	136	CPB57	206	206	6 with RR
CPB58	387	CPB58	436	CPB58	387	CPB58	436	436	6 with RR
CPB59	1286	CPB59	352	CPB59	1286	CPB59	352	1286	24 with RR
CPB60	935	CPB60	242	CPB60	935	CPB60	242	935	24 with RR
CPB61	832	CPB61	663	CPB61	832	CPB61	663	832	24 with RR
CPB65	1016	CPB65	287	CPB65	1016	CPB65	287	1016	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPC06	255	CPC06	383	CPC06	255	CPC06	383	383	6 with RR
CPC07	1095	CPC07	547	CPC07	1094	CPC07	477	1095	24 with RR
CPC09	124	CPC09	196	CPC09	125	CPC09	196	196	6 with RR
CPC10	319	CPC10	373	CPC10	308	CPC10	380	380	6 Without RR
CPC12	204	CPC12	326	CPC12	204	CPC12	326	326	6 with RR
CPC13	369	CPC13	477	CPC13	369	CPC13	477	477	6 with RR
CPC14	181	CPC14	264	CPC14	157	CPC14	233	264	6 with RR
CPC15	118	CPC15	166	CPC15	118	CPC15	170	170	6 Without RR
CPC16	217	CPC16	339	CPC16	217	CPC16	339	339	6 Without RR
CPC17	205	CPC17	297	CPC17	205	CPC17	297	297	6 Without RR
CPC18	115	CPC18	176	CPC18	115	CPC18	176	176	6 Without RR
CPC19	618	CPC19	382	CPC19	618	CPC19	382	618	24 Without RR
CPC20	455	CPC20	162	CPC20	349	CPC20	277	455	24 with RR
CPC22	935	CPC22	695	CPC22	935	CPC22	701	935	24 with RR
CPC24	1073	CPC24	734					1073	24 with RR
CPC25	90	CPC25	131					131	6 with RR
CPC26	90	CPC26	173					173	6 with RR
CPC27	439	CPC27	186	CPC27	324	CPC27	276	439	24 with RR
CPC28	319	CPC28	186					319	24 with RR
CPC29	455	CPC29	234	CPC29	453	CPC29	255	455	24 with RR
CPC30	445	CPC30	289	CPC30	302	CPC30	319	445	24 with RR
CPC31	158	CPC31	246	CPC31	137	CPC31	198	246	6 with RR
CPC33	7530	CPC33	1245	CPC33	7545	CPC33	1246	7545	24 Without RR
CPC33A	624	CPC33A	275	CPC33A	591	CPC33A	218	624	24 with RR
CPC33B	687	CPC33B	211	CPC33B	664	CPC33B	198	687	24 with RR
CPC33C	887	CPC33C	403	CPC33C	630	CPC33C	293	887	24 with RR
CPC33D	1122	CPC33D	178	CPC33D	1049	CPC33D	175	1122	24 with RR
CPC33E	1313	CPC33E	170	CPC33E	1244	CPC33E	131	1313	24 with RR
CPC33F	1260	CPC33F	130	CPC33F	1212	CPC33F	115	1260	24 with RR
CPC34	5083	CPC34	654	CPC34	5152	CPC34	654	5152	24 Without RR
CPC34A	5094	CPC34A	704	CPC34A	5157	CPC34A	705	5157	24 Without RR
CPC36	4863	CPC36	588	CPC36	4915	CPC36	589	4915	24 Without RR
CPC37	832	CPC37	641	CPC37	832	CPC37	641	832	24 with RR
CPC38	362	CPC38	438	CPC38	362	CPC38	438	438	6 with RR
CPC42	137	CPC42	208	CPC42	137	CPC42	208	208	6 with RR
CPC43	161	CPC43	246	CPC43	161	CPC43	246	246	6 with RR
CPC44	267	CPC44	361	CPC44	267	CPC44	361	361	6 with RR
CPC45	155	CPC45	216	CPC45	155	CPC45	216	216	6 with RR
CPC46	198	CPC46	272	CPC46	198	CPC46	272	272	6 with RR
CPC47	4498	CPC47	571	CPC47	4547	CPC47	572	4547	24 Without RR
CPC47A	665	CPC47A	541	CPC47A	665	CPC47A	541	665	24 with RR
CPC48	4492	CPC48	575	CPC48	4544	CPC48	581	4544	24 Without RR
CPC48A	663	CPC48A	521	CPC48A	663	CPC48A	521	663	24 with RR
CPC49	4663	CPC49	587	CPC49	4707	CPC49	588	4707	24 Without RR
CPC52	186	CPC52	222	CPC52	186	CPC52	222	222	6 with RR
CPD01	1107	CPD01	457	CPD01	1107	CPD01	457	1107	24 with RR
CPD03	517	CPD03	632	CPD03	517	CPD03	632	632	6 with RR
CPD04	223	CPD04	340	CPD04	223	CPD04	340	340	6 with RR
CPD05	996	CPD05	345	CPD05	996	CPD05	345	996	24 with RR
CPD08	249	CPD08	331	CPD08	249	CPD08	331	331	6 with RR
CPD09	368	CPD09	292	CPD09	368	CPD09	292	368	24 with RR
CPD10	631	CPD10	402	CPD10	631	CPD10	405	631	24 with RR
CPD11	295	CPD11	399	CPD11	295	CPD11	399	399	6 with RR
CPD12	111	CPD12	163					163	6 with RR
CPD13	805	CPD13	357	CPD13	805	CPD13	357	805	24 with RR
CPD15	487	CPD15	544	CPD15	487	CPD15	544	544	6 with RR
CPD17	423	CPD17	373	CPD17	424	CPD17	374	424	24 Without RR
CPD18	254	CPD18	248					254	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPD19	186	CPD19	276					276	6 with RR
CPD20	158	CPD20	223					223	6 with RR
CPD21	69	CPD21	100					100	6 with RR
CPD22	2303	CPD22	907	CPD22	2492	CPD22	952	2492	24 Without RR
CPD23	432	CPD23	299	CPD23	560	CPD23	381	560	24 Without RR
CPD24	712	CPD24	447	CPD24	818	CPD24	500	818	24 Without RR
CPD24A	295	CPD24A	414	CPD24A	335	CPD24A	431	431	6 Without RR
CPD25	675	CPD25	274	CPD25	677	CPD25	313	677	24 Without RR
CPD26	819	CPD26	493	CPD26	820	CPD26	508	820	24 Without RR
CPD27	676	CPD27	420	CPD27	677	CPD27	433	677	24 Without RR
CPD33	1774	CPD33	677	CPD33	1957	CPD33	718	1957	24 Without RR
CPD35	715	CPD35	722	CPD35	715	CPD35	722	722	6 with RR
CPD37	597	CPD37	590	CPD37	597	CPD37	590	597	24 with RR
CPD38	619	CPD38	590	CPD38	619	CPD38	590	619	24 with RR
CPD39	542	CPD39	513	CPD39	542	CPD39	513	542	24 with RR
CPD42	746	CPD42	813	CPD42	746	CPD42	813	813	6 with RR
CPD46	81	CPD46	109					109	6 with RR
CPD47	43	CPD47	65					65	6 with RR
CPE02	2677	CPE02	509	CPE02	2677	CPE02	509	2677	24 with RR
CPE03	1978	CPE03	252	CPE03	1978	CPE03	252	1978	24 with RR
CPE05	1125	CPE05	287	CPE05	1125	CPE05	287	1125	24 with RR
CPE10	123	CPE10	172	CPE10	123	CPE10	172	172	6 with RR
CPE12	621	CPE12	511	CPE12	621	CPE12	511	621	24 with RR
CPE13	761	CPE13	662	CPE13	761	CPE13	673	761	24 with RR
CPE15	864	CPE15	407	CPE15	864	CPE15	407	864	24 with RR
CPE16	1848	CPE16	166	CPE16	1848	CPE16	166	1848	24 with RR
CPE19	1396	CPE19	223	CPE19	1396	CPE19	223	1396	24 with RR
CPE20	360	CPE20	176	CPE20	360	CPE20	176	360	24 with RR
CPE22	600	CPE22	384	CPE22	601	CPE22	384	601	24 Without RR
CPE23	543	CPE23	336	CPE23	543	CPE23	336	543	24 with RR
CPE24	537	CPE24	465	CPE24	537	CPE24	472	537	24 with RR
CPE25	676	CPE25	319	CPE25	732	CPE25	388	732	24 Without RR
CPE29	753	CPE29	454	CPE29	753	CPE29	454	753	24 with RR
CPE29A	495	CPE29A	371	CPE29A	495	CPE29A	371	495	24 with RR
CPE30	659	CPE30	252	CPE30	658	CPE30	251	659	24 with RR
CPE31	278	CPE31	280	CPE31	278	CPE31	295	295	6 Without RR
CPE32	418	CPE32	357	CPE32	418	CPE32	357	418	24 with RR
CPE33	49	CPE33	70					70	6 with RR
CPE34	519	CPE34	313	CPE34	519	CPE34	313	519	24 with RR
CPE35	396	CPE35	482	CPE35	396	CPE35	482	482	6 with RR
CPE36	176	CPE36	160	CPE36	173	CPE36	236	236	6 Without RR
CPE37	418	CPE37	271	CPE37	422	CPE37	273	422	24 Without RR
CPE38	953	CPE38	447	CPE38	953	CPE38	447	953	24 with RR
CPE41	465	CPE41	361	CPE41	465	CPE41	358	465	24 with RR
CPE42	766	CPE42	509	CPE42	766	CPE42	494	766	24 with RR
CPE43	599	CPE43	562	CPE43	599	CPE43	524	599	24 with RR
CPE44	1199	CPE44	358	CPE44	1163	CPE44	308	1199	24 with RR
CPE45	562	CPE45	238	CPE45	679	CPE45	355	679	24 Without RR
CPE46	299	CPE46	202	CPE46	306	CPE46	399	399	6 Without RR
CPE47	744	CPE47	349	CPE47	795	CPE47	420	795	24 Without RR
CPE48	881	CPE48	420	CPE48	934	CPE48	496	934	24 Without RR
CPE49	1225	CPE49	615	CPE49	1161	CPE49	578	1225	24 with RR
CPE50	1234	CPE50	582	CPE50	1166	CPE50	550	1234	24 with RR
CPE53	95	CPE53	134					134	6 with RR
CPE54	254	CPE54	150	CPE54	160	CPE54	214	254	24 with RR
CPF01	698	CPF01	380	CPF01	698	CPF01	380	698	24 with RR
CPF02	418	CPF02	527	CPF02	418	CPF02	527	527	6 with RR
CPF04	690	CPF04	188	CPF04	690	CPF04	188	690	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPF05	1146	CPF05	251	CPF05	1146	CPF05	251	1146	24 with RR
CPF06	656	CPF06	340	CPF06	656	CPF06	340	656	24 with RR
CPF08	1635	CPF08	541	CPF08	1634	CPF08	541	1635	24 with RR
CPF09	1245	CPF09	302	CPF09	1244	CPF09	302	1245	24 with RR
CPF12	272	CPF12	420	CPF12	272	CPF12	420	420	6 with RR
CPF15	571	CPF15	520	CPF15	571	CPF15	520	571	24 with RR
CPF16	306	CPF16	337	CPF16	306	CPF16	337	337	6 with RR
CPF17	743	CPF17	597	CPF17	743	CPF17	597	743	24 with RR
CPF18	627	CPF18	284	CPF18	627	CPF18	284	627	24 with RR
CPF19	1114	CPF19	351	CPF19	1113	CPF19	351	1114	24 with RR
CPF20	627	CPF20	355	CPF20	608	CPF20	398	627	24 with RR
CPF21	578	CPF21	264	CPF21	577	CPF21	264	578	24 with RR
CPF22	354	CPF22	307	CPF22	354	CPF22	307	354	24 with RR
CPF24	608	CPF24	509	CPF24	608	CPF24	509	608	24 with RR
CPF25	1605	CPF25	992	CPF25	1409	CPF25	970	1605	24 with RR
CPF26	400	CPF26	276					400	24 with RR
CPF27	2211	CPF27	1402	CPF27	864	CPF27	709	2211	24 with RR
CPF28	459	CPF28	481	CPF28	459	CPF28	481	481	6 with RR
CPF29	664	CPF29	301	CPF29	662	CPF29	301	664	24 with RR
CPF31	1269	CPF31	901	CPF31	1324	CPF31	784	1324	24 Without RR
CPF32	1161	CPF32	434	CPF32	638	CPF32	309	1161	24 with RR
CPF33	454	CPF33	511	CPF33	453	CPF33	484	511	6 with RR
CPF34	1221	CPF34	701	CPF34	1784	CPF34	1103	1784	24 Without RR
CPF35	494	CPF35	378	CPF35	493	CPF35	505	505	6 Without RR
CPF36	211	CPF36	283					283	6 with RR
CPG01	964	CPG01	1080	CPG01	964	CPG01	1080	1080	6 with RR
CPG03	3484	CPG03	2241	CPG03	3484	CPG03	2241	3484	24 with RR
CPG04	2997	CPG04	1747	CPG04	2997	CPG04	1747	2997	24 with RR
CPG06	2274	CPG06	1403	CPG06	2274	CPG06	1403	2274	24 with RR
CPG07	1130	CPG07	826	CPG07	1130	CPG07	826	1130	24 with RR
CPG09	776	CPG09	535	CPG09	776	CPG09	535	776	24 with RR
CPG10	1174	CPG10	1085	CPG10	1174	CPG10	1085	1174	24 with RR
CPG11	552	CPG11	356	CPG11	625	CPG11	427	625	24 Without RR
CPG13	356	CPG13	488	CPG13	356	CPG13	488	488	6 with RR
CPG14	147	CPG14	203	CPG14	147	CPG14	203	203	6 with RR
CPG22	607	CPG22	438	CPG22	607	CPG22	438	607	24 with RR
CPG27	804	CPG27	660	CPG27	804	CPG27	660	804	24 with RR
CPG31	1944	CPG31	1034	CPG31	1965	CPG31	1051	1965	24 Without RR
CPG32	864	CPG32	773	CPG32	864	CPG32	773	864	24 with RR
CPG34	475	CPG34	400	CPG34	475	CPG34	400	475	24 with RR
CPG34A	218	CPG34A	292	CPG34A	218	CPG34A	292	292	6 with RR
CPG35	423	CPG35	314	CPG35	423	CPG35	314	423	24 with RR
CPG39	385	CPG39	348	CPG39	385	CPG39	348	385	24 with RR
CPG40	921	CPG40	499	CPG40	921	CPG40	499	921	24 with RR
CPG42	429	CPG42	258	CPG42	429	CPG42	258	429	24 with RR
CPG43	1456	CPG43	690	CPG43	1463	CPG43	693	1463	24 Without RR
CPG45	2323	CPG45	1226	CPG45	2357	CPG45	1254	2357	24 Without RR
CPG46	1125	CPG46	779	CPG46	1125	CPG46	779	1125	24 with RR
CPG47	599	CPG47	616	CPG47	599	CPG47	616	616	6 with RR
CPH01	2097	CPH01	1764	CPH01	2097	CPH01	1764	2097	24 with RR
CPH07	1009	CPH07	694	CPH07	1009	CPH07	694	1009	24 with RR
CPH10	1407	CPH10	1435	CPH10	1407	CPH10	1435	1435	6 with RR
CPH13	748	CPH13	684	CPH13	748	CPH13	684	748	24 with RR
CPH14	867	CPH14	794	CPH14	867	CPH14	794	867	24 with RR
CPH15	1086	CPH15	1156	CPH15	1086	CPH15	1156	1156	6 with RR
CPH15A	962	CPH15A	1156	CPH15A	962	CPH15A	1156	1156	6 with RR
CPH17	776	CPH17	732	CPH17	776	CPH17	732	776	24 with RR
CPH23	2672	CPH23	2318	CPH23	2672	CPH23	2318	2672	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPH24	858	CPH24	866	CPH24	858	CPH24	866	866	6 with RR
CPH25	844	CPH25	864	CPH25	844	CPH25	864	864	6 with RR
CPH28	677	CPH28	675	CPH28	677	CPH28	675	677	24 with RR
CPH29	641	CPH29	611	CPH29	641	CPH29	611	641	24 with RR
CPH30	458	CPH30	512	CPH30	458	CPH30	512	512	6 with RR
CPH31	856	CPH31	881	CPH31	856	CPH31	881	881	6 with RR
CPH31A	1654	CPH31A	1327	CPH31A	1654	CPH31A	1327	1654	24 with RR
CPH32	838	CPH32	666	CPH32	838	CPH32	666	838	24 with RR
CPH32A	216	CPH32A	299	CPH32A	216	CPH32A	299	299	6 with RR
CPH32B	413	CPH32B	480	CPH32B	413	CPH32B	480	480	6 with RR
CPH33	1017	CPH33	856	CPH33	1017	CPH33	856	1017	24 with RR
CPH33B	855	CPH33B	823	CPH33B	855	CPH33B	823	855	24 with RR
CPH34	1019	CPH34	629	CPH34	1019	CPH34	629	1019	24 with RR
CPH35	557	CPH35	594	CPH35	557	CPH35	594	594	6 with RR
CPH36	464	CPH36	402	CPH36	464	CPH36	402	464	24 with RR
CPH37	606	CPH37	477	CPH37	606	CPH37	477	606	24 with RR
CPH38	1202	CPH38	1482	CPH38	1202	CPH38	1482	1482	6 with RR
CPH39	970	CPH39	1186	CPH39	970	CPH39	1186	1186	6 with RR
CPH40	634	CPH40	705	CPH40	634	CPH40	705	705	6 with RR
CPH41	336	CPH41	415	CPH41	336	CPH41	415	415	6 with RR
CPH42	360	CPH42	275	CPH42	360	CPH42	275	360	24 with RR
CPH44	530	CPH44	400	CPH44	530	CPH44	400	530	24 with RR
CPH45	955	CPH45	574	CPH45	955	CPH45	574	955	24 with RR
CPH46	495	CPH46	514	CPH46	495	CPH46	514	514	6 with RR
CPH47	483	CPH47	491	CPH47	483	CPH47	491	491	6 with RR
CPH48	306	CPH48	343	CPH48	306	CPH48	343	343	6 with RR
CPH49	384	CPH49	421	CPH49	384	CPH49	421	421	6 with RR
CPH50	414	CPH50	367	CPH50	414	CPH50	367	414	24 with RR
CPH51	368	CPH51	371	CPH51	368	CPH51	371	371	6 with RR
CPH52A	267	CPH52A	286	CPH52A	267	CPH52A	286	286	6 with RR
CPH52B	1223	CPH52B	897	CPH52B	1223	CPH52B	897	1223	24 with RR
CPH53	973	CPH53	873	CPH53	973	CPH53	873	973	24 with RR
CPH54	1144	CPH54	835	CPH54	1144	CPH54	835	1144	24 with RR
CPH55	722	CPH55	751	CPH55	703	CPH55	731	751	6 with RR
CPH56	629	CPH56	623	CPH56	616	CPH56	611	629	24 with RR
CPH57	555	CPH57	532	CPH57	547	CPH57	525	555	24 with RR
CPH58	786	CPH58	803	CPH58	786	CPH58	803	803	6 with RR
CPH59	740	CPH59	720	CPH59	740	CPH59	720	740	24 with RR
CPH60	448	CPH60	382	CPH60	448	CPH60	382	448	24 with RR
CPH61	450	CPH61	432	CPH61	450	CPH61	432	450	24 with RR
CPH62	2259	CPH62	1970	CPH62	2259	CPH62	1970	2259	24 with RR
CPH63	2213	CPH63	1780	CPH63	2213	CPH63	1780	2213	24 with RR
CPH66	1026	CPH66	929	CPH66	1026	CPH66	929	1026	24 with RR
CPH67	195	CPH67	276	CPH67	195	CPH67	276	276	6 with RR
CPH68	512	CPH68	478	CPH68	506	CPH68	472	512	24 with RR
CPH69	655	CPH69	557	CPH69	655	CPH69	557	655	24 with RR
CPH70	390	CPH70	415	CPH70	390	CPH70	415	415	6 with RR
CPH71	920	CPH71	833	CPH71	920	CPH71	833	920	24 with RR
CPH72	882	CPH72	773	CPH72	882	CPH72	773	882	24 with RR
CPH73	1486	CPH73	900	CPH73	1486	CPH73	900	1486	24 with RR
CPH74	1421	CPH74	864	CPH74	1421	CPH74	864	1421	24 with RR
CPH75	977	CPH75	793	CPH75	976	CPH75	753	977	24 with RR
CPH76	1051	CPH76	848	CPH76	1050	CPH76	830	1051	24 with RR
CPH77	738	CPH77	615	CPH77	737	CPH77	603	738	24 with RR
CPH78	1672	CPH78	791	CPH78	1672	CPH78	791	1672	24 with RR
CPH79	1608	CPH79	752	CPH79	1608	CPH79	752	1608	24 with RR
CPH80	1560	CPH80	709	CPH80	1560	CPH80	709	1560	24 with RR
CPH81	410	CPH81	560	CPH81	410	CPH81	560	560	6 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPH82	674	CPH82	465	CPH82	674	CPH82	465	674	24 with RR
CPH84	1172	CPH84	827	CPH84	1172	CPH84	827	1172	24 with RR
CPH85	1564	CPH85	1195	CPH85	1564	CPH85	1195	1564	24 with RR
CPH86	1556	CPH86	1124	CPH86	1556	CPH86	1124	1556	24 with RR
CPI04	431	CPI04	518	CPI04	431	CPI04	518	518	6 with RR
CPI05	492	CPI05	592	CPI05	492	CPI05	592	592	6 with RR
CPI06	563	CPI06	554	CPI06	563	CPI06	554	563	24 with RR
CPI07	360	CPI07	439	CPI07	360	CPI07	439	439	6 with RR
CPI08	802	CPI08	615	CPI08	802	CPI08	615	802	24 with RR
CPI09	363	CPI09	353	CPI09	363	CPI09	353	363	24 with RR
CPI10	605	CPI10	433	CPI10	605	CPI10	433	605	24 with RR
CPI11	329	CPI11	301	CPI11	329	CPI11	301	329	24 with RR
CPI12	750	CPI12	464	CPI12	750	CPI12	464	750	24 with RR
CPI13	776	CPI13	564	CPI13	776	CPI13	564	776	24 with RR
CPI14	796	CPI14	612	CPI14	796	CPI14	612	796	24 with RR
CPI15A	619	CPI15A	775	CPI15A	619	CPI15A	775	775	6 with RR
CPI17A	414	CPI17A	571	CPI17A	414	CPI17A	571	571	6 with RR
CPI18	1040	CPI18	892	CPI18	1040	CPI18	892	1040	24 with RR
CPI19	798	CPI19	687	CPI19	798	CPI19	687	798	24 with RR
CPI20	670	CPI20	574	CPI20	670	CPI20	574	670	24 with RR
CPI21	637	CPI21	497	CPI21	647	CPI21	485	647	24 Without RR
CPI22	628	CPI22	403	CPI22	628	CPI22	401	628	24 with RR
CPI25	680	CPI25	852	CPI25	680	CPI25	852	852	6 with RR
CPI26A	663	CPI26A	788	CPI26A	663	CPI26A	788	788	6 with RR
CPI27	694	CPI27	764	CPI27	694	CPI27	764	764	6 with RR
CPI28	523	CPI28	571	CPI28	523	CPI28	571	571	6 with RR
CPI29	648	CPI29	649	CPI29	648	CPI29	649	649	6 with RR
CPI30	576	CPI30	500	CPI30	576	CPI30	500	576	24 with RR
CPI31	613	CPI31	581	CPI31	613	CPI31	581	613	24 with RR
CPI32	710	CPI32	578	CPI32	710	CPI32	578	710	24 with RR
CPI33	715	CPI33	556	CPI33	715	CPI33	556	715	24 with RR
CPI34	848	CPI34	709	CPI34	848	CPI34	709	848	24 with RR
CPI35	651	CPI35	518	CPI35	651	CPI35	518	651	24 with RR
CPI36	738	CPI36	633	CPI36	738	CPI36	633	738	24 with RR
CPI37	680	CPI37	559	CPI37	680	CPI37	559	680	24 with RR
CPI39	313	CPI39	441	CPI39	313	CPI39	441	441	6 with RR
CPI40	511	CPI40	590	CPI40	511	CPI40	590	590	6 with RR
CPI41	589	CPI41	567	CPI41	589	CPI41	567	589	24 with RR
CPI42	524	CPI42	444	CPI42	524	CPI42	444	524	24 with RR
CPI43	515	CPI43	399	CPI43	515	CPI43	399	515	24 with RR
CPI44A	859	CPI44A	1026	CPI44A	859	CPI44A	1026	1026	6 with RR
CPI45	718	CPI45	822	CPI45	718	CPI45	822	822	6 with RR
CPI46	611	CPI46	661	CPI46	611	CPI46	661	661	6 with RR
CPI47	539	CPI47	573	CPI47	539	CPI47	573	573	6 with RR
CPI48	506	CPI48	489	CPI48	506	CPI48	489	506	24 with RR
CPI49	856	CPI49	584	CPI49	856	CPI49	584	856	24 with RR
CPI50	1102	CPI50	735	CPI50	1102	CPI50	735	1102	24 with RR
CPI53	573	CPI53	749	CPI53	573	CPI53	749	749	6 with RR
CPI54	443	CPI54	605	CPI54	443	CPI54	605	605	6 with RR
CPI55	333	CPI55	452	CPI55	333	CPI55	452	452	6 with RR
CPI56	545	CPI56	613	CPI56	545	CPI56	613	613	6 with RR
CPI57	317	CPI57	389	CPI57	317	CPI57	389	389	6 with RR
CPI58A	475	CPI58A	466	CPI58A	475	CPI58A	466	475	24 with RR
CPI58B	526	CPI58B	489	CPI58B	526	CPI58B	489	526	24 with RR
CPI60A	2001	CPI60A	1472	CPI60A	2001	CPI60A	1472	2001	24 with RR
CPI60B	1405	CPI60B	1132	CPI60B	1405	CPI60B	1132	1405	24 with RR
CPI60C	321	CPI60C	346	CPI60C	321	CPI60C	346	346	6 with RR
CPI63	1448	CPI63	1113	CPI63	1448	CPI63	1113	1448	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
CPI64	580	CPI64	534	CPI64	580	CPI64	534	580	24 with RR
CPI65	605	CPI65	517	CPI65	605	CPI65	517	605	24 with RR
CPI66	2290	CPI66	1829	CPI66	2290	CPI66	1829	2290	24 with RR
CPI67	1888	CPI67	1293	CPI67	1888	CPI67	1293	1888	24 with RR
CPI70	1323	CPI70	1135	CPI70	1323	CPI70	1135	1323	24 with RR
CPI72	395	CPI72	422	CPI72	395	CPI72	422	422	6 with RR
CPJ06	382	CPJ06	548	CPJ06	382	CPJ06	548	548	6 with RR
CPJ07	472	CPJ07	601	CPJ07	472	CPJ07	601	601	6 with RR
CPJ10	410	CPJ10	518	CPJ10	410	CPJ10	518	518	6 with RR
CPJ11	736	CPJ11	838	CPJ11	736	CPJ11	838	838	6 with RR
CPJ12	556	CPJ12	774	CPJ12	556	CPJ12	774	774	6 with RR
CPJ14	6068	CPJ14	4406	CPJ14	6068	CPJ14	4406	6068	24 with RR
CPJ15	675	CPJ15	648	CPJ15	675	CPJ15	648	675	24 with RR
CPJ16	1011	CPJ16	1038	CPJ16	1011	CPJ16	1038	1038	6 with RR
CPJ17	633	CPJ17	595	CPJ17	633	CPJ17	595	633	24 with RR
CPJ20	1370	CPJ20	1071	CPJ20	1370	CPJ20	1071	1370	24 with RR
CPJ21	515	CPJ21	594	CPJ21	515	CPJ21	594	594	6 with RR
CPJ22	2572	CPJ22	1991	CPJ22	2572	CPJ22	1991	2572	24 with RR
CPJ23	5931	CPJ23	4261	CPJ23	5931	CPJ23	4261	5931	24 with RR
CPJ27	1738	CPJ27	1625	CPJ27	1738	CPJ27	1625	1738	24 with RR
CPJ29A	5568	CPJ29A	4063	CPJ29A	5568	CPJ29A	4063	5568	24 with RR
CPJ33	1896	CPJ33	1791	CPJ33	1896	CPJ33	1791	1896	24 with RR
CPJ34	1918	CPJ34	1815	CPJ34	1918	CPJ34	1815	1918	24 with RR
CPJ35	2677	CPJ35	2198	CPJ35	2677	CPJ35	2198	2677	24 with RR
CPJ37	2222	CPJ37	1926	CPJ37	2222	CPJ37	1926	2222	24 with RR
CPJ39	2390	CPJ39	1901	CPJ39	2390	CPJ39	1901	2390	24 with RR
CPJ43A	5200	CPJ43A	3849	CPJ43A	5200	CPJ43A	3849	5200	24 with RR
CPJ46	930	CPJ46	1106	CPJ46	930	CPJ46	1106	1106	6 with RR
CPJ47	518	CPJ47	687	CPJ47	518	CPJ47	687	687	6 with RR
CPJ48	1472	CPJ48	1510	CPJ48	1472	CPJ48	1510	1510	6 with RR
CPJ52	237	CPJ52	332	CPJ52	237	CPJ52	332	332	6 with RR
CPX02	3454	CPX02	2848	CPX02	3454	CPX02	2848	3454	24 with RR
CPX04	1893	CPX04	1852	CPX04	1893	CPX04	1852	1893	24 with RR
CPX17	1298	CPX17	1490	CPX17	1298	CPX17	1490	1490	6 with RR
A41RIV	10916	A41RIV	1796	A41RIV	11014	A41RIV	1810	11014	24 Without RR
A42RIV	10953	A42RIV	1762	A42RIV	11062	A42RIV	1748	11062	24 Without RR
A44RIV	10980	A44RIV	1796	A44RIV	11061	A44RIV	1775	11061	24 Without RR
A46RIV	10983	A46RIV	1746	A46RIV	11025	A46RIV	1723	11025	24 Without RR
A49RIV	10929	A49RIV	1716	A49RIV	11015	A49RIV	1696	11015	24 Without RR
A51RIV	11154	A51RIV	1671	A51RIV	11234	A51RIV	1650	11234	24 Without RR
A56RIV	11234	A56RIV	1636	A56RIV	11311	A56RIV	1615	11311	24 Without RR
A57RIV	11339	A57RIV	1607	A57RIV	11432	A57RIV	1610	11432	24 Without RR
A60RIV	11238	A60RIV	1609	A60RIV	11274	A60RIV	1587	11274	24 Without RR
A62RIV	11290	A62RIV	1587	A62RIV	11341	A62RIV	1563	11341	24 Without RR
B08RIV	5907	B08RIV	1045	B08RIV	5978	B08RIV	1033	5978	24 Without RR
B12RIV	8444	B12RIV	1101	B12RIV	8569	B12RIV	1077	8569	24 Without RR
B15RIV	8876	B15RIV	1001	B15RIV	9021	B15RIV	899	9021	24 Without RR
B45RIV	9009	B45RIV	1008	B45RIV	9130	B45RIV	904	9130	24 Without RR
B46RIV	9506	B46RIV	1108	B46RIV	9617	B46RIV	1076	9617	24 Without RR
B61RIV	10149	B61RIV	1449	B61RIV	10230	B61RIV	1427	10230	24 Without RR
B62RIV	10842	B62RIV	1520	B62RIV	10951	B62RIV	1520	10951	24 Without RR
B63RIV	10870	B63RIV	1558	B63RIV	10974	B63RIV	1560	10974	24 Without RR
B64RIV	10836	B64RIV	1707	B64RIV	10936	B64RIV	1717	10936	24 Without RR
D27RIV	4756	D27RIV	1220	D27RIV	4755	D27RIV	1218	4756	24 with RR
D28RIV	5337	D28RIV	1356	D28RIV	5336	D28RIV	1354	5337	24 with RR
D29RIV	5960	D29RIV	1366	D29RIV	5960	D29RIV	1364	5960	24 with RR
D30RIV	5880	D30RIV	1338	D30RIV	5880	D30RIV	1335	5880	24 with RR
D31RIV	5846	D31RIV	1326	D31RIV	5846	D31RIV	1324	5846	24 with RR

Table 4.3.1 Existing Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	cfs	Model
D32RIV	6036	D32RIV	1308	D32RIV	6036	D32RIV	1305	6036	24 with RR
D33RIV	6223	D33RIV	1257	D33RIV	6272	D33RIV	1254	6272	24 Without RR
D39RIV	5782	D39RIV	1015	D39RIV	5829	D39RIV	1008	5829	24 Without RR
D40RIV	5789	D40RIV	1037	D40RIV	5836	D40RIV	1031	5836	24 Without RR
D41RIV	5894	D41RIV	1107	D41RIV	5941	D41RIV	1104	5941	24 Without RR
D42RIV	5962	D42RIV	1108	D42RIV	6008	D42RIV	1106	6008	24 Without RR
E41RIV	3767	E41RIV	1183	E41RIV	3820	E41RIV	1237	3820	24 Without RR
E48RIV	2259	E48RIV	877	E48RIV	3210	E48RIV	1256	3210	24 Without RR
E49RIV	2762	E49RIV	923	E49RIV	3525	E49RIV	1225	3525	24 Without RR
E51RIV	2722	E51RIV	903	E51RIV	3286	E51RIV	1107	3286	24 Without RR
F32RIV	1541	F32RIV	516	F32RIV	1468	F32RIV	553	1541	24 with RR
F33RIV	1332	F33RIV	389	F33RIV	1412	F33RIV	593	1412	24 Without RR
F34RIV	1869	F34RIV	848	F34RIV	2729	F34RIV	1237	2729	24 Without RR
F35RIV	1984	F35RIV	850	F35RIV	2809	F35RIV	1250	2809	24 Without RR
G17RIV	2746	G17RIV	910	G17RIV	3308	G17RIV	1116	3308	24 Without RR
G27RIV	2747	G27RIV	914	G27RIV	3430	G27RIV	1143	3430	24 Without RR
G28RIV	2734	G28RIV	908	G28RIV	3339	G28RIV	1122	3339	24 Without RR
G30RIV	4559	G30RIV	1561	G30RIV	4559	G30RIV	1561	4559	24 with RR
G33RIV	5858	G33RIV	1301	G33RIV	5858	G33RIV	1297	5858	24 with RR
G36RIV	6256	G36RIV	1198	G36RIV	6301	G36RIV	1202	6301	24 Without RR
G37RIV	5993	G37RIV	1157	G37RIV	6062	G37RIV	1157	6062	24 Without RR
G38RIV	5902	G38RIV	1130	G38RIV	5948	G38RIV	1131	5948	24 Without RR
G40RIV	5886	G40RIV	1109	G40RIV	5936	G40RIV	1106	5936	24 Without RR
G42RIV	5802	G42RIV	1022	G42RIV	5864	G42RIV	1014	5864	24 Without RR
H69RIV	8899	H69RIV	960	H69RIV	9022	H69RIV	873	9022	24 Without RR
H72RIV	9646	H72RIV	1065	H72RIV	9765	H72RIV	1021	9765	24 Without RR
H74RIV	10111	H74RIV	1354	H74RIV	10216	H74RIV	1319	10216	24 Without RR
H77RIV	10118	H77RIV	1398	H77RIV	10222	H77RIV	1365	10222	24 Without RR
H80RIV	10744	H80RIV	1499	H80RIV	10851	H80RIV	1478	10851	24 Without RR
H86RIV	10871	H86RIV	1729	H86RIV	10972	H86RIV	1741	10972	24 Without RR
I36RIV	10946	I36RIV	1790	I36RIV	11050	I36RIV	1769	11050	24 Without RR
I37RIV	10966	I37RIV	1788	I37RIV	11033	I37RIV	1767	11033	24 Without RR
I50RIV	10972	I50RIV	1732	I50RIV	11009	I50RIV	1711	11009	24 Without RR
I62RIV	10966	I62RIV	1731	I62RIV	11006	I62RIV	1709	11006	24 Without RR
I63RIV	11317	I63RIV	1559	I63RIV	11390	I63RIV	1537	11390	24 Without RR

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	1617	13.17	5.78	CPA03	1501	13	5.78
CPA06	432	12.67	1.52	CPA06	432	12.67	1.52
CPA07	301	12.5	0.86	CPA07	301	12.5	0.86
CPA08	923	12.83	2.77	CPA08	907	12.83	2.77
CPA10	613	12.67	4.65	CPA10	613	12.67	4.65
CPA11	834	12.67	4.5	CPA11	834	12.67	4.5
CPA14	705	12.5	3.1	CPA14	705	12.5	3.1
CPA15	619	12.67	3.19	CPA15	619	12.67	3.19
CPA16	818	12.67	3.52	CPA16	818	12.67	3.52
CPA17	455	12.67	3.03	CPA17	446	12.67	3.03
CPA18	784	15	5.88	CPA18	761	15	5.88
CPA19	551	15	5.39	CPA19	546	15	5.39
CPA19A	433	12.5	2.21	CPA19A	433	12.5	2.21
CPA20	321	12.5	1.75	CPA20	321	12.5	1.75
CPA21	728	12.67	2.52	CPA21	728	12.67	2.52
CPA22	272	12.83	0.99	CPA22	272	12.83	0.99
CPA24	781	12.67	3.86	CPA24	780	12.67	3.86
CPA26	502	13.83	3.09	CPA26	480	13.83	3.09
CPA27	928	12.67	4.74	CPA27	928	12.67	4.74
CPA27A	631	12.67	4.19	CPA27A	631	12.67	4.19
CPA29	848	12.67	5.93	CPA29	851	12.83	5.93
CPA30	1217	12.67	10.47	CPA30	1200	12.83	10.47
CPA30A	547	13.5	4.54	CPA30A	543	13.5	4.54
CPA32	844	12.67	3.07	CPA32	844	12.67	3.07
CPA32A	845	12.67	2.53	CPA32A	845	12.67	2.53
CPA33	682	12.5	6.02	CPA33	680	12.5	6.02
CPA33A	363	15.67	2.99	CPA33A	357	15.67	2.99
CPA34	388	12.33	2.57	CPA34	388	12.33	2.57
CPA35	918	12.5	6.94	CPA35	918	12.5	6.94
CPA37	1122	12.67	4.93	CPA37	1122	12.67	4.93
CPA39	629	12.33	1.08	CPA39	629	12.33	1.08
CPA41	521	12.67	1.97	CPA41	521	12.67	1.97
CPA42	607	13	1.35	CPA42	607	13	1.35
CPA43	752	12.33	1.58	CPA43	752	12.33	1.58
CPA44	646	12.67	1.95	CPA44	646	12.67	1.95
CPA45	939	13.17	5.47	CPA45	939	13.17	5.47
CPA46	248	13.17	0.63	CPA46	248	13.17	0.63
CPA47	829	12.33	7.73	CPA47	829	12.33	7.73
CPA49	1457	12.5	9.54	CPA49	1457	12.5	9.54
CPA50	1115	13.67	13.01	CPA50	1107	13.67	13.01
CPA51	1120	14	16.07	CPA51	1114	14	16.07
CPA51A	738	13	3.06	CPA51A	738	13	3.06
CPA52	1676	13	13.76	CPA52	1653	13	13.76
CPA52A	1113	13.17	10.69	CPA52A	1152	13.17	10.69
CPA54	1152	12.5	2.25	CPA54	1152	12.5	2.25
CPA55	2051	13.17	16.62	CPA55	2025	13.17	16.62
CPA55A	889	12.83	2.87	CPA55A	889	12.83	2.87
CPA56	1795	14	18.46	CPA56	1797	14	18.46
CPA59	2454	12.5	3.39	CPA59	2454	12.5	3.39
CPA60	2712	12.67	5.05	CPA60	2712	12.67	5.05
CPA63	995	15.83	12.02	CPA63	1001	15.83	12.02
CPA63A	597	12.5	5.99	CPA63A	597	12.5	5.99
CPA64	1201	13.83	6.55	CPA64	1157	13.83	6.55
CPA65	1492	13.33	6.32	CPA65	1400	13.33	6.32
CPB03	4833	13	21.96	CPB03	4833	13	21.96
CPB05	882	12.67	4.77	CPB05	882	12.67	4.77
CPB07	358	12.33	1.57	CPB07	358	12.33	1.57

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	318	13	2	CPB08	318	13	2
CPB09	4356	16	61.72	CPB09	4400	16	61.31
CPB10	644	13.83	5.9	CPB10	644	13.83	5.9
CPB11	710	12.5	6.14	CPB11	710	12.5	6.14
CPB12	4617	16	67.78	CPB12	4657	16	67.78
CPB12A	612	14.33	6.47	CPB12A	612	14.33	6.47
CPB13	2827	13.17	15.13	CPB13	2827	13.17	15.13
CPB14	1570	14	12.33	CPB14	1570	14	12.33
CPB16	905	14	6.32	CPB16	905	14	6.32
CPB18	346	12.67	1.64	CPB18	346	12.67	1.64
CPB19	374	12.67	0.88	CPB19	374	12.67	0.88
CPB21	1570	14	12.64	CPB21	1570	14	12.64
CPB24	414	12.33	0.72	CPB24	414	12.33	0.72
CPB24A	209	12.33	0.25	CPB24A	209	12.33	0.25
CPB25	422	12.33	1.65	CPB25	422	12.33	1.65
CPB26	284	13	2.01	CPB26	284	13	2.01
CPB29	512	12.5	1.23	CPB29	512	12.5	1.23
CPB33	598	13	3.08	CPB33	598	13	3.08
CPB33A	214	12.5	0.79	CPB33A	214	12.5	0.79
CPB34	344	12.33	0.51	CPB34	344	12.33	0.51
CPB35	535	12.67	2.29	CPB35	535	12.67	2.29
CPB35A	416	12.67	1.11	CPB35A	416	12.67	1.11
CPB36	208	12.33	0.47	CPB36	208	12.33	0.47
CPB37	260	12.67	1.36	CPB37	260	12.67	1.36
CPB38	796	15.67	9.08	CPB38	796	15.67	9.08
CPB39	858	14.83	8.35	CPB39	858	14.83	8.35
CPB39A	809	14.67	6.71	CPB39A	809	14.67	6.71
CPB41	457	12.5	0.82	CPB41	457	12.5	0.82
CPB43	179	12.33	0.37	CPB43	179	12.33	0.37
CPB44	297	12.5	0.55	CPB44	297	12.5	0.55
CPB45	1306	15.17	14.16	CPB45	1306	15.17	14.16
CPB46	647	12.67	2.43	CPB46	647	12.67	2.43
CPB47	573	12.5	2.49	CPB47	573	12.5	2.49
CPB48	508	12.5	2.17	CPB48	508	12.5	2.17
CPB50	378	12.5	0.72	CPB50	378	12.5	0.72
CPB54	820	15.33	8.64	CPB54	820	15.33	8.64
CPB56	249	12.5	0.75	CPB56	249	12.5	0.75
CPB57	136	13	0.52	CPB57	136	13	0.52
CPB58	387	12.5	0.99	CPB58	387	12.5	0.99
CPB59	1286	13.5	15.98	CPB59	1286	13.5	15.98
CPB60	935	15.83	18.09	CPB60	935	15.83	18.09
CPB61	832	12.33	3.23	CPB61	832	12.33	3.23
CPB65	1016	13.5	13.18	CPB65	1016	13.5	13.18
CPC06	255	12.33	0.51	CPC06	255	12.33	0.51
CPC07	1095	12.5	2.41	CPC07	1094	12.5	2.63
CPC09	124	12.33	0.43	CPC09	125	12.33	0.27
CPC10	319	12.5	1	CPC10	308	12.5	0.78
CPC12	204	12.33	0.44	CPC12	204	12.33	0.44
CPC13	369	12.5	0.73	CPC13	369	12.5	0.73
CPC14	181	12.33	0.77	CPC14	157	12.33	0.35
CPC15	118	12.33	0.53	CPC15	118	12.33	0.24
CPC16	217	12.5	0.91	CPC16	217	12.5	0.51
CPC17	205	12.33	0.84	CPC17	205	12.33	0.42
CPC18	115	12.17	0.72	CPC18	115	12.17	0.33
CPC19	618	12.67	3.39	CPC19	618	12.67	2.08
CPC20	455	12.5	3.26	CPC20	349	12.5	1.68
CPC22	935	12.33	1.69	CPC22	935	12.33	1.67

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	1073	12.33	1.85				
CPC25	90	12.17	0.08				
CPC26	90	12.33	0.79				
CPC27	439	12.83	2.82	CPC27	324	12.83	1.4
CPC28	319	12.5	2.78				
CPC29	455	12.33	3.95	CPC29	453	12.33	3.18
CPC30	445	12.83	1.99	CPC30	302	12.33	1.11
CPC31	158	12.67	0.65	CPC31	137	12.83	0.48
CPC33	7530	13.33	46.18	CPC33	7545	13.33	46.18
CPC33A	624	13.17	2.69	CPC33A	591	12.83	3.46
CPC33B	687	13.67	6.4	CPC33B	664	13.17	6.31
CPC33C	887	12.83	4.43	CPC33C	630	12.67	3.76
CPC33D	1122	13.33	10.83	CPC33D	1049	13.17	10.07
CPC33E	1313	14.17	13.51	CPC33E	1244	13.83	13.53
CPC33F	1260	14.5	13.66	CPC33F	1212	14.17	13.66
CPC34	5083	14.83	52.84	CPC34	5152	14.83	52.84
CPC34A	5094	14.83	47.04	CPC34A	5157	14.83	47.04
CPC36	4863	15	55.93	CPC36	4915	15	55.93
CPC37	832	12.83	2.11	CPC37	832	12.83	2.11
CPC38	362	12.67	0.81	CPC38	362	12.67	0.81
CPC42	137	12.33	0.31	CPC42	137	12.33	0.31
CPC43	161	12.33	0.31	CPC43	161	12.33	0.31
CPC44	267	12.33	0.48	CPC44	267	12.33	0.48
CPC45	155	12.33	0.25	CPC45	155	12.33	0.25
CPC46	198	12.5	0.37	CPC46	198	12.5	0.37
CPC47	4498	15.67	61.04	CPC47	4547	15.67	61.04
CPC47A	665	12.67	2.57	CPC47A	665	12.67	2.57
CPC48	4492	15.5	59.14	CPC48	4544	15.5	58.48
CPC48A	663	13.17	2.37	CPC48A	663	13.17	2.37
CPC49	4663	15.17	56.11	CPC49	4707	15.17	56.11
CPC52	186	13.17	0.77	CPC52	186	13.17	0.77
CPD01	1107	12.67	3.17	CPD01	1107	12.67	3.17
CPD03	517	12.33	0.77	CPD03	517	12.33	0.77
CPD04	223	12.5	0.51	CPD04	223	12.5	0.51
CPD05	996	13.17	4.18	CPD05	996	13.17	4.18
CPD08	249	12.83	0.73	CPD08	249	12.83	0.73
CPD09	368	12.5	1.75	CPD09	368	12.5	1.75
CPD10	631	12.67	2.95	CPD10	631	12.67	2.9
CPD11	295	12.5	0.56	CPD11	295	12.5	0.56
CPD12	111	12.33	0.14				
CPD13	805	13.5	4.58	CPD13	805	13.5	4.58
CPD15	487	12.5	0.95	CPD15	487	12.5	0.95
CPD17	423	12.67	1.53	CPD17	424	12.67	1.53
CPD18	254	12.5	1.2				
CPD19	186	12.33	0.52				
CPD20	158	12.33	0.59				
CPD21	69	12.17	0.09				
CPD22	2303	13.33	16.27	CPD22	2492	13.33	16.24
CPD23	432	12.67	3.1	CPD23	560	12.67	2.67
CPD24	712	12.5	3.57	CPD24	818	12.5	3.35
CPD24A	295	12.5	0.47	CPD24A	335	12.5	0.68
CPD25	675	12.67	5.54	CPD25	677	12.67	4.87
CPD26	819	12.83	7.09	CPD26	820	12.83	6.42
CPD27	676	13.17	7.35	CPD27	677	13.17	6.68
CPD33	1774	14	16.92	CPD33	1957	14	16.89
CPD35	715	12.67	1.43	CPD35	715	12.67	1.43
CPD37	597	13.17	1.71	CPD37	597	13.17	1.71

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	619	13	2.07	CPD38	619	13	2.07
CPD39	542	12.67	2.36	CPD39	542	12.67	2.36
CPD42	746	12.5	1.41	CPD42	746	12.5	1.41
CPD46	81	12.17	0.15				
CPD47	43	12.17	0.16				
CPE02	2677	12.67	10.91	CPE02	2677	12.67	10.91
CPE03	1978	13.33	12.93	CPE03	1978	13.33	12.93
CPE05	1125	13.33	8.46	CPE05	1125	13.33	8.46
CPE10	123	12.33	0.27	CPE10	123	12.33	0.27
CPE12	621	12.67	1.93	CPE12	621	12.67	1.93
CPE13	761	12.67	1.93	CPE13	761	12.67	1.86
CPE15	864	12.5	2.81	CPE15	864	12.5	2.81
CPE16	1848	13.67	13.72	CPE16	1848	13.67	13.72
CPE19	1396	14	10.48	CPE19	1396	14	10.48
CPE20	360	16.5	4.58	CPE20	360	16.5	4.58
CPE22	600	12.67	4.1	CPE22	601	12.67	4.1
CPE23	543	13.17	6.28	CPE23	543	13.17	6.28
CPE24	537	13.17	4.7	CPE24	537	13.17	4.7
CPE25	676	12.83	21.77	CPE25	732	12.83	9.15
CPE29	753	12.67	8.41	CPE29	753	12.67	8.41
CPE29A	495	12.5	3.83	CPE29A	495	12.5	3.83
CPE30	659	16.5	8.42	CPE30	658	16.5	7.97
CPE31	278	12.5	1.28	CPE31	278	12.5	1.11
CPE32	418	13.33	1.76	CPE32	418	13.33	1.76
CPE33	49	12.17	0.07				
CPE34	519	13.33	6.55	CPE34	519	13.33	6.55
CPE35	396	12.33	0.69	CPE35	396	12.33	0.69
CPE36	176	13	6.44	CPE36	173	12.33	0.35
CPE37	418	13.5	4.28	CPE37	422	13.5	4.28
CPE38	953	13.17	19.72	CPE38	953	13.17	19.72
CPE41	465	12.67	3.37	CPE41	465	12.67	3.52
CPE42	766	12.5	2.7	CPE42	766	12.5	2.85
CPE43	599	12.5	1.55	CPE43	599	12.5	1.82
CPE44	1199	17.33	16.15	CPE44	1163	17.17	30.15
CPE45	562	17.33	16.34	CPE45	679	13.17	9.82
CPE46	299	12.17	2.75	CPE46	306	12.17	0.54
CPE47	744	12.33	19.59	CPE47	795	12.33	10.86
CPE48	881	12.5	20.45	CPE48	934	12.5	11.72
CPE49	1225	17.83	19.71	CPE49	1161	17.67	31.23
CPE50	1234	17.5	18.78	CPE50	1166	17.33	30.84
CPE53	95	12.33	0.71				
CPE54	254	12.5	6.4	CPE54	160	12.33	0.31
CPF01	698	12.67	2.19	CPF01	698	12.67	2.19
CPF02	418	12.83	1.02	CPF02	418	12.83	1.02
CPF04	690	12.83	4.82	CPF04	690	12.83	4.82
CPF05	1146	12.83	11.01	CPF05	1146	12.83	11.01
CPF06	656	12.33	2.63	CPF06	656	12.33	2.63
CPF08	1635	12.67	15.56	CPF08	1634	12.67	15.56
CPF09	1245	13	18.25	CPF09	1244	13	18.25
CPF12	272	12.33	0.44	CPF12	272	12.33	0.44
CPF15	571	12.5	1.74	CPF15	571	12.5	1.74
CPF16	306	12.83	1.02	CPF16	306	12.83	1.02
CPF17	743	12.5	1.73	CPF17	743	12.5	1.73
CPF18	627	13	2.55	CPF18	627	13	2.55
CPF19	1114	13.67	19.1	CPF19	1113	13.67	19.1
CPF20	627	15.67	16.52	CPF20	608	12.67	10.16
CPF21	578	14.33	11.12	CPF21	577	14.33	11.12

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	354	13.67	2.07	CPF22	354	13.67	2.07
CPF24	608	12.5	2.93	CPF24	608	12.5	2.93
CPF25	1605	12.83	7.11	CPF25	1409	12.83	5.36
CPF26	400	12.5	4.38				
CPF27	2211	13	9.63	CPF27	864	13.33	4.27
CPF28	459	12.5	1.26	CPF28	459	12.5	1.26
CPF29	664	14.83	13	CPF29	662	14.83	13
CPF31	1269	12.5	18.99	CPF31	1324	12.5	12.62
CPF32	1161	12.67	7.08	CPF32	638	15.33	13.45
CPF33	454	12.5	0.95	CPF33	453	12.5	1.12
CPF34	1221	14.17	18.09	CPF34	1784	13.67	10.86
CPF35	494	12.5	3.29	CPF35	493	12.5	1.29
CPF36	211	12.33	0.17				
CPG01	964	12.67	3.49	CPG01	964	12.67	3.49
CPG03	3484	12.5	4.52	CPG03	3484	12.5	4.52
CPG04	2997	12.5	5.34	CPG04	2997	12.5	5.34
CPG06	2274	12.33	2.88	CPG06	2274	12.33	2.88
CPG07	1130	12.5	2.79	CPG07	1130	12.5	2.79
CPG09	776	14.17	5.24	CPG09	776	14.17	5.24
CPG10	1174	12.67	3.93	CPG10	1174	12.67	3.93
CPG11	552	15.83	9.78	CPG11	625	15.33	9.78
CPG13	356	12.5	1.3	CPG13	356	12.5	1.3
CPG14	147	12.33	0.35	CPG14	147	12.33	0.35
CPG22	607	12.5	1.8	CPG22	607	12.5	1.8
CPG27	804	12.5	1.51	CPG27	804	12.5	1.51
CPG31	1944	13.17	9.35	CPG31	1965	13.17	9.35
CPG32	864	12.5	1.71	CPG32	864	12.5	1.71
CPG34	475	12.33	1.85	CPG34	475	12.33	1.85
CPG34A	218	12.33	0.56	CPG34A	218	12.33	0.56
CPG35	423	12.5	2.38	CPG35	423	12.5	2.38
CPG39	385	12.83	1.79	CPG39	385	12.83	1.79
CPG40	921	12.67	6.9	CPG40	921	12.67	6.9
CPG42	429	12.67	5.09	CPG42	429	12.67	5.09
CPG43	1456	14.17	11.48	CPG43	1463	14.17	11.48
CPG45	2323	12.83	9.17	CPG45	2357	12.83	9.17
CPG46	1125	12.5	3	CPG46	1125	12.5	3
CPG47	599	12.5	1.5	CPG47	599	12.5	1.5
CPH01	2097	12.33	3.2	CPH01	2097	12.33	3.2
CPH07	1009	12.5	2.35	CPH07	1009	12.5	2.35
CPH10	1407	12.33	1.63	CPH10	1407	12.33	1.63
CPH13	748	12.83	2.88	CPH13	748	12.83	2.88
CPH14	867	12.67	1.65	CPH14	867	12.67	1.65
CPH15	1086	12.33	1.29	CPH15	1086	12.33	1.29
CPH15A	962	12.33	0.77	CPH15A	962	12.33	0.77
CPH17	776	12.5	1.64	CPH17	776	12.5	1.64
CPH23	2672	12.67	4.35	CPH23	2672	12.67	4.35
CPH24	858	12.83	1.98	CPH24	858	12.83	1.98
CPH25	844	13	1.95	CPH25	844	13	1.95
CPH28	677	12.33	1.24	CPH28	677	12.33	1.24
CPH29	641	12.67	1.48	CPH29	641	12.67	1.48
CPH30	458	12.33	0.92	CPH30	458	12.33	0.92
CPH31	856	12.5	1.59	CPH31	856	12.5	1.59
CPH31A	1654	12.33	2.57	CPH31A	1654	12.33	2.57
CPH32	838	12.5	2.04	CPH32	838	12.5	2.04
CPH32A	216	12.5	0.65	CPH32A	216	12.5	0.65
CPH32B	413	12.33	0.67	CPH32B	413	12.33	0.67
CPH33	1017	12.67	2.83	CPH33	1017	12.67	2.83

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	855	13	2.06	CPH33B	855	13	2.06
CPH34	1019	13	4.44	CPH34	1019	13	4.44
CPH35	557	13	1.28	CPH35	557	13	1.28
CPH36	464	12.33	1.63	CPH36	464	12.33	1.63
CPH37	606	12.33	3	CPH37	606	12.33	3
CPH38	1202	12.67	1.01	CPH38	1202	12.67	1.01
CPH39	970	13	1.39	CPH39	970	13	1.39
CPH40	634	13.5	1.44	CPH40	634	13.5	1.44
CPH41	336	12.33	0.72	CPH41	336	12.33	0.72
CPH42	360	12.33	3.45	CPH42	360	12.33	3.45
CPH44	530	12.33	2.19	CPH44	530	12.33	2.19
CPH45	955	13.33	4.72	CPH45	955	13.33	4.72
CPH46	495	13.17	1.73	CPH46	495	13.17	1.73
CPH47	483	13.17	1.8	CPH47	483	13.17	1.8
CPH48	306	12.33	0.91	CPH48	306	12.33	0.91
CPH49	384	12.5	1.01	CPH49	384	12.5	1.01
CPH50	414	14.83	2.54	CPH50	414	14.83	2.54
CPH51	368	12.33	1.22	CPH51	368	12.33	1.22
CPH52A	267	13	1.45	CPH52A	267	13	1.45
CPH52B	1223	14	7.03	CPH52B	1223	14	7.03
CPH53	973	14	4.1	CPH53	973	14	4.1
CPH54	1144	14.5	7.24	CPH54	1144	14.5	7.24
CPH55	722	13.5	2.32	CPH55	703	13.5	2.32
CPH56	629	14.33	2.71	CPH56	616	14.33	2.71
CPH57	555	15.17	3.14	CPH57	547	15.17	3.14
CPH58	786	13.33	2.25	CPH58	786	13.33	2.25
CPH59	740	14	3.39	CPH59	740	14	3.39
CPH60	448	12.5	1.74	CPH60	448	12.5	1.74
CPH61	450	15.17	2.68	CPH61	450	15.17	2.68
CPH62	2259	13.33	5.23	CPH62	2259	13.33	5.23
CPH63	2213	13.67	6.64	CPH63	2213	13.67	6.64
CPH66	1026	14.5	3.64	CPH66	1026	14.5	3.64
CPH67	195	13	0.6	CPH67	195	13	0.6
CPH68	512	16	3.47	CPH68	506	16	3.47
CPH69	655	16	4.94	CPH69	655	16	4.94
CPH70	390	12.5	1.1	CPH70	390	12.5	1.1
CPH71	920	15.33	4.29	CPH71	920	15.33	4.29
CPH72	882	15.67	4.71	CPH72	882	15.67	4.71
CPH73	1486	14.83	11.08	CPH73	1486	14.83	11.08
CPH74	1421	15.33	11.88	CPH74	1421	15.33	11.88
CPH75	977	12.17	2.27	CPH75	976	12.17	2.55
CPH76	1051	12.5	3.03	CPH76	1050	12.5	3.3
CPH77	738	12.83	3.3	CPH77	737	12.83	3.57
CPH78	1672	13.67	9.12	CPH78	1672	13.67	9.12
CPH79	1608	13.83	9.62	CPH79	1608	13.83	9.62
CPH80	1560	14.17	10.08	CPH80	1560	14.17	10.08
CPH81	410	12.17	0.46	CPH81	410	12.17	0.46
CPH82	674	12.17	4.41	CPH82	674	12.17	4.41
CPH84	1172	12.17	2.91	CPH84	1172	12.17	2.91
CPH85	1564	12.33	3.89	CPH85	1564	12.33	3.89
CPH86	1556	12.33	4.97	CPH86	1556	12.33	4.97
CPI04	431	12.33	0.78	CPI04	431	12.33	0.78
CPI05	492	12.33	0.79	CPI05	492	12.33	0.79
CPI06	563	12.33	1.28	CPI06	563	12.33	1.28
CPI07	360	12.83	0.99	CPI07	360	12.83	0.99
CPI08	802	12.33	2.07	CPI08	802	12.33	2.07
CPI09	363	12.33	1.3	CPI09	363	12.33	1.3

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	605	12.33	2.57	CPI10	605	12.33	2.57
CPI11	329	12.33	1.59	CPI11	329	12.33	1.59
CPI12	750	12.83	4.66	CPI12	750	12.83	4.66
CPI13	776	12.33	5.18	CPI13	776	12.33	5.18
CPI14	796	12.17	5.42	CPI14	796	12.17	5.42
CPI15A	619	12.33	0.73	CPI15A	619	12.33	0.73
CPI17A	414	12.17	0.36	CPI17A	414	12.17	0.36
CPI18	1040	12.33	2.24	CPI18	1040	12.33	2.24
CPI19	798	12.67	2.53	CPI19	798	12.67	2.53
CPI20	670	13.5	3.15	CPI20	670	13.5	3.15
CPI21	637	13.83	3.62	CPI21	647	12.33	3.62
CPI22	628	12.17	4	CPI22	628	12.17	4
CPI25	680	12.33	0.73	CPI25	680	12.33	0.73
CPI26A	663	12.33	0.81	CPI26A	663	12.33	0.81
CPI27	694	12.33	1.13	CPI27	694	12.33	1.13
CPI28	523	12.33	1.26	CPI28	523	12.33	1.26
CPI29	648	12.33	1.51	CPI29	648	12.33	1.51
CPI30	576	12.33	1.68	CPI30	576	12.33	1.68
CPI31	613	12.33	1.87	CPI31	613	12.33	1.87
CPI32	710	12.17	2.18	CPI32	710	12.17	2.18
CPI33	715	12.17	2.37	CPI33	715	12.17	2.37
CPI34	848	12.67	2.69	CPI34	848	12.67	2.69
CPI35	651	12.33	2.88	CPI35	651	12.33	2.88
CPI36	738	12.83	2.89	CPI36	738	12.83	2.89
CPI37	680	12.17	3.29	CPI37	680	12.17	3.29
CPI39	313	12.33	0.47	CPI39	313	12.33	0.47
CPI40	511	12.33	0.87	CPI40	511	12.33	0.87
CPI41	589	12.33	1.35	CPI41	589	12.33	1.35
CPI42	524	12.33	1.77	CPI42	524	12.33	1.77
CPI43	515	12.33	2.2	CPI43	515	12.33	2.2
CPI44A	859	12.33	0.84	CPI44A	859	12.33	0.84
CPI45	718	12.33	1.06	CPI45	718	12.33	1.06
CPI46	611	12.33	1.52	CPI46	611	12.33	1.52
CPI47	539	13	1.87	CPI47	539	13	1.87
CPI48	506	13.33	2.21	CPI48	506	13.33	2.21
CPI49	856	13.5	4.79	CPI49	856	13.5	4.79
CPI50	1102	12.17	5.64	CPI50	1102	12.17	5.64
CPI53	573	12.33	0.66	CPI53	573	12.33	0.66
CPI54	443	12.17	0.61	CPI54	443	12.17	0.61
CPI55	333	12.33	0.91	CPI55	333	12.33	0.91
CPI56	545	12.33	1.04	CPI56	545	12.33	1.04
CPI57	317	12.83	1.1	CPI57	317	12.83	1.1
CPI58A	475	12.67	1.79	CPI58A	475	12.67	1.79
CPI58B	526	12.33	1.63	CPI58B	526	12.33	1.63
CPI60A	2001	12.33	5.12	CPI60A	2001	12.33	5.12
CPI60B	1405	12.33	2.75	CPI60B	1405	12.33	2.75
CPI60C	321	12.33	1.57	CPI60C	321	12.33	1.57
CPI63	1448	12.5	8.54	CPI63	1448	12.5	8.54
CPI64	580	12.33	2.06	CPI64	580	12.33	2.06
CPI65	605	12.33	2.79	CPI65	605	12.33	2.79
CPI66	2290	12.5	6.03	CPI66	2290	12.5	6.03
CPI67	1888	12.33	7.46	CPI67	1888	12.33	7.46
CPI70	1323	12.33	8.25	CPI70	1323	12.33	8.25
CPI72	395	12.33	1.3	CPI72	395	12.33	1.3
CPJ06	382	12.17	0.52	CPJ06	382	12.17	0.52
CPJ07	472	12.33	0.69	CPJ07	472	12.33	0.69
CPJ10	410	12.33	0.81	CPJ10	410	12.33	0.81

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	736	12.33	0.94	CPJ11	736	12.33	0.94
CPJ12	556	12.33	0.51	CPJ12	556	12.33	0.51
CPJ14	6068	12.67	9.83	CPJ14	6068	12.67	9.83
CPJ15	675	12.33	1.39	CPJ15	675	12.33	1.39
CPJ16	1011	12.33	1.21	CPJ16	1011	12.33	1.21
CPJ17	633	13	1.89	CPJ17	633	13	1.89
CPJ20	1370	12.83	5.2	CPJ20	1370	12.83	5.2
CPJ21	515	12.83	1.11	CPJ21	515	12.83	1.11
CPJ22	2572	12.67	7.81	CPJ22	2572	12.67	7.81
CPJ23	5931	12.83	10.43	CPJ23	5931	12.83	10.43
CPJ27	1738	12.67	2.37	CPJ27	1738	12.67	2.37
CPJ29A	5568	13	12.35	CPJ29A	5568	13	12.35
CPJ33	1896	12.33	1.85	CPJ33	1896	12.33	1.85
CPJ34	1918	12.33	2.31	CPJ34	1918	12.33	2.31
CPJ35	2677	12.33	2.97	CPJ35	2677	12.33	2.97
CPJ37	2222	12.67	3.18	CPJ37	2222	12.67	3.18
CPJ39	2390	13.17	9.76	CPJ39	2390	13.17	9.76
CPJ43A	5200	13.17	12.95	CPJ43A	5200	13.17	12.95
CPJ46	930	12.5	0.9	CPJ46	930	12.5	0.9
CPJ47	518	12.33	0.51	CPJ47	518	12.33	0.51
CPJ48	1472	12.5	1.65	CPJ48	1472	12.5	1.65
CPJ52	237	12.33	0.35	CPJ52	237	12.33	0.35
CPX02	3454	12.33	3.01	CPX02	3454	12.33	3.01
CPX04	1893	12.33	1.97	CPX04	1893	12.33	1.97
CPX17	1298	12.17	0.98	CPX17	1298	12.17	0.98
A41RIV	10916	17.5	335.51	A41RIV	11014	17.5	335.51
A42RIV	10953	17.67	340.86	A42RIV	11062	17.83	340.86
A44RIV	10980	18	342.81	A44RIV	11061	18	342.81
A46RIV	10983	18.5	364	A46RIV	11025	18.5	364
A49RIV	10929	19.17	377.94	A49RIV	11015	19.33	377.94
A51RIV	11154	19.33	388.64	A51RIV	11234	19.33	388.64
A56RIV	11234	19.33	404.96	A56RIV	11311	19.33	404.96
A57RIV	11339	19.67	414.97	A57RIV	11432	19.67	414.97
A60RIV	11238	20	420.03	A60RIV	11274	20	420.03
A62RIV	11290	20.17	422.19	A62RIV	11341	20.17	422.19
B08RIV	5907	14.83	174.26	B08RIV	5978	14.83	174.26
B12RIV	8444	15.83	262.59	B12RIV	8569	16	262.59
B15RIV	8876	16.17	267.64	B15RIV	9021	16.17	267.64
B45RIV	9009	16.33	282.17	B45RIV	9130	16.33	282.17
B46RIV	9506	16.83	280.17	B46RIV	9617	16.83	280.17
B61RIV	10149	17	296.93	B61RIV	10230	17	296.93
B62RIV	10842	17.17	321.9	B62RIV	10951	17	321.9
B63RIV	10870	17.17	322.12	B63RIV	10974	17.17	322.12
B64RIV	10836	17.33	321.98	B64RIV	10936	17.33	321.98
D27RIV	4756	13	123.22	D27RIV	4755	13	123.22
D28RIV	5337	13	124.9	D28RIV	5336	13	124.9
D29RIV	5960	13	128.41	D29RIV	5960	13	128.41
D30RIV	5880	13	129.98	D30RIV	5880	13	129.98
D31RIV	5846	13.17	130.65	D31RIV	5846	13.17	130.65
D32RIV	6036	13.17	133.26	D32RIV	6036	13.17	133.26
D33RIV	6223	13.5	151.28	D33RIV	6272	13.5	151.28
D39RIV	5782	14.5	171.57	D39RIV	5829	14.5	171.57
D40RIV	5789	14.33	169.2	D40RIV	5836	14.33	169.2
D41RIV	5894	14.17	157.27	D41RIV	5941	14.17	157.27
D42RIV	5962	14	156.97	D42RIV	6008	14.17	156.97
E41RIV	3767	12.5	111.17	E41RIV	3820	12.5	98.07
E48RIV	2259	14	63.76	E48RIV	3210	14	58.43

Table 4.3.2 Existing Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	2762	14.33	86.19	E49RIV	3525	14.17	86.19
E51RIV	2722	14.83	89.48	E51RIV	3286	14.83	89.48
F32RIV	1541	12.67	27.84	F32RIV	1468	12.67	27.84
F33RIV	1332	12.83	28.79	F33RIV	1412	12.83	28.81
F34RIV	1869	13	40.15	F34RIV	2729	13.67	40.15
F35RIV	1984	12.83	42.15	F35RIV	2809	13.83	42.15
G17RIV	2746	14.83	90.3	G17RIV	3308	14.83	90.3
G27RIV	2747	14.33	87.92	G27RIV	3430	14.33	87.92
G28RIV	2734	14.67	88.23	G28RIV	3339	14.67	88.23
G30RIV	4559	12.67	103.15	G30RIV	4559	12.67	103.15
G33RIV	5858	13.17	131.39	G33RIV	5858	13.17	131.39
G36RIV	6256	13.5	152.54	G36RIV	6301	13.5	152.54
G37RIV	5993	13.83	153.28	G37RIV	6062	13.83	153.28
G38RIV	5902	13.83	154.8	G38RIV	5948	13.83	154.8
G40RIV	5886	14.17	168.55	G40RIV	5936	14.17	168.55
G42RIV	5802	14.67	172.26	G42RIV	5864	14.67	172.26
H69RIV	8899	16	265.9	H69RIV	9022	16	265.9
H72RIV	9646	16.33	277.74	H72RIV	9765	16.33	277.74
H74RIV	10111	16.67	290.02	H74RIV	10216	16.67	290.02
H77RIV	10118	16.83	294.03	H77RIV	10222	16.83	294.03
H80RIV	10744	17	316.49	H80RIV	10851	17	316.49
H86RIV	10871	17.33	328.05	H86RIV	10972	17.33	328.05
I36RIV	10946	18.17	345.69	I36RIV	11050	18.17	345.69
I37RIV	10966	18.33	363.37	I37RIV	11033	18.33	363.37
I50RIV	10972	18.67	369.64	I50RIV	11009	18.67	369.64
I62RIV	10966	18.83	370.07	I62RIV	11006	18.83	370.07
I63RIV	11317	19.5	413.5	I63RIV	11390	19.5	413.5

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	265	13.17	5.78	CPA03	246	13.17	5.78
CPA06	39	12.67	1.52	CPA06	39	12.67	1.52
CPA07	22	12.5	0.86	CPA07	22	12.5	0.86
CPA08	128	12.83	2.77	CPA08	124	12.83	2.77
CPA10	222	12.67	4.65	CPA10	222	12.67	4.65
CPA11	150	12.67	4.5	CPA11	150	12.67	4.5
CPA14	262	12.5	3.1	CPA14	262	12.5	3.1
CPA15	231	12.67	3.19	CPA15	231	12.67	3.19
CPA16	319	12.67	3.52	CPA16	319	12.67	3.52
CPA17	186	12.67	3.03	CPA17	186	12.67	3.03
CPA18	220	12.67	5.88	CPA18	220	12.67	5.88
CPA19	176	12.5	5.39	CPA19	176	12.5	5.39
CPA19A	178	12.5	2.21	CPA19A	178	12.5	2.21
CPA20	127	12.5	1.75	CPA20	127	12.5	1.75
CPA21	265	12.67	2.52	CPA21	265	12.67	2.52
CPA22	73	12.83	0.99	CPA22	73	12.83	0.99
CPA24	126	12.83	3.86	CPA24	126	12.83	3.86
CPA26	101	12.5	3.09	CPA26	100	12.5	3.09
CPA27	204	12.67	4.74	CPA27	204	12.67	4.74
CPA27A	162	12.67	4.19	CPA27A	162	12.67	4.19
CPA29	105	13.17	5.93	CPA29	121	13.33	5.93
CPA30	190	12.67	10.47	CPA30	174	12.67	10.47
CPA30A	101	12.67	4.54	CPA30A	101	12.67	4.54
CPA32	330	12.67	3.07	CPA32	330	12.67	3.07
CPA32A	331	12.67	2.53	CPA32A	331	12.67	2.53
CPA33	270	12.5	6.02	CPA33	270	12.5	6.02
CPA33A	121	12.5	2.99	CPA33A	121	12.5	2.99
CPA34	157	12.5	2.57	CPA34	157	12.5	2.57
CPA35	321	12.5	6.94	CPA35	321	12.5	6.94
CPA37	404	12.67	4.93	CPA37	404	12.67	4.93
CPA39	333	12.33	1.08	CPA39	333	12.33	1.08
CPA41	200	12.67	1.97	CPA41	200	12.67	1.97
CPA42	243	12.5	1.35	CPA42	243	12.5	1.35
CPA43	353	12.33	1.58	CPA43	353	12.33	1.58
CPA44	259	12.17	1.95	CPA44	259	12.17	1.95
CPA45	295	12.33	5.47	CPA45	295	12.33	5.47
CPA46	117	12.33	0.63	CPA46	117	12.33	0.63
CPA47	374	12.33	7.73	CPA47	374	12.33	7.73
CPA49	580	12.67	9.54	CPA49	580	12.67	9.54
CPA50	298	13.83	13.01	CPA50	296	13.83	13.01
CPA51	285	14.5	16.07	CPA51	283	14.5	16.07
CPA51A	275	13	3.06	CPA51A	275	13	3.06
CPA52	350	13	13.76	CPA52	338	13	13.76
CPA52A	152	13.33	10.69	CPA52A	161	13.67	10.69
CPA54	238	12.5	2.25	CPA54	238	12.5	2.25
CPA55	411	13.17	16.62	CPA55	403	13.17	16.62
CPA55A	190	12.5	2.87	CPA55A	190	12.5	2.87
CPA56	493	12.67	18.46	CPA56	493	12.67	18.46
CPA59	1032	12.5	3.39	CPA59	1032	12.5	3.39
CPA60	1050	12.67	5.05	CPA60	1050	12.67	5.05
CPA63	312	12.5	12.02	CPA63	312	12.5	12.02
CPA63A	245	12.5	5.99	CPA63A	245	12.5	5.99
CPA64	124	14.5	6.55	CPA64	122	14.5	6.55
CPA65	202	13.67	6.32	CPA65	194	13.67	6.32
CPB03	581	13	21.96	CPB03	581	13	21.96
CPB05	273	12.67	4.77	CPB05	273	12.67	4.77
CPB07	159	12.33	1.57	CPB07	159	12.33	1.57

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	85	13.5	2	CPB08	85	13.5	2
CPB09	588	16.17	61.72	CPB09	589	16.17	61.31
CPB10	192	12.5	5.9	CPB10	192	12.5	5.9
CPB11	277	12.5	6.14	CPB11	277	12.5	6.14
CPB12	604	16.33	67.78	CPB12	605	16.33	67.78
CPB12A	123	12.67	6.47	CPB12A	123	12.67	6.47
CPB13	373	13.33	15.13	CPB13	373	13.33	15.13
CPB14	127	14.5	12.33	CPB14	127	14.5	12.33
CPB16	178	13.83	6.32	CPB16	178	13.83	6.32
CPB18	87	12.67	1.64	CPB18	87	12.67	1.64
CPB19	108	12.67	0.88	CPB19	108	12.67	0.88
CPB21	183	12.5	12.64	CPB21	183	12.5	12.64
CPB24	110	12.33	0.72	CPB24	110	12.33	0.72
CPB24A	44	12.33	0.25	CPB24A	44	12.33	0.25
CPB25	77	12.33	1.65	CPB25	77	12.33	1.65
CPB26	40	12.5	2.01	CPB26	40	12.5	2.01
CPB29	83	12.5	1.23	CPB29	83	12.5	1.23
CPB33	53	13.17	3.08	CPB33	53	13.17	3.08
CPB33A	40	12.5	0.79	CPB33A	40	12.5	0.79
CPB34	46	12.33	0.51	CPB34	46	12.33	0.51
CPB35	48	12.5	2.29	CPB35	48	12.5	2.29
CPB35A	34	12.5	1.11	CPB35A	34	12.5	1.11
CPB36	68	12.33	0.47	CPB36	68	12.33	0.47
CPB37	47	12.67	1.36	CPB37	47	12.67	1.36
CPB38	155	12.67	9.08	CPB38	155	12.67	9.08
CPB39	157	14.5	8.35	CPB39	157	14.5	8.35
CPB39A	158	14.5	6.71	CPB39A	158	14.5	6.71
CPB41	135	12.5	0.82	CPB41	135	12.5	0.82
CPB43	63	12.33	0.37	CPB43	63	12.33	0.37
CPB44	96	12.5	0.55	CPB44	96	12.5	0.55
CPB45	265	12.67	14.16	CPB45	265	12.67	14.16
CPB46	206	12.67	2.43	CPB46	206	12.67	2.43
CPB47	225	12.5	2.49	CPB47	225	12.5	2.49
CPB48	185	12.5	2.17	CPB48	185	12.5	2.17
CPB50	137	12.5	0.72	CPB50	137	12.5	0.72
CPB54	144	15	8.64	CPB54	144	15	8.64
CPB56	67	12.5	0.75	CPB56	67	12.5	0.75
CPB57	33	12.33	0.52	CPB57	33	12.33	0.52
CPB58	117	12.5	0.99	CPB58	117	12.5	0.99
CPB59	298	12.33	15.98	CPB59	298	12.33	15.98
CPB60	141	16.83	18.09	CPB60	141	16.83	18.09
CPB61	406	12.33	3.23	CPB61	406	12.33	3.23
CPB65	157	12.83	13.18	CPB65	157	12.83	13.18
CPC06	42	12.33	0.51	CPC06	42	12.33	0.51
CPC07	135	12.5	2.41	CPC07	135	12.5	2.63
CPC09	18	12.33	0.43	CPC09	18	12.33	0.27
CPC10	53	12.5	1	CPC10	53	12.5	0.78
CPC12	26	12.33	0.44	CPC12	26	12.33	0.44
CPC13	64	12.5	0.73	CPC13	64	12.5	0.73
CPC14	24	12.33	0.77	CPC14	25	12.33	0.35
CPC15	40	12.33	0.53	CPC15	40	12.33	0.24
CPC16	30	12.5	0.91	CPC16	30	12.5	0.51
CPC17	49	12.33	0.84	CPC17	49	12.33	0.42
CPC18	32	12.17	0.72	CPC18	32	12.17	0.33
CPC19	89	12.33	3.39	CPC19	89	12.33	2.08
CPC20	56	12.5	3.26	CPC20	56	12.5	1.68
CPC22	118	12.33	1.69	CPC22	118	12.33	1.67

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	144	12.33	1.85				
CPC25	18	12.17	0.08				
CPC26	16	12.33	0.79				
CPC27	66	12.33	2.82	CPC27	67	12.33	1.4
CPC28	46	12.5	2.78				
CPC29	111	12.33	3.95	CPC29	111	12.33	3.18
CPC30	95	12.33	1.99	CPC30	95	12.33	1.11
CPC31	15	12.33	0.65	CPC31	15	12.33	0.48
CPC33	1263	13.33	46.18	CPC33	1264	13.33	46.18
CPC33A	55	13.67	2.69	CPC33A	49	13	3.46
CPC33B	76	14.17	6.4	CPC33B	55	13.5	6.31
CPC33C	80	13.17	4.43	CPC33C	54	13	3.76
CPC33D	89	14.67	10.83	CPC33D	82	13.83	10.07
CPC33E	89	15.67	13.51	CPC33E	76	15.5	13.53
CPC33F	84	16.5	13.66	CPC33F	74	16.17	13.66
CPC34	732	15	52.84	CPC34	733	15	52.84
CPC34A	737	15	47.04	CPC34A	738	15	47.04
CPC36	670	15.17	55.93	CPC36	671	15.33	55.93
CPC37	205	12.83	2.11	CPC37	205	12.83	2.11
CPC38	77	12.67	0.81	CPC38	77	12.67	0.81
CPC42	27	12.33	0.31	CPC42	27	12.33	0.31
CPC43	21	12.33	0.31	CPC43	21	12.33	0.31
CPC44	96	12.33	0.48	CPC44	96	12.33	0.48
CPC45	55	12.33	0.25	CPC45	55	12.33	0.25
CPC46	62	12.5	0.37	CPC46	62	12.5	0.37
CPC47	638	15.67	61.04	CPC47	639	15.67	61.04
CPC47A	232	12.67	2.57	CPC47A	232	12.67	2.57
CPC48	652	15.5	59.14	CPC48	654	15.5	58.48
CPC48A	131	13.33	2.37	CPC48A	131	13.33	2.37
CPC49	658	15.33	56.11	CPC49	659	15.33	56.11
CPC52	48	13.17	0.77	CPC52	48	13.17	0.77
CPD01	159	12.67	3.17	CPD01	159	12.67	3.17
CPD03	68	12.5	0.77	CPD03	68	12.5	0.77
CPD04	16	12.5	0.51	CPD04	16	12.5	0.51
CPD05	143	12.83	4.18	CPD05	143	12.83	4.18
CPD08	29	12.33	0.73	CPD08	29	12.33	0.73
CPD09	86	12.5	1.75	CPD09	86	12.5	1.75
CPD10	137	12.67	2.95	CPD10	137	12.67	2.9
CPD11	83	12.5	0.56	CPD11	83	12.5	0.56
CPD12	22	12.33	0.14				
CPD13	196	12.33	4.58	CPD13	196	12.33	4.58
CPD15	154	12.5	0.95	CPD15	154	12.5	0.95
CPD17	103	12.67	1.53	CPD17	103	12.67	1.53
CPD18	45	12.5	1.2				
CPD19	33	12.33	0.52				
CPD20	24	12.33	0.59				
CPD21	13	12.33	0.09				
CPD22	613	13.33	16.27	CPD22	635	13.33	16.24
CPD23	131	12.67	3.1	CPD23	146	12.67	2.67
CPD24	187	12.67	3.57	CPD24	206	12.67	3.35
CPD24A	76	12.5	0.47	CPD24A	79	12.5	0.68
CPD25	141	12.67	5.54	CPD25	142	12.67	4.87
CPD26	262	12.83	7.09	CPD26	263	12.83	6.42
CPD27	178	13.33	7.35	CPD27	178	13.33	6.68
CPD33	398	14.33	16.92	CPD33	420	14.33	16.89
CPD35	199	12.67	1.43	CPD35	199	12.67	1.43
CPD37	131	13.33	1.71	CPD37	131	13.33	1.71

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	191	12.5	2.07	CPD38	191	12.5	2.07
CPD39	151	13	2.36	CPD39	151	13	2.36
CPD42	340	12.5	1.41	CPD42	340	12.5	1.41
CPD46	31	12.17	0.15				
CPD47	10	12.17	0.16				
CPE02	197	13.33	10.91	CPE02	197	13.33	10.91
CPE03	170	13.83	12.93	CPE03	170	13.83	12.93
CPE05	169	13.33	8.46	CPE05	169	13.33	8.46
CPE10	30	12.33	0.27	CPE10	30	12.33	0.27
CPE12	176	12.67	1.93	CPE12	176	12.67	1.93
CPE13	227	12.83	1.93	CPE13	228	12.83	1.86
CPE15	145	12.5	2.81	CPE15	145	12.5	2.81
CPE16	127	14.67	13.72	CPE16	127	14.67	13.72
CPE19	143	15	10.48	CPE19	144	15	10.48
CPE20	82	12.83	4.58	CPE20	82	12.83	4.58
CPE22	158	12.67	4.1	CPE22	158	12.67	4.1
CPE23	130	13.5	6.28	CPE23	130	13.5	6.28
CPE24	139	13.33	4.7	CPE24	139	13.33	4.7
CPE25	181	13	21.77	CPE25	209	13	9.15
CPE29	254	12.67	8.41	CPE29	254	12.67	8.41
CPE29A	185	12.67	3.83	CPE29A	185	12.67	3.83
CPE30	144	12.67	8.42	CPE30	144	12.67	7.97
CPE31	82	12.5	1.28	CPE31	83	12.5	1.11
CPE32	57	12.33	1.76	CPE32	57	12.33	1.76
CPE33	9	12.17	0.07				
CPE34	119	13.83	6.55	CPE34	119	13.83	6.55
CPE35	143	12.33	0.69	CPE35	143	12.33	0.69
CPE36	53	12.33	6.44	CPE36	55	12.33	0.35
CPE37	87	13.83	4.28	CPE37	87	13.83	4.28
CPE38	212	13.5	19.72	CPE38	212	13.5	19.72
CPE41	172	12.67	3.37	CPE41	172	12.67	3.52
CPE42	190	12.5	2.7	CPE42	190	12.5	2.85
CPE43	205	12.5	1.55	CPE43	205	12.5	1.82
CPE44	163	15.33	16.15	CPE44	154	15.67	30.15
CPE45	159	12.33	16.34	CPE45	171	12.33	9.82
CPE46	110	12.33	2.75	CPE46	114	12.33	0.54
CPE47	254	12.33	19.59	CPE47	276	12.33	10.86
CPE48	278	12.5	20.45	CPE48	307	12.5	11.72
CPE49	457	12.5	19.71	CPE49	437	12.5	31.23
CPE50	546	12.33	18.78	CPE50	527	12.33	30.84
CPE53	21	12.33	0.71				
CPE54	64	12.5	6.4	CPE54	52	12.33	0.31
CPF01	66	12.67	2.19	CPF01	66	12.67	2.19
CPF02	27	12.33	1.02	CPF02	27	12.33	1.02
CPF04	61	12.83	4.82	CPF04	61	12.83	4.82
CPF05	186	12.83	11.01	CPF05	186	12.83	11.01
CPF06	52	12.33	2.63	CPF06	52	12.33	2.63
CPF08	235	12.67	15.56	CPF08	235	12.67	15.56
CPF09	243	13	18.25	CPF09	243	13	18.25
CPF12	36	12.33	0.44	CPF12	36	12.33	0.44
CPF15	175	12.67	1.74	CPF15	175	12.67	1.74
CPF16	54	12.33	1.02	CPF16	54	12.33	1.02
CPF17	171	12.5	1.73	CPF17	171	12.5	1.73
CPF18	162	12.33	2.55	CPF18	162	12.33	2.55
CPF19	243	12.67	19.1	CPF19	243	12.67	19.1
CPF20	246	12.67	16.52	CPF20	261	12.67	10.16
CPF21	172	12.5	11.12	CPF21	172	12.5	11.12

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	141	12.5	2.07	CPF22	141	12.5	2.07
CPF24	257	12.67	2.93	CPF24	257	12.67	2.93
CPF25	487	13	7.11	CPF25	466	13	5.36
CPF26	134	12.5	4.38				
CPF27	655	13	9.63	CPF27	295	13.33	4.27
CPF28	203	12.5	1.26	CPF28	203	12.5	1.26
CPF29	203	12.5	13	CPF29	203	12.5	13
CPF31	208	12.5	18.99	CPF31	247	12.5	12.62
CPF32	223	14.17	7.08	CPF32	151	13.5	13.45
CPF33	180	12.5	0.95	CPF33	180	12.5	1.12
CPF34	331	13.5	18.09	CPF34	492	14.17	10.86
CPF35	175	12.67	3.29	CPF35	174	12.67	1.29
CPF36	96	12.33	0.17				
CPG01	499	14.5	3.49	CPG01	499	14.5	3.49
CPG03	1174	12.5	4.52	CPG03	1174	12.5	4.52
CPG04	986	12.5	5.34	CPG04	986	12.5	5.34
CPG06	744	12.33	2.88	CPG06	744	12.33	2.88
CPG07	402	12.5	2.79	CPG07	402	12.5	2.79
CPG09	194	15.33	5.24	CPG09	194	15.33	5.24
CPG10	499	14.5	3.93	CPG10	499	14.5	3.93
CPG11	177	17	9.78	CPG11	188	16.17	9.78
CPG13	101	12.5	1.3	CPG13	101	12.5	1.3
CPG14	49	12.33	0.35	CPG14	49	12.33	0.35
CPG22	97	12.5	1.8	CPG22	97	12.5	1.8
CPG27	127	12.5	1.51	CPG27	127	12.5	1.51
CPG31	521	13.33	9.35	CPG31	529	13.33	9.35
CPG32	265	12.5	1.71	CPG32	265	12.5	1.71
CPG34	132	12.5	1.85	CPG34	132	12.5	1.85
CPG34A	71	12.33	0.56	CPG34A	71	12.33	0.56
CPG35	125	12.5	2.38	CPG35	125	12.5	2.38
CPG39	116	12.83	1.79	CPG39	116	12.83	1.79
CPG40	272	12.67	6.9	CPG40	272	12.67	6.9
CPG42	132	12.67	5.09	CPG42	132	12.67	5.09
CPG43	340	12.67	11.48	CPG43	340	12.67	11.48
CPG45	694	12.83	9.17	CPG45	730	12.83	9.17
CPG46	374	12.5	3	CPG46	374	12.5	3
CPG47	196	12.5	1.5	CPG47	196	12.5	1.5
CPH01	954	12.5	3.2	CPH01	954	12.5	3.2
CPH07	215	12.5	2.35	CPH07	215	12.5	2.35
CPH10	592	12.5	1.63	CPH10	592	12.5	1.63
CPH13	212	12.83	2.88	CPH13	212	12.83	2.88
CPH14	282	12.67	1.65	CPH14	282	12.67	1.65
CPH15	485	12.33	1.29	CPH15	485	12.33	1.29
CPH15A	448	12.33	0.77	CPH15A	448	12.33	0.77
CPH17	220	12.5	1.64	CPH17	220	12.5	1.64
CPH23	1227	12.83	4.35	CPH23	1227	12.83	4.35
CPH24	336	13.17	1.98	CPH24	336	13.17	1.98
CPH25	435	13	1.95	CPH25	435	13	1.95
CPH28	188	12.33	1.24	CPH28	188	12.33	1.24
CPH29	193	12.67	1.48	CPH29	193	12.67	1.48
CPH30	132	12.33	0.92	CPH30	132	12.33	0.92
CPH31	306	12.67	1.59	CPH31	306	12.67	1.59
CPH31A	640	12.33	2.57	CPH31A	640	12.33	2.57
CPH32	222	13.67	2.04	CPH32	222	13.67	2.04
CPH32A	89	13.83	0.65	CPH32A	89	13.83	0.65
CPH32B	243	12.33	0.67	CPH32B	243	12.33	0.67
CPH33	288	12.5	2.83	CPH33	288	12.5	2.83

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	255	13.33	2.06	CPH33B	255	13.33	2.06
CPH34	241	13.17	4.44	CPH34	241	13.17	4.44
CPH35	170	13.17	1.28	CPH35	170	13.17	1.28
CPH36	140	12.33	1.63	CPH36	140	12.33	1.63
CPH37	196	12.33	3	CPH37	196	12.33	3
CPH38	482	12.83	1.01	CPH38	482	12.83	1.01
CPH39	413	13.17	1.39	CPH39	413	13.17	1.39
CPH40	327	13.83	1.44	CPH40	327	13.83	1.44
CPH41	113	12.33	0.72	CPH41	113	12.33	0.72
CPH42	114	12.5	3.45	CPH42	114	12.5	3.45
CPH44	146	12.33	2.19	CPH44	146	12.33	2.19
CPH45	215	13.67	4.72	CPH45	215	13.67	4.72
CPH46	126	13.67	1.73	CPH46	126	13.67	1.73
CPH47	146	12.33	1.8	CPH47	146	12.33	1.8
CPH48	85	12.33	0.91	CPH48	85	12.33	0.91
CPH49	119	12.5	1.01	CPH49	119	12.5	1.01
CPH50	148	16.33	2.54	CPH50	148	16.33	2.54
CPH51	115	12.33	1.22	CPH51	115	12.33	1.22
CPH52A	70	12.33	1.45	CPH52A	70	12.33	1.45
CPH52B	425	14.5	7.03	CPH52B	425	14.5	7.03
CPH53	392	14.5	4.1	CPH53	392	14.5	4.1
CPH54	397	15	7.24	CPH54	397	15	7.24
CPH55	285	13.83	2.32	CPH55	275	13.83	2.32
CPH56	226	14.83	2.71	CPH56	221	14.83	2.71
CPH57	206	15.67	3.14	CPH57	203	15.67	3.14
CPH58	402	13.5	2.25	CPH58	402	13.5	2.25
CPH59	358	14.17	3.39	CPH59	358	14.17	3.39
CPH60	142	12.5	1.74	CPH60	142	12.5	1.74
CPH61	204	15.83	2.68	CPH61	204	15.83	2.68
CPH62	967	13.5	5.23	CPH62	967	13.5	5.23
CPH63	884	14	6.64	CPH63	884	14	6.64
CPH66	406	14.83	3.64	CPH66	406	14.83	3.64
CPH67	53	12.33	0.6	CPH67	53	12.33	0.6
CPH68	195	16.5	3.47	CPH68	192	16.5	3.47
CPH69	288	16.67	4.94	CPH69	288	16.67	4.94
CPH70	117	12.5	1.1	CPH70	117	12.5	1.1
CPH71	373	15.67	4.29	CPH71	373	15.67	4.29
CPH72	360	16.17	4.71	CPH72	360	16.17	4.71
CPH73	454	15.5	11.08	CPH73	454	15.5	11.08
CPH74	443	16.17	11.88	CPH74	443	16.17	11.88
CPH75	451	12.17	2.27	CPH75	451	12.17	2.55
CPH76	322	12.5	3.03	CPH76	322	12.5	3.3
CPH77	247	13	3.3	CPH77	247	13	3.57
CPH78	365	14.17	9.12	CPH78	365	14.17	9.12
CPH79	353	14.5	9.62	CPH79	353	14.5	9.62
CPH80	342	15	10.08	CPH80	342	15	10.08
CPH81	208	12.17	0.46	CPH81	208	12.17	0.46
CPH82	316	12.33	4.41	CPH82	316	12.33	4.41
CPH84	511	12.17	2.91	CPH84	511	12.17	2.91
CPH85	629	12.33	3.89	CPH85	629	12.33	3.89
CPH86	679	12.33	4.97	CPH86	679	12.33	4.97
CPI04	142	12.33	0.78	CPI04	142	12.33	0.78
CPI05	122	12.67	0.79	CPI05	122	12.67	0.79
CPI06	194	12.33	1.28	CPI06	194	12.33	1.28
CPI07	79	13.17	0.99	CPI07	79	13.17	0.99
CPI08	244	12.33	2.07	CPI08	244	12.33	2.07
CPI09	118	12.33	1.3	CPI09	118	12.33	1.3

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	167	12.33	2.57	CPI10	167	12.33	2.57
CPI11	89	12.33	1.59	CPI11	89	12.33	1.59
CPI12	321	12.17	4.66	CPI12	321	12.17	4.66
CPI13	341	12.33	5.18	CPI13	341	12.33	5.18
CPI14	338	12.17	5.42	CPI14	338	12.17	5.42
CPI15A	203	12.33	0.73	CPI15A	203	12.33	0.73
CPI17A	171	12.33	0.36	CPI17A	171	12.33	0.36
CPI18	293	12.33	2.24	CPI18	293	12.33	2.24
CPI19	199	13.17	2.53	CPI19	199	13.17	2.53
CPI20	181	12.33	3.15	CPI20	181	12.33	3.15
CPI21	282	12.33	3.62	CPI21	285	12.33	3.62
CPI22	320	12.17	4	CPI22	320	12.17	4
CPI25	315	12.33	0.73	CPI25	315	12.33	0.73
CPI26A	216	12.33	0.81	CPI26A	216	12.33	0.81
CPI27	221	12.33	1.13	CPI27	221	12.33	1.13
CPI28	179	12.33	1.26	CPI28	179	12.33	1.26
CPI29	200	13	1.51	CPI29	200	13	1.51
CPI30	170	12.33	1.68	CPI30	170	12.33	1.68
CPI31	186	13.33	1.87	CPI31	186	13.33	1.87
CPI32	329	12.17	2.18	CPI32	329	12.17	2.18
CPI33	330	12.17	2.37	CPI33	330	12.17	2.37
CPI34	275	12.67	2.69	CPI34	275	12.67	2.69
CPI35	299	12.33	2.88	CPI35	299	12.33	2.88
CPI36	216	13	2.89	CPI36	216	13	2.89
CPI37	347	12.17	3.29	CPI37	347	12.17	3.29
CPI39	119	12.33	0.47	CPI39	119	12.33	0.47
CPI40	174	12.33	0.87	CPI40	174	12.33	0.87
CPI41	181	12.33	1.35	CPI41	181	12.33	1.35
CPI42	167	12.33	1.77	CPI42	167	12.33	1.77
CPI43	181	12.33	2.2	CPI43	181	12.33	2.2
CPI44A	346	12.33	0.84	CPI44A	346	12.33	0.84
CPI45	219	12.33	1.06	CPI45	219	12.33	1.06
CPI46	183	12.33	1.52	CPI46	183	12.33	1.52
CPI47	143	12.33	1.87	CPI47	143	12.33	1.87
CPI48	136	12.33	2.21	CPI48	136	12.33	2.21
CPI49	342	12.17	4.79	CPI49	342	12.17	4.79
CPI50	513	12.17	5.64	CPI50	513	12.17	5.64
CPI53	195	12.33	0.66	CPI53	195	12.33	0.66
CPI54	124	12.17	0.61	CPI54	124	12.17	0.61
CPI55	96	12.33	0.91	CPI55	96	12.33	0.91
CPI56	167	12.33	1.04	CPI56	167	12.33	1.04
CPI57	122	12.33	1.1	CPI57	122	12.33	1.1
CPI58A	179	12.83	1.79	CPI58A	179	12.83	1.79
CPI58B	202	12.5	1.63	CPI58B	202	12.5	1.63
CPI60A	859	12.33	5.12	CPI60A	859	12.33	5.12
CPI60B	609	12.33	2.75	CPI60B	609	12.33	2.75
CPI60C	102	12.33	1.57	CPI60C	102	12.33	1.57
CPI63	535	12.5	8.54	CPI63	535	12.5	8.54
CPI64	323	12.33	2.06	CPI64	323	12.33	2.06
CPI65	256	12.33	2.79	CPI65	256	12.33	2.79
CPI66	1014	12.5	6.03	CPI66	1014	12.5	6.03
CPI67	839	12.33	7.46	CPI67	839	12.33	7.46
CPI70	524	12.33	8.25	CPI70	524	12.33	8.25
CPI72	151	12.33	1.3	CPI72	151	12.33	1.3
CPJ06	129	12.33	0.52	CPJ06	129	12.33	0.52
CPJ07	166	12.33	0.69	CPJ07	166	12.33	0.69
CPJ10	125	12.33	0.81	CPJ10	125	12.33	0.81

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	219	12.33	0.94	CPJ11	219	12.33	0.94
CPJ12	208	12.33	0.51	CPJ12	208	12.33	0.51
CPJ14	2542	12.83	9.83	CPJ14	2542	12.83	9.83
CPJ15	266	12.33	1.39	CPJ15	266	12.33	1.39
CPJ16	275	12.33	1.21	CPJ16	275	12.33	1.21
CPJ17	161	12.5	1.89	CPJ17	161	12.5	1.89
CPJ20	674	12.33	5.2	CPJ20	674	12.33	5.2
CPJ21	197	12.33	1.11	CPJ21	197	12.33	1.11
CPJ22	1131	12.67	7.81	CPJ22	1131	12.67	7.81
CPJ23	2411	13	10.43	CPJ23	2411	13	10.43
CPJ27	773	12.67	2.37	CPJ27	773	12.67	2.37
CPJ29A	2233	13.17	12.35	CPJ29A	2233	13.17	12.35
CPJ33	928	12.33	1.85	CPJ33	928	12.33	1.85
CPJ34	870	12.33	2.31	CPJ34	870	12.33	2.31
CPJ35	1229	12.33	2.97	CPJ35	1229	12.33	2.97
CPJ37	908	12.67	3.18	CPJ37	908	12.67	3.18
CPJ39	882	13.17	9.76	CPJ39	882	13.17	9.76
CPJ43A	2102	13.5	12.95	CPJ43A	2102	13.5	12.95
CPJ46	462	12.5	0.9	CPJ46	462	12.5	0.9
CPJ47	200	12.33	0.51	CPJ47	200	12.33	0.51
CPJ48	609	12.5	1.65	CPJ48	609	12.5	1.65
CPJ52	110	12.5	0.35	CPJ52	110	12.5	0.35
CPX02	1663	12.33	3.01	CPX02	1663	12.33	3.01
CPX04	985	12.33	1.97	CPX04	985	12.33	1.97
CPX17	705	12.17	0.98	CPX17	705	12.17	0.98
A41RIV	2195	17	335.51	A41RIV	2173	16.83	335.51
A42RIV	2194	17.33	340.86	A42RIV	2176	17.33	340.86
A44RIV	2195	17.67	342.81	A44RIV	2182	17.5	342.81
A46RIV	2195	18.17	364	A46RIV	2177	18.17	364
A49RIV	2172	18.83	377.94	A49RIV	2154	18.83	377.94
A51RIV	2125	19.33	388.64	A51RIV	2105	19.33	388.64
A56RIV	2128	19.33	404.96	A56RIV	2107	19.33	404.96
A57RIV	2147	19.67	414.97	A57RIV	2132	19.67	414.97
A60RIV	2224	20.5	420.03	A60RIV	2187	20.5	420.03
A62RIV	2183	20.67	422.19	A62RIV	2156	20.5	422.19
B08RIV	1101	15	174.26	B08RIV	1106	15.17	174.26
B12RIV	1215	15.5	262.59	B12RIV	1214	15.5	262.59
B15RIV	1400	15.67	267.64	B15RIV	1388	15.67	267.64
B45RIV	1364	15.83	282.17	B45RIV	1362	15.83	282.17
B46RIV	1831	16.17	280.17	B46RIV	1828	16.17	280.17
B61RIV	2040	16.67	296.93	B61RIV	2036	16.5	296.93
B62RIV	2169	16.67	321.9	B62RIV	2165	16.5	321.9
B63RIV	2180	16.67	322.12	B63RIV	2168	16.67	322.12
B64RIV	2171	16.67	321.98	B64RIV	2161	16.67	321.98
D27RIV	1074	13.17	123.22	D27RIV	1074	13.17	123.22
D28RIV	1182	13.17	124.9	D28RIV	1182	13.17	124.9
D29RIV	1195	13.17	128.41	D29RIV	1196	13.17	128.41
D30RIV	1168	13.17	129.98	D30RIV	1168	13.17	129.98
D31RIV	1177	13.33	130.65	D31RIV	1177	13.33	130.65
D32RIV	1172	13.5	133.26	D32RIV	1171	13.5	133.26
D33RIV	1135	13.83	151.28	D33RIV	1143	13.83	151.28
D39RIV	1085	14.83	171.57	D39RIV	1090	14.83	171.57
D40RIV	1074	14.67	169.2	D40RIV	1080	14.67	169.2
D41RIV	1096	14.5	157.27	D41RIV	1101	14.5	157.27
D42RIV	1104	14.5	156.97	D42RIV	1110	14.5	156.97
E41RIV	1051	12.5	111.17	E41RIV	1080	12.5	98.07
E48RIV	517	14.67	63.76	E48RIV	714	14.67	58.43

Table 4.3.3 Existing Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	605	12.67	86.19	E49RIV	740	15	86.19
E51RIV	583	15.67	89.48	E51RIV	704	15.67	89.48
F32RIV	262	14	27.84	F32RIV	310	13.67	27.84
F33RIV	243	14.5	28.79	F33RIV	328	14	28.81
F34RIV	458	14.5	40.15	F34RIV	669	14.33	40.15
F35RIV	464	14.67	42.15	F35RIV	679	14.5	42.15
G17RIV	600	15.83	90.3	G17RIV	721	15.67	90.3
G27RIV	587	15.33	87.92	G27RIV	720	15.17	87.92
G28RIV	585	15.5	88.23	G28RIV	712	15.5	88.23
G30RIV	1285	12.67	103.15	G30RIV	1285	12.67	103.15
G33RIV	1152	13.33	131.39	G33RIV	1152	13.33	131.39
G36RIV	1132	13.83	152.54	G36RIV	1139	13.83	152.54
G37RIV	1103	14.17	153.28	G37RIV	1111	14.17	153.28
G38RIV	1104	14.17	154.8	G38RIV	1110	14.17	154.8
G40RIV	1095	14.67	168.55	G40RIV	1101	14.67	168.55
G42RIV	1091	15	172.26	G42RIV	1097	15	172.26
H69RIV	1321	15.67	265.9	H69RIV	1317	15.67	265.9
H72RIV	1538	16	277.74	H72RIV	1529	16	277.74
H74RIV	1964	16.17	290.02	H74RIV	1958	16.17	290.02
H77RIV	2028	16.5	294.03	H77RIV	2009	16.5	294.03
H80RIV	2105	16.5	316.49	H80RIV	2097	16.5	316.49
H86RIV	2193	16.67	328.05	H86RIV	2186	16.67	328.05
I36RIV	2190	17.83	345.69	I36RIV	2177	17.83	345.69
I37RIV	2193	18	363.37	I37RIV	2177	18	363.37
I50RIV	2177	18.33	369.64	I50RIV	2164	18.33	369.64
I62RIV	2189	18.5	370.07	I62RIV	2173	18.5	370.07
I63RIV	2141	19.5	413.5	I63RIV	2118	19.5	413.5

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	557	5.17	5.78	CPA03	506	5.17	5.78
CPA06	343	4.67	1.52	CPA06	343	4.67	1.52
CPA07	375	4.5	0.86	CPA07	375	4.5	0.86
CPA08	404	4.83	2.77	CPA08	391	4.83	2.77
CPA10	453	4.67	4.65	CPA10	453	4.67	4.65
CPA11	336	4.67	4.5	CPA11	336	4.67	4.5
CPA14	544	4.5	3.1	CPA14	544	4.5	3.1
CPA15	512	4.67	3.19	CPA15	512	4.67	3.19
CPA16	701	4.67	3.52	CPA16	701	4.67	3.52
CPA17	385	4.67	3.03	CPA17	377	4.67	3.03
CPA18	411	4.5	5.88	CPA18	411	4.5	5.88
CPA19	318	4.67	5.39	CPA19	318	4.67	5.39
CPA19A	375	4.5	2.21	CPA19A	375	4.5	2.21
CPA20	303	5.17	1.75	CPA20	303	5.17	1.75
CPA21	602	4.67	2.52	CPA21	601	4.67	2.52
CPA22	301	4.83	0.99	CPA22	301	4.83	0.99
CPA24	346	4.67	3.86	CPA24	346	4.67	3.86
CPA26	235	4.5	3.09	CPA26	231	4.5	3.09
CPA27	459	4.67	4.74	CPA27	459	4.67	4.74
CPA27A	343	4.67	4.19	CPA27A	343	4.67	4.19
CPA29	297	5	5.93	CPA29	330	5	5.93
CPA30	337	4.83	10.47	CPA30	331	5	10.47
CPA30A	226	4.67	4.54	CPA30A	226	4.67	4.54
CPA32	707	4.67	3.07	CPA32	707	4.67	3.07
CPA32A	741	4.67	2.53	CPA32A	741	4.67	2.53
CPA33	502	4.5	6.02	CPA33	500	4.5	6.02
CPA33A	237	8	2.99	CPA33A	234	8	2.99
CPA34	310	4.33	2.57	CPA34	310	4.33	2.57
CPA35	649	5	6.94	CPA35	649	5	6.94
CPA37	853	4.67	4.93	CPA37	853	4.67	4.93
CPA39	699	4.33	1.08	CPA39	699	4.33	1.08
CPA41	500	4.67	1.97	CPA41	500	4.67	1.97
CPA42	739	5	1.35	CPA42	739	5	1.35
CPA43	789	4.33	1.58	CPA43	789	4.33	1.58
CPA44	754	4.67	1.95	CPA44	754	4.67	1.95
CPA45	763	5.33	5.47	CPA45	763	5.33	5.47
CPA46	327	5	0.63	CPA46	327	5	0.63
CPA47	560	5.67	7.73	CPA47	560	5.67	7.73
CPA49	1080	4.67	9.54	CPA49	1080	4.67	9.54
CPA50	737	5.67	13.01	CPA50	732	5.67	13.01
CPA51	702	6.17	16.07	CPA51	698	6.17	16.07
CPA51A	621	5	3.06	CPA51A	621	5	3.06
CPA52	659	5	13.76	CPA52	641	5	13.76
CPA52A	303	5.17	10.69	CPA52A	313	5.33	10.69
CPA54	730	4.5	2.25	CPA54	730	4.5	2.25
CPA55	695	5.17	16.62	CPA55	681	5.17	16.62
CPA55A	481	4.5	2.87	CPA55A	481	4.5	2.87
CPA56	707	4.67	18.46	CPA56	707	4.67	18.46
CPA59	1999	4.5	3.39	CPA59	1999	4.5	3.39
CPA60	2241	4.67	5.05	CPA60	2241	4.67	5.05
CPA63	631	4.83	12.02	CPA63	628	4.83	12.02
CPA63A	411	4.5	5.99	CPA63A	411	4.5	5.99
CPA64	319	6.17	6.55	CPA64	306	6.17	6.55
CPA65	477	5.5	6.32	CPA65	445	5.5	6.32
CPB03	608	5	21.96	CPB03	608	5	21.96
CPB05	642	4.67	4.77	CPB05	642	4.67	4.77
CPB07	347	4.33	1.57	CPB07	347	4.33	1.57

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	299	5.17	2	CPB08	299	5.17	2
CPB09	533	8.17	61.72	CPB09	533	8.17	61.31
CPB10	394	6	5.9	CPB10	394	6	5.9
CPB11	463	4.5	6.14	CPB11	463	4.5	6.14
CPB12	551	8.33	67.78	CPB12	550	8.33	67.78
CPB12A	375	4.83	6.47	CPB12A	378	4.83	6.47
CPB13	427	5.33	15.13	CPB13	427	5.33	15.13
CPB14	413	6.17	12.33	CPB14	413	6.17	12.33
CPB16	314	5.83	6.32	CPB16	314	5.83	6.32
CPB18	297	4.67	1.64	CPB18	297	4.67	1.64
CPB19	458	4.67	0.88	CPB19	458	4.67	0.88
CPB21	366	6.17	12.64	CPB21	366	6.17	12.64
CPB24	523	4.33	0.72	CPB24	523	4.33	0.72
CPB24A	307	4.33	0.25	CPB24A	307	4.33	0.25
CPB25	408	4.33	1.65	CPB25	408	4.33	1.65
CPB26	241	5.17	2.01	CPB26	241	5.17	2.01
CPB29	488	4.5	1.23	CPB29	488	4.5	1.23
CPB33	245	5	3.08	CPB33	245	5	3.08
CPB33A	260	4.5	0.79	CPB33A	260	4.5	0.79
CPB34	516	4.33	0.51	CPB34	516	4.33	0.51
CPB35	427	4.67	2.29	CPB35	427	4.67	2.29
CPB35A	427	4.67	1.11	CPB35A	427	4.67	1.11
CPB36	307	4.5	0.47	CPB36	307	4.5	0.47
CPB37	325	4.67	1.36	CPB37	325	4.67	1.36
CPB38	305	4.67	9.08	CPB38	305	4.67	9.08
CPB39	279	6.67	8.35	CPB39	279	6.67	8.35
CPB39A	282	6.67	6.71	CPB39A	282	6.67	6.71
CPB41	554	4.67	0.82	CPB41	554	4.67	0.82
CPB43	256	4.5	0.37	CPB43	256	4.5	0.37
CPB44	391	4.5	0.55	CPB44	391	4.5	0.55
CPB45	408	4.67	14.16	CPB45	408	4.67	14.16
CPB46	527	4.67	2.43	CPB46	527	4.67	2.43
CPB47	473	4.5	2.49	CPB47	473	4.5	2.49
CPB48	423	4.5	2.17	CPB48	423	4.5	2.17
CPB50	447	4.5	0.72	CPB50	447	4.5	0.72
CPB54	223	7.17	8.64	CPB54	223	7.17	8.64
CPB56	308	4.5	0.75	CPB56	308	4.5	0.75
CPB57	206	4.83	0.52	CPB57	206	4.83	0.52
CPB58	436	4.5	0.99	CPB58	436	4.5	0.99
CPB59	352	4.33	15.98	CPB59	352	4.33	15.98
CPB60	242	7.5	18.09	CPB60	242	7.5	18.09
CPB61	663	4.33	3.23	CPB61	663	4.33	3.23
CPB65	287	5	13.18	CPB65	287	5	13.18
CPC06	383	4.33	0.51	CPC06	383	4.33	0.51
CPC07	547	4.5	2.41	CPC07	477	4.5	2.63
CPC09	196	4.33	0.43	CPC09	196	4.33	0.27
CPC10	373	4.5	1	CPC10	380	4.5	0.78
CPC12	326	4.33	0.44	CPC12	326	4.33	0.44
CPC13	477	4.5	0.73	CPC13	477	4.5	0.73
CPC14	264	4.5	0.77	CPC14	233	4.33	0.35
CPC15	166	4.33	0.53	CPC15	170	4.33	0.24
CPC16	339	4.5	0.91	CPC16	339	4.5	0.51
CPC17	297	4.33	0.84	CPC17	297	4.33	0.42
CPC18	176	4.33	0.72	CPC18	176	4.33	0.33
CPC19	382	4.5	3.39	CPC19	382	4.67	2.08
CPC20	162	4.5	3.26	CPC20	277	4.5	1.68
CPC22	695	4.33	1.69	CPC22	701	4.33	1.67

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	734	4.33	1.85				
CPC25	131	4.17	0.08				
CPC26	173	5	0.79				
CPC27	186	4.83	2.82	CPC27	276	4.83	1.4
CPC28	186	4.5	2.78				
CPC29	234	4.5	3.95	CPC29	255	4.5	3.18
CPC30	289	4.67	1.99	CPC30	319	4.33	1.11
CPC31	246	4.67	0.65	CPC31	198	4.83	0.48
CPC33	1245	5.33	46.18	CPC33	1246	5.33	46.18
CPC33A	275	5.17	2.69	CPC33A	218	4.83	3.46
CPC33B	211	5.83	6.4	CPC33B	198	5.17	6.31
CPC33C	403	5	4.43	CPC33C	293	4.83	3.76
CPC33D	178	6.17	10.83	CPC33D	175	5.5	10.07
CPC33E	170	6.83	13.51	CPC33E	131	6.5	13.53
CPC33F	130	7.67	13.66	CPC33F	115	7.5	13.66
CPC34	654	6.67	52.84	CPC34	654	6.67	52.84
CPC34A	704	6.83	47.04	CPC34A	705	6.83	47.04
CPC36	588	7	55.93	CPC36	589	7	55.93
CPC37	641	4.83	2.11	CPC37	641	4.83	2.11
CPC38	438	4.67	0.81	CPC38	438	4.67	0.81
CPC42	208	4.33	0.31	CPC42	208	4.33	0.31
CPC43	246	4.33	0.31	CPC43	246	4.33	0.31
CPC44	361	4.33	0.48	CPC44	361	4.33	0.48
CPC45	216	4.33	0.25	CPC45	216	4.33	0.25
CPC46	272	4.5	0.37	CPC46	272	4.5	0.37
CPC47	571	7.5	61.04	CPC47	572	7.5	61.04
CPC47A	541	4.67	2.57	CPC47A	541	4.67	2.57
CPC48	575	7.33	59.14	CPC48	581	7.33	58.48
CPC48A	521	5.17	2.37	CPC48A	521	5.17	2.37
CPC49	587	7.17	56.11	CPC49	588	7.17	56.11
CPC52	222	5.17	0.77	CPC52	222	5.17	0.77
CPD01	457	4.5	3.17	CPD01	457	4.5	3.17
CPD03	632	4.33	0.77	CPD03	632	4.33	0.77
CPD04	340	4.5	0.51	CPD04	340	4.5	0.51
CPD05	345	4.83	4.18	CPD05	345	4.83	4.18
CPD08	331	4.83	0.73	CPD08	331	4.83	0.73
CPD09	292	4.5	1.75	CPD09	292	4.5	1.75
CPD10	402	4.67	2.95	CPD10	405	4.67	2.9
CPD11	399	4.5	0.56	CPD11	399	4.5	0.56
CPD12	163	4.33	0.14				
CPD13	357	4.33	4.58	CPD13	357	4.33	4.58
CPD15	544	4.5	0.95	CPD15	544	4.5	0.95
CPD17	373	4.67	1.53	CPD17	374	4.67	1.53
CPD18	248	4.5	1.2				
CPD19	276	4.33	0.52				
CPD20	223	4.33	0.59				
CPD21	100	4.17	0.09				
CPD22	907	5.33	16.27	CPD22	952	5.33	16.24
CPD23	299	4.67	3.1	CPD23	381	4.67	2.67
CPD24	447	4.5	3.57	CPD24	500	4.67	3.35
CPD24A	414	4.5	0.47	CPD24A	431	4.5	0.68
CPD25	274	4.67	5.54	CPD25	313	4.67	4.87
CPD26	493	4.83	7.09	CPD26	508	4.83	6.42
CPD27	420	5.17	7.35	CPD27	433	5.17	6.68
CPD33	677	6.17	16.92	CPD33	718	6.17	16.89
CPD35	722	4.67	1.43	CPD35	722	4.67	1.43
CPD37	590	5.17	1.71	CPD37	590	5.17	1.71

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	590	5	2.07	CPD38	590	5	2.07
CPD39	513	4.83	2.36	CPD39	513	4.83	2.36
CPD42	813	4.5	1.41	CPD42	813	4.5	1.41
CPD46	109	4.17	0.15				
CPD47	65	4.83	0.16				
CPE02	509	5	10.91	CPE02	509	5	10.91
CPE03	252	5.67	12.93	CPE03	252	5.67	12.93
CPE05	287	5.33	8.46	CPE05	287	5.33	8.46
CPE10	172	4.33	0.27	CPE10	172	4.33	0.27
CPE12	511	4.67	1.93	CPE12	511	4.67	1.93
CPE13	662	4.83	1.93	CPE13	673	4.83	1.86
CPE15	407	4.5	2.81	CPE15	407	4.5	2.81
CPE16	166	6.5	13.72	CPE16	166	6.5	13.72
CPE19	223	6.83	10.48	CPE19	223	6.83	10.48
CPE20	176	4.67	4.58	CPE20	176	4.67	4.58
CPE22	384	4.67	4.1	CPE22	384	4.67	4.1
CPE23	336	5.33	6.28	CPE23	336	5.33	6.28
CPE24	465	5.17	4.7	CPE24	472	5.17	4.7
CPE25	319	4.83	21.77	CPE25	388	4.83	9.15
CPE29	454	4.67	8.41	CPE29	454	4.67	8.41
CPE29A	371	4.67	3.83	CPE29A	371	4.67	3.83
CPE30	252	4.67	8.42	CPE30	251	4.67	7.97
CPE31	280	4.5	1.28	CPE31	295	4.5	1.11
CPE32	357	5.33	1.76	CPE32	357	5.33	1.76
CPE33	70	4.17	0.07				
CPE34	313	5.5	6.55	CPE34	313	5.5	6.55
CPE35	482	4.33	0.69	CPE35	482	4.33	0.69
CPE36	160	5	6.44	CPE36	236	4.33	0.35
CPE37	271	5.67	4.28	CPE37	273	5.67	4.28
CPE38	447	5.33	19.72	CPE38	447	5.33	19.72
CPE41	361	4.67	3.37	CPE41	358	4.67	3.52
CPE42	509	4.5	2.7	CPE42	494	4.5	2.85
CPE43	562	4.5	1.55	CPE43	524	4.5	1.82
CPE44	358	6.5	16.15	CPE44	308	6.83	30.15
CPE45	238	5.17	16.34	CPE45	355	5.17	9.82
CPE46	202	4.17	2.75	CPE46	399	4.17	0.54
CPE47	349	4.33	19.59	CPE47	420	4.33	10.86
CPE48	420	4.5	20.45	CPE48	496	4.5	11.72
CPE49	615	4.5	19.71	CPE49	578	4.5	31.23
CPE50	582	4.33	18.78	CPE50	550	4.33	30.84
CPE53	134	5.33	0.71				
CPE54	150	4.5	6.4	CPE54	214	4.33	0.31
CPF01	380	4.67	2.19	CPF01	380	4.67	2.19
CPF02	527	4.67	1.02	CPF02	527	4.67	1.02
CPF04	188	4.83	4.82	CPF04	188	4.83	4.82
CPF05	251	4.83	11.01	CPF05	251	4.83	11.01
CPF06	340	4.33	2.63	CPF06	340	4.33	2.63
CPF08	541	4.67	15.56	CPF08	541	4.67	15.56
CPF09	302	5	18.25	CPF09	302	5	18.25
CPF12	420	4.33	0.44	CPF12	420	4.33	0.44
CPF15	520	4.5	1.74	CPF15	520	4.5	1.74
CPF16	337	4.83	1.02	CPF16	337	4.83	1.02
CPF17	597	4.5	1.73	CPF17	597	4.5	1.73
CPF18	284	4.33	2.55	CPF18	284	4.33	2.55
CPF19	351	4.67	19.1	CPF19	351	4.67	19.1
CPF20	355	4.67	16.52	CPF20	398	4.67	10.16
CPF21	264	4.5	11.12	CPF21	264	4.5	11.12

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	307	4.5	2.07	CPF22	307	4.5	2.07
CPF24	509	4.67	2.93	CPF24	509	4.67	2.93
CPF25	992	4.83	7.11	CPF25	970	5	5.36
CPF26	276	4.5	4.38				
CPF27	1402	5	9.63	CPF27	709	5.17	4.27
CPF28	481	4.5	1.26	CPF28	481	4.5	1.26
CPF29	301	4.5	13	CPF29	301	4.5	13
CPF31	901	4.5	18.99	CPF31	784	4.5	12.62
CPF32	434	4.67	7.08	CPF32	309	5.33	13.45
CPF33	511	4.5	0.95	CPF33	484	4.5	1.12
CPF34	701	5.83	18.09	CPF34	1103	5.83	10.86
CPF35	378	4.5	3.29	CPF35	505	4.5	1.29
CPF36	283	4.33	0.17				
CPG01	1080	6.17	3.49	CPG01	1080	6.17	3.49
CPG03	2241	4.5	4.52	CPG03	2241	4.5	4.52
CPG04	1747	4.5	5.34	CPG04	1747	4.5	5.34
CPG06	1403	4.33	2.88	CPG06	1403	4.33	2.88
CPG07	826	4.5	2.79	CPG07	826	4.5	2.79
CPG09	535	6.33	5.24	CPG09	535	6.33	5.24
CPG10	1085	6.17	3.93	CPG10	1085	6.17	3.93
CPG11	356	8.33	9.78	CPG11	427	7.67	9.78
CPG13	488	4.5	1.3	CPG13	488	4.5	1.3
CPG14	203	4.33	0.35	CPG14	203	4.33	0.35
CPG22	438	4.5	1.8	CPG22	438	4.5	1.8
CPG27	660	4.5	1.51	CPG27	660	4.5	1.51
CPG31	1034	5.17	9.35	CPG31	1051	5.17	9.35
CPG32	773	4.5	1.71	CPG32	773	4.5	1.71
CPG34	400	4.33	1.85	CPG34	400	4.33	1.85
CPG34A	292	4.33	0.56	CPG34A	292	4.33	0.56
CPG35	314	4.5	2.38	CPG35	314	4.5	2.38
CPG39	348	4.83	1.79	CPG39	348	4.83	1.79
CPG40	499	4.67	6.9	CPG40	499	4.67	6.9
CPG42	258	4.67	5.09	CPG42	258	4.67	5.09
CPG43	690	6.5	11.48	CPG43	693	6.5	11.48
CPG45	1226	4.83	9.17	CPG45	1254	4.83	9.17
CPG46	779	4.5	3	CPG46	779	4.5	3
CPG47	616	4.5	1.5	CPG47	616	4.5	1.5
CPH01	1764	4.5	3.2	CPH01	1764	4.5	3.2
CPH07	694	4.5	2.35	CPH07	694	4.5	2.35
CPH10	1435	4.33	1.63	CPH10	1435	4.33	1.63
CPH13	684	4.67	2.88	CPH13	684	4.67	2.88
CPH14	794	4.67	1.65	CPH14	794	4.67	1.65
CPH15	1156	4.33	1.29	CPH15	1156	4.33	1.29
CPH15A	1156	4.33	0.77	CPH15A	1156	4.33	0.77
CPH17	732	4.5	1.64	CPH17	732	4.5	1.64
CPH23	2318	4.67	4.35	CPH23	2318	4.67	4.35
CPH24	866	4.83	1.98	CPH24	866	4.83	1.98
CPH25	864	5	1.95	CPH25	864	5	1.95
CPH28	675	4.33	1.24	CPH28	675	4.33	1.24
CPH29	611	4.67	1.48	CPH29	611	4.67	1.48
CPH30	512	4.33	0.92	CPH30	512	4.33	0.92
CPH31	881	4.5	1.59	CPH31	881	4.5	1.59
CPH31A	1327	4.33	2.57	CPH31A	1327	4.33	2.57
CPH32	666	4.5	2.04	CPH32	666	4.5	2.04
CPH32A	299	4.5	0.65	CPH32A	299	4.5	0.65
CPH32B	480	4.33	0.67	CPH32B	480	4.33	0.67
CPH33	856	4.83	2.83	CPH33	856	4.83	2.83

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	823	5	2.06	CPH33B	823	5	2.06
CPH34	629	5	4.44	CPH34	629	5	4.44
CPH35	594	5	1.28	CPH35	594	5	1.28
CPH36	402	4.33	1.63	CPH36	402	4.33	1.63
CPH37	477	4.33	3	CPH37	477	4.33	3
CPH38	1482	4.5	1.01	CPH38	1482	4.5	1.01
CPH39	1186	5	1.39	CPH39	1186	5	1.39
CPH40	705	5.5	1.44	CPH40	705	5.5	1.44
CPH41	415	4.33	0.72	CPH41	415	4.33	0.72
CPH42	275	6.67	3.45	CPH42	275	6.67	3.45
CPH44	400	4.33	2.19	CPH44	400	4.33	2.19
CPH45	574	5.33	4.72	CPH45	574	5.33	4.72
CPH46	514	5.17	1.73	CPH46	514	5.17	1.73
CPH47	491	5.33	1.8	CPH47	491	5.33	1.8
CPH48	343	4.33	0.91	CPH48	343	4.33	0.91
CPH49	421	4.5	1.01	CPH49	421	4.5	1.01
CPH50	367	7.17	2.54	CPH50	367	7.17	2.54
CPH51	371	4.33	1.22	CPH51	371	4.33	1.22
CPH52A	286	5	1.45	CPH52A	286	5	1.45
CPH52B	897	6.17	7.03	CPH52B	897	6.17	7.03
CPH53	873	6.17	4.1	CPH53	873	6.17	4.1
CPH54	835	6.67	7.24	CPH54	835	6.67	7.24
CPH55	751	5.5	2.32	CPH55	731	5.5	2.32
CPH56	623	6.33	2.71	CPH56	611	6.33	2.71
CPH57	532	7.33	3.14	CPH57	525	7.33	3.14
CPH58	803	5.33	2.25	CPH58	803	5.33	2.25
CPH59	720	6.17	3.39	CPH59	720	6.17	3.39
CPH60	382	4.5	1.74	CPH60	382	4.5	1.74
CPH61	432	7.33	2.68	CPH61	432	7.33	2.68
CPH62	1970	5.33	5.23	CPH62	1970	5.33	5.23
CPH63	1780	5.67	6.64	CPH63	1780	5.67	6.64
CPH66	929	6.5	3.64	CPH66	929	6.5	3.64
CPH67	276	4.83	0.6	CPH67	276	4.83	0.6
CPH68	478	8.17	3.47	CPH68	472	8.17	3.47
CPH69	557	8.17	4.94	CPH69	557	8.17	4.94
CPH70	415	4.5	1.1	CPH70	415	4.5	1.1
CPH71	833	7.33	4.29	CPH71	833	7.33	4.29
CPH72	773	7.83	4.71	CPH72	773	7.83	4.71
CPH73	900	7.17	11.08	CPH73	900	7.17	11.08
CPH74	864	7.83	11.88	CPH74	864	7.83	11.88
CPH75	793	4.17	2.27	CPH75	753	4.17	2.55
CPH76	848	4.5	3.03	CPH76	830	4.5	3.3
CPH77	615	5	3.3	CPH77	603	5	3.57
CPH78	791	5.83	9.12	CPH78	791	5.83	9.12
CPH79	752	6.17	9.62	CPH79	752	6.17	9.62
CPH80	709	6.5	10.08	CPH80	709	6.5	10.08
CPH81	560	4.17	0.46	CPH81	560	4.17	0.46
CPH82	465	4.17	4.41	CPH82	465	4.17	4.41
CPH84	827	4.33	2.91	CPH84	827	4.33	2.91
CPH85	1195	4.33	3.89	CPH85	1195	4.33	3.89
CPH86	1124	4.67	4.97	CPH86	1124	4.67	4.97
CPI04	518	4.33	0.78	CPI04	518	4.33	0.78
CPI05	592	4.33	0.79	CPI05	592	4.33	0.79
CPI06	554	4.33	1.28	CPI06	554	4.33	1.28
CPI07	439	4.83	0.99	CPI07	439	4.83	0.99
CPI08	615	4.33	2.07	CPI08	615	4.33	2.07
CPI09	353	4.33	1.3	CPI09	353	4.33	1.3

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	433	4.5	2.57	CPI10	433	4.5	2.57
CPI11	301	4.5	1.59	CPI11	301	4.5	1.59
CPI12	464	4.17	4.66	CPI12	464	4.17	4.66
CPI13	564	4.33	5.18	CPI13	564	4.33	5.18
CPI14	612	4.33	5.42	CPI14	612	4.33	5.42
CPI15A	775	4.33	0.73	CPI15A	775	4.33	0.73
CPI17A	571	4.17	0.36	CPI17A	571	4.17	0.36
CPI18	892	4.33	2.24	CPI18	892	4.33	2.24
CPI19	687	4.83	2.53	CPI19	687	4.83	2.53
CPI20	574	5.5	3.15	CPI20	574	5.5	3.15
CPI21	497	6	3.62	CPI21	485	6	3.62
CPI22	403	6.83	4	CPI22	401	4.17	4
CPI25	852	4.33	0.73	CPI25	852	4.33	0.73
CPI26A	788	4.33	0.81	CPI26A	788	4.33	0.81
CPI27	764	4.33	1.13	CPI27	764	4.33	1.13
CPI28	571	4.33	1.26	CPI28	571	4.33	1.26
CPI29	649	4.67	1.51	CPI29	649	4.67	1.51
CPI30	500	4.33	1.68	CPI30	500	4.33	1.68
CPI31	581	5	1.87	CPI31	581	5	1.87
CPI32	578	4.17	2.18	CPI32	578	4.17	2.18
CPI33	556	4.17	2.37	CPI33	556	4.17	2.37
CPI34	709	4.67	2.69	CPI34	709	4.67	2.69
CPI35	518	4.5	2.88	CPI35	518	4.5	2.88
CPI36	633	4.83	2.89	CPI36	633	4.83	2.89
CPI37	559	4.67	3.29	CPI37	559	4.67	3.29
CPI39	441	4.33	0.47	CPI39	441	4.33	0.47
CPI40	590	4.33	0.87	CPI40	590	4.33	0.87
CPI41	567	4.33	1.35	CPI41	567	4.33	1.35
CPI42	444	4.33	1.77	CPI42	444	4.33	1.77
CPI43	399	4.33	2.2	CPI43	399	4.33	2.2
CPI44A	1026	4.33	0.84	CPI44A	1026	4.33	0.84
CPI45	822	4.33	1.06	CPI45	822	4.33	1.06
CPI46	661	4.67	1.52	CPI46	661	4.67	1.52
CPI47	573	5	1.87	CPI47	573	5	1.87
CPI48	489	5.33	2.21	CPI48	489	5.33	2.21
CPI49	584	5.67	4.79	CPI49	584	5.67	4.79
CPI50	735	4.33	5.64	CPI50	735	4.33	5.64
CPI53	749	4.33	0.66	CPI53	749	4.33	0.66
CPI54	605	4.17	0.61	CPI54	605	4.17	0.61
CPI55	452	4.67	0.91	CPI55	452	4.67	0.91
CPI56	613	4.33	1.04	CPI56	613	4.33	1.04
CPI57	389	4.83	1.1	CPI57	389	4.83	1.1
CPI58A	466	4.67	1.79	CPI58A	466	4.67	1.79
CPI58B	489	4.33	1.63	CPI58B	489	4.33	1.63
CPI60A	1472	4.33	5.12	CPI60A	1472	4.33	5.12
CPI60B	1132	4.33	2.75	CPI60B	1132	4.33	2.75
CPI60C	346	5	1.57	CPI60C	346	5	1.57
CPI63	1113	6	8.54	CPI63	1113	6	8.54
CPI64	534	4.33	2.06	CPI64	534	4.33	2.06
CPI65	517	4.5	2.79	CPI65	517	4.5	2.79
CPI66	1829	4.5	6.03	CPI66	1829	4.5	6.03
CPI67	1293	4.33	7.46	CPI67	1293	4.33	7.46
CPI70	1135	5.83	8.25	CPI70	1135	5.83	8.25
CPI72	422	4.33	1.3	CPI72	422	4.33	1.3
CPJ06	548	4.17	0.52	CPJ06	548	4.17	0.52
CPJ07	601	4.33	0.69	CPJ07	601	4.33	0.69
CPJ10	518	4.33	0.81	CPJ10	518	4.33	0.81

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	838	4.33	0.94	CPJ11	838	4.33	0.94
CPJ12	774	4.33	0.51	CPJ12	774	4.33	0.51
CPJ14	4406	4.67	9.83	CPJ14	4406	4.67	9.83
CPJ15	648	4.33	1.39	CPJ15	648	4.33	1.39
CPJ16	1038	4.33	1.21	CPJ16	1038	4.33	1.21
CPJ17	595	5	1.89	CPJ17	595	5	1.89
CPJ20	1071	4.67	5.2	CPJ20	1071	4.67	5.2
CPJ21	594	4.83	1.11	CPJ21	594	4.83	1.11
CPJ22	1991	4.67	7.81	CPJ22	1991	4.67	7.81
CPJ23	4261	4.83	10.43	CPJ23	4261	4.83	10.43
CPJ27	1625	4.67	2.37	CPJ27	1625	4.67	2.37
CPJ29A	4063	5	12.35	CPJ29A	4063	5	12.35
CPJ33	1791	4.33	1.85	CPJ33	1791	4.33	1.85
CPJ34	1815	4.33	2.31	CPJ34	1815	4.33	2.31
CPJ35	2198	4.33	2.97	CPJ35	2198	4.33	2.97
CPJ37	1926	4.67	3.18	CPJ37	1926	4.67	3.18
CPJ39	1901	5	9.76	CPJ39	1901	5	9.76
CPJ43A	3849	5.17	12.95	CPJ43A	3849	5.17	12.95
CPJ46	1106	4.5	0.9	CPJ46	1106	4.5	0.9
CPJ47	687	4.33	0.51	CPJ47	687	4.33	0.51
CPJ48	1510	4.5	1.65	CPJ48	1510	4.5	1.65
CPJ52	332	4.33	0.35	CPJ52	332	4.33	0.35
CPX02	2848	4.33	3.01	CPX02	2848	4.33	3.01
CPX04	1852	4.33	1.97	CPX04	1852	4.33	1.97
CPX17	1490	4.17	0.98	CPX17	1490	4.17	0.98
A41RIV	1796	8.83	335.51	A41RIV	1810	8.67	335.51
A42RIV	1762	9	340.86	A42RIV	1748	9	340.86
A44RIV	1796	9.33	342.81	A44RIV	1775	9.33	342.81
A46RIV	1746	10	364	A46RIV	1723	10	364
A49RIV	1716	10.67	377.94	A49RIV	1696	10.67	377.94
A51RIV	1671	11	388.64	A51RIV	1650	11	388.64
A56RIV	1636	11	404.96	A56RIV	1615	11	404.96
A57RIV	1607	11.17	414.97	A57RIV	1610	11.17	414.97
A60RIV	1609	11.67	420.03	A60RIV	1587	11.67	420.03
A62RIV	1587	11.83	422.19	A62RIV	1563	11.83	422.19
B08RIV	1045	7.5	174.26	B08RIV	1033	7.5	174.26
B12RIV	1101	9	262.59	B12RIV	1077	7.5	262.59
B15RIV	1001	9	267.64	B15RIV	899	9.17	267.64
B45RIV	1008	9.33	282.17	B45RIV	904	9.33	282.17
B46RIV	1108	8.67	280.17	B46RIV	1076	8.5	280.17
B61RIV	1449	8.83	296.93	B61RIV	1427	8.67	296.93
B62RIV	1520	8.67	321.9	B62RIV	1520	8.67	321.9
B63RIV	1558	8.67	322.12	B63RIV	1560	8.67	322.12
B64RIV	1707	8.67	321.98	B64RIV	1717	8.5	321.98
D27RIV	1220	5.17	123.22	D27RIV	1218	5.17	123.22
D28RIV	1356	5.17	124.9	D28RIV	1354	5.17	124.9
D29RIV	1366	5.17	128.41	D29RIV	1364	5.17	128.41
D30RIV	1338	5.33	129.98	D30RIV	1335	5.33	129.98
D31RIV	1326	5.33	130.65	D31RIV	1324	5.33	130.65
D32RIV	1308	5.5	133.26	D32RIV	1305	5.5	133.26
D33RIV	1257	5.83	151.28	D33RIV	1254	5.83	151.28
D39RIV	1015	7.17	171.57	D39RIV	1008	7.17	171.57
D40RIV	1037	7	169.2	D40RIV	1031	6.83	169.2
D41RIV	1107	6.83	157.27	D41RIV	1104	6.67	157.27
D42RIV	1108	6.67	156.97	D42RIV	1106	6.67	156.97
E41RIV	1183	4.5	111.17	E41RIV	1237	4.5	98.07
E48RIV	877	6.33	63.76	E48RIV	1256	6.5	58.43

Table 4.3.4 Existing Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	923	6.67	86.19	E49RIV	1225	6.67	86.19
E51RIV	903	7.33	89.48	E51RIV	1107	7.33	89.48
F32RIV	516	4.67	27.84	F32RIV	553	5.5	27.84
F33RIV	389	6.17	28.79	F33RIV	593	5.83	28.81
F34RIV	848	6	40.15	F34RIV	1237	6	40.15
F35RIV	850	6.33	42.15	F35RIV	1250	6.33	42.15
G17RIV	910	7.5	90.3	G17RIV	1116	7.5	90.3
G27RIV	914	7	87.92	G27RIV	1143	7	87.92
G28RIV	908	7.17	88.23	G28RIV	1122	7.17	88.23
G30RIV	1561	4.67	103.15	G30RIV	1561	4.67	103.15
G33RIV	1301	5.5	131.39	G33RIV	1297	5.5	131.39
G36RIV	1198	6	152.54	G36RIV	1202	6	152.54
G37RIV	1157	6.33	153.28	G37RIV	1157	6.33	153.28
G38RIV	1130	6.33	154.8	G38RIV	1131	6.33	154.8
G40RIV	1109	6.83	168.55	G40RIV	1106	6.83	168.55
G42RIV	1022	7.33	172.26	G42RIV	1014	7.33	172.26
H69RIV	960	9.17	265.9	H69RIV	873	9.17	265.9
H72RIV	1065	9	277.74	H72RIV	1021	8	277.74
H74RIV	1354	8.67	290.02	H74RIV	1319	8.5	290.02
H77RIV	1398	8.83	294.03	H77RIV	1365	8.83	294.03
H80RIV	1499	8.67	316.49	H80RIV	1478	8.67	316.49
H86RIV	1729	8.5	328.05	H86RIV	1741	8.5	328.05
I36RIV	1790	9.67	345.69	I36RIV	1769	9.67	345.69
I37RIV	1788	9.83	363.37	I37RIV	1767	9.83	363.37
I50RIV	1732	10.17	369.64	I50RIV	1711	10.17	369.64
I62RIV	1731	10.33	370.07	I62RIV	1709	10.33	370.07
I63RIV	1559	11.17	413.5	I63RIV	1537	11	413.5

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPA03	0	0	5.78	CPA03	0	0	5.78
CPA06	56	4.67	1.52	CPA06	56	4.67	1.52
CPA07	66	4.5	0.86	CPA07	66	4.5	0.86
CPA08	50	4.83	2.77	CPA08	51	4.83	2.77
CPA10	66	4.67	4.65	CPA10	66	4.67	4.65
CPA11	0	0	4.5	CPA11	0	0	4.5
CPA14	101	4.5	3.1	CPA14	101	4.5	3.1
CPA15	100	4.83	3.19	CPA15	100	4.83	3.19
CPA16	142	4.67	3.52	CPA16	142	4.67	3.52
CPA17	93	4.67	3.03	CPA17	93	4.67	3.03
CPA18	86	4.67	5.88	CPA18	86	4.67	5.88
CPA19	62	4.5	5.39	CPA19	62	4.5	5.39
CPA19A	106	4.5	2.21	CPA19A	106	4.5	2.21
CPA20	88	4.5	1.75	CPA20	88	4.5	1.75
CPA21	107	4.67	2.52	CPA21	107	4.67	2.52
CPA22	78	4.83	0.99	CPA22	78	4.83	0.99
CPA24	77	5	3.86	CPA24	77	5	3.86
CPA26	68	4.5	3.09	CPA26	68	4.5	3.09
CPA27	4	4.67	4.74	CPA27	4	4.67	4.74
CPA27A	4	4.67	4.19	CPA27A	4	4.67	4.19
CPA29	1	5.83	5.93	CPA29	1	6.17	5.93
CPA30	3	4.67	10.47	CPA30	3	4.67	10.47
CPA30A	10	4.67	4.54	CPA30A	10	4.67	4.54
CPA32	154	4.67	3.07	CPA32	154	4.67	3.07
CPA32A	177	4.67	2.53	CPA32A	177	4.67	2.53
CPA33	98	4.5	6.02	CPA33	98	4.5	6.02
CPA33A	63	4.5	2.99	CPA33A	63	4.5	2.99
CPA34	87	4.5	2.57	CPA34	87	4.5	2.57
CPA35	78	4.5	6.94	CPA35	78	4.5	6.94
CPA37	171	4.67	4.93	CPA37	171	4.67	4.93
CPA39	356	4.33	1.08	CPA39	356	4.33	1.08
CPA41	140	4.67	1.97	CPA41	140	4.67	1.97
CPA42	220	4.5	1.35	CPA42	220	4.5	1.35
CPA43	329	4.33	1.58	CPA43	329	4.33	1.58
CPA44	240	4.83	1.95	CPA44	240	4.83	1.95
CPA45	132	4.33	5.47	CPA45	132	4.33	5.47
CPA46	149	4.33	0.63	CPA46	149	4.33	0.63
CPA47	154	4.33	7.73	CPA47	154	4.33	7.73
CPA49	445	4.67	9.54	CPA49	445	4.67	9.54
CPA50	63	5.83	13.01	CPA50	63	5.83	13.01
CPA51	143	5	16.07	CPA51	143	5	16.07
CPA51A	100	5	3.06	CPA51A	100	5	3.06
CPA52	38	5	13.76	CPA52	38	5	13.76
CPA52A	9	4.33	10.69	CPA52A	9	4.33	10.69
CPA54	132	4.5	2.25	CPA54	132	4.5	2.25
CPA55	71	5.17	16.62	CPA55	71	5.17	16.62
CPA55A	101	4.83	2.87	CPA55A	101	4.83	2.87
CPA56	152	4.5	18.46	CPA56	152	4.5	18.46
CPA59	692	4.5	3.39	CPA59	692	4.5	3.39
CPA60	690	4.67	5.05	CPA60	690	4.67	5.05
CPA63	81	4.5	12.02	CPA63	81	4.5	12.02
CPA63A	81	4.5	5.99	CPA63A	81	4.5	5.99
CPA64	9	4.33	6.55	CPA64	9	4.33	6.55
CPA65	0	4.33	6.32	CPA65	0	4.33	6.32
CPB03	0	0	21.96	CPB03	0	0	21.96
CPB05	182	4.67	4.77	CPB05	182	4.67	4.77
CPB07	134	4.33	1.57	CPB07	134	4.33	1.57

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPB08	57	5.5	2	CPB08	57	5.5	2
CPB09	1	6	61.72	CPB09	1	6	61.31
CPB10	98	4.5	5.9	CPB10	98	4.5	5.9
CPB11	126	4.5	6.14	CPB11	126	4.5	6.14
CPB12	1	5.33	67.78	CPB12	1	5.33	67.78
CPB12A	26	5	6.47	CPB12A	26	5	6.47
CPB13	1	4.33	15.13	CPB13	1	4.33	15.13
CPB14	167	4.5	12.33	CPB14	167	4.5	12.33
CPB16	9	4.5	6.32	CPB16	9	4.5	6.32
CPB18	50	4.67	1.64	CPB18	50	4.67	1.64
CPB19	164	4.67	0.88	CPB19	164	4.67	0.88
CPB21	185	4.5	12.64	CPB21	185	4.5	12.64
CPB24	158	4.33	0.72	CPB24	158	4.33	0.72
CPB24A	96	4.33	0.25	CPB24A	96	4.33	0.25
CPB25	103	4.33	1.65	CPB25	103	4.33	1.65
CPB26	26	4.5	2.01	CPB26	26	4.5	2.01
CPB29	97	4.5	1.23	CPB29	97	4.5	1.23
CPB33	0	0	3.08	CPB33	0	0	3.08
CPB33A	75	4.5	0.79	CPB33A	75	4.5	0.79
CPB34	124	4.33	0.51	CPB34	124	4.33	0.51
CPB35	73	4.5	2.29	CPB35	73	4.5	2.29
CPB35A	73	4.67	1.11	CPB35A	73	4.67	1.11
CPB36	100	4.33	0.47	CPB36	100	4.33	0.47
CPB37	69	4.67	1.36	CPB37	69	4.67	1.36
CPB38	19	4.67	9.08	CPB38	19	4.67	9.08
CPB39	82	4.5	8.35	CPB39	82	4.5	8.35
CPB39A	3	4.5	6.71	CPB39A	3	4.5	6.71
CPB41	159	4.5	0.82	CPB41	159	4.5	0.82
CPB43	88	4.5	0.37	CPB43	88	4.5	0.37
CPB44	141	4.5	0.55	CPB44	141	4.5	0.55
CPB45	122	4.67	14.16	CPB45	122	4.67	14.16
CPB46	105	4.67	2.43	CPB46	105	4.67	2.43
CPB47	88	4.5	2.49	CPB47	88	4.5	2.49
CPB48	96	4.5	2.17	CPB48	96	4.5	2.17
CPB50	165	4.5	0.72	CPB50	165	4.5	0.72
CPB54	11	4.5	8.64	CPB54	11	4.5	8.64
CPB56	86	4.5	0.75	CPB56	86	4.5	0.75
CPB57	50	4.33	0.52	CPB57	50	4.33	0.52
CPB58	115	4.5	0.99	CPB58	115	4.5	0.99
CPB59	127	4.33	15.98	CPB59	127	4.33	15.98
CPB60	41	7.5	18.09	CPB60	41	7.5	18.09
CPB61	264	4.33	3.23	CPB61	264	4.33	3.23
CPB65	26	4.67	13.18	CPB65	26	4.67	13.18
CPC06	93	4.33	0.51	CPC06	93	4.33	0.51
CPC07	95	4.5	2.41	CPC07	95	4.5	2.63
CPC09	44	4.33	0.43	CPC09	44	4.33	0.27
CPC10	72	4.5	1	CPC10	89	4.5	0.78
CPC12	68	4.33	0.44	CPC12	68	4.33	0.44
CPC13	112	4.5	0.73	CPC13	112	4.5	0.73
CPC14	46	4.33	0.77	CPC14	58	4.33	0.35
CPC15	63	4.33	0.53	CPC15	63	4.33	0.24
CPC16	75	4.5	0.91	CPC16	75	4.5	0.51
CPC17	92	4.33	0.84	CPC17	92	4.33	0.42
CPC18	51	4.17	0.72	CPC18	51	4.17	0.33
CPC19	37	4.33	3.39	CPC19	37	4.67	2.08
CPC20	7	4.67	3.26	CPC20	37	4.5	1.68
CPC22	101	4.33	1.69	CPC22	103	4.33	1.67

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPC24	108	4.33	1.85				
CPC25	39	4.17	0.08				
CPC26	29	4.33	0.79				
CPC27	2	4.33	2.82	CPC27	49	4.33	1.4
CPC28	13	4.17	2.78				
CPC29	96	4.33	3.95	CPC29	136	4.33	3.18
CPC30	47	4.33	1.99	CPC30	91	4.33	1.11
CPC31	39	4.83	0.65	CPC31	46	4.83	0.48
CPC33	0	11.83	46.18	CPC33	0	10.83	46.18
CPC33A	35	5.33	2.69	CPC33A	29	4.67	3.46
CPC33B	1	8.17	6.4	CPC33B	31	6.33	6.31
CPC33C	17	16.83	4.43	CPC33C	0	0	3.76
CPC33D	1	9.67	10.83	CPC33D	1	8	10.07
CPC33E	3	10.33	13.51	CPC33E	1	9.5	13.53
CPC33F	0	11.17	13.66	CPC33F	0	10.17	13.66
CPC34	0	15.83	52.84	CPC34	0	14.83	52.84
CPC34A	0	15.83	47.04	CPC34A	0	14.83	47.04
CPC36	0	16.67	55.93	CPC36	0	15.67	55.93
CPC37	68	4.83	2.11	CPC37	68	4.83	2.11
CPC38	109	4.67	0.81	CPC38	109	4.67	0.81
CPC42	55	4.33	0.31	CPC42	55	4.33	0.31
CPC43	62	4.33	0.31	CPC43	62	4.33	0.31
CPC44	139	4.33	0.48	CPC44	139	4.33	0.48
CPC45	83	4.33	0.25	CPC45	83	4.33	0.25
CPC46	98	4.5	0.37	CPC46	98	4.5	0.37
CPC47	2	4.67	61.04	CPC47	2	4.67	61.04
CPC47A	89	4.67	2.57	CPC47A	89	4.67	2.57
CPC48	0	4.33	59.14	CPC48	0	4.33	58.48
CPC48A	38	4.33	2.37	CPC48A	38	4.33	2.37
CPC49	0	4.33	56.11	CPC49	0	4.33	56.11
CPC52	58	5.17	0.77	CPC52	58	5.17	0.77
CPD01	0	0	3.17	CPD01	0	0	3.17
CPD03	145	4.33	0.77	CPD03	145	4.33	0.77
CPD04	67	4.5	0.51	CPD04	67	4.5	0.51
CPD05	0	0	4.18	CPD05	0	0	4.18
CPD08	61	4.5	0.73	CPD08	61	4.5	0.73
CPD09	46	4.5	1.75	CPD09	46	4.5	1.75
CPD10	90	4.67	2.95	CPD10	90	4.67	2.9
CPD11	133	4.5	0.56	CPD11	133	4.5	0.56
CPD12	49	4.33	0.14				
CPD13	40	4.33	4.58	CPD13	40	4.33	4.58
CPD15	162	4.5	0.95	CPD15	162	4.5	0.95
CPD17	67	4.67	1.53	CPD17	67	4.67	1.53
CPD18	51	4.5	1.2				
CPD19	71	4.33	0.52				
CPD20	50	4.33	0.59				
CPD21	27	4.33	0.09				
CPD22	25	13.17	16.27	CPD22	12	8.67	16.24
CPD23	138	4.67	3.1	CPD23	61	4.67	2.67
CPD24	138	4.67	3.57	CPD24	133	4.67	3.35
CPD24A	131	4.5	0.47	CPD24A	117	4.5	0.68
CPD25	30	7	5.54	CPD25	7	7	4.87
CPD26	32	4.83	7.09	CPD26	36	4.83	6.42
CPD27	21	4.5	7.35	CPD27	22	4.5	6.68
CPD33	0	16.83	16.92	CPD33	0	12.67	16.89
CPD35	150	4.67	1.43	CPD35	150	4.67	1.43
CPD37	91	5.33	1.71	CPD37	91	5.33	1.71

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPD38	114	4.5	2.07	CPD38	114	4.5	2.07
CPD39	55	4.5	2.36	CPD39	55	4.5	2.36
CPD42	343	4.67	1.41	CPD42	343	4.67	1.41
CPD46	44	4.17	0.15				
CPD47	18	4.17	0.16				
CPE02	0	0	10.91	CPE02	0	0	10.91
CPE03	0	0	12.93	CPE03	0	0	12.93
CPE05	32	10	8.46	CPE05	32	10	8.46
CPE10	58	4.33	0.27	CPE10	58	4.33	0.27
CPE12	78	4.67	1.93	CPE12	78	4.67	1.93
CPE13	109	4.83	1.93	CPE13	117	4.83	1.86
CPE15	0	0	2.81	CPE15	0	0	2.81
CPE16	0	0	13.72	CPE16	0	0	13.72
CPE19	1	4.5	10.48	CPE19	1	4.5	10.48
CPE20	42	4.83	4.58	CPE20	42	4.83	4.58
CPE22	30	4.67	4.1	CPE22	30	4.67	4.1
CPE23	51	4.67	6.28	CPE23	51	4.67	6.28
CPE24	58	5.83	4.7	CPE24	63	5.83	4.7
CPE25	9	15.83	21.77	CPE25	56	5	9.15
CPE29	55	4.67	8.41	CPE29	55	4.67	8.41
CPE29A	62	4.67	3.83	CPE29A	62	4.67	3.83
CPE30	16	4.67	8.42	CPE30	17	4.67	7.97
CPE31	69	4.5	1.28	CPE31	79	4.5	1.11
CPE32	54	5.33	1.76	CPE32	54	5.33	1.76
CPE33	19	4.17	0.07				
CPE34	18	4.5	6.55	CPE34	18	4.5	6.55
CPE35	177	4.33	0.69	CPE35	177	4.33	0.69
CPE36	44	4.33	6.44	CPE36	87	4.33	0.35
CPE37	24	4.33	4.28	CPE37	24	4.33	4.28
CPE38	14	5.83	19.72	CPE38	14	5.83	19.72
CPE41	59	4.67	3.37	CPE41	58	4.67	3.52
CPE42	60	4.5	2.7	CPE42	102	4.5	2.85
CPE43	144	4.5	1.55	CPE43	118	4.5	1.82
CPE44	4	9	16.15	CPE44	33	10.33	30.15
CPE45	17	4.33	16.34	CPE45	77	4.33	9.82
CPE46	44	4.33	2.75	CPE46	162	4.33	0.54
CPE47	41	4.33	19.59	CPE47	99	4.33	10.86
CPE48	16	4.5	20.45	CPE48	34	4.5	11.72
CPE49	276	4.5	19.71	CPE49	264	4.5	31.23
CPE50	281	4.33	18.78	CPE50	268	4.33	30.84
CPE53	37	4.33	0.71				
CPE54	24	4.5	6.4	CPE54	76	4.33	0.31
CPF01	45	4.67	2.19	CPF01	45	4.67	2.19
CPF02	117	5	1.02	CPF02	117	5	1.02
CPF04	0	0	4.82	CPF04	0	0	4.82
CPF05	0	0	11.01	CPF05	0	0	11.01
CPF06	45	4.33	2.63	CPF06	45	4.33	2.63
CPF08	0	4.67	15.56	CPF08	0	4.67	15.56
CPF09	28	4.83	18.25	CPF09	28	4.83	18.25
CPF12	100	4.33	0.44	CPF12	100	4.33	0.44
CPF15	110	4.67	1.74	CPF15	110	4.67	1.74
CPF16	62	5	1.02	CPF16	62	5	1.02
CPF17	107	4.5	1.73	CPF17	107	4.5	1.73
CPF18	94	4.33	2.55	CPF18	94	4.33	2.55
CPF19	79	4.67	19.1	CPF19	79	4.67	19.1
CPF20	87	4.67	16.52	CPF20	105	4.67	10.16
CPF21	44	4.5	11.12	CPF21	44	4.5	11.12

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPF22	90	4.5	2.07	CPF22	90	4.5	2.07
CPF24	142	4.67	2.93	CPF24	142	4.67	2.93
CPF25	79	5	7.11	CPF25	99	5	5.36
CPF26	35	4.5	4.38				
CPF27	185	5.33	9.63	CPF27	189	5.5	4.27
CPF28	195	4.5	1.26	CPF28	195	4.5	1.26
CPF29	62	4.5	13	CPF29	62	4.5	13
CPF31	176	5.5	18.99	CPF31	173	5.33	12.62
CPF32	103	6.5	7.08	CPF32	60	5.67	13.45
CPF33	192	4.5	0.95	CPF33	173	4.5	1.12
CPF34	91	6.33	18.09	CPF34	138	6.83	10.86
CPF35	60	4.67	3.29	CPF35	149	4.67	1.29
CPF36	135	4.33	0.17				
CPG01	558	6.5	3.49	CPG01	558	6.5	3.49
CPG03	401	4.5	4.52	CPG03	401	4.5	4.52
CPG04	225	4.5	5.34	CPG04	225	4.5	5.34
CPG06	138	4.33	2.88	CPG06	138	4.33	2.88
CPG07	157	4.5	2.79	CPG07	157	4.5	2.79
CPG09	142	6.17	5.24	CPG09	142	6.17	5.24
CPG10	558	6.5	3.93	CPG10	558	6.5	3.93
CPG11	134	6.83	9.78	CPG11	134	6.83	9.78
CPG13	164	4.5	1.3	CPG13	164	4.5	1.3
CPG14	78	4.33	0.35	CPG14	78	4.33	0.35
CPG22	67	4.5	1.8	CPG22	67	4.5	1.8
CPG27	115	4.5	1.51	CPG27	115	4.5	1.51
CPG31	104	5.67	9.35	CPG31	105	5.67	9.35
CPG32	162	4.5	1.71	CPG32	162	4.5	1.71
CPG34	108	4.5	1.85	CPG34	108	4.5	1.85
CPG34A	108	4.33	0.56	CPG34A	108	4.33	0.56
CPG35	50	4.5	2.38	CPG35	50	4.5	2.38
CPG39	69	4.83	1.79	CPG39	69	4.83	1.79
CPG40	53	10.5	6.9	CPG40	53	10.5	6.9
CPG42	52	9.17	5.09	CPG42	52	9.17	5.09
CPG43	62	8	11.48	CPG43	62	8	11.48
CPG45	137	4.83	9.17	CPG45	138	4.83	9.17
CPG46	116	4.5	3	CPG46	116	4.5	3
CPG47	153	4.5	1.5	CPG47	153	4.5	1.5
CPH01	731	4.67	3.2	CPH01	731	4.67	3.2
CPH07	222	4.5	2.35	CPH07	88	4.5	2.35
CPH10	613	4.5	1.63	CPH10	613	4.5	1.63
CPH13	202	4.83	2.88	CPH13	202	4.83	2.88
CPH14	253	4.67	1.65	CPH14	253	4.67	1.65
CPH15	549	4.33	1.29	CPH15	549	4.33	1.29
CPH15A	549	4.33	0.77	CPH15A	549	4.33	0.77
CPH17	174	4.5	1.64	CPH17	174	4.5	1.64
CPH23	957	4.83	4.35	CPH23	957	4.83	4.35
CPH24	314	5.17	1.98	CPH24	314	5.17	1.98
CPH25	410	5.17	1.95	CPH25	410	5.17	1.95
CPH28	163	4.33	1.24	CPH28	163	4.33	1.24
CPH29	137	4.67	1.48	CPH29	137	4.67	1.48
CPH30	147	4.33	0.92	CPH30	147	4.33	0.92
CPH31	300	4.67	1.59	CPH31	300	4.67	1.59
CPH31A	408	4.33	2.57	CPH31A	408	4.33	2.57
CPH32	203	5.5	2.04	CPH32	203	5.5	2.04
CPH32A	124	5.67	0.65	CPH32A	124	5.67	0.65
CPH32B	289	4.33	0.67	CPH32B	289	4.33	0.67
CPH33	230	5.33	2.83	CPH33	230	5.33	2.83

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPH33B	230	5.33	2.06	CPH33B	230	5.33	2.06
CPH34	126	5.33	4.44	CPH34	126	5.33	4.44
CPH35	187	5	1.28	CPH35	187	5	1.28
CPH36	88	4.33	1.63	CPH36	88	4.33	1.63
CPH37	147	5.83	3	CPH37	147	5.83	3
CPH38	587	4.67	1.01	CPH38	587	4.67	1.01
CPH39	492	5.17	1.39	CPH39	492	5.17	1.39
CPH40	341	5.83	1.44	CPH40	341	5.83	1.44
CPH41	148	4.33	0.72	CPH41	148	4.33	0.72
CPH42	56	7.83	3.45	CPH42	56	7.83	3.45
CPH44	69	4.33	2.19	CPH44	69	4.33	2.19
CPH45	102	6	4.72	CPH45	102	6	4.72
CPH46	116	5.83	1.73	CPH46	116	5.83	1.73
CPH47	111	5.83	1.8	CPH47	111	5.83	1.8
CPH48	95	4.33	0.91	CPH48	95	4.33	0.91
CPH49	122	4.5	1.01	CPH49	122	4.5	1.01
CPH50	105	8.67	2.54	CPH50	105	8.67	2.54
CPH51	100	4.33	1.22	CPH51	100	4.33	1.22
CPH52A	51	4.33	1.45	CPH52A	51	4.33	1.45
CPH52B	313	6.67	7.03	CPH52B	313	6.67	7.03
CPH53	313	6.67	4.1	CPH53	313	6.67	4.1
CPH54	277	7.33	7.24	CPH54	277	7.33	7.24
CPH55	258	6	2.32	CPH55	249	6	2.32
CPH56	187	7.17	2.71	CPH56	183	7.17	2.71
CPH57	169	7.83	3.14	CPH57	166	7.83	3.14
CPH58	377	5.5	2.25	CPH58	377	5.5	2.25
CPH59	318	6.33	3.39	CPH59	318	6.33	3.39
CPH60	106	7.33	1.74	CPH60	106	7.33	1.74
CPH61	165	8	2.68	CPH61	165	8	2.68
CPH62	777	5.5	5.23	CPH62	777	5.5	5.23
CPH63	672	6.17	6.64	CPH63	672	6.17	6.64
CPH66	335	7	3.64	CPH66	335	7	3.64
CPH67	77	4.33	0.6	CPH67	77	4.33	0.6
CPH68	157	8.5	3.47	CPH68	154	8.5	3.47
CPH69	217	8.83	4.94	CPH69	217	8.83	4.94
CPH70	113	4.5	1.1	CPH70	113	4.5	1.1
CPH71	310	7.83	4.29	CPH71	310	7.83	4.29
CPH72	296	8.17	4.71	CPH72	296	8.17	4.71
CPH73	268	8	11.08	CPH73	268	8	11.08
CPH74	257	8.83	11.88	CPH74	257	8.83	11.88
CPH75	309	4.17	2.27	CPH75	284	4.17	2.55
CPH76	157	4.67	3.03	CPH76	137	4.67	3.3
CPH77	118	5	3.3	CPH77	112	5	3.57
CPH78	151	6.83	9.12	CPH78	151	6.83	9.12
CPH79	141	7.5	9.62	CPH79	141	7.5	9.62
CPH80	130	8.17	10.08	CPH80	130	8.17	10.08
CPH81	297	4.17	0.46	CPH81	297	4.17	0.46
CPH82	158	4.33	4.41	CPH82	158	4.33	4.41
CPH84	423	4.17	2.91	CPH84	423	4.17	2.91
CPH85	321	4.17	3.89	CPH85	321	4.17	3.89
CPH86	340	4.33	4.97	CPH86	340	4.33	4.97
CPI04	177	4.33	0.78	CPI04	177	4.33	0.78
CPI05	150	4.33	0.79	CPI05	150	4.33	0.79
CPI06	161	4.33	1.28	CPI06	161	4.33	1.28
CPI07	99	5	0.99	CPI07	99	5	0.99
CPI08	122	4.33	2.07	CPI08	122	4.33	2.07
CPI09	97	4.33	1.3	CPI09	97	4.33	1.3

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPI10	58	4.33	2.57	CPI10	58	4.33	2.57
CPI11	61	4.33	1.59	CPI11	61	4.33	1.59
CPI12	161	4.17	4.66	CPI12	161	4.17	4.66
CPI13	175	4.17	5.18	CPI13	175	4.17	5.18
CPI14	176	4.17	5.42	CPI14	176	4.17	5.42
CPI15A	271	4.33	0.73	CPI15A	271	4.33	0.73
CPI17A	245	4.33	0.36	CPI17A	245	4.33	0.36
CPI18	319	4.33	2.24	CPI18	319	4.33	2.24
CPI19	108	5.33	2.53	CPI19	108	5.33	2.53
CPI20	88	6.83	3.15	CPI20	88	6.83	3.15
CPI21	132	4.33	3.62	CPI21	132	4.33	3.62
CPI22	168	4.17	4	CPI22	168	4.17	4
CPI25	408	4.33	0.73	CPI25	408	4.33	0.73
CPI26A	259	4.33	0.81	CPI26A	259	4.33	0.81
CPI27	272	4.67	1.13	CPI27	272	4.67	1.13
CPI28	154	4.33	1.26	CPI28	154	4.33	1.26
CPI29	218	5	1.51	CPI29	218	5	1.51
CPI30	109	4.33	1.68	CPI30	109	4.33	1.68
CPI31	170	5.5	1.87	CPI31	170	5.5	1.87
CPI32	232	4.17	2.18	CPI32	232	4.17	2.18
CPI33	217	4.17	2.37	CPI33	217	4.17	2.37
CPI34	133	4.67	2.69	CPI34	133	4.67	2.69
CPI35	183	4.33	2.88	CPI35	183	4.33	2.88
CPI36	100	5.17	2.89	CPI36	100	5.17	2.89
CPI37	213	4.17	3.29	CPI37	213	4.17	3.29
CPI39	185	4.33	0.47	CPI39	185	4.33	0.47
CPI40	197	4.33	0.87	CPI40	197	4.33	0.87
CPI41	142	4.33	1.35	CPI41	142	4.33	1.35
CPI42	102	4.33	1.77	CPI42	102	4.33	1.77
CPI43	93	4.33	2.2	CPI43	93	4.33	2.2
CPI44A	426	4.33	0.84	CPI44A	426	4.33	0.84
CPI45	238	4.33	1.06	CPI45	238	4.33	1.06
CPI46	155	4.33	1.52	CPI46	155	4.33	1.52
CPI47	94	5.67	1.87	CPI47	94	5.67	1.87
CPI48	76	6.5	2.21	CPI48	76	6.5	2.21
CPI49	163	4.17	4.79	CPI49	163	4.17	4.79
CPI50	258	4.17	5.64	CPI50	258	4.17	5.64
CPI53	281	4.33	0.66	CPI53	281	4.33	0.66
CPI54	203	4.17	0.61	CPI54	203	4.17	0.61
CPI55	112	4.33	0.91	CPI55	112	4.33	0.91
CPI56	173	4.33	1.04	CPI56	173	4.33	1.04
CPI57	127	4.33	1.1	CPI57	127	4.33	1.1
CPI58A	131	4.83	1.79	CPI58A	131	4.83	1.79
CPI58B	153	4.5	1.63	CPI58B	153	4.5	1.63
CPI60A	485	4.5	5.12	CPI60A	485	4.5	5.12
CPI60B	382	4.5	2.75	CPI60B	382	4.5	2.75
CPI60C	80	5.17	1.57	CPI60C	80	5.17	1.57
CPI63	344	6.17	8.54	CPI63	344	6.17	8.54
CPI64	268	4.33	2.06	CPI64	268	4.33	2.06
CPI65	191	4.5	2.79	CPI65	191	4.5	2.79
CPI66	586	4.5	6.03	CPI66	586	4.5	6.03
CPI67	551	4.33	7.46	CPI67	551	4.33	7.46
CPI70	347	6.17	8.25	CPI70	347	6.17	8.25
CPI72	145	4.33	1.3	CPI72	145	4.33	1.3
CPJ06	214	4.33	0.52	CPJ06	214	4.33	0.52
CPJ07	234	4.33	0.69	CPJ07	234	4.33	0.69
CPJ10	158	4.33	0.81	CPJ10	158	4.33	0.81

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
CPJ11	261	4.33	0.94	CPJ11	261	4.33	0.94
CPJ12	326	4.33	0.51	CPJ12	326	4.33	0.51
CPJ14	1797	4.83	9.83	CPJ14	1797	4.83	9.83
CPJ15	220	4.33	1.39	CPJ15	220	4.33	1.39
CPJ16	270	4.33	1.21	CPJ16	270	4.33	1.21
CPJ17	156	5.17	1.89	CPJ17	156	5.17	1.89
CPJ20	457	4.33	5.2	CPJ20	457	4.33	5.2
CPJ21	209	4.33	1.11	CPJ21	209	4.33	1.11
CPJ22	764	4.67	7.81	CPJ22	764	4.67	7.81
CPJ23	1741	5	10.43	CPJ23	1741	5	10.43
CPJ27	540	4.67	2.37	CPJ27	540	4.67	2.37
CPJ29A	1644	5.17	12.35	CPJ29A	1644	5.17	12.35
CPJ33	798	4.33	1.85	CPJ33	798	4.33	1.85
CPJ34	783	4.33	2.31	CPJ34	783	4.33	2.31
CPJ35	886	4.33	2.97	CPJ35	886	4.33	2.97
CPJ37	511	4.67	3.18	CPJ37	511	4.67	3.18
CPJ39	612	5.33	9.76	CPJ39	612	5.33	9.76
CPJ43A	1581	5.5	12.95	CPJ43A	1581	5.5	12.95
CPJ46	547	4.5	0.9	CPJ46	547	4.5	0.9
CPJ47	277	4.33	0.51	CPJ47	277	4.33	0.51
CPJ48	583	4.5	1.65	CPJ48	583	4.5	1.65
CPJ52	155	4.5	0.35	CPJ52	155	4.5	0.35
CPX02	1273	4.33	3.01	CPX02	1273	4.33	3.01
CPX04	917	4.33	1.97	CPX04	917	4.33	1.97
CPX17	809	4.17	0.98	CPX17	809	4.17	0.98
A41RIV	830	10.5	335.51	A41RIV	827	10.5	335.51
A42RIV	821	11.17	340.86	A42RIV	819	11.17	340.86
A44RIV	826	11.67	342.81	A44RIV	823	11.67	342.81
A46RIV	812	12.5	364	A46RIV	808	12.5	364
A49RIV	822	13.33	377.94	A49RIV	817	13.33	377.94
A51RIV	783	14	388.64	A51RIV	778	14	388.64
A56RIV	781	14	404.96	A56RIV	776	14	404.96
A57RIV	772	14.5	414.97	A57RIV	765	14.5	414.97
A60RIV	747	15.33	420.03	A60RIV	740	15.33	420.03
A62RIV	741	15.67	422.19	A62RIV	735	15.67	422.19
B08RIV	268	11.5	174.26	B08RIV	283	11.67	174.26
B12RIV	307	8.83	262.59	B12RIV	303	8.83	262.59
B15RIV	464	9	267.64	B15RIV	460	9	267.64
B45RIV	460	9.33	282.17	B45RIV	456	9.33	282.17
B46RIV	527	9.17	280.17	B46RIV	522	9.17	280.17
B61RIV	723	9.83	296.93	B61RIV	719	9.83	296.93
B62RIV	790	10	321.9	B62RIV	786	10	321.9
B63RIV	792	10	322.12	B63RIV	788	10	322.12
B64RIV	792	10.17	321.98	B64RIV	789	10.17	321.98
D27RIV	238	6.17	123.22	D27RIV	249	9.5	123.22
D28RIV	235	6.17	124.9	D28RIV	250	9.67	124.9
D29RIV	235	6.33	128.41	D29RIV	249	9.67	128.41
D30RIV	233	6.5	129.98	D30RIV	247	9.83	129.98
D31RIV	233	6.67	130.65	D31RIV	248	10	130.65
D32RIV	232	6.83	133.26	D32RIV	247	10.17	133.26
D33RIV	228	7.17	151.28	D33RIV	244	10.5	151.28
D39RIV	254	11.33	171.57	D39RIV	271	11.5	171.57
D40RIV	255	11.17	169.2	D40RIV	272	11.33	169.2
D41RIV	220	8	157.27	D41RIV	237	11.17	157.27
D42RIV	221	7.83	156.97	D42RIV	346	10.33	156.97
E41RIV	297	4.5	111.17	E41RIV	297	4.5	98.07
E48RIV	180	7.5	63.76	E48RIV	223	7.5	58.43

Table 4.3.5 Existing Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contrbuting Area (sq.mi.)
E49RIV	261	4.67	86.19	E49RIV	258	4.67	86.19
E51RIV	210	5.5	89.48	E51RIV	207	5.5	89.48
F32RIV	117	6.17	27.84	F32RIV	133	6	27.84
F33RIV	122	6.67	28.79	F33RIV	142	6.5	28.81
F34RIV	185	6.83	40.15	F34RIV	233	7	40.15
F35RIV	183	7.17	42.15	F35RIV	228	7.33	42.15
G17RIV	238	5.33	90.3	G17RIV	234	5.33	90.3
G27RIV	232	4.83	87.92	G27RIV	229	4.83	87.92
G28RIV	220	5.17	88.23	G28RIV	217	5.17	88.23
G30RIV	250	4.67	103.15	G30RIV	250	4.67	103.15
G33RIV	232	6.83	131.39	G33RIV	247	10.17	131.39
G36RIV	224	7.17	152.54	G36RIV	241	10.5	152.54
G37RIV	223	7.5	153.28	G37RIV	240	10.83	153.28
G38RIV	222	7.67	154.8	G38RIV	239	11	154.8
G40RIV	253	11	168.55	G40RIV	269	11.33	168.55
G42RIV	267	11.33	172.26	G42RIV	281	11.5	172.26
H69RIV	460	9	265.9	H69RIV	456	9	265.9
H72RIV	537	8.83	277.74	H72RIV	532	8.83	277.74
H74RIV	703	9.17	290.02	H74RIV	699	9.17	290.02
H77RIV	716	9.67	294.03	H77RIV	712	9.67	294.03
H80RIV	766	9.83	316.49	H80RIV	762	9.83	316.49
H86RIV	815	10.17	328.05	H86RIV	811	10.17	328.05
I36RIV	815	12	345.69	I36RIV	812	12	345.69
I37RIV	814	12.33	363.37	I37RIV	809	12.33	363.37
I50RIV	818	12.83	369.64	I50RIV	813	12.83	369.64
I62RIV	829	13	370.07	I62RIV	824	13	370.07
I63RIV	778	14.17	413.5	I63RIV	772	14.17	413.5

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
A01	3687	A01	928	A01	3687	A01	928	3687	24 with RR
A03	462	A03	483	A03	462	A03	483	483	6 with RR
A04	464	A04	608	A04	464	A04	608	608	6 with RR
A05	1046	A05	605	A05	1046	A05	605	1046	24 with RR
A06	434	A06	440	A06	434	A06	440	440	6 with RR
A07	265	A07	405	A07	265	A07	405	405	6 with RR
A08	781	A08	485	A08	781	A08	485	781	24 with RR
A09	378	A09	472	A09	378	A09	472	472	6 with RR
A10	621	A10	700	A10	621	A10	700	700	6 with RR
A11	800	A11	608	A11	800	A11	608	800	24 with RR
A12	667	A12	750	A12	667	A12	750	750	6 with RR
A13	479	A13	604	A13	479	A13	604	604	6 with RR
A14	631	A14	736	A14	631	A14	736	736	6 with RR
A15	510	A15	595	A15	510	A15	595	595	6 with RR
A16	275	A16	354	A16	275	A16	354	354	6 with RR
A17	384	A17	485	A17	384	A17	485	485	6 with RR
A18	548	A18	659	A18	548	A18	659	659	6 with RR
A19	388	A19	499	A19	388	A19	499	499	6 with RR
A20	268	A20	353	A20	268	A20	353	353	6 with RR
A21	731	A21	807	A21	731	A21	807	807	6 with RR
A22	273	A22	365	A22	273	A22	365	365	6 with RR
A23	131	A23	195	A23	131	A23	195	195	6 with RR
A24	588	A24	526	A24	588	A24	526	588	24 with RR
A25	135	A25	198	A25	135	A25	198	198	6 with RR
A26	369	A26	515	A26	369	A26	515	515	6 with RR
A27	629	A27	660	A27	629	A27	660	660	6 with RR
A28	426	A28	587	A28	426	A28	587	587	6 with RR
A29	532	A29	517	A29	532	A29	517	532	24 with RR
A30	341	A30	433	A30	341	A30	433	433	6 with RR
A31	356	A31	460	A31	356	A31	460	460	6 with RR
A32	690	A32	770	A32	690	A32	770	770	6 with RR
A33	252	A33	326	A33	252	A33	326	326	6 with RR
A34	338	A34	440	A34	338	A34	440	440	6 with RR
A35	623	A35	742	A35	623	A35	742	742	6 with RR
A36	336	A36	441	A36	336	A36	441	441	6 with RR
A37	860	A37	954	A37	860	A37	954	954	6 with RR
A38	442	A38	590	A38	442	A38	590	590	6 with RR
A39	450	A39	598	A39	450	A39	598	598	6 with RR
A40	485	A40	641	A40	485	A40	641	641	6 with RR
A41	464	A41	557	A41	464	A41	557	557	6 with RR
A42	677	A42	809	A42	677	A42	809	809	6 with RR
A43	450	A43	595	A43	450	A43	595	595	6 with RR
A44	387	A44	512	A44	387	A44	512	512	6 with RR
A45	488	A45	641	A45	488	A45	641	641	6 with RR
A46	200	A46	264	A46	200	A46	264	264	6 with RR
A47	679	A47	831	A47	679	A47	831	831	6 with RR
A48	886	A48	1036	A48	886	A48	1036	1036	6 with RR
A49	565	A49	694	A49	565	A49	694	694	6 with RR
A50	837	A50	976	A50	838	A50	983	983	6 Without RR
A51	612	A51	650	A51	612	A51	646	650	6 with RR
A52	199	A52	265	A52	199	A52	265	265	6 with RR
A53	761	A53	554	A53	761	A53	554	761	24 with RR
A54	367	A54	520	A54	367	A54	520	520	6 with RR
A55	461	A55	607	A55	461	A55	607	607	6 with RR
A56	1251	A56	1175	A56	1251	A56	1175	1251	24 with RR
A57	1400	A57	1400	A57	1400	A57	1400	1400	24 with RR
A58	1444	A58	1289	A58	1444	A58	1289	1444	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
A59	1201	A59	1260	A59	1201	A59	1260	1260	6 with RR
A60	1532	A60	1477	A60	1532	A60	1477	1532	24 with RR
A61	1198	A61	1169	A61	1198	A61	1169	1198	24 with RR
A62	232	A62	313	A62	232	A62	313	313	6 with RR
A63	490	A63	620	A63	490	A63	620	620	6 with RR
A64	251	A64	343	A64	251	A64	343	343	6 with RR
A65	478	A65	660	A65	478	A65	660	660	6 with RR
B01	1659	B01	458	B01	1659	B01	458	1659	24 with RR
B02	1721	B02	847	B02	1721	B02	847	1721	24 with RR
B03	4071	B03	771	B03	4071	B03	771	4071	24 with RR
B04	566	B04	648	B04	566	B04	648	648	6 with RR
B05	382	B05	500	B05	382	B05	500	500	6 with RR
B06	504	B06	651	B06	504	B06	651	651	6 with RR
B07	478	B07	631	B07	478	B07	631	631	6 with RR
B08	458	B08	611	B08	458	B08	611	611	6 with RR
B09	228	B09	315	B09	228	B09	315	315	6 with RR
B10	433	B10	560	B10	433	B10	560	560	6 with RR
B11	217	B11	284	B11	217	B11	284	284	6 with RR
B12	257	B12	341	B12	257	B12	341	341	6 with RR
B13	170	B13	234	B13	170	B13	234	234	6 with RR
B14	304	B14	403	B14	304	B14	403	403	6 with RR
B15	474	B15	599	B15	474	B15	599	599	6 with RR
B16	596	B16	705	B16	596	B16	705	705	6 with RR
B17	52	B17	72	B17	52	B17	72	72	6 with RR
B18	348	B18	456	B18	348	B18	456	456	6 with RR
B19	337	B19	450	B19	337	B19	450	450	6 with RR
B20	182	B20	249	B20	182	B20	249	249	6 with RR
B21	258	B21	354	B21	258	B21	354	354	6 with RR
B22	529	B22	729	B22	529	B22	729	729	6 with RR
B23	210	B23	329	B23	210	B23	329	329	6 with RR
B24	209	B24	307	B24	209	B24	307	307	6 with RR
B25	222	B25	332	B25	222	B25	332	332	6 with RR
B26	216	B26	318	B26	216	B26	318	318	6 with RR
B27	639	B27	751	B27	639	B27	751	751	6 with RR
B28	266	B28	403	B28	266	B28	403	403	6 with RR
B29	510	B29	576	B29	510	B29	576	576	6 with RR
B30	286	B30	428	B30	286	B30	428	428	6 with RR
B31	135	B31	199	B31	135	B31	199	199	6 with RR
B32	37	B32	54	B32	37	B32	54	54	6 with RR
B33	188	B33	272	B33	188	B33	272	272	6 with RR
B34	80	B34	118	B34	80	B34	118	118	6 with RR
B35	157	B35	230	B35	157	B35	230	230	6 with RR
B36	196	B36	261	B36	196	B36	261	261	6 with RR
B37	102	B37	137	B37	102	B37	137	137	6 with RR
B38	328	B38	429	B38	328	B38	429	429	6 with RR
B39	297	B39	414	B39	297	B39	414	414	6 with RR
B40	114	B40	167	B40	114	B40	167	167	6 with RR
B41	285	B41	383	B41	285	B41	383	383	6 with RR
B42	188	B42	256	B42	188	B42	256	256	6 with RR
B43	164	B43	216	B43	164	B43	216	216	6 with RR
B44	298	B44	403	B44	298	B44	403	403	6 with RR
B45	635	B45	713	B45	635	B45	713	713	6 with RR
B46	583	B46	643	B46	583	B46	643	643	6 with RR
B47	280	B47	369	B47	280	B47	369	369	6 with RR
B48	503	B48	650	B48	503	B48	650	650	6 with RR
B49	251	B49	333	B49	251	B49	333	333	6 with RR
B50	235	B50	315	B50	235	B50	315	315	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
B52	375	B52	495	B52	375	B52	495	495	6 with RR
B53	381	B53	502	B53	381	B53	502	502	6 with RR
B54	248	B54	329	B54	248	B54	329	329	6 with RR
B55	74	B55	105	B55	74	B55	105	105	6 with RR
B56	164	B56	218	B56	164	B56	218	218	6 with RR
B57	93	B57	122	B57	93	B57	122	122	6 with RR
B58	174	B58	233	B58	174	B58	233	233	6 with RR
B59	356	B59	476	B59	356	B59	476	476	6 with RR
B60	581	B60	700	B60	581	B60	700	700	6 with RR
B61	489	B61	605	B61	489	B61	605	605	6 with RR
B62	287	B62	381	B62	287	B62	381	381	6 with RR
B63	266	B63	355	B63	266	B63	355	355	6 with RR
B64	252	B64	332	B64	252	B64	332	332	6 with RR
B65	232	B65	311	B65	232	B65	311	311	6 with RR
C01	399	C01	595	C01	399	C01	595	595	6 with RR
C02	136	C02	201	C02	136	C02	201	201	6 with RR
C03	249	C03	373	C03	249	C03	373	373	6 with RR
C04	234	C04	343	C04	234	C04	343	343	6 with RR
C05	198	C05	297	C05	198	C05	297	297	6 with RR
C06	248	C06	365	C06	248	C06	365	365	6 with RR
C07	684	C07	662	C07	684	C07	662	684	24 with RR
C08	518	C08	599	C08	518	C08	599	599	6 with RR
C09	107	C09	158	C09	107	C09	158	158	6 with RR
C10	308	C10	439	C10	308	C10	439	439	6 with RR
C11	171	C11	254	C11	171	C11	254	254	6 with RR
C12	161	C12	240	C12	161	C12	240	240	6 with RR
C13	328	C13	476	C13	328	C13	476	476	6 with RR
C14	157	C14	232	C14	157	C14	232	232	6 with RR
C15	109	C15	148	C15	109	C15	148	148	6 with RR
C16	106	C16	154	C16	106	C16	154	154	6 with RR
C17	116	C17	165	C17	116	C17	165	165	6 with RR
C18	103	C18	140	C18	103	C18	140	140	6 with RR
C19	262	C19	368	C19	262	C19	368	368	6 with RR
C20	294	C20	431	C20	294	C20	431	431	6 with RR
C21	477	C21	687	C21	477	C21	687	687	6 with RR
C22	627	C22	757	C22	627	C22	757	757	6 with RR
C23	387	C23	590	C23	387	C23	590	590	6 with RR
C24	142	C24	208	C24	142	C24	208	208	6 with RR
C25	90	C25	131	C25	90	C25	131	131	6 with RR
C26	88	C26	129	C26	88	C26	129	129	6 with RR
C27	219	C27	307	C27	219	C27	307	307	6 with RR
C28	85	C28	114	C28	85	C28	114	114	6 with RR
C29	358	C29	494	C29	358	C29	494	494	6 with RR
C30	265	C30	363	C30	265	C30	363	363	6 with RR
C31	86	C31	126	C31	86	C31	126	126	6 with RR
C33	8130	C33	1930	C33	8130	C33	1930	8130	24 with RR
C34	428	C34	502	C34	428	C34	502	502	6 with RR
C35	3427	C35	1371	C35	3427	C35	1371	3427	24 with RR
C36	1541	C36	970	C36	1541	C36	970	1541	24 with RR
C37	804	C37	673	C37	804	C37	673	804	24 with RR
C38	337	C38	442	C38	337	C38	442	442	6 with RR
C39	93	C39	143	C39	93	C39	143	143	6 with RR
C40	124	C40	185	C40	124	C40	185	185	6 with RR
C41	62	C41	93	C41	62	C41	93	93	6 with RR
C42	96	C42	138	C42	96	C42	138	138	6 with RR
C43	160	C43	243	C43	160	C43	243	243	6 with RR
C44	203	C44	269	C44	203	C44	269	269	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
C45	145	C45	197	C45	145	C45	197	197	6 with RR
C46	196	C46	267	C46	196	C46	267	267	6 with RR
C47	638	C47	707	C47	638	C47	707	707	6 with RR
C48	262	C48	351	C48	262	C48	351	351	6 with RR
C49	219	C49	297	C49	219	C49	297	297	6 with RR
C51	361	C51	480	C51	361	C51	480	480	6 with RR
C52	339	C52	448	C52	339	C52	448	448	6 with RR
C53	330	C53	437	C53	330	C53	437	437	6 with RR
D01	1121	D01	607	D01	1121	D01	607	1121	24 with RR
D02	444	D02	654	D02	444	D02	654	654	6 with RR
D03	239	D03	361	D03	239	D03	361	361	6 with RR
D04	122	D04	192	D04	122	D04	192	192	6 with RR
D05	724	D05	493	D05	724	D05	493	724	24 with RR
D06	456	D06	432	D06	456	D06	432	456	24 with RR
D07	497	D07	523	D07	497	D07	523	523	6 with RR
D08	192	D08	285	D08	192	D08	285	285	6 with RR
D09	383	D09	533	D09	383	D09	533	533	6 with RR
D10	468	D10	549	D10	468	D10	549	549	6 with RR
D11	296	D11	415	D11	296	D11	415	415	6 with RR
D12	111	D12	163	D12	111	D12	163	163	6 with RR
D13	594	D13	777	D13	594	D13	777	777	6 with RR
D15	489	D15	607	D15	489	D15	607	607	6 with RR
D17	425	D17	515	D17	425	D17	515	515	6 with RR
D18	257	D18	377	D18	257	D18	377	377	6 with RR
D19	161	D19	238	D19	161	D19	238	238	6 with RR
D20	91	D20	134	D20	91	D20	134	134	6 with RR
D21	71	D21	104	D21	71	D21	104	104	6 with RR
D22	2419	D22	1272	D22	2419	D22	1272	2419	24 with RR
D23	450	D23	558	D23	450	D23	558	558	6 with RR
D24	247	D24	340	D24	247	D24	340	340	6 with RR
D25	629	D25	624	D25	629	D25	624	629	24 with RR
D26	977	D26	1003	D26	977	D26	1003	1003	6 with RR
D27	234	D27	306	D27	234	D27	306	306	6 with RR
D28	1025	D28	968	D28	1025	D28	968	1025	24 with RR
D29	1413	D29	735	D29	1413	D29	735	1413	24 with RR
D30	322	D30	445	D30	322	D30	445	445	6 with RR
D31	385	D31	490	D31	385	D31	490	490	6 with RR
D32	414	D32	567	D32	414	D32	567	567	6 with RR
D33	446	D33	559	D33	446	D33	559	559	6 with RR
D34	913	D34	1016	D34	913	D34	1016	1016	6 with RR
D35	642	D35	670	D35	642	D35	670	670	6 with RR
D36	278	D36	368	D36	278	D36	368	368	6 with RR
D37	240	D37	320	D37	240	D37	320	320	6 with RR
D38	293	D38	387	D38	293	D38	387	387	6 with RR
D39	240	D39	316	D39	240	D39	316	316	6 with RR
D40	228	D40	306	D40	228	D40	306	306	6 with RR
D41	317	D41	426	D41	317	D41	426	426	6 with RR
D42	229	D42	314	D42	229	D42	314	314	6 with RR
D43	177	D43	241	D43	177	D43	241	241	6 with RR
D44	304	D44	412	D44	304	D44	412	412	6 with RR
D45	142	D45	191	D45	142	D45	191	191	6 with RR
D46	81	D46	109	D46	81	D46	109	109	6 with RR
D47	44	D47	62	D47	44	D47	62	62	6 with RR
E01	2051	E01	1166	E01	2051	E01	1166	2051	24 with RR
E02	2933	E02	1176	E02	2933	E02	1176	2933	24 with RR
E03	1108	E03	720	E03	1108	E03	720	1108	24 with RR
E04	1142	E04	882	E04	1142	E04	882	1142	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
E05	1014	E05	411	E05	1014	E05	411	1014	24 with RR
E06	774	E06	826	E06	774	E06	826	826	6 with RR
E07	441	E07	459	E07	441	E07	459	459	6 with RR
E08	412	E08	456	E08	412	E08	456	456	6 with RR
E09	229	E09	352	E09	229	E09	352	352	6 with RR
E10	94	E10	132	E10	94	E10	132	132	6 with RR
E11	967	E11	550	E11	967	E11	550	967	24 with RR
E12	550	E12	610	E12	550	E12	610	610	6 with RR
E13	762	E13	730	E13	762	E13	730	762	24 with RR
E14	655	E14	795	E14	655	E14	795	795	6 with RR
E15	623	E15	701	E15	623	E15	701	701	6 with RR
E16	525	E16	635	E16	525	E16	635	635	6 with RR
E17	570	E17	488	E17	570	E17	488	570	24 with RR
E18	429	E18	535	E18	429	E18	535	535	6 with RR
E19	292	E19	407	E19	292	E19	407	407	6 with RR
E20	289	E20	386	E20	289	E20	386	386	6 with RR
E21	216	E21	312	E21	216	E21	312	312	6 with RR
E22	562	E22	633	E22	562	E22	633	633	6 with RR
E23	235	E23	309	E23	235	E23	309	309	6 with RR
E24	184	E24	247	E24	184	E24	247	247	6 with RR
E25	754	E25	809	E25	754	E25	809	809	6 with RR
E26	255	E26	337	E26	255	E26	337	337	6 with RR
E27	116	E27	152	E27	116	E27	152	152	6 with RR
E28	175	E28	232	E28	175	E28	232	232	6 with RR
E29	381	E29	492	E29	381	E29	492	492	6 with RR
E30	430	E30	549	E30	430	E30	549	549	6 with RR
E31	277	E31	374	E31	277	E31	374	374	6 with RR
E32	232	E32	322	E32	232	E32	322	322	6 with RR
E33	47	E33	68	E33	47	E33	68	68	6 with RR
E34	214	E34	283	E34	214	E34	283	283	6 with RR
E35	399	E35	532	E35	399	E35	532	532	6 with RR
E36	196	E36	264	E36	196	E36	264	264	6 with RR
E37	196	E37	261	E37	196	E37	261	261	6 with RR
E38	579	E38	775	E38	579	E38	775	775	6 with RR
E41	682	E41	865	E41	682	E41	865	865	6 with RR
E42	800	E42	951	E42	800	E42	951	951	6 with RR
E43	814	E43	1015	E43	814	E43	1015	1015	6 with RR
E44	671	E44	863	E44	671	E44	863	863	6 with RR
E45	486	E45	647	E45	486	E45	647	647	6 with RR
E46	487	E46	648	E46	487	E46	648	648	6 with RR
E47	859	E47	1145	E47	859	E47	1145	1145	6 with RR
E48	1056	E48	1251	E48	1056	E48	1251	1251	6 with RR
E49	261	E49	357	E49	261	E49	357	357	6 with RR
E50	847	E50	1055	E50	847	E50	1055	1055	6 with RR
E51	1282	E51	1441	E51	1282	E51	1441	1441	6 with RR
E52	288	E52	383	E52	288	E52	383	383	6 with RR
E53	120	E53	168	E53	120	E53	168	168	6 with RR
E54	130	E54	173	E54	130	E54	173	173	6 with RR
F01	566	F01	434	F01	566	F01	434	566	24 with RR
F01A	322	F01A	489	F01A	322	F01A	489	489	6 with RR
F02	232	F02	351	F02	232	F02	351	351	6 with RR
F02A	548	F02A	743	F02A	548	F02A	743	743	6 with RR
F03	588	F03	473	F03	588	F03	473	588	24 with RR
F04	588	F04	367	F04	588	F04	367	588	24 with RR
F05	1000	F05	512	F05	1000	F05	512	1000	24 with RR
F06	633	F06	687	F06	633	F06	687	687	6 with RR
F07	1410	F07	625	F07	1410	F07	625	1410	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
F08	451	F08	529	F08	451	F08	529	529	6 with RR
F09	961	F09	686	F09	961	F09	686	961	24 with RR
F10	1191	F10	838	F10	1191	F10	838	1191	24 with RR
F11	638	F11	527	F11	638	F11	527	638	24 with RR
F12	242	F12	363	F12	242	F12	363	363	6 with RR
F13	207	F13	313	F13	207	F13	313	313	6 with RR
F14	287	F14	427	F14	287	F14	427	427	6 with RR
F15	538	F15	654	F15	538	F15	654	654	6 with RR
F16	133	F16	179	F16	133	F16	179	179	6 with RR
F17	729	F17	732	F17	729	F17	732	732	6 with RR
F18	332	F18	446	F18	332	F18	446	446	6 with RR
F19	538	F19	639	F19	538	F19	639	639	6 with RR
F20	603	F20	739	F20	603	F20	739	739	6 with RR
F21	366	F21	472	F21	366	F21	472	472	6 with RR
F22	332	F22	445	F22	332	F22	445	445	6 with RR
F23	458	F23	570	F23	458	F23	570	570	6 with RR
F24	555	F24	658	F24	555	F24	658	658	6 with RR
F25	1601	F25	1517	F25	1601	F25	1517	1601	24 with RR
F26	459	F26	610	F26	459	F26	610	610	6 with RR
F27	574	F27	721	F27	574	F27	721	721	6 with RR
F28	353	F28	466	F28	353	F28	466	466	6 with RR
F29	416	F29	530	F29	416	F29	530	530	6 with RR
F31	384	F31	511	F31	384	F31	511	511	6 with RR
F32	297	F32	394	F32	297	F32	394	394	6 with RR
F33	519	F33	692	F33	519	F33	692	692	6 with RR
F34	495	F34	635	F34	495	F34	635	635	6 with RR
F35	610	F35	769	F35	610	F35	769	769	6 with RR
F36	179	F36	240	F36	179	F36	240	240	6 with RR
G01	830	G01	774	G01	830	G01	774	830	24 with RR
G02	1563	G02	1298	G02	1563	G02	1298	1563	24 with RR
G03	1941	G03	1510	G03	1941	G03	1510	1941	24 with RR
G04	1891	G04	1426	G04	1891	G04	1426	1891	24 with RR
G05	668	G05	473	G05	668	G05	473	668	24 with RR
G06	2280	G06	1685	G06	2280	G06	1685	2280	24 with RR
G07	1133	G07	1129	G07	1133	G07	1129	1133	24 with RR
G08	317	G08	436	G08	317	G08	436	436	6 with RR
G09	434	G09	540	G09	434	G09	540	540	6 with RR
G10	326	G10	447	G10	326	G10	447	447	6 with RR
G11	402	G11	523	G11	402	G11	523	523	6 with RR
G12	629	G12	692	G12	629	G12	692	692	6 with RR
G13	326	G13	444	G13	326	G13	444	444	6 with RR
G14	144	G14	197	G14	144	G14	197	197	6 with RR
G16	1117	G16	1069	G16	1117	G16	1069	1117	24 with RR
G17	775	G17	1010	G17	775	G17	1010	1010	6 with RR
G18	326	G18	458	G18	326	G18	458	458	6 with RR
G19	608	G19	794	G19	608	G19	794	794	6 with RR
G20	222	G20	318	G20	222	G20	318	318	6 with RR
G21	1310	G21	1097	G21	1310	G21	1097	1310	24 with RR
G22	620	G22	663	G22	620	G22	663	663	6 with RR
G23	627	G23	650	G23	627	G23	650	650	6 with RR
G24	214	G24	318	G24	214	G24	318	318	6 with RR
G25	165	G25	245	G25	165	G25	245	245	6 with RR
G26A	527	G26A	577	G26A	527	G26A	577	577	6 with RR
G26B	134	G26B	197	G26B	134	G26B	197	197	6 with RR
G27	1005	G27	970	G27	1005	G27	970	1005	24 with RR
G28	420	G28	567	G28	420	G28	567	567	6 with RR
G29	2163	G29	1494	G29	2163	G29	1494	2163	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
G30	2326	G30	1561	G30	2326	G30	1561	2326	24 with RR
G31	201	G31	275	G31	201	G31	275	275	6 with RR
G32	867	G32	909	G32	867	G32	909	909	6 with RR
G33	595	G33	724	G33	595	G33	724	724	6 with RR
G34	217	G34	298	G34	217	G34	298	298	6 with RR
G35	405	G35	548	G35	405	G35	548	548	6 with RR
G36	624	G36	692	G36	624	G36	692	692	6 with RR
G37	339	G37	466	G37	339	G37	466	466	6 with RR
G38	230	G38	310	G38	230	G38	310	310	6 with RR
G39	390	G39	473	G39	390	G39	473	473	6 with RR
G40	797	G40	773	G40	797	G40	773	797	24 with RR
G41	301	G41	406	G41	301	G41	406	406	6 with RR
G42	410	G42	517	G42	410	G42	517	517	6 with RR
G43	1232	G43	1010	G43	1232	G43	1010	1232	24 with RR
G44	292	G44	435	G44	292	G44	435	435	6 with RR
G45	1098	G45	983	G45	1098	G45	983	1098	24 with RR
G46	1132	G46	1099	G46	1132	G46	1099	1132	24 with RR
G47	134	G47	184	G47	134	G47	184	184	6 with RR
G48	2282	G48	2151	G48	2282	G48	2151	2282	24 with RR
H01	1538	H01	1383	H01	1538	H01	1383	1538	24 with RR
H02	1954	H02	1946	H02	1954	H02	1946	1954	24 with RR
H03	2159	H03	1910	H03	2159	H03	1910	2159	24 with RR
H04	852	H04	863	H04	852	H04	863	863	6 with RR
H05	1265	H05	1199	H05	1265	H05	1199	1265	24 with RR
H06	719	H06	680	H06	719	H06	680	719	24 with RR
H07	409	H07	517	H07	409	H07	517	517	6 with RR
H08	910	H08	1051	H08	910	H08	1051	1051	6 with RR
H09	1255	H09	1373	H09	1255	H09	1373	1373	6 with RR
H10	561	H10	760	H10	561	H10	760	760	6 with RR
H11	316	H11	430	H11	316	H11	430	430	6 with RR
H12	343	H12	539	H12	343	H12	539	539	6 with RR
H13	362	H13	494	H13	362	H13	494	494	6 with RR
H14	430	H14	515	H14	430	H14	515	515	6 with RR
H15A	543	H15A	751	H15A	543	H15A	751	751	6 with RR
H15B	449	H15B	608	H15B	449	H15B	608	608	6 with RR
H16	202	H16	305	H16	202	H16	305	305	6 with RR
H17	448	H17	615	H17	448	H17	615	615	6 with RR
H18	383	H18	529	H18	383	H18	529	529	6 with RR
H20	581	H20	792	H20	581	H20	792	792	6 with RR
H22	1446	H22	1367	H22	1446	H22	1367	1446	24 with RR
H23	485	H23	609	H23	485	H23	609	609	6 with RR
H24	441	H24	608	H24	441	H24	608	608	6 with RR
H25	307	H25	421	H25	307	H25	421	421	6 with RR
H26	432	H26	535	H26	432	H26	535	535	6 with RR
H27	350	H27	479	H27	350	H27	479	479	6 with RR
H28	505	H28	632	H28	505	H28	632	632	6 with RR
H29	503	H29	569	H29	503	H29	569	569	6 with RR
H30	347	H30	477	H30	347	H30	477	477	6 with RR
H31	323	H31	445	H31	323	H31	445	445	6 with RR
H32	469	H32	585	H32	469	H32	585	585	6 with RR
H33	687	H33	745	H33	687	H33	745	745	6 with RR
H34	439	H34	605	H34	439	H34	605	605	6 with RR
H35	1303	H35	1257	H35	1303	H35	1257	1303	24 with RR
H36	369	H36	506	H36	369	H36	506	506	6 with RR
H37	488	H37	652	H37	488	H37	652	652	6 with RR
H38	436	H38	601	H38	436	H38	601	601	6 with RR
H39	342	H39	469	H39	342	H39	469	469	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
H40	386	H40	515	H40	386	H40	515	515	6 with RR
H41	282	H41	380	H41	282	H41	380	380	6 with RR
H42	321	H42	432	H42	321	H42	432	432	6 with RR
H43	204	H43	276	H43	204	H43	276	276	6 with RR
H44	438	H44	579	H44	438	H44	579	579	6 with RR
H45	232	H45	315	H45	232	H45	315	315	6 with RR
H46	272	H46	374	H46	272	H46	374	374	6 with RR
H47	336	H47	458	H47	336	H47	458	458	6 with RR
H48	308	H48	420	H48	308	H48	420	420	6 with RR
H49	322	H49	442	H49	322	H49	442	442	6 with RR
H50	348	H50	450	H50	348	H50	450	450	6 with RR
H51	292	H51	398	H51	292	H51	398	398	6 with RR
H52	200	H52	271	H52	200	H52	271	271	6 with RR
H53	229	H53	313	H53	229	H53	313	313	6 with RR
H54	189	H54	259	H54	189	H54	259	259	6 with RR
H55	282	H55	384	H55	282	H55	384	384	6 with RR
H56	337	H56	458	H56	337	H56	458	458	6 with RR
H57	365	H57	498	H57	365	H57	498	498	6 with RR
H58	238	H58	324	H58	238	H58	324	324	6 with RR
H59	411	H59	566	H59	411	H59	566	566	6 with RR
H60	396	H60	528	H60	396	H60	528	528	6 with RR
H61	336	H61	458	H61	336	H61	458	458	6 with RR
H62	406	H62	559	H62	406	H62	559	559	6 with RR
H63	182	H63	250	H63	182	H63	250	250	6 with RR
H65	283	H65	388	H65	283	H65	388	388	6 with RR
H66	267	H66	334	H66	267	H66	334	334	6 with RR
H67	162	H67	221	H67	162	H67	221	221	6 with RR
H68	348	H68	470	H68	348	H68	470	470	6 with RR
H69	490	H69	658	H69	490	H69	658	658	6 with RR
H70	356	H70	486	H70	356	H70	486	486	6 with RR
H71	554	H71	710	H71	554	H71	710	710	6 with RR
H72	422	H72	568	H72	422	H72	568	568	6 with RR
H73	307	H73	411	H73	307	H73	411	411	6 with RR
H74	616	H74	747	H74	616	H74	747	747	6 with RR
H75	570	H75	697	H75	570	H75	697	697	6 with RR
H76	812	H76	1001	H76	812	H76	1001	1001	6 with RR
H77	328	H77	444	H77	328	H77	444	444	6 with RR
H78	496	H78	676	H78	496	H78	676	676	6 with RR
H79	716	H79	965	H79	716	H79	965	965	6 with RR
H80	563	H80	765	H80	563	H80	765	765	6 with RR
H81	321	H81	437	H81	321	H81	437	437	6 with RR
H82	609	H82	821	H82	609	H82	821	821	6 with RR
H83	616	H83	784	H83	616	H83	784	784	6 with RR
H84	789	H84	969	H84	789	H84	969	969	6 with RR
H85	1203	H85	1381	H85	1203	H85	1381	1381	6 with RR
H86	956	H86	1095	H86	956	H86	1095	1095	6 with RR
I03	1201	I03	1339	I03	1201	I03	1339	1339	6 with RR
I04	385	I04	529	I04	385	I04	529	529	6 with RR
I05	230	I05	312	I05	230	I05	312	312	6 with RR
I06	447	I06	611	I06	447	I06	611	611	6 with RR
I07	213	I07	290	I07	213	I07	290	290	6 with RR
I08	668	I08	798	I08	668	I08	798	798	6 with RR
I09	295	I09	398	I09	295	I09	398	398	6 with RR
I10	454	I10	612	I10	454	I10	612	612	6 with RR
I11	246	I11	333	I11	246	I11	333	333	6 with RR
I12	721	I12	969	I12	721	I12	969	969	6 with RR
I13	764	I13	1019	I13	764	I13	1019	1019	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
I14	341	I14	457	I14	341	I14	457	457	6 with RR
I15A	420	I15A	574	I15A	420	I15A	574	574	6 with RR
I15B	391	I15B	536	I15B	391	I15B	536	536	6 with RR
I16	564	I16	776	I16	564	I16	776	776	6 with RR
I17A	139	I17A	185	I17A	139	I17A	185	185	6 with RR
I17B	132	I17B	176	I17B	132	I17B	176	176	6 with RR
I17C	266	I17C	353	I17C	266	I17C	353	353	6 with RR
I18	608	I18	769	I18	608	I18	769	769	6 with RR
I19	324	I19	441	I19	324	I19	441	441	6 with RR
I20	650	I20	836	I20	650	I20	836	836	6 with RR
I21	648	I21	876	I21	648	I21	876	876	6 with RR
I22	468	I22	631	I22	468	I22	631	631	6 with RR
I23	499	I23	673	I23	499	I23	673	673	6 with RR
I24	223	I24	299	I24	223	I24	299	299	6 with RR
I25	384	I25	513	I25	384	I25	513	513	6 with RR
I26A	507	I26A	655	I26A	507	I26A	655	655	6 with RR
I26B	90	I26B	120	I26B	90	I26B	120	120	6 with RR
I27	384	I27	517	I27	384	I27	517	517	6 with RR
I28	474	I28	639	I28	474	I28	639	639	6 with RR
I29	401	I29	540	I29	401	I29	540	540	6 with RR
I30	394	I30	534	I30	394	I30	534	534	6 with RR
I31	385	I31	518	I31	385	I31	518	518	6 with RR
I32	693	I32	934	I32	693	I32	934	934	6 with RR
I33	569	I33	768	I33	569	I33	768	768	6 with RR
I34	527	I34	706	I34	527	I34	706	706	6 with RR
I35	544	I35	724	I35	544	I35	724	724	6 with RR
I36	245	I36	332	I36	245	I36	332	332	6 with RR
I37	511	I37	676	I37	511	I37	676	676	6 with RR
I38	143	I38	190	I38	143	I38	190	190	6 with RR
I39	248	I39	331	I39	248	I39	331	331	6 with RR
I40	387	I40	521	I40	387	I40	521	521	6 with RR
I41	437	I41	594	I41	437	I41	594	594	6 with RR
I42	559	I42	757	I42	559	I42	757	757	6 with RR
I43	437	I43	585	I43	437	I43	585	585	6 with RR
I44A	402	I44A	519	I44A	402	I44A	519	519	6 with RR
I44B	314	I44B	417	I44B	314	I44B	417	417	6 with RR
I45	325	I45	432	I45	325	I45	432	432	6 with RR
I46	425	I46	575	I46	425	I46	575	575	6 with RR
I47	434	I47	586	I47	434	I47	586	586	6 with RR
I48	474	I48	637	I48	474	I48	637	637	6 with RR
I49	547	I49	736	I49	547	I49	736	736	6 with RR
I50	794	I50	1021	I50	794	I50	1021	1021	6 with RR
I51	70	I51	99	I51	70	I51	99	99	6 with RR
I52	197	I52	277	I52	197	I52	277	277	6 with RR
I53	178	I53	252	I53	178	I53	252	252	6 with RR
I54	159	I54	230	I54	159	I54	230	230	6 with RR
I55	212	I55	287	I55	212	I55	287	287	6 with RR
I56	350	I56	483	I56	350	I56	483	483	6 with RR
I57	280	I57	373	I57	280	I57	373	373	6 with RR
I58A	249	I58A	326	I58A	249	I58A	326	326	6 with RR
I58B	596	I58B	773	I58B	596	I58B	773	773	6 with RR
I59	193	I59	253	I59	193	I59	253	253	6 with RR
I60A	1120	I60A	1310	I60A	1120	I60A	1310	1310	6 with RR
I60B	214	I60B	282	I60B	214	I60B	282	282	6 with RR
I60C	352	I60C	471	I60C	352	I60C	471	471	6 with RR
I61	484	I61	645	I61	484	I61	645	645	6 with RR
I62	568	I62	759	I62	568	I62	759	759	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
I63	345	I63	456	I63	345	I63	456	456	6 with RR
I64	432	I64	569	I64	432	I64	569	569	6 with RR
I65	430	I65	568	I65	430	I65	568	568	6 with RR
I66	1005	I66	1192	I66	1005	I66	1192	1192	6 with RR
I67	1086	I67	1255	I67	1086	I67	1255	1255	6 with RR
I68	343	I68	452	I68	343	I68	452	452	6 with RR
I69	229	I69	306	I69	229	I69	306	306	6 with RR
I70	382	I70	505	I70	382	I70	505	505	6 with RR
I71	481	I71	635	I71	481	I71	635	635	6 with RR
I72	296	I72	397	I72	296	I72	397	397	6 with RR
J01	3517	J01	2742	J01	3517	J01	2742	3517	24 with RR
J04	195	J04	262	J04	195	J04	262	262	6 with RR
J06	139	J06	202	J06	139	J06	202	202	6 with RR
J07	195	J07	276	J07	195	J07	276	276	6 with RR
J08	61	J08	80	J08	61	J08	80	80	6 with RR
J10	259	J10	356	J10	259	J10	356	356	6 with RR
J11	310	J11	420	J11	310	J11	420	420	6 with RR
J12	199	J12	275	J12	199	J12	275	275	6 with RR
J13	282	J13	339	J13	282	J13	339	339	6 with RR
J14	863	J14	860	J14	863	J14	860	863	24 with RR
J15	807	J15	1044	J15	807	J15	1044	1044	6 with RR
J16	415	J16	555	J16	415	J16	555	555	6 with RR
J17	588	J17	783	J17	588	J17	783	783	6 with RR
J18	800	J18	966	J18	800	J18	966	966	6 with RR
J19	151	J19	202	J19	151	J19	202	202	6 with RR
J20	973	J20	1195	J20	973	J20	1195	1195	6 with RR
J21	335	J21	447	J21	335	J21	447	447	6 with RR
J22	1696	J22	1772	J22	1696	J22	1772	1772	6 with RR
J23	421	J23	564	J23	421	J23	564	564	6 with RR
J24	349	J24	461	J24	349	J24	461	461	6 with RR
J25	427	J25	566	J25	427	J25	566	566	6 with RR
J26	470	J26	631	J26	470	J26	631	631	6 with RR
J27	916	J27	985	J27	916	J27	985	985	6 with RR
J28	635	J28	743	J28	635	J28	743	743	6 with RR
J29A	431	J29A	572	J29A	431	J29A	572	572	6 with RR
J29B	260	J29B	344	J29B	260	J29B	344	344	6 with RR
J29C	1396	J29C	1569	J29C	1396	J29C	1569	1569	6 with RR
J29D	645	J29D	849	J29D	645	J29D	849	849	6 with RR
J30	491	J30	653	J30	491	J30	653	653	6 with RR
J31	456	J31	606	J31	456	J31	606	606	6 with RR
J32	432	J32	583	J32	432	J32	583	583	6 with RR
J33	804	J33	900	J33	804	J33	900	900	6 with RR
J34	386	J34	523	J34	386	J34	523	523	6 with RR
J35	378	J35	485	J35	378	J35	485	485	6 with RR
J36	512	J36	669	J36	512	J36	669	669	6 with RR
J37	541	J37	651	J37	541	J37	651	651	6 with RR
J38	1386	J38	1358	J38	1386	J38	1358	1386	24 with RR
J39	707	J39	807	J39	707	J39	807	807	6 with RR
J40	932	J40	1085	J40	932	J40	1085	1085	6 with RR
J41	299	J41	407	J41	299	J41	407	407	6 with RR
J42	356	J42	479	J42	356	J42	479	479	6 with RR
J43A	486	J43A	657	J43A	486	J43A	657	657	6 with RR
J43B	181	J43B	239	J43B	181	J43B	239	239	6 with RR
J43C	240	J43C	322	J43C	240	J43C	322	322	6 with RR
J44	270	J44	366	J44	270	J44	366	366	6 with RR
J45	479	J45	641	J45	479	J45	641	641	6 with RR
J46	693	J46	895	J46	693	J46	895	895	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
J47	505	J47	674	J47	505	J47	674	674	6 with RR
J48	788	J48	947	J48	788	J48	947	947	6 with RR
J49	325	J49	436	J49	325	J49	436	436	6 with RR
J50	845	J50	1094	J50	845	J50	1094	1094	6 with RR
J51	259	J51	344	J51	259	J51	344	344	6 with RR
J52	236	J52	315	J52	236	J52	315	315	6 with RR
J53	85	J53	113	J53	85	J53	113	113	6 with RR
J54	148	J54	205	J54	148	J54	205	205	6 with RR
X01	840	X01	923	X01	840	X01	923	923	6 with RR
X02	1003	X02	1098	X02	1003	X02	1098	1098	6 with RR
X03	1089	X03	1246	X03	1089	X03	1246	1246	6 with RR
X04	1048	X04	1205	X04	1048	X04	1205	1205	6 with RR
X05	329	X05	433	X05	329	X05	433	433	6 with RR
X06	1088	X06	1234	X06	1088	X06	1234	1234	6 with RR
X07	1901	X07	1901	X07	1901	X07	1901	1901	24 with RR
X08	682	X08	908	X08	682	X08	908	908	6 with RR
X09	632	X09	843	X09	632	X09	843	843	6 with RR
X10	401	X10	535	X10	401	X10	535	535	6 with RR
X11	402	X11	540	X11	402	X11	540	540	6 with RR
X12	342	X12	459	X12	342	X12	459	459	6 with RR
X13	2951	X13	2400	X13	2951	X13	2400	2951	24 with RR
X14	111	X14	153	X14	111	X14	153	153	6 with RR
X15	151	X15	207	X15	151	X15	207	207	6 with RR
X16	419	X16	555	X16	419	X16	555	555	6 with RR
X17	887	X17	1179	X17	887	X17	1179	1179	6 with RR
X18	519	X18	693	X18	519	X18	693	693	6 with RR
CPA03	1617	CPA03	557	CPA03	1501	CPA03	506	1617	24 with RR
CPA06	432	CPA06	343	CPA06	432	CPA06	343	432	24 with RR
CPA07	301	CPA07	375	CPA07	301	CPA07	375	375	6 with RR
CPA08	923	CPA08	404	CPA08	907	CPA08	391	923	24 with RR
CPA10	613	CPA10	453	CPA10	613	CPA10	453	613	24 with RR
CPA11	792	CPA11	256	CPA11	792	CPA11	256	792	24 with RR
CPA14	404	CPA14	316	CPA14	401	CPA14	315	404	24 with RR
CPA15	200	CPA15	217	CPA15	200	CPA15	217	217	6 with RR
CPA16	212	CPA16	225	CPA16	212	CPA16	225	225	6 with RR
CPA17	376	CPA17	356	CPA17	371	CPA17	350	376	24 with RR
CPA18	784	CPA18	405	CPA18	761	CPA18	405	784	24 with RR
CPA19	552	CPA19	339	CPA19	547	CPA19	339	552	24 with RR
CPA19A	363	CPA19A	316	CPA19A	362	CPA19A	316	363	24 with RR
CPA20	303	CPA20	315	CPA20	345	CPA20	351	351	6 Without RR
CPA21	728	CPA21	602	CPA21	728	CPA21	601	728	24 with RR
CPA22	272	CPA22	301	CPA22	272	CPA22	301	301	6 with RR
CPA24	781	CPA24	346	CPA24	780	CPA24	346	781	24 with RR
CPA26	502	CPA26	235	CPA26	480	CPA26	231	502	24 with RR
CPA27	928	CPA27	459	CPA27	928	CPA27	459	928	24 with RR
CPA27A	631	CPA27A	343	CPA27A	631	CPA27A	343	631	24 with RR
CPA29	848	CPA29	297	CPA29	851	CPA29	330	851	24 Without RR
CPA30	1229	CPA30	340	CPA30	1236	CPA30	353	1236	24 Without RR
CPA30A	567	CPA30A	229	CPA30A	563	CPA30A	229	567	24 with RR
CPA32	359	CPA32	340	CPA32	359	CPA32	340	359	24 with RR
CPA32A	352	CPA32A	362	CPA32A	352	CPA32A	362	362	6 with RR
CPA33	596	CPA33	461	CPA33	614	CPA33	477	614	24 Without RR
CPA33A	363	CPA33A	243	CPA33A	357	CPA33A	243	363	24 with RR
CPA34	198	CPA34	140	CPA34	207	CPA34	140	207	24 Without RR
CPA35	360	CPA35	139	CPA35	368	CPA35	139	368	24 Without RR
CPA37	265	CPA37	136	CPA37	250	CPA37	135	265	24 with RR
CPA39	99	CPA39	103	CPA39	99	CPA39	103	103	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPA41	75	CPA41	70	CPA41	75	CPA41	70	75	24 with RR
CPA42	244	CPA42	238	CPA42	244	CPA42	238	244	24 with RR
CPA43	71	CPA43	74	CPA43	71	CPA43	74	74	6 with RR
CPA44	66	CPA44	58	CPA44	66	CPA44	58	66	24 with RR
CPA45	254	CPA45	103	CPA45	243	CPA45	100	254	24 with RR
CPA46	80	CPA46	110	CPA46	80	CPA46	110	110	6 with RR
CPA47	345	CPA47	89	CPA47	351	CPA47	89	351	24 Without RR
CPA49	448	CPA49	196	CPA49	448	CPA49	196	448	24 with RR
CPA50	959	CPA50	316	CPA50	957	CPA50	305	959	24 with RR
CPA51	1034	CPA51	268	CPA51	1037	CPA51	264	1037	24 Without RR
CPA51A	160	CPA51A	155	CPA51A	158	CPA51A	153	160	24 with RR
CPA52	1120	CPA52	298	CPA52	1161	CPA52	318	1161	24 Without RR
CPA52A	1138	CPA52A	299	CPA52A	1175	CPA52A	318	1175	24 Without RR
CPA54	1120	CPA54	688	CPA54	1120	CPA54	688	1120	24 with RR
CPA55	1404	CPA55	242	CPA55	1395	CPA55	257	1404	24 with RR
CPA55A	909	CPA55A	462	CPA55A	909	CPA55A	462	909	24 with RR
CPA56	1239	CPA56	401	CPA56	1255	CPA56	401	1255	24 Without RR
CPA59	2367	CPA59	1882	CPA59	2367	CPA59	1882	2367	24 with RR
CPA60	2719	CPA60	2181	CPA60	2719	CPA60	2181	2719	24 with RR
CPA63	997	CPA63	429	CPA63	1003	CPA63	439	1003	24 Without RR
CPA63A	520	CPA63A	176	CPA63A	516	CPA63A	176	520	24 with RR
CPA64	1201	CPA64	319	CPA64	1157	CPA64	306	1201	24 with RR
CPA65	1492	CPA65	477	CPA65	1400	CPA65	445	1492	24 with RR
CPB03	4908	CPB03	701	CPB03	4908	CPB03	701	4908	24 with RR
CPB05	826	CPB05	650	CPB05	826	CPB05	650	826	24 with RR
CPB07	172	CPB07	132	CPB07	172	CPB07	173	173	6 Without RR
CPB08	218	CPB08	160	CPB08	218	CPB08	161	218	24 with RR
CPB09	4692	CPB09	802	CPB09	4691	CPB09	804	4692	24 with RR
CPB10	592	CPB10	330	CPB10	592	CPB10	330	592	24 with RR
CPB11	593	CPB11	328	CPB11	593	CPB11	328	593	24 with RR
CPB12	4960	CPB12	799	CPB12	4960	CPB12	801	4960	24 with RR
CPB12A	592	CPB12A	267	CPB12A	592	CPB12A	268	592	24 with RR
CPB13	2882	CPB13	491	CPB13	2882	CPB13	491	2882	24 with RR
CPB14	1606	CPB14	392	CPB14	1606	CPB14	392	1606	24 with RR
CPB16	919	CPB16	340	CPB16	919	CPB16	340	919	24 with RR
CPB18	345	CPB18	298	CPB18	345	CPB18	298	345	24 with RR
CPB19	370	CPB19	450	CPB19	370	CPB19	450	450	6 with RR
CPB21	1606	CPB21	352	CPB21	1606	CPB21	352	1606	24 with RR
CPB24	414	CPB24	523	CPB24	414	CPB24	523	523	6 with RR
CPB24A	209	CPB24A	307	CPB24A	209	CPB24A	307	307	6 with RR
CPB25	422	CPB25	408	CPB25	422	CPB25	408	422	24 with RR
CPB26	284	CPB26	241	CPB26	284	CPB26	241	284	24 with RR
CPB29	508	CPB29	418	CPB29	508	CPB29	418	508	24 with RR
CPB33	598	CPB33	245	CPB33	598	CPB33	245	598	24 with RR
CPB33A	214	CPB33A	260	CPB33A	214	CPB33A	260	260	6 with RR
CPB34	344	CPB34	516	CPB34	344	CPB34	516	516	6 with RR
CPB35	535	CPB35	427	CPB35	535	CPB35	427	535	24 with RR
CPB35A	416	CPB35A	427	CPB35A	416	CPB35A	427	427	6 with RR
CPB36	208	CPB36	307	CPB36	208	CPB36	307	307	6 with RR
CPB37	260	CPB37	325	CPB37	260	CPB37	325	325	6 with RR
CPB38	811	CPB38	244	CPB38	813	CPB38	244	813	24 Without RR
CPB39	875	CPB39	294	CPB39	877	CPB39	294	877	24 Without RR
CPB39A	822	CPB39A	302	CPB39A	822	CPB39A	302	822	24 with RR
CPB41	493	CPB41	582	CPB41	493	CPB41	582	582	6 with RR
CPB43	211	CPB43	307	CPB43	211	CPB43	307	307	6 with RR
CPB44	297	CPB44	391	CPB44	297	CPB44	391	391	6 with RR
CPB45	1336	CPB45	408	CPB45	1336	CPB45	408	1336	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPB46	390	CPB46	373	CPB46	390	CPB46	373	390	24 with RR
CPB47	524	CPB47	437	CPB47	524	CPB47	437	524	24 with RR
CPB48	501	CPB48	421	CPB48	501	CPB48	421	501	24 with RR
CPB50	441	CPB50	516	CPB50	441	CPB50	516	516	6 with RR
CPB54	837	CPB54	244	CPB54	839	CPB54	244	839	24 Without RR
CPB56	81	CPB56	128	CPB56	81	CPB56	128	128	6 with RR
CPB57	18	CPB57	101	CPB57	18	CPB57	101	101	6 with RR
CPB58	66	CPB58	113	CPB58	66	CPB58	113	113	6 with RR
CPB59	1065	CPB59	234	CPB59	1065	CPB59	234	1065	24 with RR
CPB60	782	CPB60	153	CPB60	781	CPB60	152	782	24 with RR
CPB61	428	CPB61	346	CPB61	428	CPB61	346	428	24 with RR
CPB65	1011	CPB65	250	CPB65	1011	CPB65	250	1011	24 with RR
CPC06	265	CPC06	399	CPC06	265	CPC06	399	399	6 with RR
CPC07	1195	CPC07	628	CPC07	1193	CPC07	554	1195	24 with RR
CPC09	134	CPC09	210	CPC09	135	CPC09	210	210	6 with RR
CPC10	324	CPC10	382	CPC10	312	CPC10	386	386	6 Without RR
CPC12	261	CPC12	387	CPC12	261	CPC12	387	387	6 with RR
CPC13	394	CPC13	506	CPC13	394	CPC13	506	506	6 with RR
CPC14	194	CPC14	283	CPC14	157	CPC14	233	283	6 with RR
CPC15	120	CPC15	173	CPC15	120	CPC15	173	173	6 with RR
CPC16	228	CPC16	355	CPC16	228	CPC16	355	355	6 with RR
CPC17	206	CPC17	299	CPC17	206	CPC17	299	299	6 with RR
CPC18	118	CPC18	181	CPC18	118	CPC18	181	181	6 with RR
CPC19	673	CPC19	437	CPC19	673	CPC19	437	673	24 with RR
CPC20	492	CPC20	175	CPC20	378	CPC20	297	492	24 with RR
CPC22	983	CPC22	748	CPC22	983	CPC22	754	983	24 with RR
CPC24	1121	CPC24	786					1121	24 with RR
CPC25	90	CPC25	131					131	6 with RR
CPC26	91	CPC26	214					214	6 with RR
CPC27	468	CPC27	215	CPC27	349	CPC27	300	468	24 with RR
CPC28	326	CPC28	192					326	24 with RR
CPC29	464	CPC29	243	CPC29	462	CPC29	264	464	24 with RR
CPC30	468	CPC30	306	CPC30	306	CPC30	322	468	24 with RR
CPC31	182	CPC31	278	CPC31	155	CPC31	218	278	6 with RR
CPC33	7839	CPC33	1637	CPC33	7852	CPC33	1638	7852	24 Without RR
CPC33A	671	CPC33A	317	CPC33A	640	CPC33A	254	671	24 with RR
CPC33B	733	CPC33B	257	CPC33B	717	CPC33B	215	733	24 with RR
CPC33C	1075	CPC33C	465	CPC33C	694	CPC33C	343	1075	24 with RR
CPC33D	1497	CPC33D	316	CPC33D	1149	CPC33D	250	1497	24 with RR
CPC33E	1744	CPC33E	287	CPC33E	1385	CPC33E	209	1744	24 with RR
CPC33F	1689	CPC33F	259	CPC33F	1351	CPC33F	191	1689	24 with RR
CPC34	5438	CPC34	1048	CPC34	5458	CPC34	1049	5458	24 Without RR
CPC34A	5448	CPC34A	1048	CPC34A	5468	CPC34A	1049	5468	24 Without RR
CPC36	5211	CPC36	936	CPC36	5226	CPC36	938	5226	24 Without RR
CPC37	832	CPC37	641	CPC37	832	CPC37	641	832	24 with RR
CPC38	362	CPC38	438	CPC38	362	CPC38	438	438	6 with RR
CPC42	137	CPC42	208	CPC42	137	CPC42	208	208	6 with RR
CPC43	161	CPC43	246	CPC43	161	CPC43	246	246	6 with RR
CPC44	267	CPC44	361	CPC44	267	CPC44	361	361	6 with RR
CPC45	155	CPC45	216	CPC45	155	CPC45	216	216	6 with RR
CPC46	198	CPC46	272	CPC46	198	CPC46	272	272	6 with RR
CPC47	4843	CPC47	855	CPC47	4844	CPC47	856	4844	24 Without RR
CPC47A	633	CPC47A	529	CPC47A	633	CPC47A	529	633	24 with RR
CPC48	4841	CPC48	878	CPC48	4844	CPC48	880	4844	24 Without RR
CPC48A	663	CPC48A	521	CPC48A	663	CPC48A	521	663	24 with RR
CPC49	5017	CPC49	904	CPC49	5032	CPC49	905	5032	24 Without RR
CPC52	123	CPC52	214	CPC52	123	CPC52	214	214	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPD01	1149	CPD01	486	CPD01	1149	CPD01	486	1149	24 with RR
CPD03	544	CPD03	663	CPD03	544	CPD03	663	663	6 with RR
CPD04	235	CPD04	353	CPD04	235	CPD04	353	353	6 with RR
CPD05	779	CPD05	284	CPD05	1021	CPD05	361	1021	24 Without RR
CPD08	249	CPD08	331	CPD08	249	CPD08	331	331	6 with RR
CPD09	629	CPD09	451	CPD09	380	CPD09	307	629	24 with RR
CPD10	631	CPD10	402	CPD10	631	CPD10	405	631	24 with RR
CPD11	295	CPD11	399	CPD11	295	CPD11	399	399	6 with RR
CPD12	111	CPD12	163					163	6 with RR
CPD13	607	CPD13	357	CPD13	825	CPD13	359	825	24 Without RR
CPD15	487	CPD15	544	CPD15	487	CPD15	544	544	6 with RR
CPD17	423	CPD17	373	CPD17	424	CPD17	374	424	24 Without RR
CPD18	254	CPD18	248					254	24 with RR
CPD19	162	CPD19	244					244	6 with RR
CPD20	153	CPD20	224					224	6 with RR
CPD21	57	CPD21	101					101	6 with RR
CPD22	2303	CPD22	907	CPD22	2496	CPD22	952	2496	24 Without RR
CPD23	446	CPD23	309	CPD23	574	CPD23	397	574	24 Without RR
CPD24	446	CPD24	309	CPD24	573	CPD24	356	573	24 Without RR
CPD24A	6	CPD24A	118	CPD24A	5	CPD24A	97	118	6 with RR
CPD25	410	CPD25	174	CPD25	407	CPD25	167	410	24 with RR
CPD26	786	CPD26	357	CPD26	788	CPD26	377	788	24 Without RR
CPD27	389	CPD27	182	CPD27	390	CPD27	193	390	24 Without RR
CPD33	1774	CPD33	677	CPD33	1961	CPD33	718	1961	24 Without RR
CPD35	722	CPD35	752	CPD35	722	CPD35	752	752	6 with RR
CPD37	534	CPD37	521	CPD37	534	CPD37	521	534	24 with RR
CPD38	566	CPD38	506	CPD38	566	CPD38	506	566	24 with RR
CPD39	544	CPD39	477	CPD39	544	CPD39	477	544	24 with RR
CPD42	225	CPD42	209	CPD42	225	CPD42	209	225	24 with RR
CPD46	81	CPD46	109					109	6 with RR
CPD47	43	CPD47	65					65	6 with RR
CPE02	3508	CPE02	1228	CPE02	3508	CPE02	1228	3508	24 with RR
CPE03	2642	CPE03	1115	CPE03	2642	CPE03	1115	2642	24 with RR
CPE05	1136	CPE05	291	CPE05	1136	CPE05	291	1136	24 with RR
CPE10	123	CPE10	172	CPE10	123	CPE10	172	172	6 with RR
CPE12	258	CPE12	115	CPE12	258	CPE12	115	258	24 with RR
CPE13	761	CPE13	662	CPE13	761	CPE13	673	761	24 with RR
CPE15	873	CPE15	416	CPE15	873	CPE15	416	873	24 with RR
CPE16	2472	CPE16	1032	CPE16	2472	CPE16	1032	2472	24 with RR
CPE19	1703	CPE19	873	CPE19	1703	CPE19	873	1703	24 with RR
CPE20	609	CPE20	203	CPE20	609	CPE20	204	609	24 with RR
CPE22	343	CPE22	142	CPE22	310	CPE22	147	343	24 with RR
CPE23	606	CPE23	378	CPE23	606	CPE23	378	606	24 with RR
CPE24	552	CPE24	465	CPE24	552	CPE24	472	552	24 with RR
CPE25	854	CPE25	206	CPE25	638	CPE25	150	854	24 with RR
CPE29	838	CPE29	194	CPE29	838	CPE29	195	838	24 with RR
CPE29A	555	CPE29A	295	CPE29A	556	CPE29A	295	556	24 Without RR
CPE30	938	CPE30	518	CPE30	936	CPE30	526	938	24 with RR
CPE31	193	CPE31	204	CPE31	170	CPE31	199	204	6 with RR
CPE32	433	CPE32	345	CPE32	433	CPE32	345	433	24 with RR
CPE33	16	CPE33	39					39	6 with RR
CPE34	581	CPE34	340	CPE34	582	CPE34	353	582	24 Without RR
CPE35	76	CPE35	126	CPE35	76	CPE35	126	126	6 with RR
CPE36	149	CPE36	41	CPE36	38	CPE36	91	149	24 with RR
CPE37	292	CPE37	63	CPE37	186	CPE37	66	292	24 with RR
CPE38	1108	CPE38	346	CPE38	1039	CPE38	353	1108	24 with RR
CPE41	346	CPE41	204	CPE41	362	CPE41	199	362	24 Without RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPE42	418	CPE42	269	CPE42	454	CPE42	284	454	24 Without RR
CPE43	140	CPE43	104	CPE43	140	CPE43	84	140	24 with RR
CPE44	1591	CPE44	534	CPE44	1662	CPE44	466	1662	24 Without RR
CPE45	826	CPE45	112	CPE45	617	CPE45	141	826	24 with RR
CPE46	118	CPE46	89	CPE46	90	CPE46	172	172	6 Without RR
CPE47	847	CPE47	107	CPE47	634	CPE47	135	847	24 with RR
CPE48	792	CPE48	91	CPE48	579	CPE48	119	792	24 with RR
CPE49	1632	CPE49	503	CPE49	1658	CPE49	423	1658	24 Without RR
CPE50	1646	CPE50	528	CPE50	1666	CPE50	433	1666	24 Without RR
CPE53	46	CPE53	158					158	6 with RR
CPE54	152	CPE54	25	CPE54	51	CPE54	95	152	24 with RR
CPF01	136	CPF01	248	CPF01	136	CPF01	248	248	6 with RR
CPF02	457	CPF02	676	CPF02	457	CPF02	676	676	6 with RR
CPF04	102	CPF04	81	CPF04	102	CPF04	81	102	24 with RR
CPF05	843	CPF05	71	CPF05	843	CPF05	72	843	24 with RR
CPF06	625	CPF06	261	CPF06	625	CPF06	261	625	24 with RR
CPF08	1179	CPF08	234	CPF08	1179	CPF08	234	1179	24 with RR
CPF09	708	CPF09	12	CPF09	708	CPF09	13	708	24 with RR
CPF12	280	CPF12	428	CPF12	280	CPF12	428	428	6 with RR
CPF15	416	CPF15	442	CPF15	416	CPF15	442	442	6 with RR
CPF16	302	CPF16	314	CPF16	302	CPF16	314	314	6 with RR
CPF17	726	CPF17	573	CPF17	726	CPF17	574	726	24 with RR
CPF18	327	CPF18	238	CPF18	327	CPF18	238	327	24 with RR
CPF19	514	CPF19	106	CPF19	513	CPF19	106	514	24 with RR
CPF20	258	CPF20	86	CPF20	325	CPF20	87	325	24 Without RR
CPF21	268	CPF21	26	CPF21	267	CPF21	26	268	24 with RR
CPF22	330	CPF22	283	CPF22	330	CPF22	283	330	24 with RR
CPF24	550	CPF24	436	CPF24	550	CPF24	436	550	24 with RR
CPF25	1246	CPF25	511	CPF25	1245	CPF25	688	1246	24 with RR
CPF26	111	CPF26	62					111	24 with RR
CPF27	2026	CPF27	706	CPF27	790	CPF27	577	2026	24 with RR
CPF28	51	CPF28	101	CPF28	51	CPF28	59	101	6 with RR
CPF29	248	CPF29	64	CPF29	247	CPF29	64	248	24 with RR
CPF31	628	CPF31	279	CPF31	628	CPF31	264	628	24 with RR
CPF32	384	CPF32	106	CPF32	239	CPF32	30	384	24 with RR
CPF33	92	CPF33	181	CPF33	91	CPF33	152	181	6 with RR
CPF34	833	CPF34	344	CPF34	1315	CPF34	432	1315	24 Without RR
CPF35	182	CPF35	145	CPF35	183	CPF35	182	183	24 Without RR
CPF36	43	CPF36	129					129	6 with RR
CPG01	929	CPG01	1080	CPG01	929	CPG01	1080	1080	6 with RR
CPG03	3484	CPG03	2241	CPG03	3484	CPG03	2241	3484	24 with RR
CPG04	2997	CPG04	1747	CPG04	2997	CPG04	1747	2997	24 with RR
CPG06	2274	CPG06	1403	CPG06	2274	CPG06	1403	2274	24 with RR
CPG07	1130	CPG07	826	CPG07	1130	CPG07	826	1130	24 with RR
CPG09	776	CPG09	535	CPG09	776	CPG09	535	776	24 with RR
CPG10	1159	CPG10	1085	CPG10	1159	CPG10	1085	1159	24 with RR
CPG11	550	CPG11	355	CPG11	626	CPG11	430	626	24 Without RR
CPG13	238	CPG13	437	CPG13	238	CPG13	437	437	6 with RR
CPG14	143	CPG14	197	CPG14	143	CPG14	197	197	6 with RR
CPG22	347	CPG22	235	CPG22	347	CPG22	235	347	24 with RR
CPG27	620	CPG27	357	CPG27	619	CPG27	357	620	24 with RR
CPG31	1943	CPG31	1034	CPG31	1965	CPG31	1051	1965	24 Without RR
CPG32	864	CPG32	773	CPG32	864	CPG32	773	864	24 with RR
CPG34	245	CPG34	237	CPG34	245	CPG34	236	245	24 with RR
CPG34A	215	CPG34A	287	CPG34A	215	CPG34A	287	287	6 with RR
CPG35	401	CPG35	299	CPG35	401	CPG35	299	401	24 with RR
CPG39	323	CPG39	316	CPG39	323	CPG39	316	323	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPG40	776	CPG40	279	CPG40	776	CPG40	279	776	24 with RR
CPG42	289	CPG42	160	CPG42	289	CPG42	187	289	24 with RR
CPG43	1455	CPG43	690	CPG43	1463	CPG43	693	1463	24 Without RR
CPG45	2322	CPG45	1226	CPG45	2357	CPG45	1254	2357	24 Without RR
CPG46	1125	CPG46	779	CPG46	1125	CPG46	779	1125	24 with RR
CPG47	599	CPG47	616	CPG47	599	CPG47	616	616	6 with RR
CPH01	2097	CPH01	1764	CPH01	2097	CPH01	1764	2097	24 with RR
CPH07	167	CPH07	135	CPH07	171	CPH07	184	184	6 Without RR
CPH10	1315	CPH10	1317	CPH10	1314	CPH10	1321	1321	6 Without RR
CPH13	255	CPH13	174	CPH13	255	CPH13	174	255	24 with RR
CPH14	248	CPH14	242	CPH14	248	CPH14	242	248	24 with RR
CPH15	984	CPH15	1053	CPH15	984	CPH15	1053	1053	6 with RR
CPH15A	878	CPH15A	1053	CPH15A	878	CPH15A	1053	1053	6 with RR
CPH17	789	CPH17	742	CPH17	789	CPH17	742	789	24 with RR
CPH23	2281	CPH23	1877	CPH23	2281	CPH23	1877	2281	24 with RR
CPH24	870	CPH24	877	CPH24	870	CPH24	877	877	6 with RR
CPH25	856	CPH25	879	CPH25	856	CPH25	879	879	6 with RR
CPH28	115	CPH28	187	CPH28	115	CPH28	187	187	6 with RR
CPH29	11	CPH29	82	CPH29	11	CPH29	82	82	6 with RR
CPH30	128	CPH30	175	CPH30	128	CPH30	171	175	6 with RR
CPH31	752	CPH31	797	CPH31	752	CPH31	797	797	6 with RR
CPH31A	1146	CPH31A	920	CPH31A	1146	CPH31A	920	1146	24 with RR
CPH32	526	CPH32	489	CPH32	526	CPH32	489	526	24 with RR
CPH32A	220	CPH32A	302	CPH32A	220	CPH32A	302	302	6 with RR
CPH32B	336	CPH32B	405	CPH32B	336	CPH32B	405	405	6 with RR
CPH33	891	CPH33	654	CPH33	891	CPH33	654	891	24 with RR
CPH33B	616	CPH33B	571	CPH33B	616	CPH33B	571	616	24 with RR
CPH34	278	CPH34	130	CPH34	278	CPH34	130	278	24 with RR
CPH35	430	CPH35	462	CPH35	430	CPH35	462	462	6 with RR
CPH36	70	CPH36	59	CPH36	70	CPH36	59	70	24 with RR
CPH37	322	CPH37	358	CPH37	322	CPH37	358	358	6 with RR
CPH38	958	CPH38	1217	CPH38	1137	CPH38	1303	1303	6 Without RR
CPH39	719	CPH39	891	CPH39	822	CPH39	944	944	6 Without RR
CPH40	480	CPH40	532	CPH40	537	CPH40	555	555	6 Without RR
CPH41	162	CPH41	247	CPH41	199	CPH41	262	262	6 Without RR
CPH42	209	CPH42	127	CPH42	209	CPH42	127	209	24 with RR
CPH44	56	CPH44	47	CPH44	56	CPH44	47	56	24 with RR
CPH45	254	CPH45	94	CPH45	254	CPH45	94	254	24 with RR
CPH46	369	CPH46	372	CPH46	388	CPH46	376	388	24 Without RR
CPH47	391	CPH47	377	CPH47	374	CPH47	366	391	24 with RR
CPH48	305	CPH48	342	CPH48	305	CPH48	342	342	6 with RR
CPH49	200	CPH49	230	CPH49	200	CPH49	230	230	6 with RR
CPH50	359	CPH50	283	CPH50	359	CPH50	284	359	24 with RR
CPH51	98	CPH51	158	CPH51	98	CPH51	153	158	6 with RR
CPH52A	171	CPH52A	168	CPH52A	171	CPH52A	167	171	24 with RR
CPH52B	766	CPH52B	597	CPH52B	766	CPH52B	597	766	24 with RR
CPH53	697	CPH53	597	CPH53	697	CPH53	597	697	24 with RR
CPH54	693	CPH54	505	CPH54	693	CPH54	504	693	24 with RR
CPH55	728	CPH55	754	CPH55	707	CPH55	732	754	6 with RR
CPH56	623	CPH56	609	CPH56	610	CPH56	598	623	24 with RR
CPH57	533	CPH57	512	CPH57	526	CPH57	505	533	24 with RR
CPH58	799	CPH58	822	CPH58	799	CPH58	822	822	6 with RR
CPH59	706	CPH59	712	CPH59	706	CPH59	712	712	6 with RR
CPH60	360	CPH60	228	CPH60	360	CPH60	244	360	24 with RR
CPH61	392	CPH61	381	CPH61	392	CPH61	381	392	24 with RR
CPH62	1728	CPH62	1501	CPH62	1728	CPH62	1501	1728	24 with RR
CPH63	1582	CPH63	1270	CPH63	1582	CPH63	1270	1582	24 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPH66	705	CPH66	609	CPH66	705	CPH66	609	705	24 with RR
CPH67	87	CPH67	119	CPH67	87	CPH67	119	119	6 with RR
CPH68	494	CPH68	453	CPH68	488	CPH68	448	494	24 with RR
CPH69	551	CPH69	473	CPH69	553	CPH69	478	553	24 Without RR
CPH70	171	CPH70	183	CPH70	171	CPH70	183	183	6 with RR
CPH71	625	CPH71	547	CPH71	625	CPH71	547	625	24 with RR
CPH72	600	CPH72	509	CPH72	600	CPH72	509	600	24 with RR
CPH73	974	CPH73	510	CPH73	974	CPH73	509	974	24 with RR
CPH74	924	CPH74	491	CPH74	924	CPH74	491	924	24 with RR
CPH75	350	CPH75	330	CPH75	342	CPH75	323	350	24 with RR
CPH76	397	CPH76	249	CPH76	397	CPH76	231	397	24 with RR
CPH77	315	CPH77	206	CPH77	311	CPH77	194	315	24 with RR
CPH78	455	CPH78	321	CPH78	458	CPH78	281	458	24 Without RR
CPH79	468	CPH79	134	CPH79	474	CPH79	97	474	24 Without RR
CPH80	475	CPH80	111	CPH80	480	CPH80	88	480	24 Without RR
CPH81	9	CPH81	71	CPH81	9	CPH81	71	71	6 with RR
CPH82	206	CPH82	98	CPH82	206	CPH82	98	206	24 with RR
CPH84	531	CPH84	515	CPH84	628	CPH84	533	628	24 Without RR
CPH85	557	CPH85	459	CPH85	643	CPH85	495	643	24 Without RR
CPH86	556	CPH86	418	CPH86	630	CPH86	438	630	24 Without RR
CPI04	364	CPI04	469	CPI04	364	CPI04	469	469	6 with RR
CPI05	638	CPI05	780	CPI05	638	CPI05	780	780	6 with RR
CPI06	248	CPI06	354	CPI06	248	CPI06	354	354	6 with RR
CPI07	479	CPI07	585	CPI07	479	CPI07	585	585	6 with RR
CPI08	126	CPI08	137	CPI08	126	CPI08	137	137	6 with RR
CPI09	397	CPI09	491	CPI09	397	CPI09	491	491	6 with RR
CPI10	111	CPI10	90	CPI10	111	CPI10	90	111	24 with RR
CPI11	350	CPI11	400	CPI11	350	CPI11	400	400	6 with RR
CPI12	343	CPI12	347	CPI12	343	CPI12	347	347	6 with RR
CPI13	320	CPI13	229	CPI13	320	CPI13	229	320	24 with RR
CPI14	307	CPI14	208	CPI14	307	CPI14	208	307	24 with RR
CPI15A	468	CPI15A	625	CPI15A	468	CPI15A	625	625	6 with RR
CPI17A	369	CPI17A	572	CPI17A	369	CPI17A	572	572	6 with RR
CPI18	336	CPI18	284	CPI18	336	CPI18	284	336	24 with RR
CPI19	282	CPI19	250	CPI19	282	CPI19	250	282	24 with RR
CPI20	243	CPI20	201	CPI20	243	CPI20	201	243	24 with RR
CPI21	248	CPI21	173	CPI21	239	CPI21	166	248	24 with RR
CPI22	221	CPI22	134	CPI22	217	CPI22	131	221	24 with RR
CPI25	390	CPI25	574	CPI25	390	CPI25	574	574	6 with RR
CPI26A	104	CPI26A	135	CPI26A	104	CPI26A	135	135	6 with RR
CPI27	307	CPI27	450	CPI27	307	CPI27	450	450	6 with RR
CPI28	71	CPI28	100	CPI28	71	CPI28	100	100	6 with RR
CPI29	259	CPI29	340	CPI29	259	CPI29	340	340	6 with RR
CPI30	53	CPI30	63	CPI30	53	CPI30	63	63	6 with RR
CPI31	223	CPI31	275	CPI31	223	CPI31	275	275	6 with RR
CPI32	59	CPI32	33	CPI32	59	CPI32	33	59	24 with RR
CPI33	209	CPI33	220	CPI33	209	CPI33	220	220	6 with RR
CPI34	53	CPI34	27	CPI34	53	CPI34	27	53	24 with RR
CPI35	190	CPI35	178	CPI35	190	CPI35	178	190	24 with RR
CPI36	132	CPI36	109	CPI36	132	CPI36	109	132	24 with RR
CPI37	185	CPI37	156	CPI37	185	CPI37	156	185	24 with RR
CPI39	55	CPI39	84	CPI39	55	CPI39	84	84	6 with RR
CPI40	25	CPI40	42	CPI40	25	CPI40	42	42	6 with RR
CPI41	19	CPI41	24	CPI41	19	CPI41	24	24	6 with RR
CPI42	44	CPI42	45	CPI42	44	CPI42	45	45	6 with RR
CPI43	38	CPI43	24	CPI43	38	CPI43	24	38	24 with RR
CPI44A	542	CPI44A	651	CPI44A	542	CPI44A	651	651	6 with RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
CPI45	394	CPI45	523	CPI45	394	CPI45	523	523	6 with RR
CPI46	324	CPI46	412	CPI46	324	CPI46	412	412	6 with RR
CPI47	288	CPI47	283	CPI47	288	CPI47	283	288	24 with RR
CPI48	258	CPI48	221	CPI48	258	CPI48	221	258	24 with RR
CPI49	287	CPI49	207	CPI49	287	CPI49	207	287	24 with RR
CPI50	450	CPI50	223	CPI50	450	CPI50	223	450	24 with RR
CPI53	228	CPI53	302	CPI53	228	CPI53	302	302	6 with RR
CPI54	276	CPI54	391	CPI54	276	CPI54	391	391	6 with RR
CPI55	179	CPI55	247	CPI55	179	CPI55	247	247	6 with RR
CPI56	239	CPI56	318	CPI56	239	CPI56	318	318	6 with RR
CPI57	275	CPI57	252	CPI57	275	CPI57	252	275	24 with RR
CPI58A	272	CPI58A	220	CPI58A	272	CPI58A	220	272	24 with RR
CPI58B	325	CPI58B	296	CPI58B	325	CPI58B	296	325	24 with RR
CPI60A	881	CPI60A	542	CPI60A	881	CPI60A	542	881	24 with RR
CPI60B	604	CPI60B	484	CPI60B	604	CPI60B	484	604	24 with RR
CPI60C	167	CPI60C	148	CPI60C	167	CPI60C	148	167	24 with RR
CPI63	615	CPI63	417	CPI63	615	CPI63	417	615	24 with RR
CPI64	399	CPI64	432	CPI64	399	CPI64	432	432	6 with RR
CPI65	285	CPI65	278	CPI65	285	CPI65	278	285	24 with RR
CPI66	907	CPI66	650	CPI66	907	CPI66	650	907	24 with RR
CPI67	613	CPI67	553	CPI67	613	CPI67	553	613	24 with RR
CPI70	612	CPI70	428	CPI70	612	CPI70	428	612	24 with RR
CPI72	174	CPI72	173	CPI72	174	CPI72	173	174	24 with RR
CPJ06	193	CPJ06	271	CPJ06	193	CPJ06	271	271	6 with RR
CPJ07	194	CPJ07	236	CPJ07	194	CPJ07	236	236	6 with RR
CPJ10	261	CPJ10	314	CPJ10	261	CPJ10	314	314	6 with RR
CPJ11	307	CPJ11	349	CPJ11	307	CPJ11	349	349	6 with RR
CPJ12	189	CPJ12	344	CPJ12	189	CPJ12	344	344	6 with RR
CPJ14	3777	CPJ14	2908	CPJ14	3777	CPJ14	2908	3777	24 with RR
CPJ15	806	CPJ15	828	CPJ15	806	CPJ15	828	828	6 with RR
CPJ16	694	CPJ16	737	CPJ16	694	CPJ16	737	737	6 with RR
CPJ17	584	CPJ17	568	CPJ17	584	CPJ17	568	584	24 with RR
CPJ20	1872	CPJ20	1658	CPJ20	1872	CPJ20	1658	1872	24 with RR
CPJ21	620	CPJ21	770	CPJ21	620	CPJ21	770	770	6 with RR
CPJ22	2549	CPJ22	2359	CPJ22	2549	CPJ22	2359	2549	24 with RR
CPJ23	3654	CPJ23	2820	CPJ23	3654	CPJ23	2820	3654	24 with RR
CPJ27	99	CPJ27	140	CPJ27	99	CPJ27	140	140	6 with RR
CPJ29A	3553	CPJ29A	2663	CPJ29A	3553	CPJ29A	2663	3553	24 with RR
CPJ33	1063	CPJ33	1152	CPJ33	1063	CPJ33	1152	1152	6 with RR
CPJ34	1135	CPJ34	1217	CPJ34	1135	CPJ34	1217	1217	6 with RR
CPJ35	1409	CPJ35	1425	CPJ35	1409	CPJ35	1425	1425	6 with RR
CPJ37	56	CPJ37	93	CPJ37	56	CPJ37	93	93	6 with RR
CPJ39	2438	CPJ39	2188	CPJ39	2438	CPJ39	2188	2438	24 with RR
CPJ43A	3313	CPJ43A	2501	CPJ43A	3313	CPJ43A	2501	3313	24 with RR
CPJ46	1050	CPJ46	1263	CPJ46	1050	CPJ46	1263	1263	6 with RR
CPJ47	538	CPJ47	719	CPJ47	538	CPJ47	719	719	6 with RR
CPJ48	1334	CPJ48	1460	CPJ48	1334	CPJ48	1460	1460	6 with RR
CPJ52	399	CPJ52	545	CPJ52	399	CPJ52	545	545	6 with RR
CPX02	1505	CPX02	1526	CPX02	1505	CPX02	1526	1526	6 with RR
CPX04	1633	CPX04	1612	CPX04	1633	CPX04	1612	1633	24 with RR
CPX17	862	CPX17	837	CPX17	862	CPX17	837	862	24 with RR
A41RIV	8530	A41RIV	861	A41RIV	8700	A41RIV	853	8700	24 Without RR
A42RIV	8616	A42RIV	861	A42RIV	8667	A42RIV	849	8667	24 Without RR
A44RIV	8627	A44RIV	853	A44RIV	8754	A44RIV	840	8754	24 Without RR
A46RIV	8534	A46RIV	887	A46RIV	8710	A46RIV	861	8710	24 Without RR
A49RIV	8468	A49RIV	905	A49RIV	8627	A49RIV	874	8627	24 Without RR
A51RIV	8704	A51RIV	917	A51RIV	8876	A51RIV	901	8876	24 Without RR

Table 4.3.6 Future Conditions Maximum Flow									
Model =>	24 with RR		6 with RR		24 Without RR		6 Without RR	Maximum Flow	
Hydrograph	(cfs)		(cfs)		(cfs)		(cfs)	(cfs)	Model
A56RIV	8877	A56RIV	930	A56RIV	9051	A56RIV	902	9051	24 Without RR
A57RIV	8939	A57RIV	980	A57RIV	9087	A57RIV	958	9087	24 Without RR
A60RIV	8833	A60RIV	1177	A60RIV	9040	A60RIV	1161	9040	24 Without RR
A62RIV	8803	A62RIV	1178	A62RIV	8968	A62RIV	1165	8968	24 Without RR
B08RIV	3889	B08RIV	408	B08RIV	3966	B08RIV	391	3966	24 Without RR
B12RIV	6916	B12RIV	843	B12RIV	7060	B12RIV	841	7060	24 Without RR
B15RIV	7140	B15RIV	690	B15RIV	7315	B15RIV	639	7315	24 Without RR
B45RIV	7261	B45RIV	703	B45RIV	7458	B45RIV	652	7458	24 Without RR
B46RIV	7538	B46RIV	668	B46RIV	7704	B46RIV	657	7704	24 Without RR
B61RIV	8015	B61RIV	900	B61RIV	8156	B61RIV	916	8156	24 Without RR
B62RIV	8512	B62RIV	842	B62RIV	8687	B62RIV	818	8687	24 Without RR
B63RIV	8526	B63RIV	831	B63RIV	8687	B63RIV	807	8687	24 Without RR
B64RIV	8480	B64RIV	840	B64RIV	8637	B64RIV	816	8637	24 Without RR
D27RIV	3005	D27RIV	690	D27RIV	3007	D27RIV	693	3007	24 Without RR
D28RIV	3675	D28RIV	718	D28RIV	3678	D28RIV	720	3678	24 Without RR
D29RIV	4413	D29RIV	691	D29RIV	4416	D29RIV	693	4416	24 Without RR
D30RIV	4296	D30RIV	622	D30RIV	4297	D30RIV	623	4297	24 Without RR
D31RIV	4269	D31RIV	613	D31RIV	4272	D31RIV	614	4272	24 Without RR
D32RIV	4165	D32RIV	590	D32RIV	4167	D32RIV	590	4167	24 Without RR
D33RIV	4487	D33RIV	490	D33RIV	4540	D33RIV	486	4540	24 Without RR
D39RIV	3927	D39RIV	426	D39RIV	3985	D39RIV	410	3985	24 Without RR
D40RIV	3947	D40RIV	427	D40RIV	3996	D40RIV	412	3996	24 Without RR
D41RIV	4027	D41RIV	445	D41RIV	4094	D41RIV	416	4094	24 Without RR
D42RIV	4095	D42RIV	455	D42RIV	4161	D42RIV	426	4161	24 Without RR
E41RIV	2575	E41RIV	1038	E41RIV	2587	E41RIV	1038	2587	24 Without RR
E48RIV	1032	E48RIV	368	E48RIV	1205	E48RIV	360	1205	24 Without RR
E49RIV	2029	E49RIV	403	E49RIV	2030	E49RIV	383	2030	24 Without RR
E51RIV	2031	E51RIV	386	E51RIV	2017	E51RIV	370	2031	24 with RR
F32RIV	599	F32RIV	140	F32RIV	451	F32RIV	54	599	24 with RR
F33RIV	411	F33RIV	46	F33RIV	412	F33RIV	52	412	24 Without RR
F34RIV	948	F34RIV	344	F34RIV	1303	F34RIV	432	1303	24 Without RR
F35RIV	955	F35RIV	174	F35RIV	1236	F35RIV	214	1236	24 Without RR
G17RIV	2043	G17RIV	384	G17RIV	2028	G17RIV	368	2043	24 with RR
G27RIV	2021	G27RIV	395	G27RIV	2013	G27RIV	378	2021	24 with RR
G28RIV	2020	G28RIV	390	G28RIV	2010	G28RIV	373	2020	24 with RR
G30RIV	3363	G30RIV	1561	G30RIV	3364	G30RIV	1561	3364	24 Without RR
G33RIV	4199	G33RIV	584	G33RIV	4201	G33RIV	584	4201	24 Without RR
G36RIV	4521	G36RIV	485	G36RIV	4571	G36RIV	471	4571	24 Without RR
G37RIV	4271	G37RIV	462	G37RIV	4332	G37RIV	435	4332	24 Without RR
G38RIV	4195	G38RIV	460	G38RIV	4238	G38RIV	432	4238	24 Without RR
G40RIV	4031	G40RIV	409	G40RIV	4090	G40RIV	386	4090	24 Without RR
G42RIV	3907	G42RIV	403	G42RIV	3976	G42RIV	383	3976	24 Without RR
H69RIV	7131	H69RIV	695	H69RIV	7323	H69RIV	641	7323	24 Without RR
H72RIV	7702	H72RIV	684	H72RIV	7899	H72RIV	655	7899	24 Without RR
H74RIV	8000	H74RIV	699	H74RIV	8179	H74RIV	701	8179	24 Without RR
H77RIV	7990	H77RIV	834	H77RIV	8170	H77RIV	841	8170	24 Without RR
H80RIV	8455	H80RIV	872	H80RIV	8628	H80RIV	861	8628	24 Without RR
H86RIV	8492	H86RIV	841	H86RIV	8652	H86RIV	826	8652	24 Without RR
I36RIV	8575	I36RIV	872	I36RIV	8689	I36RIV	843	8689	24 Without RR
I37RIV	8588	I37RIV	897	I37RIV	8719	I37RIV	869	8719	24 Without RR
I50RIV	8495	I50RIV	904	I50RIV	8666	I50RIV	876	8666	24 Without RR
I62RIV	8481	I62RIV	874	I62RIV	8643	I62RIV	847	8643	24 Without RR
I63RIV	8846	I63RIV	972	I63RIV	9049	I63RIV	950	9049	24 Without RR

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	1617	13.17	5.78	CPA03	1501	13	5.78
CPA06	432	12.67	1.52	CPA06	432	12.67	1.52
CPA07	301	12.5	0.86	CPA07	301	12.5	0.86
CPA08	923	12.83	2.77	CPA08	907	12.83	2.77
CPA10	613	12.67	4.65	CPA10	613	12.67	4.65
CPA11	792	12.67	4.5	CPA11	792	12.67	4.5
CPA14	404	12.83	3.1	CPA14	401	12.83	3.1
CPA15	200	13.67	3.19	CPA15	200	13.67	3.19
CPA16	212	13.67	3.52	CPA16	212	13.67	3.52
CPA17	376	13.17	3.03	CPA17	371	13.17	3.03
CPA18	784	15	5.88	CPA18	761	15	5.88
CPA19	552	15	5.39	CPA19	547	15	5.39
CPA19A	363	12.67	2.21	CPA19A	362	12.67	2.21
CPA20	303	13	1.75	CPA20	345	13.17	1.75
CPA21	728	12.67	2.52	CPA21	728	12.67	2.52
CPA22	272	12.83	0.99	CPA22	272	12.83	0.99
CPA24	781	12.67	3.86	CPA24	780	12.67	3.86
CPA26	502	13.83	3.09	CPA26	480	13.83	3.09
CPA27	928	12.67	4.74	CPA27	928	12.67	4.74
CPA27A	631	12.67	4.19	CPA27A	631	12.67	4.19
CPA29	848	12.67	5.93	CPA29	851	12.83	5.93
CPA30	1229	12.83	10.47	CPA30	1236	12.83	10.47
CPA30A	567	13.5	4.54	CPA30A	563	13.5	4.54
CPA32	359	13.5	3.07	CPA32	359	13.5	3.07
CPA32A	352	13.5	2.53	CPA32A	352	13.5	2.53
CPA33	596	15.67	6.02	CPA33	614	15.67	6.02
CPA33A	363	15.67	2.99	CPA33A	357	15.67	2.99
CPA34	198	16	2.57	CPA34	207	16	2.57
CPA35	360	16.5	6.94	CPA35	368	16.5	6.94
CPA37	265	14.33	4.93	CPA37	250	14.33	4.93
CPA39	99	13.17	1.08	CPA39	99	13.17	1.08
CPA41	75	14.33	1.97	CPA41	75	14.33	1.97
CPA42	244	13	1.35	CPA42	244	13	1.35
CPA43	71	13.33	1.58	CPA43	71	13.33	1.58
CPA44	66	14.83	1.95	CPA44	66	14.83	1.95
CPA45	254	15	5.47	CPA45	243	15.17	5.47
CPA46	80	12.83	0.63	CPA46	80	12.83	0.63
CPA47	345	17.33	7.73	CPA47	351	17.33	7.73
CPA49	448	12.83	9.54	CPA49	448	12.83	9.54
CPA50	959	16.5	13.01	CPA50	957	16.5	13.01
CPA51	1034	17	16.07	CPA51	1037	17.17	16.07
CPA51A	160	17.33	3.06	CPA51A	158	17.33	3.06
CPA52	1120	13.67	13.76	CPA52	1161	13.67	13.76
CPA52A	1138	13.17	10.69	CPA52A	1175	13.17	10.69
CPA54	1120	12.5	2.25	CPA54	1120	12.5	2.25
CPA55	1404	13.17	16.62	CPA55	1395	13.33	16.62
CPA55A	909	12.83	2.87	CPA55A	909	12.83	2.87
CPA56	1239	14.33	18.46	CPA56	1255	14.33	18.46
CPA59	2367	12.5	3.39	CPA59	2367	12.5	3.39
CPA60	2719	12.67	5.05	CPA60	2719	12.67	5.05
CPA63	997	15.83	12.02	CPA63	1003	15.83	12.02
CPA63A	520	15.5	5.99	CPA63A	516	15.5	5.99
CPA64	1201	13.83	6.55	CPA64	1157	13.83	6.55
CPA65	1492	13.33	6.32	CPA65	1400	13.33	6.32
CPB03	4908	13	21.96	CPB03	4908	13	21.96
CPB05	826	12.67	4.77	CPB05	826	12.67	4.77
CPB07	172	12.5	1.57	CPB07	172	12.5	1.57

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	218	12.67	2	CPB08	218	12.67	2
CPB09	4692	16	61.72	CPB09	4691	16	61.31
CPB10	592	14.67	5.9	CPB10	592	14.67	5.9
CPB11	593	14.67	6.14	CPB11	593	14.67	6.14
CPB12	4960	16	67.78	CPB12	4960	16	67.78
CPB12A	592	15	6.47	CPB12A	592	15	6.47
CPB13	2882	13.17	15.13	CPB13	2882	13.17	15.13
CPB14	1606	14	12.33	CPB14	1606	14	12.33
CPB16	919	14	6.32	CPB16	919	14	6.32
CPB18	345	12.67	1.64	CPB18	345	12.67	1.64
CPB19	370	12.67	0.88	CPB19	370	12.67	0.88
CPB21	1606	14	12.64	CPB21	1606	14	12.64
CPB24	414	12.33	0.72	CPB24	414	12.33	0.72
CPB24A	209	12.33	0.25	CPB24A	209	12.33	0.25
CPB25	422	12.33	1.65	CPB25	422	12.33	1.65
CPB26	284	13	2.01	CPB26	284	13	2.01
CPB29	508	12.5	1.23	CPB29	508	12.5	1.23
CPB33	598	13	3.08	CPB33	598	13	3.08
CPB33A	214	12.5	0.79	CPB33A	214	12.5	0.79
CPB34	344	12.33	0.51	CPB34	344	12.33	0.51
CPB35	535	12.67	2.29	CPB35	535	12.67	2.29
CPB35A	416	12.67	1.11	CPB35A	416	12.67	1.11
CPB36	208	12.33	0.47	CPB36	208	12.33	0.47
CPB37	260	12.67	1.36	CPB37	260	12.67	1.36
CPB38	811	15.67	9.08	CPB38	813	15.67	9.08
CPB39	875	14.83	8.35	CPB39	877	14.83	8.35
CPB39A	822	14.67	6.71	CPB39A	822	14.67	6.71
CPB41	493	12.67	0.82	CPB41	493	12.67	0.82
CPB43	211	12.67	0.37	CPB43	211	12.67	0.37
CPB44	297	12.5	0.55	CPB44	297	12.5	0.55
CPB45	1336	15.17	14.16	CPB45	1336	15.17	14.16
CPB46	390	13	2.43	CPB46	390	13	2.43
CPB47	524	12.67	2.49	CPB47	524	12.67	2.49
CPB48	501	12.5	2.17	CPB48	501	12.5	2.17
CPB50	441	12.5	0.72	CPB50	441	12.5	0.72
CPB54	837	15.33	8.64	CPB54	839	15.33	8.64
CPB56	81	12.83	0.75	CPB56	81	12.83	0.75
CPB57	18	13.67	0.52	CPB57	18	13.67	0.52
CPB58	66	13	0.99	CPB58	66	13	0.99
CPB59	1065	13.67	15.98	CPB59	1065	13.67	15.98
CPB60	782	17.17	18.09	CPB60	781	17.17	18.09
CPB61	428	13.67	3.23	CPB61	428	13.67	3.23
CPB65	1011	13.5	13.18	CPB65	1011	13.5	13.18
CPC06	265	12.33	0.51	CPC06	265	12.33	0.51
CPC07	1195	12.5	2.41	CPC07	1193	12.5	2.63
CPC09	134	12.33	0.43	CPC09	135	12.33	0.27
CPC10	324	12.5	1	CPC10	312	12.5	0.78
CPC12	261	12.33	0.44	CPC12	261	12.33	0.44
CPC13	394	12.5	0.73	CPC13	394	12.5	0.73
CPC14	194	12.5	0.77	CPC14	157	12.33	0.35
CPC15	120	12.33	0.53	CPC15	120	12.33	0.24
CPC16	228	12.5	0.91	CPC16	228	12.5	0.51
CPC17	206	12.33	0.84	CPC17	206	12.33	0.42
CPC18	118	12.33	0.72	CPC18	118	12.33	0.33
CPC19	673	12.67	3.39	CPC19	673	12.67	2.08
CPC20	492	12.5	3.26	CPC20	378	12.5	1.68
CPC22	983	12.33	1.69	CPC22	983	12.33	1.67

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	1121	12.33	1.85				
CPC25	90	12.17	0.08				
CPC26	91	12.33	0.79				
CPC27	468	12.83	2.82	CPC27	349	12.83	1.4
CPC28	326	12.5	2.78				
CPC29	464	12.33	3.95	CPC29	462	12.33	3.18
CPC30	468	12.83	1.99	CPC30	306	12.33	1.11
CPC31	182	12.67	0.65	CPC31	155	12.83	0.48
CPC33	7839	13.33	46.18	CPC33	7852	13.33	46.18
CPC33A	671	13.17	2.69	CPC33A	640	13	3.46
CPC33B	733	13.67	6.4	CPC33B	717	13.17	6.31
CPC33C	1075	13	4.43	CPC33C	694	12.67	3.76
CPC33D	1497	13.5	10.83	CPC33D	1149	13.17	10.07
CPC33E	1744	14	13.51	CPC33E	1385	13.83	13.53
CPC33F	1689	14.33	13.66	CPC33F	1351	14.17	13.66
CPC34	5438	14.83	52.84	CPC34	5458	14.83	52.84
CPC34A	5448	14.83	47.04	CPC34A	5468	14.83	47.04
CPC36	5211	15	55.93	CPC36	5226	15	55.93
CPC37	832	12.83	2.11	CPC37	832	12.83	2.11
CPC38	362	12.67	0.81	CPC38	362	12.67	0.81
CPC42	137	12.33	0.31	CPC42	137	12.33	0.31
CPC43	161	12.33	0.31	CPC43	161	12.33	0.31
CPC44	267	12.33	0.48	CPC44	267	12.33	0.48
CPC45	155	12.33	0.25	CPC45	155	12.33	0.25
CPC46	198	12.5	0.37	CPC46	198	12.5	0.37
CPC47	4843	15.67	61.04	CPC47	4844	15.67	61.04
CPC47A	633	12.67	2.56	CPC47A	633	12.67	2.57
CPC48	4841	15.5	59.14	CPC48	4844	15.5	58.48
CPC48A	663	13.17	2.37	CPC48A	663	13.17	2.37
CPC49	5017	15.17	56.11	CPC49	5032	15.17	56.11
CPC52	123	13.17	0.77	CPC52	123	13.17	0.77
CPD01	1149	12.67	3.17	CPD01	1149	12.67	3.17
CPD03	544	12.33	0.77	CPD03	544	12.33	0.77
CPD04	235	12.5	0.51	CPD04	235	12.5	0.51
CPD05	779	12.83	4.18	CPD05	1021	13.17	4.18
CPD08	249	12.83	0.73	CPD08	249	12.83	0.73
CPD09	629	13.17	1.75	CPD09	380	12.5	1.75
CPD10	631	12.67	2.95	CPD10	631	12.67	2.9
CPD11	295	12.5	0.56	CPD11	295	12.5	0.56
CPD12	111	12.33	0.14				
CPD13	607	12.33	4.58	CPD13	825	13.5	4.58
CPD15	487	12.5	0.95	CPD15	487	12.5	0.95
CPD17	423	12.67	1.53	CPD17	424	12.67	1.53
CPD18	254	12.5	1.2				
CPD19	162	12.33	0.52				
CPD20	153	12.5	0.59				
CPD21	57	12.33	0.09				
CPD22	2303	13.33	16.27	CPD22	2496	13.33	16.24
CPD23	446	12.67	3.1	CPD23	574	12.67	2.67
CPD24	446	12.67	3.57	CPD24	573	12.67	3.35
CPD24A	6	13.5	0.47	CPD24A	5	13.5	0.68
CPD25	410	13.83	5.54	CPD25	407	13.67	4.87
CPD26	786	12.83	7.09	CPD26	788	12.83	6.42
CPD27	389	13.67	7.35	CPD27	390	13.67	6.68
CPD33	1774	14	16.92	CPD33	1961	14	16.89
CPD35	722	12.67	1.43	CPD35	722	12.67	1.43
CPD37	534	13.33	1.71	CPD37	534	13.33	1.71

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	566	13.17	2.07	CPD38	566	13.17	2.07
CPD39	544	13	2.36	CPD39	544	13	2.36
CPD42	225	12.33	1.41	CPD42	225	12.33	1.41
CPD46	81	12.17	0.15				
CPD47	43	12.17	0.16				
CPE02	3508	12.67	10.91	CPE02	3508	12.67	10.91
CPE03	2642	13.33	12.93	CPE03	2642	13.33	12.93
CPE05	1136	13.33	8.46	CPE05	1136	13.33	8.46
CPE10	123	12.33	0.27	CPE10	123	12.33	0.27
CPE12	258	13.17	1.93	CPE12	258	13.17	1.93
CPE13	761	12.67	1.93	CPE13	761	12.67	1.86
CPE15	873	12.5	2.81	CPE15	873	12.5	2.81
CPE16	2472	13.67	13.72	CPE16	2472	13.67	13.72
CPE19	1703	14	10.48	CPE19	1703	14	10.48
CPE20	609	16.17	4.58	CPE20	609	16.17	4.58
CPE22	343	15.33	4.1	CPE22	310	13.5	4.1
CPE23	606	13.17	6.28	CPE23	606	13.17	6.28
CPE24	552	13.17	4.7	CPE24	552	13.17	4.7
CPE25	854	17.17	21.77	CPE25	638	17	9.15
CPE29	838	16	8.41	CPE29	838	16	8.41
CPE29A	555	14.83	3.83	CPE29A	556	14.83	3.83
CPE30	938	15.5	8.42	CPE30	936	15.67	7.97
CPE31	193	13.5	1.28	CPE31	170	14.17	1.11
CPE32	433	13.33	1.76	CPE32	433	13.33	1.76
CPE33	16	12.67	0.07				
CPE34	581	13.5	6.55	CPE34	582	13.5	6.55
CPE35	76	13.67	0.69	CPE35	76	13.67	0.69
CPE36	149	17	6.44	CPE36	38	14.5	0.35
CPE37	292	16.33	4.28	CPE37	186	14.83	4.28
CPE38	1108	16.67	19.72	CPE38	1039	16.5	19.72
CPE41	346	14.83	3.37	CPE41	362	14.83	3.52
CPE42	418	13.5	2.7	CPE42	454	13.5	2.85
CPE43	140	13	1.55	CPE43	140	13	1.82
CPE44	1591	16.33	16.15	CPE44	1662	16.67	30.15
CPE45	826	17.33	16.34	CPE45	617	17.33	9.82
CPE46	118	17.67	2.75	CPE46	90	12.33	0.54
CPE47	847	17.67	19.59	CPE47	634	17.67	10.86
CPE48	792	18.33	20.45	CPE48	579	18.5	11.72
CPE49	1632	17	19.71	CPE49	1658	17.33	31.23
CPE50	1646	16.67	18.78	CPE50	1666	17	30.84
CPE53	46	13.5	0.71				
CPE54	152	17.33	6.4	CPE54	51	12.83	0.31
CPF01	136	13.83	2.19	CPF01	136	13.83	2.19
CPF02	457	12.67	1.02	CPF02	457	12.67	1.02
CPF04	102	15.17	4.82	CPF04	102	15.17	4.82
CPF05	843	13.17	11.01	CPF05	843	13.17	11.01
CPF06	625	12.33	2.63	CPF06	625	12.33	2.63
CPF08	1179	13	15.56	CPF08	1179	13	15.56
CPF09	708	13.5	18.25	CPF09	708	13.5	18.25
CPF12	280	12.33	0.44	CPF12	280	12.33	0.44
CPF15	416	13	1.74	CPF15	416	13	1.74
CPF16	302	13	1.02	CPF16	302	13	1.02
CPF17	726	12.5	1.74	CPF17	726	12.5	1.73
CPF18	327	12.33	2.55	CPF18	327	12.33	2.55
CPF19	514	14.5	19.1	CPF19	513	14.5	19.1
CPF20	258	13.17	16.52	CPF20	325	13.17	10.16
CPF21	268	15.17	11.12	CPF21	267	15.17	11.12

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	330	12.5	2.07	CPF22	330	12.5	2.07
CPF24	550	12.67	2.93	CPF24	550	12.67	2.93
CPF25	1246	13.33	7.11	CPF25	1245	13.33	5.36
CPF26	111	13.17	4.38				
CPF27	2026	13.33	9.63	CPF27	790	13.33	4.27
CPF28	51	14.33	1.26	CPF28	51	14.33	1.26
CPF29	248	16	13	CPF29	247	16	13
CPF31	628	12.83	18.99	CPF31	628	12.83	12.62
CPF32	384	13.17	7.08	CPF32	239	16.83	13.45
CPF33	92	13	0.95	CPF33	91	13	1.12
CPF34	833	14.67	18.09	CPF34	1315	14.33	10.86
CPF35	182	13.17	3.29	CPF35	183	13.17	1.29
CPF36	43	12.83	0.16				
CPG01	929	14.17	3.49	CPG01	929	14.17	3.49
CPG03	3484	12.5	4.52	CPG03	3484	12.5	4.52
CPG04	2997	12.5	5.34	CPG04	2997	12.5	5.34
CPG06	2274	12.33	2.88	CPG06	2274	12.33	2.88
CPG07	1130	12.5	2.79	CPG07	1130	12.5	2.79
CPG09	776	14.17	5.24	CPG09	776	14.17	5.24
CPG10	1159	12.67	3.93	CPG10	1159	12.67	3.93
CPG11	550	15.83	9.78	CPG11	626	15.33	9.78
CPG13	238	12.83	1.3	CPG13	238	12.83	1.3
CPG14	143	12.33	0.35	CPG14	143	12.33	0.35
CPG22	347	13	1.8	CPG22	347	13	1.8
CPG27	620	12.67	1.51	CPG27	619	12.67	1.51
CPG31	1943	13.17	9.35	CPG31	1965	13.17	9.35
CPG32	864	12.5	1.71	CPG32	864	12.5	1.71
CPG34	245	12.83	1.85	CPG34	245	12.83	1.85
CPG34A	215	12.33	0.56	CPG34A	215	12.33	0.56
CPG35	401	12.5	2.38	CPG35	401	12.5	2.38
CPG39	323	13	1.79	CPG39	323	13	1.79
CPG40	776	12.83	6.9	CPG40	776	12.83	6.9
CPG42	289	13	5.09	CPG42	289	13	5.09
CPG43	1455	14.17	11.48	CPG43	1463	14.17	11.48
CPG45	2322	12.83	9.17	CPG45	2357	12.83	9.17
CPG46	1125	12.5	3	CPG46	1125	12.5	3
CPG47	599	12.5	1.5	CPG47	599	12.5	1.5
CPH01	2097	12.33	3.2	CPH01	2097	12.33	3.2
CPH07	167	12.83	2.35	CPH07	171	12.83	2.35
CPH10	1315	12.5	1.63	CPH10	1314	12.5	1.63
CPH13	255	13.67	2.88	CPH13	255	13.67	2.88
CPH14	248	13.17	1.65	CPH14	248	13.17	1.65
CPH15	984	12.33	1.29	CPH15	984	12.33	1.29
CPH15A	878	12.33	0.77	CPH15A	878	12.33	0.77
CPH17	789	12.5	1.64	CPH17	789	12.5	1.64
CPH23	2281	12.83	4.35	CPH23	2281	12.83	4.35
CPH24	870	12.83	1.98	CPH24	870	12.83	1.98
CPH25	856	13	1.95	CPH25	856	13	1.95
CPH28	115	13.17	1.24	CPH28	115	13.17	1.24
CPH29	11	16.67	1.48	CPH29	11	16.67	1.48
CPH30	128	13.17	0.88	CPH30	128	13.17	0.92
CPH31	752	12.67	1.59	CPH31	752	12.67	1.59
CPH31A	1146	12.33	2.57	CPH31A	1146	12.33	2.57
CPH32	526	12.83	2.04	CPH32	526	12.83	2.04
CPH32A	220	12.5	0.65	CPH32A	220	12.5	0.65
CPH32B	336	12.33	0.67	CPH32B	336	12.33	0.67
CPH33	891	12.67	2.83	CPH33	891	12.67	2.83

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	616	13.17	2.06	CPH33B	616	13.17	2.06
CPH34	278	14	4.44	CPH34	278	14	4.44
CPH35	430	13	1.28	CPH35	430	13	1.28
CPH36	70	13.83	1.63	CPH36	70	13.83	1.63
CPH37	322	13.67	3	CPH37	322	13.67	3
CPH38	958	12.67	1.01	CPH38	1137	12.67	1.01
CPH39	719	13.33	1.39	CPH39	822	13.17	1.39
CPH40	480	13.83	1.44	CPH40	537	13.67	1.44
CPH41	162	13.67	0.72	CPH41	199	13.67	0.72
CPH42	209	15.17	3.45	CPH42	209	15.17	3.45
CPH44	56	14.83	2.19	CPH44	56	14.83	2.19
CPH45	254	14.5	4.72	CPH45	254	14.5	4.72
CPH46	369	13.33	1.73	CPH46	388	13.33	1.73
CPH47	391	13.33	1.8	CPH47	374	13.33	1.8
CPH48	305	12.33	0.91	CPH48	305	12.33	0.91
CPH49	200	13	1.01	CPH49	200	13	1.01
CPH50	359	15.33	2.54	CPH50	359	15.33	2.54
CPH51	98	13.83	1.18	CPH51	98	13.83	1.22
CPH52A	171	12.5	1.41	CPH52A	171	12.5	1.45
CPH52B	766	14.33	6.99	CPH52B	766	14.33	7.03
CPH53	697	14.33	4.1	CPH53	697	14.33	4.1
CPH54	693	15	7.24	CPH54	693	15	7.24
CPH55	728	13.5	2.32	CPH55	707	13.5	2.32
CPH56	623	14.33	2.71	CPH56	610	14.33	2.71
CPH57	533	15.33	3.14	CPH57	526	15.33	3.14
CPH58	799	13.33	2.25	CPH58	799	13.33	2.25
CPH59	706	14.17	3.39	CPH59	706	14.17	3.39
CPH60	360	12.67	1.74	CPH60	360	12.67	1.74
CPH61	392	15.5	2.68	CPH61	392	15.5	2.68
CPH62	1728	13.33	5.23	CPH62	1728	13.33	5.23
CPH63	1582	13.83	6.64	CPH63	1582	13.83	6.64
CPH66	705	14.83	3.64	CPH66	705	14.83	3.64
CPH67	87	12.67	0.6	CPH67	87	12.67	0.6
CPH68	494	16.17	3.47	CPH68	488	16.17	3.47
CPH69	551	16.5	4.94	CPH69	553	16.33	4.94
CPH70	171	13	1.1	CPH70	171	13	1.1
CPH71	625	15.67	4.29	CPH71	625	15.67	4.29
CPH72	600	16.17	4.71	CPH72	600	16.17	4.71
CPH73	974	15.33	11.08	CPH73	974	15.33	11.08
CPH74	924	16	11.88	CPH74	924	16	11.88
CPH75	350	14	2.27	CPH75	342	14	2.55
CPH76	397	12.67	3.03	CPH76	397	12.67	3.3
CPH77	315	15	3.3	CPH77	311	15	3.57
CPH78	455	14.67	9.12	CPH78	458	14.67	9.12
CPH79	468	14.83	9.62	CPH79	474	14.83	9.62
CPH80	475	15.17	10.08	CPH80	480	15.17	10.08
CPH81	9	13.83	0.46	CPH81	9	13.83	0.46
CPH82	206	15.67	4.41	CPH82	206	15.67	4.41
CPH84	531	14.17	2.91	CPH84	628	14.17	2.91
CPH85	557	14.5	3.89	CPH85	643	14.33	3.89
CPH86	556	15	4.97	CPH86	630	15	4.97
CPI04	364	12.5	0.78	CPI04	364	12.5	0.78
CPI05	638	12.33	0.79	CPI05	638	12.33	0.79
CPI06	248	13.17	1.28	CPI06	248	13.17	1.28
CPI07	479	12.83	0.99	CPI07	479	12.83	0.99
CPI08	126	14.5	2.07	CPI08	126	14.5	2.07
CPI09	397	13.17	1.3	CPI09	397	13.17	1.3

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	111	15.17	2.57	CPI10	111	15.17	2.57
CPI11	350	13.67	1.59	CPI11	350	13.67	1.59
CPI12	343	14	4.66	CPI12	343	14	4.66
CPI13	320	14.5	5.18	CPI13	320	14.5	5.18
CPI14	307	14.83	5.42	CPI14	307	14.83	5.42
CPI15A	468	12.5	0.73	CPI15A	468	12.5	0.73
CPI17A	369	12.33	0.36	CPI17A	369	12.33	0.36
CPI18	336	12.83	2.24	CPI18	336	12.83	2.24
CPI19	282	13.33	2.53	CPI19	282	13.33	2.53
CPI20	243	14.5	3.15	CPI20	243	14.5	3.15
CPI21	248	14.83	3.62	CPI21	239	14.83	3.62
CPI22	221	16	4	CPI22	217	16	4
CPI25	390	12.5	0.73	CPI25	390	12.5	0.73
CPI26A	104	12.83	0.81	CPI26A	104	12.83	0.81
CPI27	307	12.83	1.13	CPI27	307	12.83	1.13
CPI28	71	13.5	1.26	CPI28	71	13.5	1.26
CPI29	259	13.17	1.51	CPI29	259	13.17	1.51
CPI30	53	14.17	1.68	CPI30	53	14.17	1.68
CPI31	223	13.5	1.87	CPI31	223	13.5	1.87
CPI32	59	13	2.18	CPI32	59	13	2.18
CPI33	209	14	2.37	CPI33	209	14	2.37
CPI34	53	16.33	2.69	CPI34	53	16.33	2.69
CPI35	190	14.83	2.88	CPI35	190	14.83	2.88
CPI36	132	12.33	2.89	CPI36	132	12.33	2.89
CPI37	185	15.33	3.29	CPI37	185	15.33	3.29
CPI39	55	12.67	0.47	CPI39	55	12.67	0.47
CPI40	25	13.5	0.87	CPI40	25	13.5	0.87
CPI41	19	14.67	1.35	CPI41	19	14.67	1.35
CPI42	44	12.83	1.77	CPI42	44	12.83	1.77
CPI43	38	14	2.2	CPI43	38	14	2.2
CPI44A	542	12.67	0.84	CPI44A	542	12.67	0.84
CPI45	394	13	1.06	CPI45	394	13	1.06
CPI46	324	13.33	1.52	CPI46	324	13.33	1.52
CPI47	288	13.83	1.87	CPI47	288	13.83	1.87
CPI48	258	14.33	2.21	CPI48	258	14.33	2.21
CPI49	287	14.67	4.79	CPI49	287	14.67	4.79
CPI50	450	12.5	5.64	CPI50	450	12.5	5.64
CPI53	228	13.17	0.66	CPI53	228	13.17	0.66
CPI54	276	12.83	0.61	CPI54	276	12.83	0.61
CPI55	179	13.67	0.91	CPI55	179	13.67	0.91
CPI56	239	12.67	1.04	CPI56	239	12.67	1.04
CPI57	275	12.33	1.1	CPI57	275	12.33	1.1
CPI58A	272	13.17	1.79	CPI58A	272	13.17	1.79
CPI58B	325	12.67	1.63	CPI58B	325	12.67	1.63
CPI60A	881	12.83	5.12	CPI60A	881	12.83	5.12
CPI60B	604	12.83	2.75	CPI60B	604	12.83	2.75
CPI60C	167	14.83	1.57	CPI60C	167	14.83	1.57
CPI63	615	14.83	8.54	CPI63	615	14.83	8.54
CPI64	399	12.33	2.06	CPI64	399	12.33	2.06
CPI65	285	12.67	2.79	CPI65	285	12.67	2.79
CPI66	907	12.67	6.03	CPI66	907	12.67	6.03
CPI67	613	14.17	7.46	CPI67	613	14.17	7.46
CPI70	612	14.83	8.25	CPI70	612	14.83	8.25
CPI72	174	14.17	1.3	CPI72	174	14.17	1.3
CPJ06	193	13	0.52	CPJ06	193	13	0.52
CPJ07	194	13	0.69	CPJ07	194	13	0.69
CPJ10	261	12.5	0.81	CPJ10	261	12.5	0.81

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	307	12.33	0.94	CPJ11	307	12.33	0.94
CPJ12	189	13.17	0.51	CPJ12	189	13.17	0.51
CPJ14	3777	13.5	9.83	CPJ14	3777	13.5	9.83
CPJ15	806	12.33	1.39	CPJ15	806	12.33	1.39
CPJ16	694	12.33	1.21	CPJ16	694	12.33	1.21
CPJ17	584	12.5	1.89	CPJ17	584	12.5	1.89
CPJ20	1872	12.5	5.2	CPJ20	1872	12.5	5.2
CPJ21	620	12.83	1.11	CPJ21	620	12.83	1.11
CPJ22	2549	12.83	7.81	CPJ22	2549	12.83	7.81
CPJ23	3654	13.67	10.43	CPJ23	3654	13.67	10.43
CPJ27	99	13.5	2.37	CPJ27	99	13.5	2.37
CPJ29A	3553	13.83	12.35	CPJ29A	3553	13.83	12.35
CPJ33	1063	13	1.85	CPJ33	1063	13	1.85
CPJ34	1135	13.17	2.31	CPJ34	1135	13.17	2.31
CPJ35	1409	13	2.97	CPJ35	1409	13	2.97
CPJ37	56	13.67	3.18	CPJ37	56	13.67	3.18
CPJ39	2438	13.17	9.76	CPJ39	2438	13.17	9.76
CPJ43A	3313	14	12.95	CPJ43A	3313	14	12.95
CPJ46	1050	12.5	0.9	CPJ46	1050	12.5	0.9
CPJ47	538	12.5	0.51	CPJ47	538	12.5	0.51
CPJ48	1334	12.67	1.65	CPJ48	1334	12.67	1.65
CPJ52	399	12.33	0.35	CPJ52	399	12.33	0.35
CPX02	1505	13	3.01	CPX02	1505	13	3.01
CPX04	1633	12.5	1.97	CPX04	1633	12.5	1.97
CPX17	862	12.33	0.98	CPX17	862	12.33	0.98
A41RIV	8530	17.83	335.51	A41RIV	8700	17.83	335.51
A42RIV	8616	18.17	340.86	A42RIV	8667	18.17	340.86
A44RIV	8627	18.5	342.81	A44RIV	8754	18.5	342.81
A46RIV	8534	19	364	A46RIV	8710	19	364
A49RIV	8468	19.83	377.94	A49RIV	8627	19.83	377.94
A51RIV	8704	20	388.64	A51RIV	8876	20	388.64
A56RIV	8877	20	404.96	A56RIV	9051	20	404.96
A57RIV	8939	20.33	414.97	A57RIV	9087	20.33	414.97
A60RIV	8833	20.67	420.03	A60RIV	9040	20.67	420.03
A62RIV	8803	20.67	422.19	A62RIV	8968	20.67	422.19
B08RIV	3889	14.83	174.26	B08RIV	3966	14.83	174.26
B12RIV	6916	15.83	262.59	B12RIV	7060	15.83	262.59
B15RIV	7140	16	267.64	B15RIV	7315	16	267.64
B45RIV	7261	16.33	282.17	B45RIV	7458	16.33	282.17
B46RIV	7538	16.83	280.17	B46RIV	7704	16.83	280.17
B61RIV	8015	17.17	296.93	B61RIV	8156	17.17	296.93
B62RIV	8512	17.33	321.9	B62RIV	8687	17.33	321.9
B63RIV	8526	17.5	322.12	B63RIV	8687	17.5	322.12
B64RIV	8480	17.67	321.98	B64RIV	8637	17.67	321.98
D27RIV	3005	12.83	123.22	D27RIV	3007	12.83	123.22
D28RIV	3675	12.83	124.9	D28RIV	3678	12.83	124.9
D29RIV	4413	13	128.41	D29RIV	4416	13	128.41
D30RIV	4296	13	129.98	D30RIV	4297	13	129.98
D31RIV	4269	13.17	130.65	D31RIV	4272	13.17	130.65
D32RIV	4165	13.17	133.26	D32RIV	4167	13.17	133.26
D33RIV	4487	13.5	151.28	D33RIV	4540	13.5	151.28
D39RIV	3927	14.67	171.57	D39RIV	3985	14.67	171.57
D40RIV	3947	14.5	169.2	D40RIV	3996	14.5	169.2
D41RIV	4027	14.33	157.27	D41RIV	4094	14.33	157.27
D42RIV	4095	14.17	156.97	D42RIV	4161	14.17	156.97
E41RIV	2575	12.5	111.17	E41RIV	2587	12.5	98.07
E48RIV	1032	18.67	63.76	E48RIV	1205	15	58.43

Table 4.3.7 Future Conditions 100-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	2029	18.17	86.19	E49RIV	2030	18.33	86.19
E51RIV	2031	18.83	89.48	E51RIV	2017	19	89.48
F32RIV	599	13.17	27.84	F32RIV	451	13.33	27.84
F33RIV	411	13.83	28.79	F33RIV	412	13.83	28.81
F34RIV	948	14.5	40.15	F34RIV	1303	14.5	40.15
F35RIV	955	14.83	42.15	F35RIV	1236	14.83	42.15
G17RIV	2043	18.83	90.3	G17RIV	2028	19	90.3
G27RIV	2021	18.5	87.92	G27RIV	2013	18.5	87.92
G28RIV	2020	18.67	88.23	G28RIV	2010	18.83	88.23
G30RIV	3363	12.67	103.15	G30RIV	3364	12.67	103.15
G33RIV	4199	13.17	131.39	G33RIV	4201	13.17	131.39
G36RIV	4521	13.5	152.54	G36RIV	4571	13.5	152.54
G37RIV	4271	13.83	153.28	G37RIV	4332	13.83	153.28
G38RIV	4195	14	154.8	G38RIV	4238	14	154.8
G40RIV	4031	14.33	168.55	G40RIV	4090	14.33	168.55
G42RIV	3907	14.83	172.26	G42RIV	3976	14.83	172.26
H69RIV	7131	16	265.9	H69RIV	7323	16	265.9
H72RIV	7702	16.33	277.74	H72RIV	7899	16.33	277.74
H74RIV	8000	16.83	290.02	H74RIV	8179	16.83	290.02
H77RIV	7990	17	294.03	H77RIV	8170	17.17	294.03
H80RIV	8455	17.33	316.49	H80RIV	8628	17.33	316.49
H86RIV	8492	17.67	328.05	H86RIV	8652	17.67	328.05
I36RIV	8575	18.67	345.69	I36RIV	8689	18.67	345.69
I37RIV	8588	18.83	363.37	I37RIV	8719	18.83	363.37
I50RIV	8495	19.17	369.64	I50RIV	8666	19.17	369.64
I62RIV	8481	19.33	370.07	I62RIV	8643	19.33	370.07
I63RIV	8846	20.17	413.5	I63RIV	9049	20.17	413.5

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	265	13.17	5.78	CPA03	246	13.17	5.78
CPA06	39	12.67	1.52	CPA06	39	12.67	1.52
CPA07	22	12.5	0.86	CPA07	22	12.5	0.86
CPA08	128	12.83	2.77	CPA08	124	12.83	2.77
CPA10	222	12.67	4.65	CPA10	222	12.67	4.65
CPA11	40	15.83	4.5	CPA11	40	15.83	4.5
CPA14	15	17.67	3.1	CPA14	11	20	3.1
CPA15	13	19.5	3.19	CPA15	13	19.5	3.19
CPA16	13	19.5	3.52	CPA16	13	19.5	3.52
CPA17	58	13.67	3.03	CPA17	66	13.67	3.03
CPA18	223	12.67	5.88	CPA18	223	12.67	5.88
CPA19	28	14.67	5.39	CPA19	28	14.67	5.39
CPA19A	29	14.67	2.21	CPA19A	29	14.67	2.21
CPA20	77	13.33	1.75	CPA20	81	13.33	1.75
CPA21	265	12.67	2.52	CPA21	265	12.67	2.52
CPA22	73	12.83	0.99	CPA22	73	12.83	0.99
CPA24	126	12.83	3.86	CPA24	126	12.83	3.86
CPA26	101	12.5	3.09	CPA26	100	12.5	3.09
CPA27	204	12.67	4.74	CPA27	204	12.67	4.74
CPA27A	162	12.67	4.19	CPA27A	162	12.67	4.19
CPA29	105	13.17	5.93	CPA29	121	13.33	5.93
CPA30	156	13.5	10.47	CPA30	176	13.5	10.47
CPA30A	84	13.67	4.54	CPA30A	84	13.67	4.54
CPA32	22	16.67	3.07	CPA32	28	16.5	3.07
CPA32A	22	16.67	2.53	CPA32A	28	16.5	2.53
CPA33	150	13.67	6.02	CPA33	158	13.67	6.02
CPA33A	95	13.5	2.99	CPA33A	95	13.5	2.99
CPA34	37	14.33	2.57	CPA34	37	14.33	2.57
CPA35	29	15.33	6.94	CPA35	29	15.33	6.94
CPA37	11	22	4.93	CPA37	9	24	4.93
CPA39	0	0	1.08	CPA39	0	0	1.08
CPA41	0	0	1.97	CPA41	0	0	1.97
CPA42	0	0	1.35	CPA42	0	0	1.35
CPA43	0	0	1.58	CPA43	0	0	1.58
CPA44	0	0	1.95	CPA44	0	0	1.95
CPA45	10	24.17	5.47	CPA45	9	26.17	5.47
CPA46	0	0	0.63	CPA46	0	0	0.63
CPA47	17	17.33	7.73	CPA47	17	17.33	7.73
CPA49	14	26.83	9.54	CPA49	14	26.67	9.54
CPA50	86	19.17	13.01	CPA50	86	19.33	13.01
CPA51	87	20.17	16.07	CPA51	86	20.33	16.07
CPA51A	20	19.83	3.06	CPA51A	20	19.83	3.06
CPA52	144	14	13.76	CPA52	156	13.83	13.76
CPA52A	144	14	10.69	CPA52A	156	13.83	10.69
CPA54	205	12.5	2.25	CPA54	205	12.5	2.25
CPA55	130	14	16.62	CPA55	140	14	16.62
CPA55A	133	13	2.87	CPA55A	133	13	2.87
CPA56	104	15.83	18.46	CPA56	106	15.83	18.46
CPA59	943	12.5	3.39	CPA59	943	12.5	3.39
CPA60	1018	12.67	5.05	CPA60	1018	12.67	5.05
CPA63	122	14.17	12.02	CPA63	128	14.17	12.02
CPA63A	21	16.17	5.99	CPA63A	21	16.33	5.99
CPA64	124	14.5	6.55	CPA64	122	14.5	6.55
CPA65	202	13.67	6.32	CPA65	194	13.67	6.32
CPB03	643	13	21.96	CPB03	643	13	21.96
CPB05	159	12.67	4.77	CPB05	159	12.67	4.77
CPB07	0	0	1.57	CPB07	0	0	1.57

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	0	0	2	CPB08	0	0	2
CPB09	736	16.33	61.72	CPB09	736	16.33	61.31
CPB10	108	16	5.9	CPB10	108	16	5.9
CPB11	108	16	6.14	CPB11	108	16	6.14
CPB12	737	16.33	67.78	CPB12	736	16.33	67.78
CPB12A	101	16.67	6.47	CPB12A	101	16.67	6.47
CPB13	415	13.33	15.13	CPB13	415	13.33	15.13
CPB14	149	14.5	12.33	CPB14	149	14.5	12.33
CPB16	189	13.83	6.32	CPB16	189	13.83	6.32
CPB18	78	12.67	1.64	CPB18	78	12.67	1.64
CPB19	105	12.67	0.88	CPB19	105	12.67	0.88
CPB21	148	14.5	12.64	CPB21	148	14.5	12.64
CPB24	110	12.33	0.72	CPB24	110	12.33	0.72
CPB24A	44	12.33	0.25	CPB24A	44	12.33	0.25
CPB25	77	12.33	1.65	CPB25	77	12.33	1.65
CPB26	40	12.5	2.01	CPB26	40	12.5	2.01
CPB29	0	0	1.23	CPB29	0	0	1.23
CPB33	53	13.17	3.08	CPB33	53	13.17	3.08
CPB33A	40	12.5	0.79	CPB33A	40	12.5	0.79
CPB34	46	12.33	0.51	CPB34	46	12.33	0.51
CPB35	48	12.5	2.29	CPB35	48	12.5	2.29
CPB35A	34	12.5	1.11	CPB35A	34	12.5	1.11
CPB36	68	12.33	0.47	CPB36	68	12.33	0.47
CPB37	47	12.67	1.36	CPB37	47	12.67	1.36
CPB38	151	15.33	9.08	CPB38	150	15.33	9.08
CPB39	169	14.5	8.35	CPB39	168	14.5	8.35
CPB39A	168	14.5	6.71	CPB39A	168	14.5	6.71
CPB41	34	13	0.82	CPB41	34	13	0.82
CPB43	34	13	0.37	CPB43	34	13	0.37
CPB44	96	12.5	0.55	CPB44	96	12.5	0.55
CPB45	265	12.67	14.16	CPB45	265	12.67	14.16
CPB46	7	16	2.43	CPB46	7	16	2.43
CPB47	103	12.83	2.49	CPB47	103	12.83	2.49
CPB48	121	12.67	2.17	CPB48	121	12.67	2.17
CPB50	135	12.67	0.72	CPB50	135	12.67	0.72
CPB54	156	15	8.64	CPB54	155	15	8.64
CPB56	0	0	0.75	CPB56	0	0	0.75
CPB57	0	0	0.52	CPB57	0	0	0.52
CPB58	0	0	0.99	CPB58	0	0	0.99
CPB59	150	16	15.98	CPB59	149	16	15.98
CPB60	109	18.17	18.09	CPB60	109	18.17	18.09
CPB61	49	14.83	3.23	CPB61	49	14.83	3.23
CPB65	160	15.5	13.18	CPB65	159	15.5	13.18
CPC06	44	12.33	0.51	CPC06	44	12.33	0.51
CPC07	151	12.5	2.41	CPC07	151	12.5	2.63
CPC09	20	12.33	0.43	CPC09	20	12.33	0.27
CPC10	53	12.5	1	CPC10	54	12.5	0.78
CPC12	53	12.5	0.44	CPC12	53	12.5	0.44
CPC13	68	12.5	0.73	CPC13	68	12.5	0.73
CPC14	24	12.33	0.77	CPC14	25	12.33	0.35
CPC15	41	12.33	0.53	CPC15	41	12.33	0.24
CPC16	32	12.5	0.91	CPC16	32	12.5	0.51
CPC17	50	12.33	0.84	CPC17	50	12.33	0.42
CPC18	32	12.17	0.72	CPC18	32	12.17	0.33
CPC19	95	12.33	3.39	CPC19	95	12.33	2.08
CPC20	58	12.5	3.26	CPC20	58	12.5	1.68
CPC22	130	12.33	1.69	CPC22	130	12.33	1.67

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	156	12.33	1.85				
CPC25	18	12.17	0.08				
CPC26	16	12.33	0.79				
CPC27	68	12.33	2.82	CPC27	68	12.33	1.4
CPC28	47	12.5	2.78				
CPC29	112	12.33	3.95	CPC29	112	12.33	3.18
CPC30	95	12.33	1.99	CPC30	96	12.33	1.11
CPC31	29	13	0.65	CPC31	30	13	0.48
CPC33	1526	13.33	46.18	CPC33	1526	13.33	46.18
CPC33A	70	13.83	2.69	CPC33A	61	13.33	3.46
CPC33B	98	14.17	6.4	CPC33B	74	13.83	6.31
CPC33C	122	13.17	4.43	CPC33C	88	13	3.76
CPC33D	174	14.5	10.83	CPC33D	125	13.83	10.07
CPC33E	171	15.33	13.51	CPC33E	119	15	13.53
CPC33F	159	16.17	13.66	CPC33F	115	16	13.66
CPC34	907	15.17	52.84	CPC34	907	15.17	52.84
CPC34A	907	15.17	47.04	CPC34A	907	15.17	47.04
CPC36	831	15.5	55.93	CPC36	831	15.5	55.93
CPC37	205	12.83	2.11	CPC37	205	12.83	2.11
CPC38	77	12.67	0.81	CPC38	77	12.67	0.81
CPC42	27	12.33	0.31	CPC42	27	12.33	0.31
CPC43	21	12.33	0.31	CPC43	21	12.33	0.31
CPC44	96	12.33	0.48	CPC44	96	12.33	0.48
CPC45	55	12.33	0.25	CPC45	55	12.33	0.25
CPC46	62	12.5	0.37	CPC46	62	12.5	0.37
CPC47	786	15.83	61.04	CPC47	786	15.83	61.04
CPC47A	203	12.83	2.56	CPC47A	203	12.83	2.57
CPC48	808	15.67	59.14	CPC48	808	15.67	58.48
CPC48A	131	13.33	2.37	CPC48A	131	13.33	2.37
CPC49	812	15.5	56.11	CPC49	812	15.5	56.11
CPC52	0	0	0.77	CPC52	0	0	0.77
CPD01	177	12.67	3.17	CPD01	177	12.67	3.17
CPD03	103	12.33	0.77	CPD03	103	12.33	0.77
CPD04	26	12.5	0.51	CPD04	26	12.5	0.51
CPD05	115	12.83	4.18	CPD05	158	12.83	4.18
CPD08	29	12.33	0.73	CPD08	29	12.33	0.73
CPD09	100	12.5	1.75	CPD09	98	12.5	1.75
CPD10	137	12.67	2.95	CPD10	137	12.67	2.9
CPD11	83	12.5	0.56	CPD11	83	12.5	0.56
CPD12	22	12.33	0.14				
CPD13	196	12.33	4.58	CPD13	197	12.33	4.58
CPD15	154	12.5	0.95	CPD15	154	12.5	0.95
CPD17	103	12.67	1.53	CPD17	103	12.67	1.53
CPD18	45	12.5	1.2				
CPD19	27	12.5	0.52				
CPD20	17	12.67	0.59				
CPD21	0	0	0.09				
CPD22	613	13.33	16.27	CPD22	635	13.33	16.24
CPD23	45	13	3.1	CPD23	71	13	2.67
CPD24	45	13	3.57	CPD24	70	13	3.35
CPD24A	0	0	0.47	CPD24A	0	0	0.68
CPD25	28	17.5	5.54	CPD25	25	16.83	4.87
CPD26	24	24.33	7.09	CPD26	21	24.17	6.42
CPD27	87	12.5	7.35	CPD27	88	12.5	6.68
CPD33	398	14.33	16.92	CPD33	420	14.33	16.89
CPD35	144	13	1.43	CPD35	144	13	1.43
CPD37	61	12.67	1.71	CPD37	61	12.67	1.71

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	60	12.67	2.07	CPD38	60	12.67	2.07
CPD39	47	14.67	2.36	CPD39	47	14.67	2.36
CPD42	76	12.33	1.41	CPD42	76	12.33	1.41
CPD46	31	12.17	0.15				
CPD47	10	12.17	0.16				
CPE02	767	12.67	10.91	CPE02	767	12.67	10.91
CPE03	688	13.17	12.93	CPE03	688	13.17	12.93
CPE05	173	13.33	8.46	CPE05	173	13.33	8.46
CPE10	30	12.33	0.27	CPE10	30	12.33	0.27
CPE12	11	15.5	1.93	CPE12	11	15.5	1.93
CPE13	227	12.83	1.93	CPE13	228	12.83	1.86
CPE15	49	12.83	2.81	CPE15	49	12.83	2.81
CPE16	630	13.67	13.72	CPE16	630	13.67	13.72
CPE19	528	14.33	10.48	CPE19	528	14.33	10.48
CPE20	53	18.33	4.58	CPE20	53	18.33	4.58
CPE22	11	19.83	4.1	CPE22	5	18.83	4.1
CPE23	130	13.5	6.28	CPE23	130	13.5	6.28
CPE24	144	13.33	4.7	CPE24	144	13.33	4.7
CPE25	99	20	21.77	CPE25	99	20	9.15
CPE29	69	18.17	8.41	CPE29	69	18.17	8.41
CPE29A	57	16	3.83	CPE29A	57	16	3.83
CPE30	305	16.83	8.42	CPE30	305	16.83	7.97
CPE31	10	14.67	1.28	CPE31	10	15.67	1.11
CPE32	40	13.67	1.76	CPE32	40	13.67	1.76
CPE33	0	0	0.07				
CPE34	105	14	6.55	CPE34	110	13.83	6.55
CPE35	0	0	0.69	CPE35	0	0	0.69
CPE36	2	20.67	6.44	CPE36	0	0	0.35
CPE37	9	22.17	4.28	CPE37	5	21.17	4.28
CPE38	85	14.67	19.72	CPE38	88	14.67	19.72
CPE41	13	18.33	3.37	CPE41	13	18.33	3.52
CPE42	26	14.17	2.7	CPE42	26	14.17	2.85
CPE43	2	19.67	1.55	CPE43	2	20.5	1.82
CPE44	317	18	16.15	CPE44	278	18.17	30.15
CPE45	79	21.17	16.34	CPE45	96	20.67	9.82
CPE46	2	22.17	2.75	CPE46	0	0	0.54
CPE47	77	21.67	19.59	CPE47	95	21	10.86
CPE48	64	23.17	20.45	CPE48	82	22.33	11.72
CPE49	300	18.83	19.71	CPE49	260	19.17	31.23
CPE50	311	18.33	18.78	CPE50	264	18.67	30.84
CPE53	0	0	0.71				
CPE54	2	21.33	6.4	CPE54	0	0	0.31
CPF01	15	15.33	2.19	CPF01	15	15.33	2.19
CPF02	96	13	1.02	CPF02	96	13	1.02
CPF04	15	16.17	4.82	CPF04	15	16.17	4.82
CPF05	21	17	11.01	CPF05	21	17	11.01
CPF06	61	12.33	2.63	CPF06	61	12.33	2.63
CPF08	17	21.17	15.56	CPF08	18	21	15.56
CPF09	8	26.17	18.25	CPF09	8	26.17	18.25
CPF12	23	12.5	0.44	CPF12	23	12.5	0.44
CPF15	6	14.33	1.74	CPF15	6	14.33	1.74
CPF16	54	12.33	1.02	CPF16	54	12.33	1.02
CPF17	154	12.5	1.74	CPF17	154	12.5	1.73
CPF18	84	12.5	2.55	CPF18	84	12.5	2.55
CPF19	8	29.33	19.1	CPF19	8	29.17	19.1
CPF20	4	32.67	16.52	CPF20	4	32.17	10.16
CPF21	5	30.83	11.12	CPF21	5	30.83	11.12

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	127	12.5	2.07	CPF22	127	12.5	2.07
CPF24	201	12.67	2.93	CPF24	201	12.67	2.93
CPF25	5	15.17	7.11	CPF25	5	15.17	5.36
CPF26	0	0	4.38				
CPF27	152	13.67	9.63	CPF27	153	13.67	4.27
CPF28	10	15	1.26	CPF28	10	15	1.26
CPF29	13	15	13	CPF29	13	15	13
CPF31	9	14	18.99	CPF31	11	14	12.62
CPF32	11	17	7.08	CPF32	9	17	13.45
CPF33	2	17.83	0.95	CPF33	4	18	1.12
CPF34	55	15.83	18.09	CPF34	97	15.33	10.86
CPF35	0	0	3.29	CPF35	0	0	1.29
CPF36	0	0	0.16				
CPG01	499	14.5	3.49	CPG01	499	14.5	3.49
CPG03	1174	12.5	4.52	CPG03	1174	12.5	4.52
CPG04	986	12.5	5.34	CPG04	986	12.5	5.34
CPG06	744	12.33	2.88	CPG06	744	12.33	2.88
CPG07	402	12.5	2.79	CPG07	402	12.5	2.79
CPG09	194	15.33	5.24	CPG09	194	15.33	5.24
CPG10	499	14.5	3.93	CPG10	499	14.5	3.93
CPG11	177	17	9.78	CPG11	188	16.17	9.78
CPG13	40	14	1.3	CPG13	40	14	1.3
CPG14	4	15.17	0.35	CPG14	4	15.17	0.35
CPG22	7	15.5	1.8	CPG22	7	15.5	1.8
CPG27	3	14.5	1.51	CPG27	4	14.5	1.51
CPG31	521	13.33	9.35	CPG31	529	13.33	9.35
CPG32	265	12.5	1.71	CPG32	265	12.5	1.71
CPG34	40	14	1.85	CPG34	40	14	1.85
CPG34A	40	12.5	0.56	CPG34A	40	12.5	0.56
CPG35	119	12.5	2.38	CPG35	119	12.5	2.38
CPG39	1	16.17	1.79	CPG39	1	16.17	1.79
CPG40	95	18.83	6.9	CPG40	97	18.67	6.9
CPG42	77	18.33	5.09	CPG42	80	18	5.09
CPG43	340	12.67	11.48	CPG43	340	12.67	11.48
CPG45	694	12.83	9.17	CPG45	730	12.83	9.17
CPG46	374	12.5	3	CPG46	374	12.5	3
CPG47	196	12.5	1.5	CPG47	196	12.5	1.5
CPH01	954	12.5	3.2	CPH01	954	12.5	3.2
CPH07	0	0	2.35	CPH07	0	0	2.35
CPH10	430	12.5	1.63	CPH10	550	12.5	1.63
CPH13	5	13.5	2.88	CPH13	5	13.5	2.88
CPH14	10	12.83	1.65	CPH14	10	12.83	1.65
CPH15	373	12.33	1.29	CPH15	373	12.33	1.29
CPH15A	349	12.33	0.77	CPH15A	349	12.33	0.77
CPH17	223	12.5	1.64	CPH17	223	12.5	1.64
CPH23	957	12.83	4.35	CPH23	957	12.83	4.35
CPH24	337	13.17	1.98	CPH24	337	13.17	1.98
CPH25	435	13	1.95	CPH25	435	13	1.95
CPH28	0	25.33	1.24	CPH28	0	25.33	1.24
CPH29	0	0	1.48	CPH29	0	0	1.48
CPH30	16	14	0.88	CPH30	16	14	0.92
CPH31	247	12.67	1.59	CPH31	247	12.67	1.59
CPH31A	381	12.33	2.57	CPH31A	381	12.33	2.57
CPH32	176	13.83	2.04	CPH32	176	13.83	2.04
CPH32A	81	14	0.65	CPH32A	81	14	0.65
CPH32B	144	12.33	0.67	CPH32B	144	12.33	0.67
CPH33	169	13.5	2.83	CPH33	169	13.5	2.83

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	169	13.5	2.06	CPH33B	169	13.5	2.06
CPH34	4	14.33	4.44	CPH34	4	14.33	4.44
CPH35	75	13.33	1.28	CPH35	75	13.33	1.28
CPH36	0	0	1.63	CPH36	0	0	1.63
CPH37	57	14.17	3	CPH37	57	14.17	3
CPH38	337	12.83	1.01	CPH38	416	12.83	1.01
CPH39	287	13.33	1.39	CPH39	339	13.33	1.39
CPH40	246	14	1.44	CPH40	272	14	1.44
CPH41	5	14.17	0.72	CPH41	14	14	0.72
CPH42	33	16.5	3.45	CPH42	33	16.5	3.45
CPH44	0	0	2.19	CPH44	0	0	2.19
CPH45	3	15.83	4.72	CPH45	3	15.83	4.72
CPH46	71	14.17	1.73	CPH46	105	12.5	1.73
CPH47	73	14.33	1.8	CPH47	71	14.17	1.8
CPH48	80	12.33	0.91	CPH48	80	12.33	0.91
CPH49	15	13.67	1.01	CPH49	15	13.67	1.01
CPH50	105	17	2.54	CPH50	106	17	2.54
CPH51	13	15	1.18	CPH51	13	15	1.22
CPH52A	11	16.33	1.41	CPH52A	11	16.33	1.45
CPH52B	254	14.67	6.99	CPH52B	254	14.67	7.03
CPH53	252	14.67	4.1	CPH53	252	14.67	4.1
CPH54	234	15.33	7.24	CPH54	234	15.33	7.24
CPH55	283	13.83	2.32	CPH55	272	13.83	2.32
CPH56	215	15	2.71	CPH56	210	15	2.71
CPH57	195	15.83	3.14	CPH57	192	15.83	3.14
CPH58	398	13.5	2.25	CPH58	398	13.5	2.25
CPH59	333	14.33	3.39	CPH59	333	14.33	3.39
CPH60	93	15.83	1.74	CPH60	101	15.33	1.74
CPH61	177	16	2.68	CPH61	177	16	2.68
CPH62	684	13.5	5.23	CPH62	684	13.5	5.23
CPH63	586	14.17	6.64	CPH63	586	14.17	6.64
CPH66	269	15	3.64	CPH66	269	15	3.64
CPH67	0	0	0.6	CPH67	0	0	0.6
CPH68	185	16.5	3.47	CPH68	182	16.5	3.47
CPH69	241	17	4.94	CPH69	248	16.83	4.94
CPH70	0	0	1.1	CPH70	0	0	1.1
CPH71	249	15.83	4.29	CPH71	249	15.83	4.29
CPH72	241	16.17	4.71	CPH72	241	16.17	4.71
CPH73	246	16	11.08	CPH73	246	16	11.08
CPH74	239	17	11.88	CPH74	239	17	11.88
CPH75	64	15.17	2.27	CPH75	63	15.17	2.55
CPH76	55	16	3.03	CPH76	54	16	3.3
CPH77	54	16.17	3.3	CPH77	53	16.17	3.57
CPH78	60	14.83	9.12	CPH78	43	13	9.12
CPH79	53	15.67	9.62	CPH79	25	17.5	9.62
CPH80	46	16.67	10.08	CPH80	23	19	10.08
CPH81	0	0	0.46	CPH81	0	0	0.46
CPH82	25	18	4.41	CPH82	25	18	4.41
CPH84	233	14.17	2.91	CPH84	256	14.17	2.91
CPH85	208	14.67	3.89	CPH85	226	14.67	3.89
CPH86	177	15.5	4.97	CPH86	183	15.5	4.97
CPI04	54	13	0.78	CPI04	54	13	0.78
CPI05	258	12.5	0.79	CPI05	258	12.5	0.79
CPI06	36	13.83	1.28	CPI06	36	13.83	1.28
CPI07	191	13	0.99	CPI07	191	13	0.99
CPI08	19	15.83	2.07	CPI08	19	15.83	2.07
CPI09	155	13.5	1.3	CPI09	155	13.5	1.3

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	16	17.17	2.57	CPI10	16	17.17	2.57
CPI11	135	14	1.59	CPI11	135	14	1.59
CPI12	116	14.67	4.66	CPI12	116	14.67	4.66
CPI13	94	15.5	5.18	CPI13	94	15.5	5.18
CPI14	85	15.83	5.42	CPI14	85	15.83	5.42
CPI15A	82	12.67	0.73	CPI15A	82	12.67	0.73
CPI17A	108	12.5	0.36	CPI17A	108	12.5	0.36
CPI18	80	13	2.24	CPI18	80	13	2.24
CPI19	65	13.83	2.53	CPI19	65	13.83	2.53
CPI20	53	15.33	3.15	CPI20	53	15.33	3.15
CPI21	49	16.17	3.62	CPI21	47	16.17	3.62
CPI22	39	17.83	4	CPI22	38	17.83	4
CPI25	187	12.5	0.73	CPI25	187	12.5	0.73
CPI26A	12	13.33	0.81	CPI26A	12	13.33	0.81
CPI27	141	13	1.13	CPI27	141	13	1.13
CPI28	9	14.33	1.26	CPI28	9	14.33	1.26
CPI29	113	13.33	1.51	CPI29	113	13.33	1.51
CPI30	7	15.33	1.68	CPI30	7	15.33	1.68
CPI31	97	13.83	1.87	CPI31	97	13.83	1.87
CPI32	5	16.67	2.18	CPI32	5	16.67	2.18
CPI33	80	14.67	2.37	CPI33	80	14.67	2.37
CPI34	5	18.17	2.69	CPI34	5	18.17	2.69
CPI35	66	15.67	2.88	CPI35	66	15.67	2.88
CPI36	4	19	2.89	CPI36	4	19	2.89
CPI37	60	16.33	3.29	CPI37	60	16.33	3.29
CPI39	2	13	0.47	CPI39	2	13	0.47
CPI40	1	14	0.87	CPI40	1	14	0.87
CPI41	1	15	1.35	CPI41	1	15	1.35
CPI42	1	16.17	1.77	CPI42	1	16.17	1.77
CPI43	1	17.5	2.2	CPI43	1	17.5	2.2
CPI44A	152	12.83	0.84	CPI44A	152	12.83	0.84
CPI45	98	13.17	1.06	CPI45	98	13.17	1.06
CPI46	77	13.83	1.52	CPI46	77	13.83	1.52
CPI47	63	14.5	1.87	CPI47	63	14.5	1.87
CPI48	52	15.33	2.21	CPI48	52	15.33	2.21
CPI49	47	16	4.79	CPI49	47	16	4.79
CPI50	37	16.83	5.64	CPI50	37	16.83	5.64
CPI53	60	13.17	0.66	CPI53	60	13.17	0.66
CPI54	65	12.83	0.61	CPI54	65	12.83	0.61
CPI55	37	14	0.91	CPI55	37	14	0.91
CPI56	51	13.67	1.04	CPI56	51	13.67	1.04
CPI57	35	14.5	1.1	CPI57	35	14.5	1.1
CPI58A	26	18.17	1.79	CPI58A	26	18.17	1.79
CPI58B	24	17.83	1.63	CPI58B	24	17.83	1.63
CPI60A	46	16.33	5.12	CPI60A	46	16.33	5.12
CPI60B	33	16.33	2.75	CPI60B	33	16.33	2.75
CPI60C	23	16.5	1.57	CPI60C	23	16.5	1.57
CPI63	56	20.17	8.54	CPI63	56	20.17	8.54
CPI64	31	18	2.06	CPI64	31	18	2.06
CPI65	30	19	2.79	CPI65	30	19	2.79
CPI66	59	16.83	6.03	CPI66	59	16.83	6.03
CPI67	57	18.67	7.46	CPI67	57	18.67	7.46
CPI70	56	20	8.25	CPI70	56	20	8.25
CPI72	30	15	1.3	CPI72	30	15	1.3
CPJ06	52	13	0.52	CPJ06	52	13	0.52
CPJ07	2	16.33	0.69	CPJ07	2	16.33	0.69
CPJ10	104	12.5	0.81	CPJ10	104	12.5	0.81

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	145	12.33	0.94	CPJ11	145	12.33	0.94
CPJ12	25	12.83	0.51	CPJ12	25	12.83	0.51
CPJ14	1546	13.67	9.83	CPJ14	1546	13.67	9.83
CPJ15	450	12.33	1.39	CPJ15	450	12.33	1.39
CPJ16	362	12.33	1.21	CPJ16	362	12.33	1.21
CPJ17	317	12.5	1.89	CPJ17	317	12.5	1.89
CPJ20	602	12.83	5.2	CPJ20	602	12.83	5.2
CPJ21	287	13	1.11	CPJ21	287	13	1.11
CPJ22	1125	12.5	7.81	CPJ22	1125	12.5	7.81
CPJ23	1508	13.83	10.43	CPJ23	1508	13.83	10.43
CPJ27	0	0	2.37	CPJ27	0	0	2.37
CPJ29A	1419	14	12.35	CPJ29A	1419	14	12.35
CPJ33	499	13	1.85	CPJ33	499	13	1.85
CPJ34	541	13.17	2.31	CPJ34	541	13.17	2.31
CPJ35	642	13.17	2.97	CPJ35	642	13.17	2.97
CPJ37	0	0	3.18	CPJ37	0	0	3.18
CPJ39	898	13.33	9.76	CPJ39	898	13.33	9.76
CPJ43A	1317	14.33	12.95	CPJ43A	1317	14.33	12.95
CPJ46	593	12.5	0.9	CPJ46	593	12.5	0.9
CPJ47	285	12.5	0.51	CPJ47	285	12.5	0.51
CPJ48	669	12.67	1.65	CPJ48	669	12.67	1.65
CPJ52	203	12.33	0.35	CPJ52	203	12.33	0.35
CPX02	724	13	3.01	CPX02	724	13	3.01
CPX04	844	12.5	1.97	CPX04	844	12.5	1.97
CPX17	141	12.33	0.98	CPX17	141	12.33	0.98
A41RIV	1152	17.67	335.51	A41RIV	1156	17.67	335.51
A42RIV	1155	18.17	340.86	A42RIV	1160	18.17	340.86
A44RIV	1146	18.83	342.81	A44RIV	1150	18.67	342.81
A46RIV	1170	19.83	364	A46RIV	1171	19.83	364
A49RIV	1153	20.5	377.94	A49RIV	1152	20.5	377.94
A51RIV	1064	20.83	388.64	A51RIV	1063	20.83	388.64
A56RIV	1050	21	404.96	A56RIV	1050	20.83	404.96
A57RIV	1033	21.83	414.97	A57RIV	1031	21.67	414.97
A60RIV	1037	22.67	420.03	A60RIV	1035	22.67	420.03
A62RIV	1047	22.83	422.19	A62RIV	1046	22.83	422.19
B08RIV	444	15.33	174.26	B08RIV	455	15.33	174.26
B12RIV	824	16.17	262.59	B12RIV	820	16.33	262.59
B15RIV	975	16.5	267.64	B15RIV	986	16.5	267.64
B45RIV	941	16.5	282.17	B45RIV	945	16.67	282.17
B46RIV	1049	16.67	280.17	B46RIV	1054	16.67	280.17
B61RIV	1152	17.17	296.93	B61RIV	1158	17.17	296.93
B62RIV	1111	17.17	321.9	B62RIV	1113	17.17	321.9
B63RIV	1108	17.33	322.12	B63RIV	1108	17.33	322.12
B64RIV	1108	17.33	321.98	B64RIV	1108	17.33	321.98
D27RIV	386	13	123.22	D27RIV	387	13	123.22
D28RIV	455	13.33	124.9	D28RIV	454	13.33	124.9
D29RIV	459	13.33	128.41	D29RIV	456	13.33	128.41
D30RIV	417	13.5	129.98	D30RIV	418	13.5	129.98
D31RIV	401	13.5	130.65	D31RIV	401	13.5	130.65
D32RIV	399	13.67	133.26	D32RIV	400	13.67	133.26
D33RIV	509	14.17	151.28	D33RIV	521	14.17	151.28
D39RIV	459	15	171.57	D39RIV	470	15	171.57
D40RIV	464	14.83	169.2	D40RIV	475	14.83	169.2
D41RIV	470	14.67	157.27	D41RIV	482	14.83	157.27
D42RIV	484	14.67	156.97	D42RIV	497	14.67	156.97
E41RIV	330	12.5	111.17	E41RIV	331	12.5	98.07
E48RIV	78	23.67	63.76	E48RIV	99	22.83	58.43

Table 4.3.8 Future Conditions 10-Year, 24 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	259	19.17	86.19	E49RIV	251	19.17	86.19
E51RIV	251	20	89.48	E51RIV	245	20	89.48
F32RIV	12	17	27.84	F32RIV	9	17.33	27.84
F33RIV	10	18.17	28.79	F33RIV	11	18.17	28.81
F34RIV	55	16.17	40.15	F34RIV	104	15.33	40.15
F35RIV	42	16.67	42.15	F35RIV	61	16.33	42.15
G17RIV	250	20	90.3	G17RIV	245	20.17	90.3
G27RIV	256	19.5	87.92	G27RIV	249	19.5	87.92
G28RIV	253	19.83	88.23	G28RIV	247	19.83	88.23
G30RIV	724	12.67	103.15	G30RIV	724	12.67	103.15
G33RIV	404	13.67	131.39	G33RIV	404	13.67	131.39
G36RIV	522	14.17	152.54	G36RIV	535	14.17	152.54
G37RIV	491	14.33	153.28	G37RIV	503	14.33	153.28
G38RIV	499	14.5	154.8	G38RIV	511	14.5	154.8
G40RIV	471	14.83	168.55	G40RIV	484	14.83	168.55
G42RIV	448	15.17	172.26	G42RIV	461	15.17	172.26
H69RIV	953	16.33	265.9	H69RIV	962	16.33	265.9
H72RIV	1030	16.5	277.74	H72RIV	1027	16.5	277.74
H74RIV	1113	16.83	290.02	H74RIV	1114	16.83	290.02
H77RIV	1139	17	294.03	H77RIV	1141	17	294.03
H80RIV	1119	17.33	316.49	H80RIV	1138	17.33	316.49
H86RIV	1109	17.5	328.05	H86RIV	1109	17.5	328.05
I36RIV	1158	19.17	345.69	I36RIV	1161	19.17	345.69
I37RIV	1166	19.67	363.37	I37RIV	1166	19.67	363.37
I50RIV	1167	20	369.64	I50RIV	1167	20	369.64
I62RIV	1177	20.17	370.07	I62RIV	1175	20.17	370.07
I63RIV	1042	21.17	413.5	I63RIV	1040	21.17	413.5

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	557	5.17	5.78	CPA03	506	5.17	5.78
CPA06	343	4.67	1.52	CPA06	343	4.67	1.52
CPA07	375	4.5	0.86	CPA07	375	4.5	0.86
CPA08	404	4.83	2.77	CPA08	391	4.83	2.77
CPA10	453	4.67	4.65	CPA10	453	4.67	4.65
CPA11	256	4.83	4.5	CPA11	256	4.83	4.5
CPA14	316	5	3.1	CPA14	315	5	3.1
CPA15	217	5.67	3.19	CPA15	217	5.67	3.19
CPA16	225	5.67	3.52	CPA16	225	5.67	3.52
CPA17	356	5.17	3.03	CPA17	350	5.33	3.03
CPA18	405	4.67	5.88	CPA18	405	4.67	5.88
CPA19	339	4.83	5.39	CPA19	339	4.83	5.39
CPA19A	316	4.67	2.21	CPA19A	316	4.67	2.21
CPA20	315	5	1.75	CPA20	351	5	1.75
CPA21	602	4.67	2.52	CPA21	601	4.67	2.52
CPA22	301	4.83	0.99	CPA22	301	4.83	0.99
CPA24	346	4.67	3.86	CPA24	346	4.67	3.86
CPA26	235	4.5	3.09	CPA26	231	4.5	3.09
CPA27	459	4.67	4.74	CPA27	459	4.67	4.74
CPA27A	343	4.67	4.19	CPA27A	343	4.67	4.19
CPA29	297	5	5.93	CPA29	330	5	5.93
CPA30	340	5	10.47	CPA30	353	5.17	10.47
CPA30A	229	5.5	4.54	CPA30A	229	5.5	4.54
CPA32	340	5.5	3.07	CPA32	340	5.5	3.07
CPA32A	362	5.5	2.53	CPA32A	362	5.5	2.53
CPA33	461	5.5	6.02	CPA33	477	5.5	6.02
CPA33A	243	5.5	2.99	CPA33A	243	5.5	2.99
CPA34	140	5.83	2.57	CPA34	140	5.83	2.57
CPA35	139	6.67	6.94	CPA35	139	6.67	6.94
CPA37	136	5.83	4.93	CPA37	135	5.83	4.93
CPA39	103	5	1.08	CPA39	103	5	1.08
CPA41	70	6.67	1.97	CPA41	70	6.67	1.97
CPA42	238	5.17	1.35	CPA42	238	5.17	1.35
CPA43	74	5.5	1.58	CPA43	74	5.5	1.58
CPA44	58	6.83	1.95	CPA44	58	6.83	1.95
CPA45	103	7.17	5.47	CPA45	100	7.17	5.47
CPA46	110	4.67	0.63	CPA46	110	4.67	0.63
CPA47	89	7.83	7.73	CPA47	89	7.83	7.73
CPA49	196	5	9.54	CPA49	196	5	9.54
CPA50	316	6.83	13.01	CPA50	305	6.83	13.01
CPA51	268	7.5	16.07	CPA51	264	7.67	16.07
CPA51A	155	9.5	3.06	CPA51A	153	9.5	3.06
CPA52	298	5.67	13.76	CPA52	318	5.67	13.76
CPA52A	299	5.5	10.69	CPA52A	318	5.5	10.69
CPA54	688	4.5	2.25	CPA54	688	4.5	2.25
CPA55	242	5.67	16.62	CPA55	257	5.83	16.62
CPA55A	462	4.67	2.87	CPA55A	462	4.67	2.87
CPA56	401	5	18.46	CPA56	401	5	18.46
CPA59	1882	4.5	3.39	CPA59	1882	4.5	3.39
CPA60	2181	4.67	5.05	CPA60	2181	4.67	5.05
CPA63	429	5.83	12.02	CPA63	439	5.83	12.02
CPA63A	176	5.5	5.99	CPA63A	176	5.5	5.99
CPA64	319	6.17	6.55	CPA64	306	6.17	6.55
CPA65	477	5.5	6.32	CPA65	445	5.5	6.32
CPB03	701	5	21.96	CPB03	701	5	21.96
CPB05	650	4.83	4.77	CPB05	650	4.83	4.77
CPB07	132	4.67	1.57	CPB07	173	4.83	1.57

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	160	4.83	2	CPB08	161	4.83	2
CPB09	802	8.33	61.72	CPB09	804	8.33	61.31
CPB10	330	6.33	5.9	CPB10	330	6.33	5.9
CPB11	328	6.33	6.14	CPB11	328	6.33	6.14
CPB12	799	8.33	67.78	CPB12	801	8.33	67.78
CPB12A	267	6.83	6.47	CPB12A	268	6.83	6.47
CPB13	491	5.33	15.13	CPB13	491	5.33	15.13
CPB14	392	6.17	12.33	CPB14	392	6.17	12.33
CPB16	340	6	6.32	CPB16	340	6	6.32
CPB18	298	4.67	1.64	CPB18	298	4.67	1.64
CPB19	450	4.67	0.88	CPB19	450	4.67	0.88
CPB21	352	6.17	12.64	CPB21	352	6.17	12.64
CPB24	523	4.33	0.72	CPB24	523	4.33	0.72
CPB24A	307	4.33	0.25	CPB24A	307	4.33	0.25
CPB25	408	4.33	1.65	CPB25	408	4.33	1.65
CPB26	241	5.17	2.01	CPB26	241	5.17	2.01
CPB29	418	4.5	1.23	CPB29	418	4.5	1.23
CPB33	245	5	3.08	CPB33	245	5	3.08
CPB33A	260	4.5	0.79	CPB33A	260	4.5	0.79
CPB34	516	4.33	0.51	CPB34	516	4.33	0.51
CPB35	427	4.67	2.29	CPB35	427	4.67	2.29
CPB35A	427	4.67	1.11	CPB35A	427	4.67	1.11
CPB36	307	4.5	0.47	CPB36	307	4.5	0.47
CPB37	325	4.67	1.36	CPB37	325	4.67	1.36
CPB38	244	4.83	9.08	CPB38	244	4.83	9.08
CPB39	294	6.67	8.35	CPB39	294	6.67	8.35
CPB39A	302	6.67	6.71	CPB39A	302	6.67	6.71
CPB41	582	4.67	0.82	CPB41	582	4.67	0.82
CPB43	307	4.67	0.37	CPB43	307	4.67	0.37
CPB44	391	4.5	0.55	CPB44	391	4.5	0.55
CPB45	408	4.67	14.16	CPB45	408	4.67	14.16
CPB46	373	5.17	2.43	CPB46	373	5.17	2.43
CPB47	437	4.83	2.49	CPB47	437	4.83	2.49
CPB48	421	4.5	2.17	CPB48	421	4.5	2.17
CPB50	516	4.5	0.72	CPB50	516	4.5	0.72
CPB54	244	7.17	8.64	CPB54	244	7.17	8.64
CPB56	128	4.83	0.75	CPB56	128	4.83	0.75
CPB57	101	5.33	0.52	CPB57	101	5.33	0.52
CPB58	113	5	0.99	CPB58	113	5	0.99
CPB59	234	5.83	15.98	CPB59	234	5.83	15.98
CPB60	153	9.67	18.09	CPB60	152	9.67	18.09
CPB61	346	5.67	3.23	CPB61	346	5.67	3.23
CPB65	250	5	13.18	CPB65	250	5	13.18
CPC06	399	4.33	0.51	CPC06	399	4.33	0.51
CPC07	628	4.5	2.41	CPC07	554	4.5	2.63
CPC09	210	4.33	0.43	CPC09	210	4.33	0.27
CPC10	382	4.5	1	CPC10	386	4.5	0.78
CPC12	387	4.33	0.44	CPC12	387	4.33	0.44
CPC13	506	4.5	0.73	CPC13	506	4.5	0.73
CPC14	283	4.5	0.77	CPC14	233	4.33	0.35
CPC15	173	4.33	0.53	CPC15	173	4.33	0.24
CPC16	355	4.5	0.91	CPC16	355	4.5	0.51
CPC17	299	4.33	0.84	CPC17	299	4.33	0.42
CPC18	181	4.33	0.72	CPC18	181	4.33	0.33
CPC19	437	4.67	3.39	CPC19	437	4.67	2.08
CPC20	175	4.5	3.26	CPC20	297	4.5	1.68
CPC22	748	4.33	1.69	CPC22	754	4.33	1.67

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	786	4.33	1.85				
CPC25	131	4.17	0.08				
CPC26	214	5	0.79				
CPC27	215	4.83	2.82	CPC27	300	4.83	1.4
CPC28	192	4.5	2.78				
CPC29	243	4.5	3.95	CPC29	264	4.5	3.18
CPC30	306	4.83	1.99	CPC30	322	4.33	1.11
CPC31	278	4.67	0.65	CPC31	218	4.83	0.48
CPC33	1637	5.33	46.18	CPC33	1638	5.33	46.18
CPC33A	317	5.17	2.69	CPC33A	254	5	3.46
CPC33B	257	5.83	6.4	CPC33B	215	5.33	6.31
CPC33C	465	5	4.43	CPC33C	343	4.83	3.76
CPC33D	316	6.17	10.83	CPC33D	250	5.5	10.07
CPC33E	287	6.83	13.51	CPC33E	209	6.67	13.53
CPC33F	259	7.5	13.66	CPC33F	191	7.5	13.66
CPC34	1048	7.17	52.84	CPC34	1049	7.17	52.84
CPC34A	1048	7.17	47.04	CPC34A	1049	7.17	47.04
CPC36	936	7.33	55.93	CPC36	938	7.33	55.93
CPC37	641	4.83	2.11	CPC37	641	4.83	2.11
CPC38	438	4.67	0.81	CPC38	438	4.67	0.81
CPC42	208	4.33	0.31	CPC42	208	4.33	0.31
CPC43	246	4.33	0.31	CPC43	246	4.33	0.31
CPC44	361	4.33	0.48	CPC44	361	4.33	0.48
CPC45	216	4.33	0.25	CPC45	216	4.33	0.25
CPC46	272	4.5	0.37	CPC46	272	4.5	0.37
CPC47	855	7.83	61.04	CPC47	856	7.83	61.04
CPC47A	529	4.67	2.56	CPC47A	529	4.67	2.57
CPC48	878	7.67	59.14	CPC48	880	7.67	58.48
CPC48A	521	5.17	2.37	CPC48A	521	5.17	2.37
CPC49	904	7.5	56.11	CPC49	905	7.5	56.11
CPC52	214	5	0.77	CPC52	214	5	0.77
CPD01	486	4.5	3.17	CPD01	486	4.5	3.17
CPD03	663	4.33	0.77	CPD03	663	4.33	0.77
CPD04	353	4.5	0.51	CPD04	353	4.5	0.51
CPD05	284	4.83	4.18	CPD05	361	4.83	4.18
CPD08	331	4.83	0.73	CPD08	331	4.83	0.73
CPD09	451	5.17	1.75	CPD09	307	4.5	1.75
CPD10	402	4.67	2.95	CPD10	405	4.67	2.9
CPD11	399	4.5	0.56	CPD11	399	4.5	0.56
CPD12	163	4.33	0.14				
CPD13	357	4.33	4.58	CPD13	359	4.33	4.58
CPD15	544	4.5	0.95	CPD15	544	4.5	0.95
CPD17	373	4.67	1.53	CPD17	374	4.67	1.53
CPD18	248	4.5	1.2				
CPD19	244	4.5	0.52				
CPD20	224	4.5	0.59				
CPD21	101	4.33	0.09				
CPD22	907	5.33	16.27	CPD22	952	5.33	16.24
CPD23	309	4.67	3.1	CPD23	397	4.67	2.67
CPD24	309	4.67	3.57	CPD24	356	4.67	3.35
CPD24A	118	5	0.47	CPD24A	97	5	0.68
CPD25	174	6.17	5.54	CPD25	167	6	4.87
CPD26	357	5.17	7.09	CPD26	377	5.17	6.42
CPD27	182	6	7.35	CPD27	193	5.83	6.68
CPD33	677	6.17	16.92	CPD33	718	6.17	16.89
CPD35	752	4.67	1.43	CPD35	752	4.67	1.43
CPD37	521	5.33	1.71	CPD37	521	5.33	1.71

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	506	5.33	2.07	CPD38	506	5.33	2.07
CPD39	477	5	2.36	CPD39	477	5	2.36
CPD42	209	4.33	1.41	CPD42	209	4.33	1.41
CPD46	109	4.17	0.15				
CPD47	65	4.83	0.16				
CPE02	1228	4.83	10.91	CPE02	1228	4.83	10.91
CPE03	1115	5.33	12.93	CPE03	1115	5.33	12.93
CPE05	291	5.33	8.46	CPE05	291	5.33	8.46
CPE10	172	4.33	0.27	CPE10	172	4.33	0.27
CPE12	115	5	1.93	CPE12	115	5	1.93
CPE13	662	4.83	1.93	CPE13	673	4.83	1.86
CPE15	416	4.5	2.81	CPE15	416	4.5	2.81
CPE16	1032	5.67	13.72	CPE16	1032	5.67	13.72
CPE19	873	6.17	10.48	CPE19	873	6.17	10.48
CPE20	203	8.83	4.58	CPE20	204	8.83	4.58
CPE22	142	5.67	4.1	CPE22	147	5.67	4.1
CPE23	378	5.17	6.28	CPE23	378	5.17	6.28
CPE24	465	5.17	4.7	CPE24	472	5.17	4.7
CPE25	206	12	21.77	CPE25	150	11.83	9.15
CPE29	194	9	8.41	CPE29	195	9	8.41
CPE29A	295	7	3.83	CPE29A	295	7	3.83
CPE30	518	8.17	8.42	CPE30	526	8.17	7.97
CPE31	204	5.5	1.28	CPE31	199	6	1.11
CPE32	345	5.33	1.76	CPE32	345	5.33	1.76
CPE33	39	4.5	0.07				
CPE34	340	5.5	6.55	CPE34	353	5.5	6.55
CPE35	126	4.67	0.69	CPE35	126	4.67	0.69
CPE36	41	6.83	6.44	CPE36	91	4.67	0.35
CPE37	63	10	4.28	CPE37	66	7.17	4.28
CPE38	346	6.17	19.72	CPE38	353	6	19.72
CPE41	204	5.17	3.37	CPE41	199	5.17	3.52
CPE42	269	5.33	2.7	CPE42	284	5.33	2.85
CPE43	104	4.83	1.55	CPE43	84	4.83	1.82
CPE44	534	9.33	16.15	CPE44	466	9.5	30.15
CPE45	112	12.67	16.34	CPE45	141	12.33	9.82
CPE46	89	4.67	2.75	CPE46	172	4.33	0.54
CPE47	107	13.17	19.59	CPE47	135	12.83	10.86
CPE48	91	14.5	20.45	CPE48	119	14	11.72
CPE49	503	10	19.71	CPE49	423	10.33	31.23
CPE50	528	9.67	18.78	CPE50	433	9.83	30.84
CPE53	158	5.33	0.71				
CPE54	25	7.17	6.4	CPE54	95	4.67	0.31
CPF01	248	5.67	2.19	CPF01	248	5.67	2.19
CPF02	676	4.67	1.02	CPF02	676	4.67	1.02
CPF04	81	7.33	4.82	CPF04	81	7.33	4.82
CPF05	71	5.83	11.01	CPF05	72	5.83	11.01
CPF06	261	4.33	2.63	CPF06	261	4.33	2.63
CPF08	234	5.17	15.56	CPF08	234	5.17	15.56
CPF09	12	17	18.25	CPF09	13	17	18.25
CPF12	428	4.33	0.44	CPF12	428	4.33	0.44
CPF15	442	5	1.74	CPF15	442	5	1.74
CPF16	314	5	1.02	CPF16	314	5	1.02
CPF17	573	4.5	1.74	CPF17	574	4.5	1.73
CPF18	238	4.33	2.55	CPF18	238	4.33	2.55
CPF19	106	5.33	19.1	CPF19	106	5.33	19.1
CPF20	86	5.83	16.52	CPF20	87	5.83	10.16
CPF21	26	7	11.12	CPF21	26	7	11.12

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	283	4.5	2.07	CPF22	283	4.5	2.07
CPF24	436	4.67	2.93	CPF24	436	4.67	2.93
CPF25	511	5.5	7.11	CPF25	688	5.5	5.36
CPF26	62	5.33	4.38				
CPF27	706	5.5	9.63	CPF27	577	5.33	4.27
CPF28	101	6.67	1.26	CPF28	59	6.33	1.26
CPF29	64	7	13	CPF29	64	7	13
CPF31	279	5.33	18.99	CPF31	264	6.17	12.62
CPF32	106	8	7.08	CPF32	30	7.83	13.45
CPF33	181	4.83	0.95	CPF33	152	4.83	1.12
CPF34	344	6.67	18.09	CPF34	432	7.17	10.86
CPF35	145	5.33	3.29	CPF35	182	5.17	1.29
CPF36	129	4.67	0.16				
CPG01	1080	6.17	3.49	CPG01	1080	6.17	3.49
CPG03	2241	4.5	4.52	CPG03	2241	4.5	4.52
CPG04	1747	4.5	5.34	CPG04	1747	4.5	5.34
CPG06	1403	4.33	2.88	CPG06	1403	4.33	2.88
CPG07	826	4.5	2.79	CPG07	826	4.5	2.79
CPG09	535	6.33	5.24	CPG09	535	6.33	5.24
CPG10	1085	6.17	3.93	CPG10	1085	6.17	3.93
CPG11	355	8.33	9.78	CPG11	430	7.67	9.78
CPG13	437	4.67	1.3	CPG13	437	4.67	1.3
CPG14	197	4.33	0.35	CPG14	197	4.33	0.35
CPG22	235	4.83	1.8	CPG22	235	4.83	1.8
CPG27	357	4.67	1.51	CPG27	357	4.67	1.51
CPG31	1034	5.17	9.35	CPG31	1051	5.17	9.35
CPG32	773	4.5	1.71	CPG32	773	4.5	1.71
CPG34	237	4.83	1.85	CPG34	236	4.83	1.85
CPG34A	287	4.33	0.56	CPG34A	287	4.33	0.56
CPG35	299	4.5	2.38	CPG35	299	4.5	2.38
CPG39	316	5	1.79	CPG39	316	5	1.79
CPG40	279	4.83	6.9	CPG40	279	4.83	6.9
CPG42	160	10	5.09	CPG42	187	9.17	5.09
CPG43	690	6.5	11.48	CPG43	693	6.5	11.48
CPG45	1226	4.83	9.17	CPG45	1254	4.83	9.17
CPG46	779	4.5	3	CPG46	779	4.5	3
CPG47	616	4.5	1.5	CPG47	616	4.5	1.5
CPH01	1764	4.5	3.2	CPH01	1764	4.5	3.2
CPH07	135	4.67	2.35	CPH07	184	4.67	2.35
CPH10	1317	4.5	1.63	CPH10	1321	4.5	1.63
CPH13	174	5.5	2.88	CPH13	174	5.5	2.88
CPH14	242	5	1.65	CPH14	242	5	1.65
CPH15	1053	4.33	1.29	CPH15	1053	4.33	1.29
CPH15A	1053	4.33	0.77	CPH15A	1053	4.33	0.77
CPH17	742	4.5	1.64	CPH17	742	4.5	1.64
CPH23	1877	4.83	4.35	CPH23	1877	4.83	4.35
CPH24	877	4.83	1.98	CPH24	877	4.83	1.98
CPH25	879	5	1.95	CPH25	879	5	1.95
CPH28	187	5.17	1.24	CPH28	187	5.17	1.24
CPH29	82	5.67	1.48	CPH29	82	5.67	1.48
CPH30	175	5.33	0.88	CPH30	171	5.33	0.92
CPH31	797	4.67	1.59	CPH31	797	4.67	1.59
CPH31A	920	4.5	2.57	CPH31A	920	4.5	2.57
CPH32	489	5.5	2.04	CPH32	489	5.5	2.04
CPH32A	302	4.5	0.65	CPH32A	302	4.5	0.65
CPH32B	405	4.67	0.67	CPH32B	405	4.67	0.67
CPH33	654	4.83	2.83	CPH33	654	4.83	2.83

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	571	5.17	2.06	CPH33B	571	5.17	2.06
CPH34	130	4.5	4.44	CPH34	130	4.5	4.44
CPH35	462	5	1.28	CPH35	462	5	1.28
CPH36	59	5.33	1.63	CPH36	59	5.33	1.63
CPH37	358	5.5	3	CPH37	358	5.5	3
CPH38	1217	4.67	1.01	CPH38	1303	4.67	1.01
CPH39	891	5.17	1.39	CPH39	944	5.17	1.39
CPH40	532	5.83	1.44	CPH40	555	5.67	1.44
CPH41	247	5.67	0.72	CPH41	262	5.5	0.72
CPH42	127	7.33	3.45	CPH42	127	7.33	3.45
CPH44	47	6.17	2.19	CPH44	47	6.17	2.19
CPH45	94	4.5	4.72	CPH45	94	4.5	4.72
CPH46	372	5.33	1.73	CPH46	376	5.5	1.73
CPH47	377	5.5	1.8	CPH47	366	5.5	1.8
CPH48	342	4.33	0.91	CPH48	342	4.33	0.91
CPH49	230	4.83	1.01	CPH49	230	4.83	1.01
CPH50	283	7.67	2.54	CPH50	284	7.67	2.54
CPH51	158	4.5	1.18	CPH51	153	4.5	1.22
CPH52A	168	4.5	1.41	CPH52A	167	4.5	1.45
CPH52B	597	6.5	6.99	CPH52B	597	6.5	7.03
CPH53	597	6.33	4.1	CPH53	597	6.33	4.1
CPH54	505	7	7.24	CPH54	504	7	7.24
CPH55	754	5.5	2.32	CPH55	732	5.5	2.32
CPH56	609	6.33	2.71	CPH56	598	6.33	2.71
CPH57	512	7.33	3.14	CPH57	505	7.33	3.14
CPH58	822	5.33	2.25	CPH58	822	5.33	2.25
CPH59	712	6.17	3.39	CPH59	712	6.17	3.39
CPH60	228	7.17	1.74	CPH60	244	7	1.74
CPH61	381	7.67	2.68	CPH61	381	7.67	2.68
CPH62	1501	5.5	5.23	CPH62	1501	5.5	5.23
CPH63	1270	6	6.64	CPH63	1270	6	6.64
CPH66	609	6.83	3.64	CPH66	609	6.83	3.64
CPH67	119	4.67	0.6	CPH67	119	4.67	0.6
CPH68	453	8.17	3.47	CPH68	448	8.17	3.47
CPH69	473	8.67	4.94	CPH69	478	8.5	4.94
CPH70	183	4.83	1.1	CPH70	183	4.83	1.1
CPH71	547	7.83	4.29	CPH71	547	7.83	4.29
CPH72	509	8.17	4.71	CPH72	509	8.17	4.71
CPH73	510	7.67	11.08	CPH73	509	7.67	11.08
CPH74	491	8.33	11.88	CPH74	491	8.33	11.88
CPH75	330	6	2.27	CPH75	323	6	2.55
CPH76	249	4.83	3.03	CPH76	231	4.83	3.3
CPH77	206	7.17	3.3	CPH77	194	7.17	3.57
CPH78	321	6	9.12	CPH78	281	6.17	9.12
CPH79	134	6.83	9.62	CPH79	97	6.5	9.62
CPH80	111	7.83	10.08	CPH80	88	7.17	10.08
CPH81	71	4.5	0.46	CPH81	71	4.5	0.46
CPH82	98	8.17	4.41	CPH82	98	8.17	4.41
CPH84	515	6.33	2.91	CPH84	533	6.33	2.91
CPH85	459	6.5	3.89	CPH85	495	6.5	3.89
CPH86	418	7	4.97	CPH86	438	7.17	4.97
CPI04	469	4.5	0.78	CPI04	469	4.5	0.78
CPI05	780	4.33	0.79	CPI05	780	4.33	0.79
CPI06	354	5	1.28	CPI06	354	5	1.28
CPI07	585	4.83	0.99	CPI07	585	4.83	0.99
CPI08	137	6.33	2.07	CPI08	137	6.33	2.07
CPI09	491	5.17	1.3	CPI09	491	5.17	1.3

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	90	7.33	2.57	CPI10	90	7.33	2.57
CPI11	400	5.5	1.59	CPI11	400	5.5	1.59
CPI12	347	6.17	4.66	CPI12	347	6.17	4.66
CPI13	229	6.67	5.18	CPI13	229	6.67	5.18
CPI14	208	7	5.42	CPI14	208	7	5.42
CPI15A	625	4.5	0.73	CPI15A	625	4.5	0.73
CPI17A	572	4.33	0.36	CPI17A	572	4.33	0.36
CPI18	284	5	2.24	CPI18	284	5	2.24
CPI19	250	5.5	2.53	CPI19	250	5.5	2.53
CPI20	201	6.5	3.15	CPI20	201	6.5	3.15
CPI21	173	7.17	3.62	CPI21	166	7.17	3.62
CPI22	134	8.33	4	CPI22	131	8.33	4
CPI25	574	4.5	0.73	CPI25	574	4.5	0.73
CPI26A	135	4.83	0.81	CPI26A	135	4.83	0.81
CPI27	450	4.83	1.13	CPI27	450	4.83	1.13
CPI28	100	5.5	1.26	CPI28	100	5.5	1.26
CPI29	340	5.17	1.51	CPI29	340	5.17	1.51
CPI30	63	6.17	1.68	CPI30	63	6.17	1.68
CPI31	275	5.5	1.87	CPI31	275	5.5	1.87
CPI32	33	5.33	2.18	CPI32	33	5.33	2.18
CPI33	220	6.17	2.37	CPI33	220	6.17	2.37
CPI34	27	8.83	2.69	CPI34	27	8.83	2.69
CPI35	178	7	2.88	CPI35	178	7	2.88
CPI36	109	4.5	2.89	CPI36	109	4.5	2.89
CPI37	156	7.5	3.29	CPI37	156	7.5	3.29
CPI39	84	4.67	0.47	CPI39	84	4.67	0.47
CPI40	42	5.33	0.87	CPI40	42	5.33	0.87
CPI41	24	6.33	1.35	CPI41	24	6.33	1.35
CPI42	45	4.67	1.77	CPI42	45	4.67	1.77
CPI43	24	4.83	2.2	CPI43	24	4.83	2.2
CPI44A	651	4.67	0.84	CPI44A	651	4.67	0.84
CPI45	523	4.83	1.06	CPI45	523	4.83	1.06
CPI46	412	5.33	1.52	CPI46	412	5.33	1.52
CPI47	283	5.83	1.87	CPI47	283	5.83	1.87
CPI48	221	6.5	2.21	CPI48	221	6.5	2.21
CPI49	207	6.83	4.79	CPI49	207	6.83	4.79
CPI50	223	4.5	5.64	CPI50	223	4.5	5.64
CPI53	302	5.17	0.66	CPI53	302	5.17	0.66
CPI54	391	4.83	0.61	CPI54	391	4.83	0.61
CPI55	247	5.5	0.91	CPI55	247	5.5	0.91
CPI56	318	5.33	1.04	CPI56	318	5.33	1.04
CPI57	252	4.33	1.1	CPI57	252	4.33	1.1
CPI58A	220	5.33	1.79	CPI58A	220	5.33	1.79
CPI58B	296	4.83	1.63	CPI58B	296	4.83	1.63
CPI60A	542	5	5.12	CPI60A	542	5	5.12
CPI60B	484	5	2.75	CPI60B	484	5	2.75
CPI60C	148	6.67	1.57	CPI60C	148	6.67	1.57
CPI63	417	6.83	8.54	CPI63	417	6.83	8.54
CPI64	432	4.5	2.06	CPI64	432	4.5	2.06
CPI65	278	5	2.79	CPI65	278	5	2.79
CPI66	650	4.83	6.03	CPI66	650	4.83	6.03
CPI67	553	6.17	7.46	CPI67	553	6.17	7.46
CPI70	428	6.67	8.25	CPI70	428	6.67	8.25
CPI72	173	6.17	1.3	CPI72	173	6.17	1.3
CPJ06	271	5	0.52	CPJ06	271	5	0.52
CPJ07	236	5	0.69	CPJ07	236	5	0.69
CPJ10	314	4.5	0.81	CPJ10	314	4.5	0.81

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	349	4.33	0.94	CPJ11	349	4.33	0.94
CPJ12	344	5	0.51	CPJ12	344	5	0.51
CPJ14	2908	5.5	9.83	CPJ14	2908	5.5	9.83
CPJ15	828	4.33	1.39	CPJ15	828	4.33	1.39
CPJ16	737	4.33	1.21	CPJ16	737	4.33	1.21
CPJ17	568	4.5	1.89	CPJ17	568	4.5	1.89
CPJ20	1658	4.67	5.2	CPJ20	1658	4.67	5.2
CPJ21	770	4.83	1.11	CPJ21	770	4.83	1.11
CPJ22	2359	4.83	7.81	CPJ22	2359	4.83	7.81
CPJ23	2820	5.67	10.43	CPJ23	2820	5.67	10.43
CPJ27	140	5.5	2.37	CPJ27	140	5.5	2.37
CPJ29A	2663	5.83	12.35	CPJ29A	2663	5.83	12.35
CPJ33	1152	5	1.85	CPJ33	1152	5	1.85
CPJ34	1217	5	2.31	CPJ34	1217	5	2.31
CPJ35	1425	5	2.97	CPJ35	1425	5	2.97
CPJ37	93	5.83	3.18	CPJ37	93	5.83	3.18
CPJ39	2188	5.33	9.76	CPJ39	2188	5.33	9.76
CPJ43A	2501	6.17	12.95	CPJ43A	2501	6.17	12.95
CPJ46	1263	4.5	0.9	CPJ46	1263	4.5	0.9
CPJ47	719	4.5	0.51	CPJ47	719	4.5	0.51
CPJ48	1460	4.67	1.65	CPJ48	1460	4.67	1.65
CPJ52	545	4.33	0.35	CPJ52	545	4.33	0.35
CPX02	1526	5	3.01	CPX02	1526	5	3.01
CPX04	1612	4.5	1.97	CPX04	1612	4.5	1.97
CPX17	837	4.33	0.98	CPX17	837	4.33	0.98
A41RIV	861	9.5	335.51	A41RIV	853	9.5	335.51
A42RIV	861	10	340.86	A42RIV	849	10	340.86
A44RIV	853	10.33	342.81	A44RIV	840	10.33	342.81
A46RIV	887	12.67	364	A46RIV	861	12.83	364
A49RIV	905	13.17	377.94	A49RIV	874	13.17	377.94
A51RIV	917	13.33	388.64	A51RIV	901	13.33	388.64
A56RIV	930	13.33	404.96	A56RIV	902	13.5	404.96
A57RIV	980	14	414.97	A57RIV	958	14	414.97
A60RIV	1177	14.17	420.03	A60RIV	1161	14.17	420.03
A62RIV	1178	14.33	422.19	A62RIV	1165	14.33	422.19
B08RIV	408	14.5	174.26	B08RIV	391	14.5	174.26
B12RIV	843	8.5	262.59	B12RIV	841	8.5	262.59
B15RIV	690	9.5	267.64	B15RIV	639	9.5	267.64
B45RIV	703	9.5	282.17	B45RIV	652	9.5	282.17
B46RIV	668	8.83	280.17	B46RIV	657	8.83	280.17
B61RIV	900	9.17	296.93	B61RIV	916	9.17	296.93
B62RIV	842	9.17	321.9	B62RIV	818	9.17	321.9
B63RIV	831	9.17	322.12	B63RIV	807	9.17	322.12
B64RIV	840	9.33	321.98	B64RIV	816	9.33	321.98
D27RIV	690	5	123.22	D27RIV	693	5	123.22
D28RIV	718	5	124.9	D28RIV	720	5	124.9
D29RIV	691	5.17	128.41	D29RIV	693	5.17	128.41
D30RIV	622	5.33	129.98	D30RIV	623	5.33	129.98
D31RIV	613	5.33	130.65	D31RIV	614	5.33	130.65
D32RIV	590	5.5	133.26	D32RIV	590	5.5	133.26
D33RIV	490	6	151.28	D33RIV	486	6	151.28
D39RIV	426	6.67	171.57	D39RIV	410	6.67	171.57
D40RIV	427	6.67	169.2	D40RIV	412	6.67	169.2
D41RIV	445	6.5	157.27	D41RIV	416	6.5	157.27
D42RIV	455	6.33	156.97	D42RIV	426	6.33	156.97
E41RIV	1038	4.5	111.17	E41RIV	1038	4.5	98.07
E48RIV	368	7.33	63.76	E48RIV	360	7.83	58.43

Table 4.3.9 Future Conditions 100-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	403	10.5	86.19	E49RIV	383	10.5	86.19
E51RIV	386	11.33	89.48	E51RIV	370	11.33	89.48
F32RIV	140	8	27.84	F32RIV	54	7.67	27.84
F33RIV	46	8.67	28.79	F33RIV	52	8.17	28.81
F34RIV	344	7.33	40.15	F34RIV	432	7.33	40.15
F35RIV	174	7.5	42.15	F35RIV	214	7.67	42.15
G17RIV	384	11.33	90.3	G17RIV	368	11.5	90.3
G27RIV	395	10.83	87.92	G27RIV	378	10.83	87.92
G28RIV	390	11	88.23	G28RIV	373	11.17	88.23
G30RIV	1561	4.67	103.15	G30RIV	1561	4.67	103.15
G33RIV	584	5.5	131.39	G33RIV	584	5.5	131.39
G36RIV	485	6	152.54	G36RIV	471	6	152.54
G37RIV	462	6.17	153.28	G37RIV	435	6.33	153.28
G38RIV	460	6.33	154.8	G38RIV	432	6.33	154.8
G40RIV	409	6.5	168.55	G40RIV	386	6.5	168.55
G42RIV	403	14.5	172.26	G42RIV	383	14.33	172.26
H69RIV	695	9.33	265.9	H69RIV	641	8.83	265.9
H72RIV	684	9	277.74	H72RIV	655	9	277.74
H74RIV	699	9	290.02	H74RIV	701	9	290.02
H77RIV	834	9.17	294.03	H77RIV	841	9.17	294.03
H80RIV	872	9.17	316.49	H80RIV	861	9.17	316.49
H86RIV	841	9.33	328.05	H86RIV	826	9.33	328.05
I36RIV	872	12.33	345.69	I36RIV	843	12.33	345.69
I37RIV	897	12.5	363.37	I37RIV	869	12.5	363.37
I50RIV	904	12.83	369.64	I50RIV	876	12.83	369.64
I62RIV	874	13	370.07	I62RIV	847	13	370.07
I63RIV	972	13.5	413.5	I63RIV	950	13.67	413.5

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPA03	0	0	5.78	CPA03	0	0	5.78
CPA06	56	4.67	1.52	CPA06	56	4.67	1.52
CPA07	66	4.5	0.86	CPA07	66	4.5	0.86
CPA08	50	4.83	2.77	CPA08	51	4.83	2.77
CPA10	66	4.67	4.65	CPA10	66	4.67	4.65
CPA11	0	0	4.5	CPA11	0	0	4.5
CPA14	0	0	3.1	CPA14	0	0	3.1
CPA15	0	0	3.19	CPA15	0	0	3.19
CPA16	0	0	3.52	CPA16	0	0	3.52
CPA17	17	6	3.03	CPA17	21	6	3.03
CPA18	71	4.67	5.88	CPA18	71	4.67	5.88
CPA19	0	5.83	5.39	CPA19	0	5.83	5.39
CPA19A	14	6.17	2.21	CPA19A	15	6.33	2.21
CPA20	41	5.5	1.75	CPA20	43	5.5	1.75
CPA21	107	4.67	2.52	CPA21	107	4.67	2.52
CPA22	78	4.83	0.99	CPA22	78	4.83	0.99
CPA24	77	5	3.86	CPA24	77	5	3.86
CPA26	68	4.5	3.09	CPA26	68	4.5	3.09
CPA27	4	4.67	4.74	CPA27	4	4.67	4.74
CPA27A	4	4.67	4.19	CPA27A	4	4.67	4.19
CPA29	1	5.83	5.93	CPA29	1	6.17	5.93
CPA30	1	7.83	10.47	CPA30	1	7.33	10.47
CPA30A	1	8	4.54	CPA30A	1	8	4.54
CPA32	12	11.67	3.07	CPA32	12	11.17	3.07
CPA32A	4	11.33	2.53	CPA32A	5	11	2.53
CPA33	33	5.83	6.02	CPA33	34	6	6.02
CPA33A	38	5.83	2.99	CPA33A	38	5.83	2.99
CPA34	12	6.83	2.57	CPA34	12	6.83	2.57
CPA35	12	8.17	6.94	CPA35	12	8.17	6.94
CPA37	0	0	4.93	CPA37	0	0	4.93
CPA39	0	0	1.08	CPA39	0	0	1.08
CPA41	0	0	1.97	CPA41	0	0	1.97
CPA42	0	0	1.35	CPA42	0	0	1.35
CPA43	0	0	1.58	CPA43	0	0	1.58
CPA44	0	0	1.95	CPA44	0	0	1.95
CPA45	0	0	5.47	CPA45	0	0	5.47
CPA46	0	0	0.63	CPA46	0	0	0.63
CPA47	2	11.5	7.73	CPA47	2	11.5	7.73
CPA49	2	15	9.54	CPA49	2	15	9.54
CPA50	6	10	13.01	CPA50	6	10.33	13.01
CPA51	17	14.17	16.07	CPA51	17	14.33	16.07
CPA51A	11	16.17	3.06	CPA51A	11	16	3.06
CPA52	0	12.17	13.76	CPA52	0	11.83	13.76
CPA52A	0	9	10.69	CPA52A	0	8.67	10.69
CPA54	94	4.5	2.25	CPA54	94	4.5	2.25
CPA55	26	5	16.62	CPA55	26	5	16.62
CPA55A	94	5	2.87	CPA55A	94	5	2.87
CPA56	10	8.83	18.46	CPA56	10	8.83	18.46
CPA59	582	4.5	3.39	CPA59	582	4.5	3.39
CPA60	610	4.83	5.05	CPA60	610	4.83	5.05
CPA63	8	6.67	12.02	CPA63	9	6.67	12.02
CPA63A	0	7.17	5.99	CPA63A	0	7.17	5.99
CPA64	9	4.33	6.55	CPA64	9	4.33	6.55
CPA65	0	4.33	6.32	CPA65	0	4.33	6.32
CPB03	53	5.33	21.96	CPB03	53	5.33	21.96
CPB05	215	4.83	4.77	CPB05	215	4.83	4.77
CPB07	0	0	1.57	CPB07	0	0	1.57

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPB08	0	0	2	CPB08	0	0	2
CPB09	86	9.83	61.72	CPB09	87	9.83	61.31
CPB10	235	8	5.9	CPB10	235	8	5.9
CPB11	676	8	6.14	CPB11	676	8	6.14
CPB12	85	10	67.78	CPB12	86	10	67.78
CPB12A	5	14.67	6.47	CPB12A	5	14.67	6.47
CPB13	20	6.33	15.13	CPB13	20	6.33	15.13
CPB14	183	7.67	12.33	CPB14	183	7.67	12.33
CPB16	15	6.17	6.32	CPB16	15	6.17	6.32
CPB18	49	4.67	1.64	CPB18	49	4.67	1.64
CPB19	158	4.67	0.88	CPB19	158	4.67	0.88
CPB21	3150	4.5	12.64	CPB21	3150	4.5	12.64
CPB24	158	4.33	0.72	CPB24	158	4.33	0.72
CPB24A	96	4.33	0.25	CPB24A	96	4.33	0.25
CPB25	103	4.33	1.65	CPB25	103	4.33	1.65
CPB26	26	4.5	2.01	CPB26	26	4.5	2.01
CPB29	54	4.67	1.23	CPB29	54	4.67	1.23
CPB33	0	0	3.08	CPB33	0	0	3.08
CPB33A	75	4.5	0.79	CPB33A	75	4.5	0.79
CPB34	124	4.33	0.51	CPB34	124	4.33	0.51
CPB35	73	4.5	2.29	CPB35	73	4.5	2.29
CPB35A	73	4.67	1.11	CPB35A	73	4.67	1.11
CPB36	100	4.33	0.47	CPB36	100	4.33	0.47
CPB37	69	4.67	1.36	CPB37	69	4.67	1.36
CPB38	16	4.67	9.08	CPB38	16	4.67	9.08
CPB39	239	4.5	8.35	CPB39	236	4.5	8.35
CPB39A	8	9.17	6.71	CPB39A	8	9.17	6.71
CPB41	88	5	0.82	CPB41	88	5	0.82
CPB43	69	5	0.37	CPB43	69	5	0.37
CPB44	141	4.5	0.55	CPB44	141	4.5	0.55
CPB45	270	4.67	14.16	CPB45	270	4.67	14.16
CPB46	24	6.5	2.43	CPB46	24	6.5	2.43
CPB47	25	4.83	2.49	CPB47	25	4.83	2.49
CPB48	78	4.5	2.17	CPB48	78	4.5	2.17
CPB50	169	4.5	0.72	CPB50	169	4.5	0.72
CPB54	8	9.83	8.64	CPB54	8	9.83	8.64
CPB56	0	0	0.75	CPB56	0	0	0.75
CPB57	0	0	0.52	CPB57	0	0	0.52
CPB58	0	0	0.99	CPB58	0	0	0.99
CPB59	8	12	15.98	CPB59	8	12	15.98
CPB60	4	20	18.09	CPB60	4	20	18.09
CPB61	13	8.67	3.23	CPB61	13	8.67	3.23
CPB65	10	4.67	13.18	CPB65	10	4.67	13.18
CPC06	96	4.33	0.51	CPC06	96	4.33	0.51
CPC07	77	4.67	2.41	CPC07	77	4.67	2.63
CPC09	49	4.33	0.43	CPC09	49	4.33	0.27
CPC10	73	4.5	1	CPC10	90	4.5	0.78
CPC12	114	4.33	0.44	CPC12	114	4.33	0.44
CPC13	122	4.5	0.73	CPC13	122	4.5	0.73
CPC14	46	4.33	0.77	CPC14	58	4.33	0.35
CPC15	63	4.33	0.53	CPC15	63	4.33	0.24
CPC16	80	4.5	0.91	CPC16	80	4.5	0.51
CPC17	93	4.33	0.84	CPC17	93	4.33	0.42
CPC18	51	4.17	0.72	CPC18	51	4.17	0.33
CPC19	52	5.33	3.39	CPC19	52	4.83	2.08
CPC20	12	6.83	3.26	CPC20	40	4.5	1.68
CPC22	118	4.33	1.69	CPC22	120	4.33	1.67

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPC24	124	4.33	1.85				
CPC25	39	4.17	0.08				
CPC26	29	4.33	0.79				
CPC27	14	6.17	2.82	CPC27	54	5	1.4
CPC28	14	4.17	2.78				
CPC29	55	4.33	3.95	CPC29	84	4.33	3.18
CPC30	48	4.33	1.99	CPC30	92	4.33	1.11
CPC31	62	4.83	0.65	CPC31	71	4.83	0.48
CPC33	267	5.33	46.18	CPC33	268	5.33	46.18
CPC33A	33	5.5	2.69	CPC33A	37	6	3.46
CPC33B	18	8.67	6.4	CPC33B	48	6.67	6.31
CPC33C	64	5.67	4.43	CPC33C	58	5.33	3.76
CPC33D	33	6.5	10.83	CPC33D	25	6.83	10.07
CPC33E	37	10.67	13.51	CPC33E	28	9.67	13.53
CPC33F	36	11.5	13.66	CPC33F	28	10.5	13.66
CPC34	152	7.17	52.84	CPC34	152	7.17	52.84
CPC34A	152	7.17	47.04	CPC34A	152	7.17	47.04
CPC36	118	7.67	55.93	CPC36	118	7.67	55.93
CPC37	68	4.83	2.11	CPC37	68	4.83	2.11
CPC38	109	4.67	0.81	CPC38	109	4.67	0.81
CPC42	55	4.33	0.31	CPC42	55	4.33	0.31
CPC43	62	4.33	0.31	CPC43	62	4.33	0.31
CPC44	139	4.33	0.48	CPC44	139	4.33	0.48
CPC45	83	4.33	0.25	CPC45	83	4.33	0.25
CPC46	98	4.5	0.37	CPC46	98	4.5	0.37
CPC47	107	8.5	61.04	CPC47	108	8.5	61.04
CPC47A	44	4.67	2.56	CPC47A	44	4.67	2.57
CPC48	110	8.33	59.14	CPC48	111	8.33	58.48
CPC48A	35	5.33	2.37	CPC48A	35	5.33	2.37
CPC49	114	8	56.11	CPC49	114	8	56.11
CPC52	0	0	0.77	CPC52	0	0	0.77
CPD01	42	4.5	3.17	CPD01	42	4.5	3.17
CPD03	179	4.33	0.77	CPD03	179	4.33	0.77
CPD04	82	4.5	0.51	CPD04	82	4.5	0.51
CPD05	44	7.67	4.18	CPD05	24	5.17	4.18
CPD08	61	4.5	0.73	CPD08	61	4.5	0.73
CPD09	65	5.33	1.75	CPD09	60	4.5	1.75
CPD10	90	4.67	2.95	CPD10	90	4.67	2.9
CPD11	133	4.5	0.56	CPD11	133	4.5	0.56
CPD12	49	4.33	0.14				
CPD13	40	4.33	4.58	CPD13	41	4.33	4.58
CPD15	162	4.5	0.95	CPD15	162	4.5	0.95
CPD17	67	4.67	1.53	CPD17	67	4.67	1.53
CPD18	51	4.5	1.2				
CPD19	60	4.5	0.52				
CPD20	45	4.5	0.59				
CPD21	0	0	0.09				
CPD22	66	13.33	16.27	CPD22	12	13.33	16.24
CPD23	29	8.17	3.1	CPD23	48	4.83	2.67
CPD24	29	8.17	3.57	CPD24	0	5.17	3.35
CPD24A	0	0	0.47	CPD24A	0	0	0.68
CPD25	27	11.17	5.54	CPD25	4	8.83	4.87
CPD26	0	26.83	7.09	CPD26	0	18.5	6.42
CPD27	21	4.5	7.35	CPD27	22	4.5	6.68
CPD33	1	24	16.92	CPD33	4	18.67	16.89
CPD35	129	4.83	1.43	CPD35	129	4.83	1.43
CPD37	53	5.67	1.71	CPD37	53	5.67	1.71

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPD38	53	5.67	2.07	CPD38	53	5.67	2.07
CPD39	22	6.17	2.36	CPD39	22	6.17	2.36
CPD42	55	4.33	1.41	CPD42	55	4.33	1.41
CPD46	44	4.17	0.15				
CPD47	18	4.17	0.16				
CPE02	545	4.67	10.91	CPE02	545	4.67	10.91
CPE03	523	5.17	12.93	CPE03	523	5.17	12.93
CPE05	89	8.17	8.46	CPE05	89	8.17	8.46
CPE10	58	4.33	0.27	CPE10	58	4.33	0.27
CPE12	10	6.67	1.93	CPE12	10	6.67	1.93
CPE13	109	4.83	1.93	CPE13	117	4.83	1.86
CPE15	0	0	2.81	CPE15	0	0	2.81
CPE16	483	5.67	13.72	CPE16	483	5.67	13.72
CPE19	409	6.33	10.48	CPE19	409	6.33	10.48
CPE20	31	10.83	4.58	CPE20	31	10.83	4.58
CPE22	0	0	4.1	CPE22	0	0	4.1
CPE23	33	6.33	6.28	CPE23	28	6.33	6.28
CPE24	58	5.83	4.7	CPE24	63	5.83	4.7
CPE25	52	14.33	21.77	CPE25	51	14.33	9.15
CPE29	36	10.83	8.41	CPE29	36	10.83	8.41
CPE29A	37	8	3.83	CPE29A	37	8	3.83
CPE30	225	9.33	8.42	CPE30	225	9.33	7.97
CPE31	29	6.17	1.28	CPE31	29	6.83	1.11
CPE32	50	5.5	1.76	CPE32	50	5.5	1.76
CPE33	0	0	0.07				
CPE34	6	7	6.55	CPE34	6	7	6.55
CPE35	0	0	0.69	CPE35	0	0	0.69
CPE36	1	14.83	6.44	CPE36	0	0	0.35
CPE37	0	0	4.28	CPE37	0	0	4.28
CPE38	35	11.83	19.72	CPE38	34	11.83	19.72
CPE41	0	0	3.37	CPE41	0	0	3.52
CPE42	27	5.83	2.7	CPE42	356	6	2.85
CPE43	4	9.33	1.55	CPE43	5	10.17	1.82
CPE44	220	10.33	16.15	CPE44	206	10.5	30.15
CPE45	44	15.17	16.34	CPE45	46	15	9.82
CPE46	1	16.33	2.75	CPE46	0	0	0.54
CPE47	43	15.67	19.59	CPE47	45	15.67	10.86
CPE48	34	17.5	20.45	CPE48	36	17.33	11.72
CPE49	210	11.33	19.71	CPE49	189	11.5	31.23
CPE50	216	10.83	18.78	CPE50	192	11	30.84
CPE53	0	0	0.71				
CPE54	1	15.67	6.4	CPE54	0	0	0.31
CPF01	40	6.5	2.19	CPF01	40	6.5	2.19
CPF02	199	4.83	1.02	CPF02	199	4.83	1.02
CPF04	22	8.17	4.82	CPF04	22	8.17	4.82
CPF05	18	9.17	11.01	CPF05	19	9	11.01
CPF06	17	4.33	2.63	CPF06	17	4.33	2.63
CPF08	13	14.5	15.56	CPF08	13	14.33	15.56
CPF09	6	19.33	18.25	CPF09	6	19.17	18.25
CPF12	85	4.33	0.44	CPF12	85	4.33	0.44
CPF15	26	5.83	1.74	CPF15	26	5.83	1.74
CPF16	54	4.33	1.02	CPF16	54	4.33	1.02
CPF17	86	4.5	1.74	CPF17	87	4.5	1.73
CPF18	8	4.33	2.55	CPF18	8	4.33	2.55
CPF19	5	22.33	19.1	CPF19	5	22.33	19.1
CPF20	3	25.67	16.52	CPF20	3	25.5	10.16
CPF21	3	24.67	11.12	CPF21	3	24.5	11.12

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPF22	49	4.5	2.07	CPF22	49	4.5	2.07
CPF24	99	4.67	2.93	CPF24	100	4.67	2.93
CPF25	15	6.83	7.11	CPF25	16	6.83	5.36
CPF26	0	0	4.38				
CPF27	97	6.33	9.63	CPF27	97	6.33	4.27
CPF28	8	6.83	1.26	CPF28	8	6.83	1.26
CPF29	26	7.17	13	CPF29	25	7.17	13
CPF31	3	28.17	18.99	CPF31	3	27.67	12.62
CPF32	5	29	7.08	CPF32	3	29.17	13.45
CPF33	2	9.67	0.95	CPF33	3	9.67	1.12
CPF34	5	9.5	18.09	CPF34	12	9.17	10.86
CPF35	0	0	3.29	CPF35	0	0	1.29
CPF36	0	0	0.16				
CPG01	570	6.5	3.49	CPG01	570	6.5	3.49
CPG03	401	4.5	4.52	CPG03	401	4.5	4.52
CPG04	225	4.5	5.34	CPG04	225	4.5	5.34
CPG06	138	4.33	2.88	CPG06	138	4.33	2.88
CPG07	157	4.5	2.79	CPG07	157	4.5	2.79
CPG09	143	6.17	5.24	CPG09	143	6.17	5.24
CPG10	572	6.5	3.93	CPG10	572	6.5	3.93
CPG11	134	7	9.78	CPG11	134	7	9.78
CPG13	25	5.83	1.3	CPG13	25	5.83	1.3
CPG14	43	4.5	0.35	CPG14	43	4.5	0.35
CPG22	20	6.17	1.8	CPG22	20	6.17	1.8
CPG27	6	6.33	1.51	CPG27	10	6.5	1.51
CPG31	104	5.67	9.35	CPG31	105	5.67	9.35
CPG32	162	4.5	1.71	CPG32	162	4.5	1.71
CPG34	76	4.33	1.85	CPG34	76	4.33	1.85
CPG34A	76	4.33	0.56	CPG34A	76	4.33	0.56
CPG35	32	4.5	2.38	CPG35	31	4.5	2.38
CPG39	19	6.83	1.79	CPG39	19	6.83	1.79
CPG40	52	10.67	6.9	CPG40	52	10.67	6.9
CPG42	51	9.17	5.09	CPG42	51	9.17	5.09
CPG43	62	8	11.48	CPG43	62	8	11.48
CPG45	137	4.83	9.17	CPG45	138	4.83	9.17
CPG46	116	4.5	3	CPG46	116	4.5	3
CPG47	153	4.5	1.5	CPG47	153	4.5	1.5
CPH01	731	4.67	3.2	CPH01	731	4.67	3.2
CPH07	0	0	2.35	CPH07	0	0	2.35
CPH10	504	4.5	1.63	CPH10	445	4.5	1.63
CPH13	783	4.33	2.88	CPH13	783	4.33	2.88
CPH14	31	5	1.65	CPH14	31	5	1.65
CPH15	432	4.33	1.29	CPH15	432	4.33	1.29
CPH15A	432	4.33	0.77	CPH15A	432	4.33	0.77
CPH17	167	4.5	1.64	CPH17	167	4.5	1.64
CPH23	670	4.83	4.35	CPH23	670	4.83	4.35
CPH24	314	5.17	1.98	CPH24	314	5.17	1.98
CPH25	410	5.17	1.95	CPH25	410	5.17	1.95
CPH28	0	0	1.24	CPH28	0	0	1.24
CPH29	0	0	1.48	CPH29	0	0	1.48
CPH30	21	5.83	0.88	CPH30	20	5.83	0.92
CPH31	238	4.67	1.59	CPH31	238	4.67	1.59
CPH31A	251	4.67	2.57	CPH31A	251	4.67	2.57
CPH32	141	5.83	2.04	CPH32	141	5.83	2.04
CPH32A	115	5.83	0.65	CPH32A	115	5.83	0.65
CPH32B	211	4.33	0.67	CPH32B	211	4.33	0.67
CPH33	145	5.67	2.83	CPH33	145	5.67	2.83

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPH33B	138	5.67	2.06	CPH33B	138	5.67	2.06
CPH34	0	0	4.44	CPH34	0	0	4.44
CPH35	93	5.17	1.28	CPH35	93	5.17	1.28
CPH36	0	0	1.63	CPH36	0	0	1.63
CPH37	88	6.83	3	CPH37	88	6.83	3
CPH38	422	4.83	1.01	CPH38	426	4.83	1.01
CPH39	348	5.33	1.39	CPH39	350	5.33	1.39
CPH40	265	6	1.44	CPH40	243	6	1.44
CPH41	26	6	0.72	CPH41	35	5.83	0.72
CPH42	7	11	3.45	CPH42	7	11	3.45
CPH44	0	0	2.19	CPH44	0	0	2.19
CPH45	0	0	4.72	CPH45	0	0	4.72
CPH46	68	6	1.73	CPH46	76	4.5	1.73
CPH47	68	6.17	1.8	CPH47	66	6.17	1.8
CPH48	90	4.33	0.91	CPH48	90	4.33	0.91
CPH49	18	5.33	1.01	CPH49	18	5.33	1.01
CPH50	79	9.33	2.54	CPH50	79	9.33	2.54
CPH51	17	7	1.18	CPH51	16	7	1.22
CPH52A	16	4.67	1.41	CPH52A	15	4.67	1.45
CPH52B	198	6.83	6.99	CPH52B	198	6.83	7.03
CPH53	199	6.83	4.1	CPH53	199	6.83	4.1
CPH54	174	7.67	7.24	CPH54	174	7.67	7.24
CPH55	263	6	2.32	CPH55	253	6	2.32
CPH56	184	7.17	2.71	CPH56	180	7.17	2.71
CPH57	166	7.83	3.14	CPH57	164	7.83	3.14
CPH58	377	5.5	2.25	CPH58	377	5.5	2.25
CPH59	330	6.33	3.39	CPH59	330	6.33	3.39
CPH60	93	7.67	1.74	CPH60	100	7.33	1.74
CPH61	160	8.17	2.68	CPH61	160	8.17	2.68
CPH62	516	5.67	5.23	CPH62	516	5.67	5.23
CPH63	443	6.33	6.64	CPH63	443	6.33	6.64
CPH66	219	7.17	3.64	CPH66	219	7.17	3.64
CPH67	0	0	0.6	CPH67	0	0	0.6
CPH68	154	8.5	3.47	CPH68	152	8.5	3.47
CPH69	203	9	4.94	CPH69	212	9	4.94
CPH70	0	0	1.1	CPH70	0	0	1.1
CPH71	207	7.83	4.29	CPH71	207	7.83	4.29
CPH72	198	8.17	4.71	CPH72	198	8.17	4.71
CPH73	168	8.67	11.08	CPH73	168	8.67	11.08
CPH74	162	9.67	11.88	CPH74	162	9.67	11.88
CPH75	57	7	2.27	CPH75	56	7	2.55
CPH76	46	8.33	3.03	CPH76	39	8.33	3.3
CPH77	33	8.67	3.3	CPH77	32	8.83	3.57
CPH78	64	6.83	9.12	CPH78	56	5.33	9.12
CPH79	27	8.5	9.62	CPH79	11	6.67	9.62
CPH80	23	10.33	10.08	CPH80	9	8.17	10.08
CPH81	0	0	0.46	CPH81	0	0	0.46
CPH82	6	12.67	4.41	CPH82	6	12.67	4.41
CPH84	256	6.17	2.91	CPH84	240	6.33	2.91
CPH85	199	6.67	3.89	CPH85	158	7	3.89
CPH86	163	7.67	4.97	CPH86	122	8	4.97
CPI04	81	4.83	0.78	CPI04	81	4.83	0.78
CPI05	320	4.5	0.79	CPI05	320	4.5	0.79
CPI06	54	5.67	1.28	CPI06	54	5.67	1.28
CPI07	238	5	0.99	CPI07	238	5	0.99
CPI08	20	7.67	2.07	CPI08	20	7.67	2.07
CPI09	179	5.5	1.3	CPI09	179	5.5	1.3

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPI10	11	9.5	2.57	CPI10	11	9.5	2.57
CPI11	141	6	1.59	CPI11	141	6	1.59
CPI12	113	6.83	4.66	CPI12	113	6.83	4.66
CPI13	74	7.83	5.18	CPI13	74	7.83	5.18
CPI14	66	8.33	5.42	CPI14	66	8.33	5.42
CPI15A	125	4.5	0.73	CPI15A	125	4.5	0.73
CPI17A	166	4.33	0.36	CPI17A	166	4.33	0.36
CPI18	75	5	2.24	CPI18	75	5	2.24
CPI19	61	5.67	2.53	CPI19	61	5.67	2.53
CPI20	48	7.33	3.15	CPI20	48	7.33	3.15
CPI21	40	8.33	3.62	CPI21	38	8.5	3.62
CPI22	32	10.5	4	CPI22	31	10.5	4
CPI25	269	4.5	0.73	CPI25	269	4.5	0.73
CPI26A	21	5.17	0.81	CPI26A	21	5.17	0.81
CPI27	184	5	1.13	CPI27	184	5	1.13
CPI28	13	6.33	1.26	CPI28	13	6.33	1.26
CPI29	138	5.33	1.51	CPI29	138	5.33	1.51
CPI30	7	7.17	1.68	CPI30	7	7.17	1.68
CPI31	109	5.83	1.87	CPI31	109	5.83	1.87
CPI32	3	8.5	2.18	CPI32	3	8.5	2.18
CPI33	85	6.5	2.37	CPI33	85	6.5	2.37
CPI34	1	10	2.69	CPI34	1	10	2.69
CPI35	67	7.83	2.88	CPI35	67	7.83	2.88
CPI36	0	12.17	2.89	CPI36	0	12.17	2.89
CPI37	57	8.5	3.29	CPI37	57	8.5	3.29
CPI39	11	5	0.47	CPI39	11	5	0.47
CPI40	6	5.83	0.87	CPI40	6	5.83	0.87
CPI41	3	6.83	1.35	CPI41	3	6.83	1.35
CPI42	2	8	1.77	CPI42	2	8	1.77
CPI43	1	9.33	2.2	CPI43	1	9.33	2.2
CPI44A	246	4.67	0.84	CPI44A	246	4.67	0.84
CPI45	143	5	1.06	CPI45	143	5	1.06
CPI46	100	5.67	1.52	CPI46	100	5.67	1.52
CPI47	63	6.33	1.87	CPI47	63	6.33	1.87
CPI48	42	7.5	2.21	CPI48	42	7.5	2.21
CPI49	38	8.33	4.79	CPI49	38	8.33	4.79
CPI50	23	10.17	5.64	CPI50	23	10.17	5.64
CPI53	90	5.17	0.66	CPI53	90	5.17	0.66
CPI54	113	5	0.61	CPI54	113	5	0.61
CPI55	64	5.83	0.91	CPI55	64	5.83	0.91
CPI56	87	5.5	1.04	CPI56	87	5.5	1.04
CPI57	44	6.17	1.1	CPI57	44	6.17	1.1
CPI58A	16	10.33	1.79	CPI58A	16	10.33	1.79
CPI58B	26	8.17	1.63	CPI58B	26	8.17	1.63
CPI60A	33	7	5.12	CPI60A	33	7	5.12
CPI60B	23	7.33	2.75	CPI60B	23	7.33	2.75
CPI60C	23	7.5	1.57	CPI60C	23	7.5	1.57
CPI63	6	16.83	8.54	CPI63	6	16.83	8.54
CPI64	15	10.5	2.06	CPI64	15	10.5	2.06
CPI65	12	11.5	2.79	CPI65	12	11.5	2.79
CPI66	9	12.67	6.03	CPI66	9	12.67	6.03
CPI67	8	14.33	7.46	CPI67	8	14.33	7.46
CPI70	7	16.33	8.25	CPI70	7	16.33	8.25
CPI72	34	6.5	1.3	CPI72	34	6.5	1.3
CPJ06	91	5	0.52	CPJ06	91	5	0.52
CPJ07	35	5.5	0.69	CPJ07	35	5.5	0.69
CPJ10	127	4.5	0.81	CPJ10	127	4.5	0.81

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
CPJ11	165	4.33	0.94	CPJ11	165	4.33	0.94
CPJ12	35	4.83	0.51	CPJ12	35	4.83	0.51
CPJ14	914	5.83	9.83	CPJ14	914	5.83	9.83
CPJ15	451	4.33	1.39	CPJ15	451	4.33	1.39
CPJ16	382	4.33	1.21	CPJ16	382	4.33	1.21
CPJ17	291	4.5	1.89	CPJ17	291	4.5	1.89
CPJ20	526	4.83	5.2	CPJ20	526	4.83	5.2
CPJ21	344	4.83	1.11	CPJ21	344	4.83	1.11
CPJ22	844	4.67	7.81	CPJ22	844	4.67	7.81
CPJ23	916	6	10.43	CPJ23	916	6	10.43
CPJ27	0	0	2.37	CPJ27	0	0	2.37
CPJ29A	918	6.33	12.35	CPJ29A	918	6.33	12.35
CPJ33	545	5.17	1.85	CPJ33	545	5.17	1.85
CPJ34	542	5.33	2.31	CPJ34	542	5.33	2.31
CPJ35	582	5.33	2.97	CPJ35	582	5.33	2.97
CPJ37	0	0	3.18	CPJ37	0	0	3.18
CPJ39	800	5.5	9.76	CPJ39	800	5.5	9.76
CPJ43A	902	6.5	12.95	CPJ43A	902	6.5	12.95
CPJ46	714	4.5	0.9	CPJ46	714	4.5	0.9
CPJ47	389	4.5	0.51	CPJ47	389	4.5	0.51
CPJ48	715	4.67	1.65	CPJ48	715	4.67	1.65
CPJ52	287	4.33	0.35	CPJ52	287	4.33	0.35
CPX02	684	5.17	3.01	CPX02	684	5.17	3.01
CPX04	775	4.5	1.97	CPX04	775	4.5	1.97
CPX17	181	4.5	0.98	CPX17	181	4.5	0.98
A41RIV	480	11.67	335.51	A41RIV	467	11.5	335.51
A42RIV	488	12.17	340.86	A42RIV	476	12.17	340.86
A44RIV	494	12.67	342.81	A44RIV	481	12.67	342.81
A46RIV	477	13.83	364	A46RIV	464	13.83	364
A49RIV	476	14.67	377.94	A49RIV	463	14.67	377.94
A51RIV	454	15.33	388.64	A51RIV	444	15.5	388.64
A56RIV	452	15.33	404.96	A56RIV	443	15.5	404.96
A57RIV	450	16.17	414.97	A57RIV	439	16.17	414.97
A60RIV	451	17.17	420.03	A60RIV	435	17.17	420.03
A62RIV	447	17.5	422.19	A62RIV	431	17.5	422.19
B08RIV	179	16.5	174.26	B08RIV	176	16.67	174.26
B12RIV	205	16.67	262.59	B12RIV	198	16.67	262.59
B15RIV	272	9.83	267.64	B15RIV	270	9.83	267.64
B45RIV	266	10	282.17	B45RIV	265	10	282.17
B46RIV	298	10.33	280.17	B46RIV	299	10.17	280.17
B61RIV	432	10.83	296.93	B61RIV	434	10.83	296.93
B62RIV	447	11	321.9	B62RIV	433	11	321.9
B63RIV	447	11.17	322.12	B63RIV	432	11	322.12
B64RIV	445	11.17	321.98	B64RIV	431	11.17	321.98
D27RIV	180	13.83	123.22	D27RIV	173	13.83	123.22
D28RIV	180	13.83	124.9	D28RIV	173	13.83	124.9
D29RIV	179	13.83	128.41	D29RIV	173	14	128.41
D30RIV	178	14.17	129.98	D30RIV	171	14.17	129.98
D31RIV	178	14.33	130.65	D31RIV	171	14.33	130.65
D32RIV	218	14	133.26	D32RIV	219	14	133.26
D33RIV	174	14.83	151.28	D33RIV	167	14.83	151.28
D39RIV	179	16.17	171.57	D39RIV	175	16.17	171.57
D40RIV	180	16	169.2	D40RIV	176	16	169.2
D41RIV	169	15.83	157.27	D41RIV	165	15.83	157.27
D42RIV	170	15.5	156.97	D42RIV	166	15.5	156.97
E41RIV	177	12.67	111.17	E41RIV	169	12.83	98.07
E48RIV	33	17.5	63.76	E48RIV	36	17.33	58.43

Table 4.3.10 Future Conditions 10-Year, 6 Hour Storm							
Modeled with Railroad				Modeled Without Railroad			
HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)	HEC-1 Identifier	Peak Flow (cfs)	Time of Peak (hr)	Contributing Area (sq.mi.)
E49RIV	184	11.5	86.19	E49RIV	174	11.67	86.19
E51RIV	178	12.5	89.48	E51RIV	170	12.5	89.48
F32RIV	6	29	27.84	F32RIV	5	29.17	27.84
F33RIV	5	30.33	28.79	F33RIV	5	29.83	28.81
F34RIV	5	31.17	40.15	F34RIV	14	29.67	40.15
F35RIV	5	32.17	42.15	F35RIV	5	31.83	42.15
G17RIV	178	12.5	90.3	G17RIV	169	12.67	90.3
G27RIV	181	11.83	87.92	G27RIV	172	12	87.92
G28RIV	180	12.17	88.23	G28RIV	171	12.33	88.23
G30RIV	178	13	103.15	G30RIV	170	13	103.15
G33RIV	177	14.5	131.39	G33RIV	171	14.5	131.39
G36RIV	171	14.83	152.54	G36RIV	168	15	152.54
G37RIV	170	15.17	153.28	G37RIV	166	15.17	153.28
G38RIV	170	15.33	154.8	G38RIV	166	15.33	154.8
G40RIV	179	15.83	168.55	G40RIV	175	15.83	168.55
G42RIV	180	16.33	172.26	G42RIV	176	16.33	172.26
H69RIV	264	9.67	265.9	H69RIV	263	9.67	265.9
H72RIV	294	10	277.74	H72RIV	295	9.5	277.74
H74RIV	414	10.33	290.02	H74RIV	416	10.17	290.02
H77RIV	429	10.67	294.03	H77RIV	431	10.5	294.03
H80RIV	436	11	316.49	H80RIV	434	10.83	316.49
H86RIV	462	11.33	328.05	H86RIV	449	11.17	328.05
I36RIV	484	13.17	345.69	I36RIV	471	13.17	345.69
I37RIV	478	13.5	363.37	I37RIV	465	13.5	363.37
I50RIV	476	14	369.64	I50RIV	463	14	369.64
I62RIV	479	14.17	370.07	I62RIV	467	14.17	370.07
I63RIV	454	15.83	413.5	I63RIV	445	15.83	413.5

Table 4.4
Comparison of Peak Discharges

Location Description		EEC HEC-1 Modeled w/RR	EEC HEC-1 Modeled w/o RR	URS HEC-1 Modeled w/o RR	URS HEC-1 Modeled w/ RR
CP on Waterman Wash, d/s of Land Fill (E49RIV)	Discharge (cfs)	5,830	6,090	3,525	2,800
	Area (sq mi)	101	86	86	86
Confluence of the West Prong at Waterman Wash (B12RIV)	Discharge (cfs)	21,370	21,730	8,600	8,500
	Area (sq mi)	263	263	263	263
Approximately 1 mile south of Buenos Aires Road along Waterman Wash (H80RIV)	Discharge (cfs)	28,070	28,310	10,900	10,800
	Area (sq mi)	316	316	317	317
Confluence with the Gila River (A62RIV)	Discharge (cfs)	28,320	28,570	11,400	11,300
	Area (sq mi)	422	422	422	422

The modeled values in Table 4.4 are lower than those developed by EEC due to several factors. Those factors include NOAA 14 precipitation values, refined land use parameters, percentage effective rock outcrop, and routing and diversion methodology. The routing cross sections have been revised to better reflect distributary-flow conditions. The 25-percent reduction in the 100-year 24-hour rainfall is the largest contributing factor to the reduction in peak discharges. There is an overall reduction in the peak 100-year 24-hour discharge of approximately 45 percent for the updated models.

A comparison analysis of unit peak discharges was conducted to validate the calculated peak discharges for the 100-year 24-hour storm event. The analysis was conducted by comparing the peak discharges calculated with the regional USGS regression equations for the area, flow gauge data for Waterman Wash and effective Flood Insurance Study (FIS) peak discharges for watersheds with similar characteristics. The results of the analysis show that the peak discharges from URS study are reasonable when compared to the peak discharges obtained from USGS regression equations, effective FIS study, and are closer to the peak discharges recorded by the Waterman Wash stream gauge. The results of the analysis are shown in Table 4.5 and Graph 4.G1. A technical memorandum *RVADMP Task 9.9 Hydrology – Flood Frequency Comparisons* (Reference 20) discussed the comparison of the Region 13 Flood Magnitude curve, gage data from gage 09514200, and HEC-1 100-year 24-hour flows. The analysis concluded that the URS peak discharges developed from the HEC-1 models are significantly lower then the Region 13 curve. This can be explained by the fact that a large portion of the Waterman Wash watershed consists of distributary flow areas. The USGS Open File Report 93-419 (page 14, Reference 21) states that distributary flow areas can have a large effect on the flood characteristics of stream and that the magnitude of peak discharges leaving the basin can be significantly reduced in basins with distributary flow areas. In addition, the report states that during large floods, most of the peak discharge in the distributary flow areas can be lost to

infiltration or attenuation. It is URS' opinion that the peak discharge relation curve overestimates the 100-year peak discharge for Waterman Wash, its tributaries, and concentration points.

Table 4.5 – Discharge Comparison Table

Flooding Source and Location	Drainage Area (mi^2)	100-Year Discharge (cfs)					100-Year Discharge per Square Mile (cfs/mi^2)					Regression Equation Standard Error (cfs/mi^2)			
		Hec-1		Regression Equation		FIS Report	Hec-1		Regression Equation		FIS Report	Southwest		Arizona	
		24-Hour Storm	6-Hour Storm	Southwest	Arizona		24-Hour Storm	6-Hour Storm	Southwest	Arizona		10%	90%	37.5%	62.5%
Waterman Wash															
At confluence with Gila River (A62 RIV)	422.19	11,290	1,587	22,308	22,466	33,600	27	4	53	53	80	5	100	20	86
Basin A															
Study Sub Basin - **A56**															
At Confluence with Waterman Wash	1.84	1,367	1,287	1,865	1,491	-	743	699	1,014	810	-	101	1,926	304	1,317
Study Sub Basin - **A60**															
At Confluence with Waterman Wash	1.67	1,561	1,490	1,756	1,421	-	935	892	1,051	851	-	105	1,997	319	1,382
Basin B															
Study Stream - **B45**															
At confluence Waterman Wash	0.97	635	713	1,233	1,083	-	655	735	1,272	1,117	-	127	2,416	419	1,815
Study Stream - **B12**															
At confluence Waterman Wash	0.33	244	319	570	633	-	739	967	1,726	1,917	-	173	3,280	719	3,115
Basin C						-					-				
Study Stream - **C37**															
At confluence point	1.80	804	673	1,840	1,475	-	447	374	1,022	819		102	1,942	307	1,332
Study Stream - **C33**						-					-				
At confluence point	32.52	7,839	1,535	8,443	6,251	-	241	47	260	192		26	493	72	312
Basin D															
Study Stream - **D31**															
At confluence Waterman Wash	0.67	385	490	957	901	-	575	731	1,428	1,344	-	143	2,714	504	2,185
Study Stream - **D33**															
At confluence Waterman Wash	0.65	446	559	937	887	-	686	860	1,441	1,365	-	144	2,738	512	2,218
Basin E															
Study Stream - **E44**															
At confluence point	0.63	488	627	916	874	-	775	995	1,454	1,387	-	145	2,763	520	2,253
Study Stream - **E51**															
At confluence Waterman Wash	1.25	886	931	1,459	1,230	-	709	745	1,167	984	-	117	2,217	369	1,598
Basin F															
Study Stream - **F34**															
At confluence Waterman Wash	0.60	467	588	885	852	-	778	980	1,475	1,421	-	148	2,803	533	2,309
Study Stream - **F32**															
At confluence Waterman Wash	0.29	263	342	516	593	-	907	1,179	1,778	2,045	-	178	3,379	767	3,323
Basin G															
Study Stream - **G40**															
At confluence Waterman Wash	1.52	931	878	1,654	1,356	-	613	578	1,088	892	-	109	2,068	334	1,449
Study Stream - **G29**															
At confluence Waterman Wash	2.81	2,163	1,494	2,411	1,842	-	770	532	858	656	-	86	1,630	246	1,065
Basin H															
Study Stream - **H71**															
At confluence point with H72	0.65	698	887	937	887	-	1,074	1,365	1,441	1,365	-	144	2,738	512	2,218
Study Stream - **H68**															
At confluence Waterman Wash	0.34	346	475	583	642	-	1,018	1,397	1,714	1,889	-	171	3,257	708	3,069
Basin I															
Study Stream - **I70**															
At confluence Waterman Wash	0.37	454	603	621	670	-	1,227	1,630	1,679	1,810	-	168	3,191	679	2,942
Study Stream - **I60A**															
At confluence point with I66	0.98	1,084	1,219	1,242	1,089	-	1,106	1,244	1,267	1,111	-	127	2,408	417	1,806
Basin J															
Study Stream - **J48**															
At confluence w/Gila River	0.82	854	977	1,101	996	-	1,041	1,191	1,342	1,215	-	134	2,550	456	1,974
Study Stream - **J46**															
At confluence w/Gila River	0.82	617	791	1,101	996	-	752	965	1,342	1,215	-	134	2,550	456	1,974
Basin X											-				
Study Stream - **X06**															
At confluence w/Gila River	6.75	1,354	1,498	3,941	2,852	-	201	222	584	423	-	58	1,109	158	687
Study Stream - **X12**															
At confluence w/Gila River	6.75	406	554	3,941	2,852	-	60	82	584	423	-	58	1,109	158	687
Centennial Wash															
At confluence with the Gila River	1870					67,300					36				
Near Baseline Road	1398					58,100					42				
At Maricopa/La Paz County Boundary	451.5					21,700					48				
Old Camp Wash															
Pinnacle Peak and 451st Ave	0.94					1,040					1,106				
Greenway and 427th Ave	5.833					6,100					1,046				
Unnamed Tributary to Jackrabbit Wash															
At Vulture Mine Road	3.7					3,000					811				
At Wickenberg Road	8.4					3,000					357				
Bender Wash															
Above Gila Bend Canal	89					4,900					55				
Below I-8	85					2,184					26				
Above I-8	85					5,530					65				
Citrus Valley Wash															
At Watermelon Road (above confluence with Gila River)	10.7					2,760									
At I-8	7.8					3,110									
Above Gila Bend Canal	7.8					3,210					412				
Winters Wash (T1S - R6W - S29E)															
Northern Ave and 395th Ave	0.842					430					511				
Northern Ave and 395th Ave	1.579					810					513				
Peoria and 411th Ave	1.798					920					512				

5.0 HYDRAULICS

The hydraulic section of this report will be included in the final technical data notebook.

6.0 EROSION AND SEDIMENT TRANSPORT

Erosion and sediment transport will be included in the final technical data notebook.

7.0 DRAFT FIS DATA

Draft FIS data will be included in the final technical data notebook.

APPENDIX A

REFERENCES

REFERENCES

1. Engineering and Environmental Consultants, Inc., *Waterman Wash and Tributaries Floodplain Delineation Study*, March 2006.

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5. Hartman, G.W. 1977. *Soil Survey of Maricopa County, Central Part:* Soil Conservation Service, USDA.

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16. Cella Bar and Associates, *Hydrologic Analysis of Waterman Wash*, September 1988.

17. U.S. Geological Survey, *Computer Program PeakFQ, Annual Flood-Frequency Analysis Using 17B Guidelines,* Version 5.2.0, 2006.

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20. URS Corporation, *Flood Frequency Comparisons Memorandum – Rainbow Valley Area Drainage Master Plan,* May 2009.

21. U.S. Geological Survey, *Methods for Estimating Magnitude and Frequency of Floods in the Southwestern United States – Open File Report 93-419,* 1994.

APPENDIX B

GENERAL DOCUMENTATION & CORRESPONDENCE

The records for Appendix B of this report will be included in the final technical data notebook.

APPENDIX C

SURVEY FIELD NOTES

C.1 Description of Detailed Aerial Topographic Mapping Projects

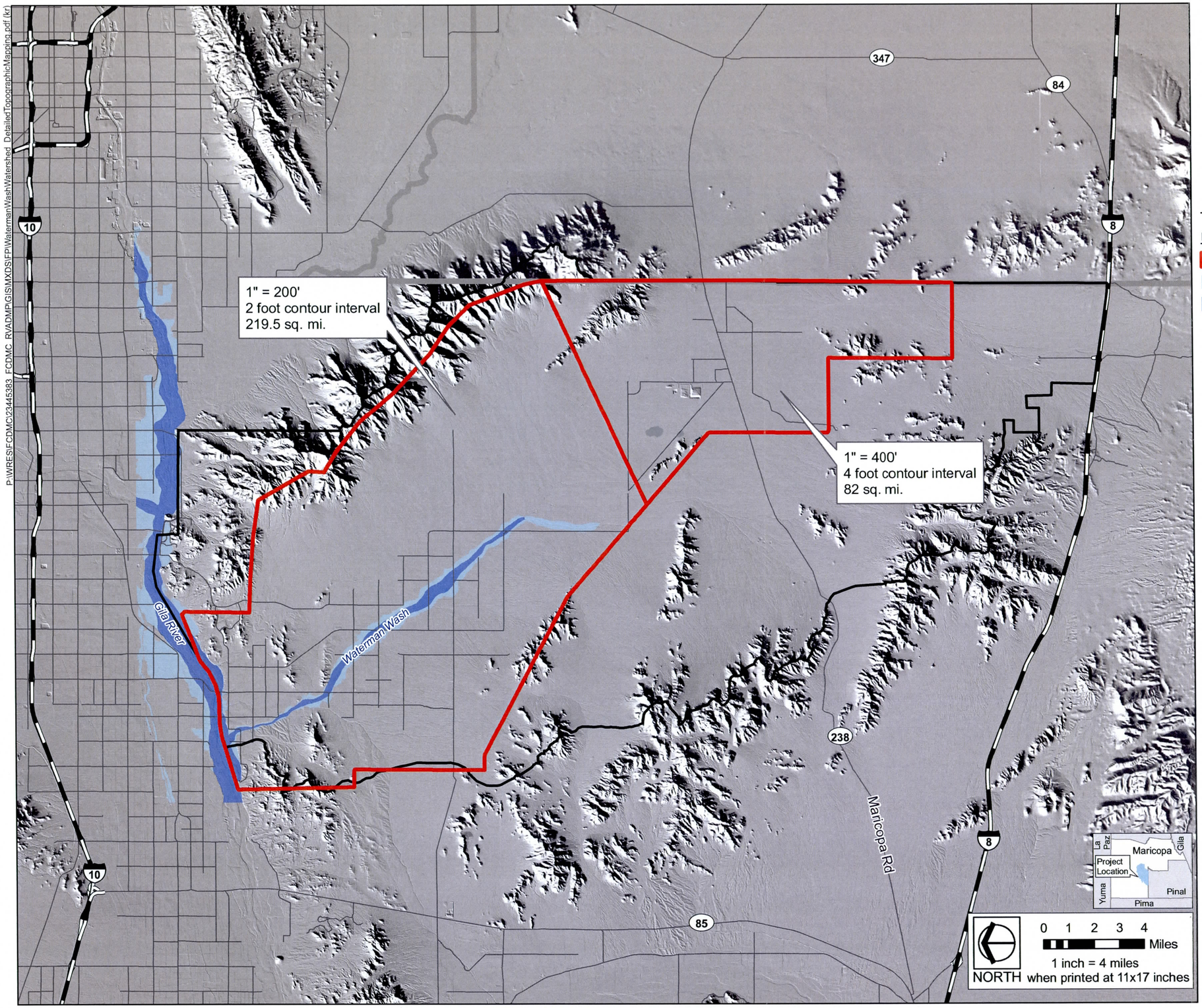
C.2 Structure Survey Field Notes

C.3 Structure As-Builts

C.1 DESCRIPTION OF DETAILED AERIAL TOPOGRAPHIC MAPPING PROJECTS

P:\WRES\FCDMC\23445383 FCDMC RVADMP\GIS\MXDS\FP\WatermanWashWatershed DetailedTopographicMapping.pdf (kr)

Rainbow Valley
Area Drainage Master Plan
Waterman Wash Watershed
Detailed Topographic Mapping



Project Features

- Limit of Topographic Mapping
- 1% Annual Chance Floodplain
- Floodway

Reference Features

- County Boundary
- Rainbow Valley ADMP Boundary
- Interstate Highway/ Freeway
- Major Road

Data Sources

Flood Control District of Maricopa County
Base Vector and Hillshade Data, 2008
Limit of Topographic Mapping, 2010

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CONTRACT FCD 2003C067
Mapping Services for Rainbow Valley Area Drainage Master Plan

TOPOGRAPHIC MAPPING REPORT

GENERAL DYNAMICS – AIS
4400 E. Broadway Blvd., Suite 118
Tucson, Arizona 85711

Topographic mapping for Rainbow Valley included 2-foot contour interval and 4-foot contour interval photogrammetric data collection and included the use of bare earth LiDAR data covering the entire 300+ square mile area. The project was divided into two geographic areas for the different contour interval coverages. Generally, the northerly 70% of the project was mapped at 1"=200' with two-foot contour interval while the southerly 30% was prepared and delivered at 1"=200' with four-foot coverage.

All topographic mapping included collection of visible planimetric (cultural) features appropriate for in-situ or symbolic representation according to FCDMC and FEMA specifications and National Map Standards for the requested map scale. All topographic data was based on the control established for the project according to contract specifications and as shown in the preceding Huitt-Zollars Survey Report, the final approved aerotriangulation calculations, and the LiDAR bare earth model collected for the project. Mapping was completed to all applicable standards for the 1"=200' map scale and related two-foot or four-foot contour interval accuracy and representation.

Definition of the final project terrain model was accomplished through the "enhancement" of the LiDAR bare earth model by visually editing the individual digital elevation model points in a softcopy stereo photogrammetric environment. The LiDAR data was examined and edited as necessary to ensure that all mass points represented ground elevations within the accuracy parameters of the project. The digital elevation model was further enhanced by stereoscopically adding breaklines to the dataset, developing the final digital terrain model. All stereoscopic editing, enhancement of the mass point dataset, and collection of the planimetric data was done using state-of-the-art ERDAS software with export to the MicroStation CADD environment. Contour generation was accomplished by processing the digital terrain model data in the Bentley Civil Engineering InRoads Site software.

The following table describes, by coordinate, the exterior boundary of the entire project. Note that a straight line connecting points "5" and "15" define the common boundary of the two-foot and four foot contour interval areas.

PROJECT BOUNDARY

Coordinate Listing is NAD83 Arizona State Plane – Central Zone

Beginning at Southeast corner of project and proceeding chronologically clockwise around perimeter:

Vertices	North	East	
1	701095	612105	(Beginning)
2	701230	596050	
3	727595	596190	
4	727595	580400	
5	**753015**	**580525**	
6	766275	565240	
7	783175	545695	
8	800890	512380	
9	828390	512500	
10	828410	505630	
11	852830	505175	
12	856325	516495	
13	856700	519025	
14	856850	524625	
15	**857500**	**577160**	
16	858765	529860	
17	860800	532470	
18	862770	537595	
19	864780	542755	
20	850235	542535	
21	849930	549810	
22	849290	558580	
23	848130	556260	
24	842550	569550	
25	837580	572430	
26	834200	578190	
27	831780	581100	
28	828220	585105	
29	823135	591200	
30	814710	601300	
31	809045	605240	
32	803425	607525	
33	791755	611870	
34	788090	612630	
35	740520	612675	
1	701095	612105	(Close)

A straight line between points 6 and 34 identify the demarcation between 2-foot contours and 4-foot contours. The project area NORTH of said line is to be mapped at a scale of 1"=200' with two foot contours. The project area SOUTH of said line is to be mapped at a scale of 1"=400' with four foot contours.

The project boundary as listed above includes the "apex" area along the northeasterly portion of the project in the Estrella Mountains.

Although no edge matching to previous projects was required for this work, General dynamics personnel compared the data collected for this project to previous data sets supplied by FCDMC. The data set provided was originally collected to serve as the terrain model for orthophotography production in 2000 and 2001. That digital elevation model was "enhanced" at some later date to enable production of 10-foot contour coverage. An effort was made to match the Rainbow Valley mapping to the existing coverage along the apex of the Estrella Mountains. However, because of the greater accuracy of the Rainbow Valley coverage, the attempt was abandoned, and we elected to deliver the datasets "as-is" to maintain the 2-foot and 4-foot contour interval accuracy requirements.

Project Sheet Layout/"Tiling"

The geographic scope for the Rainbow Valley mapping required 280 individual sheets/tiles to cover the project and afford management of the project's data. The project ius "tiled" into 6000-foot by 6000-foot areas based on the project's coordinate system. The sheet/tile boundary corners are established on uniform and even division of the North and East coordinates by the 6000-foot value (e.g. – Sheet 1 upper left corner = N870000, E540000 – Sheet 2 upper left corner = N864000, E528000 – Sheet 3 upper left corner = N864000, E524000, etc.) This layout was designed to provide a reliable location configuration for ease of reference by all users.

Sheets 170, 171, 181, 182, 183, 191, 192, 200, 201, and 209 have been delivered as 2-foot contour interval maps. These same geographic areas of map coverage have been delivered as 4-foot contour interval maps with the designations of 170A, 171A, 181A, 182A, 183A, 191A, 192A, 200A, 201A, and 209A. The relative 2-foot contour interval or 4-foot contour interval coverage for these sheets is based on the "match line" for the different configurations as described above in the table referencing the project boundary.

All hardcopy map sheets presented under this contract are a visual representation of the final edited electronic CADD (MicroStation Design file) datasets. However, in some cases, some intermediate contours were removed from the hardcopy map for readability.

In addition to the standard marginalia and Legend information on the individual sheets, all control points falling within the sheet boundary are listed with their coordinates and elevations.

The Public Land Survey System monuments that were found during the field survey efforts are also represented graphically on the hardcopy sheets and in the MicroStation files. These points were field measured using RTC GPS methodology and should not be used or accepted at face value (coordinates or elevations represented in the graphics files) without independent field verification. A note to that effect is included on all applicable hardcopy map sheets.

GIS DATA DELIVERY

All topographic map data collection for the Rainbow Valley mapping was translated to the District's HIS directly from the MicroStation CADD (dgn) data files. We note that our translation technology enables transfer directly to the ESRI coverage format, without the intermediate DXF and related XLS format translation. This simplifies the process and eliminates many potential errors.

GIS datasets have been produced on a per sheet/tile basis to enable handing of the extremely large dataset. Terrain data, is delivered in the prescribed ASCII format (point files and line files) for direct import to the ESRI GIS software. Topographic data, including contours, spot elevations, and all other captured data not included in the terrain files, has been delivered in Coverage format as prescribed by the District's GIS. Data delivery was completed by the following "grouping" of sheets/tiles:

DELIVERY GROUP	TERRAIN DATA	TOPO DATA
Group 1		
Tiles 1-22	349.3Mb	507.7Mb
Group 2		
Tiles 23-46	524.4Mb	914.4Mb
Group 3		
Tiles 47-73	399.6Mb	887.6Mb
Group 4		
Tiles 74-104	788.2Mb	834.1Mb
Group 5		
Tiles 105-112, 123-130, 141-146, 157-160, 172, 173, 185	671.1Mb	583.9Mb
Group 6		
Tiles 113-116, 131-134, 147-150, 161-164, 174-177, 186-189, 197-200, 208	767.2Mb	453.6Mb
Group 7		
Tiles 117-122, 135-140, 151-156, 165-170, 178-183, 190-192	760.4Mb	1,681.0Mb
Group 8		
Tiles 170A, 171A, 181A-183A, 184, 192-196, 200A, 209A, 201-207, 210-225	748.2Mb	736.1Mb
Group 9		
Tiles 226-253	602.9Mb	127.3Mb
Group 10		
Tiles 254-280	459.3Mb	264.0Mb

PROJECT APPROACH

Huitt-Zollars, Inc. was tasked with providing survey work in an effort to support aerial mapping of the project area. Prior to starting the project, General Dynamics- Advanced Information Systems (GD-AIS) determined that in addition to using aerial targets to control its photography, data would also be obtained using both LiDAR and airborne GPS methods. From the ground surveying aspect, this involved running three GPS receivers that were constantly collecting data while the respective flights were occurring. Project Engineering Consultants, Ltd. (PEC) provided the field personnel and equipment necessary to accomplish this task. We reviewed PEC's information before forwarding it on to GD-AIS and their aerial sub-consultant, Horizons.

Due to the large size of the project area, the speediest way to expedite the location of aerial targets is to use Global Positioning System (GPS) satellite surveying methods. In accordance with Federal Emergency Management Agency (FEMA) Guidelines and Specifications for Aerial Mapping (April 2003), as well as the FCDMC's own guidelines and specifications, differential GPS methods are considered adequate for the purposes of this project. Differential GPS is generally defined as having a "base" receiver unit at a known point and measuring other points in the project area by using a "rover" receiver unit, producing a three-dimensional difference in location between the two. This information can then be used to calculate horizontal coordinates and elevation for the point located at the "rover". We decided to use Real-Time Kinematic (RTK) methods to conduct this differential GPS survey. With its constant radio communication with the "base" unit, the "rover" could collect information on the fly, reducing the amount of data processing necessary at the office afterwards. All aerial control points, GPS control points, and blind aerial targets were located at least twice (on different days at different times of day) to verify their accuracy.

As directed by John Stock with the FCDMC, Maricopa County Geodetic Densification and Cadastral Survey (GDACS) control points were to be used as both a horizontal and vertical basis of this survey. Due to the large size of the project area, and the limitations of GPS RTK surveying, the whole project could not be collected from one base point. We determined that the best way to approach this project would be to divide our area into thirteen smaller survey areas, denoted as Areas 1 thru 13, [see drawings at the end of this section]. It was determined that Areas 9 and 11 did not have sufficient GDACS control to conduct the survey. National Geodetic Survey (NGS) point ENID RM1, which is on the same system as GDACS, was used for Area 9. "Static" GPS survey methods were used to obtain a location for BT 103, a point set by Huitt-Zollars, as the basis for Area 11. "Static" GPS surveying involves longer occupation times and produces coordinate and elevation values that are much more accurate than RTK surveying. Our base points for these areas are noted below:

Area 1- 3BD3	Area 6- 3DB3	Area 11- BT103
Area 2- 3BF3	Area 7- 2EB3	Area 12- 3FB2
Area 3- 3CC3	Area 8- 3GA2	Area 13- 3CE3
Area 4- 3EE2	Area 9- ENID RM1	
Area 5- 3EC2	Area 10- 2IA3	

To ensure the quality of our measurements, we did a "site calibration" by using the nearest GDACS points to the northeast, northwest, southwest, and southeast of our base point. This provided a check of the GDACS control points and a best-fit mathematical model for the area we were surveying. In some areas, GDACS coverage was insufficient, and additional points were set and locations obtained using static GPS methods. With this "site calibration", we could survey a large polygon with the GDACS and other control points at the vertices, and the base point in the

center. Because the National Geodetic Survey (NGS) has not yet certified the GDACS points for vertical accuracy, we also took measurements on additional NGS vertical benchmarks in the project area to check and ensure the vertical accuracy of our surveys.

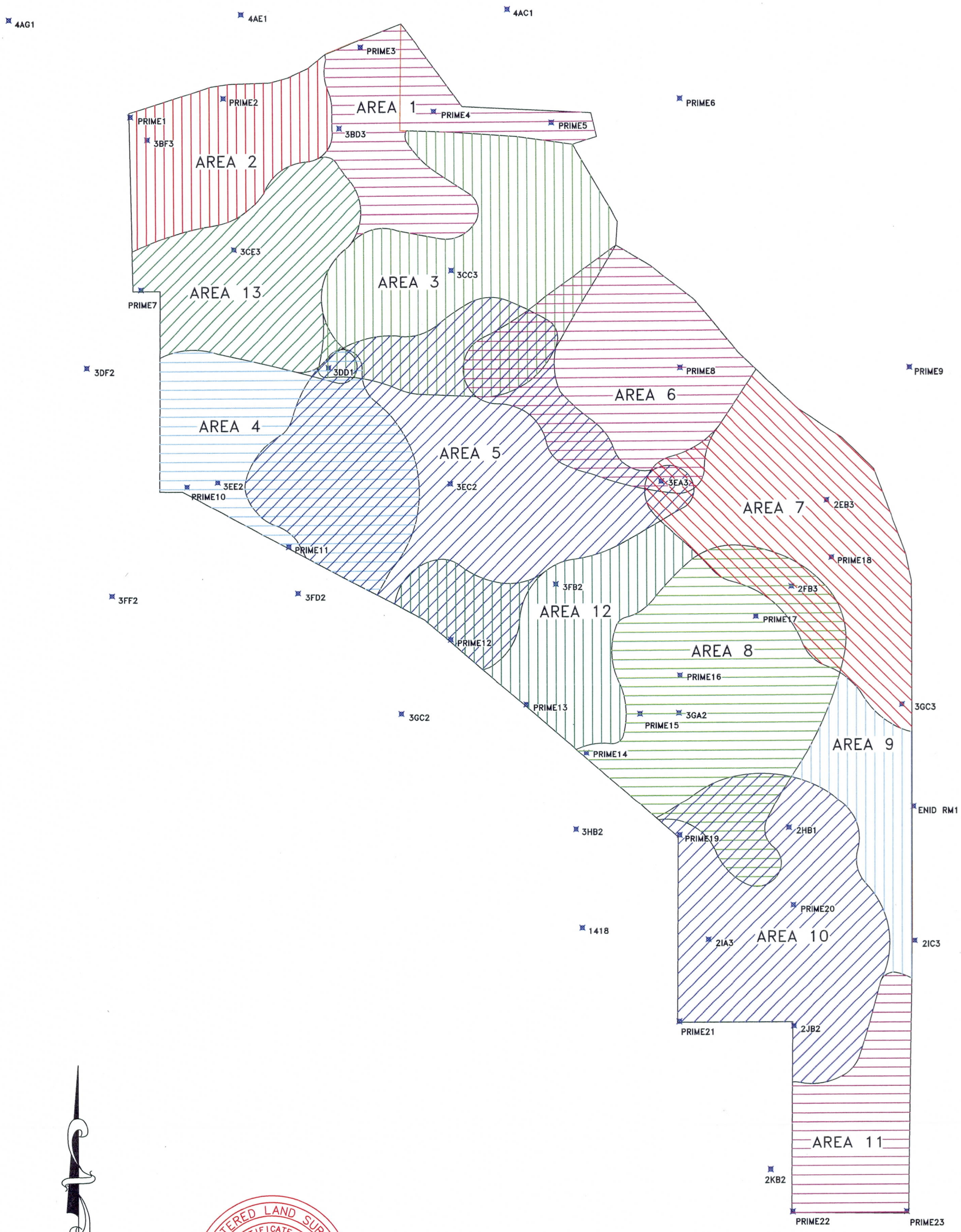
After the control for our sites was calibrated, checked, and verified, we moved on to locating the aerial control points. GD-AIS and Horizons used the GDCAS control points and an additional 23 points set by us as control for this job. These 23 points were designated as the Primary Control or Prime points. All Prime points were located at least twice, and where they fell between survey areas, were located from each area. Results were checked and averaged, then provided to GD-AIS.

Further assisting us in the project, PEC set and located all the blind check points. GD-AIS designated 105 locations for these points. We checked and verified the information provided by PEC. Both the blind target and Prime point data processing was checked internally by Huitt-Zollars using the QA \ QC procedures outlined at the end of this chapter. Once we were satisfied with the results, the coordinate information for the blind points was sent to the FCDMC to check versus information obtained by the aerial mappers.

As a final check of the mapping. GD-AIS had us run several "check profiles" through the job site. These were obtained using RTK methods, with the GPS rover receiver of known height mounted on a work vehicle as it slowly moved down a roadway.

As an additional task used to help the FCDMC, the location of section corners throughout the jobsite were also obtained and provided as they were found in the course of doing our work.

Huitt-Zollars, Inc. conducted all its GPS work with Trimble 4700, 4800, 5700, and 5800 GPS receivers and Trimble TSC1 and TSCe data collectors. Data was downloaded and processed through Trimble Geomatics Office (Version 1.62) software. Further data processing was done in Microsoft Excel 2002. All enclosed maps were produced in AutoCAD 2002. Existing control point information obtained from the Maricopa County D.O.T. (www.mcdot.maricopa.gov) and NGS (www.ngs.noaa.gov) websites. NGVD29 elevations were obtained using the VERTCON (Version 2.0) conversion program available through the NGS website (www.ngs.noaa.gov/TOOLS).



N.T.S.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
33874
DANIEL G.
FRANCETIC
Date Signed .....
ARIZONA, U.S.A.

HUITT-ZOLLARS
Huitt-Zollars, Inc. Phoenix
426 North 44th Street, Suite 300
Phoenix, Arizona 85008-6596
Phone (602) 952-9123 Fax (602) 952-9124

GDACS & PRIME POINT MAP
"RAINBOW VALLEY ADMP"

PART OF TOWNSHIPS 1-6 SOUTH, RANGE 1-3 WEST, & PART OF TOWNSHIPS 1-6 SOUTH, RANGE 1 EAST, MARICOPA COUNTY, ARIZONA

REVISION	BY	APP.	DATE

DESIGNED	DRAWN	CHECKED	DATE	SHEET NO.	TOTAL SHEETS	AS BUILT
PHIL	PHIL	FRANCETIC	07/06/05	1	1	

H.Z. JOB NO. 05-1487-01

G:\PROJ\05148701\MAPS\AREA-GDACS & PRIME.DWG

C.2 STRUCTURE SURVEY FIELD NOTES

234 453 83.03000
ADOTC BE # 2016

Bennko 1000
Dean 5000

SOKKIA

815205

MADE IN CHINA

[redacted]

SOKKIA 2025

ECONOMY
FIELD BOOK

RAINBOW VALLEY

"RVALLEY1"
"RVALLEY1"

No. 8152-05

2025 RAINBOW VALLEY BRIDGE TOPO

PROJECT: "RVALLEY3"

COORD SYS: "RVALLEY3"

BASE: #659

2-5-10 (9)

PT ID	CODE	DESCRIPTION		REMARKS
6391	15311	MON.	AC FLUSH	MCFCD A/C ± 50' WEST OF RAINBOW VALLEY ROAD @ N. EDGE OF WATERMAN WASH NORTH OF PROP QUEEN CREEK RD
6392	15361	MON	NAIL. FLUSH	60D NAIL - PDC C.P. #4
6393	"	"	"	" - PDC C.P. #3
6394	15381	MON	REBAR FLUSH	1/4" REBAR - PDC C.P. #2
6395	15311	MON.	AC FLUSH	AC IN ℄ RAINBOW VALLEY @ ℄ WATERMAN WASH BRIDGE

P:\SKIPRO PROJECTS\RVALLEY3
S:\RTK RAW\RVALLEY3\OBSFILE.10

2025 BRIDGE TOPO (CONT.)

TP #6391 ✓ McFCD B/C

B.S. #6394 ✓ 1/4" R.B.

H.I. = 5.31 ✓ POGO = 4.70

B.S. 00-00-00 ✓ 272.43

P+#	CODE	DESC.
6396 ✓	15381 ✓	MON. R.B. FLUSH
* 6397 ✓	10162 ✓	ASPH CONC. EDGE
6403 ✓	10104 ✓	" " Z. PT.
6406 ✓	10733 ✓	BRDG DECK COR
643 ✓	15311 ✓	ALUM. CAP FL
6424 ✓	18438 ✓	WALL CONC. EDGE
6434 ✓	10764 ✓	BRIDGE PIER EDGE
6436 ✓	10713 ✓	" ABUT COR.
* 6437 ✓	10764 ✓	BRIDGE PIER EDGE
* 6445 ✓	~~18605~~ 18603 ✓	WING WALL EDGE
6446 ✓	10714 ✓	BRDG ABUT EDGE
6455 ✓	10713 ✓	BRDG ABUT COR

2-8-10 (16)

C. MIHELICH

D. KNEZEVIC

REMARKS

✓-SHOT #6394 POGO = 5.41 ✓

POGO = 4.70 ✓

@ FACE OF JERSEY WALL TYP.

@ " " " " "

✓-SHOT #6395

@ BGN 2' JERSEY WALL TYP.

@ GROUND POGO = 1.70 ✓

POGO = 4.70 ✓

@ FL

FL @ EDGE OF DECK

@ GROUND POGO = 6.00 ✓

LAST SHOT —

2025 BRIDGE TOPO (CONT.)

02-08-10 (11)

TC #6393 ✓ 60p NAIL
B.S. #6394 ✓ 1/4" R.B.
H.I. = 5.42 ✓ P060 = 4.70
B.S. 00-00-00 ✓ 286.42

Pt #	CODE	DESC.
6456 ✓	15381 ✓	MON. R/B Ft.
6457 ✓	10102 ✓	ASP EDGE
6472 ✓	18604 ✓	WINGWALL EDGE
6473 ✓	18604 ✓	" " "
6497 ✓	10734 ✓	BRDG DECK EDGE
6506 ✓	10734 ✓	" " "
6512 ✓	10768	BRIDGE PIER TOP

Pt	+	H.I.	−	ELEV.	
6391	5.19	1026.99		1021.80	(GPS EL.)
6394			6.57	1020.42	(1020.39 GPS)
6393			5.80	1021.19	(1021.20 GPS)
	5.59	1026.78			
6392			5.14	1021.64	(1021.65 GPS)
6391			4.97	1021.81	(1021.80)

* PAGES (9) TO (11) *
RVALLEY3.SEC
RVALLEY3-1.RAW
RVALLEY3-1.FLD
RVALLEY3-1.RPT

REMARKS

✓ + SHOT #6394 P060 = 5.41 ✓
P060 = 4.70 ✓
P060 = 8.00 ✓
P060 = 4.70 ✓
@ PIER & TYP.
" " " ~~EAST~~
@ OUTSIDE FACE JERSEY WALL P060 = 4.70 ✓
LAST SHOT

DESC.

FCD B/C
S.S.
T.P. 60p NAIL
~~✓ - IN~~ S.S. 60p NAIL
✓ - IN

P:\SKIPRO PROJECTS\RVALLEY3\RVALLEY3-1.XLS

234 USS 83.03000
[illegible] [illegible] 2016

Bernardo 1000
Dean 5000

SOKKIA

815205

MADE IN CHINA

[redacted]

SOKKIA 2025

ECONOMY
FIELD BOOK

RAINBOW VALLEY

"RVALLEY1"
"RVALLEY1"

No. 8152-05

2025 CULVERT #1 TOPO

PROJECT: "RVALLEY8"

COORD SYS: AZCENTBB

Pt	CODE	DESC.
6279	15371	P.K. NAIL
6280	13600	GROUND
6356	13600	"
6374	18604	WING WALL EDGE
6390	18604	" " "

Pt	+	H.I.	−	ELEV.	
6001	5.33	945.10		939.77	(939.78 grs)
S.S.			3.70	941.40	(941.35 grs)
S.S.			7.10	938.00	(938.01 grs)
	6.97	944.97			
6001			5.20	939.77	(939.78 grs)

02-05-10

REMARKS

√ SHOT #6001 CQ 0.04, 0.04

EDGE OF SHOULDER - BGN X-SEC'S

" " " - END X-SEC'S

TOP FACE 8" WINGWALL @ END

LAST SHOT

DESC

P.K. NAIL

TOP HEADWALL S. SIDE VINEYARD

" " N. " "

√ - IN 6001

* THIS PAGE ONLY *

P:\SKIPRO PROJECTS\RVALLEY8\RVALLEY8-CULVERT-1.xls

NOTE: CULVERT DETAIL IN F.B. #2016, PG. 18

234 453 83.03000
ADOT 6C # 2016

Bennko 1000
Dean 5000

SOKKIA

815205

MADE IN CHINA

SOKKIA 2025

ECONOMY FIELD BOOK

RAINBOW VALLEY

No. 8152-05

2025 CULVERT #3 TOPO

PROJECT: RVALLEY8

COORD SYS: AZ CENT 88

Pt#	CODE	DESC	
6005	10102	ASP. CONC. EDGE	
6006	13600	GRND	
6007	10100	ASP CONT.	
6008	10100	" "	
6009	10100	" "	
6010	10102	ASP. CONC. EDGE	
6011	13600	GRND	
6042	15371	P.K. NAIL	
6105	13600	GND	
6106	18604	WINGWALL EDGE	
6110	12122	C.M.P. ℄	
6119	18604	WINGWALL EDGE	
6157	18604	" "	

Pt	+	H.T	−	ELEV.	
6003	5.57	942.38		936.81	(936.81 Grs)
S.S			6.33	936.05	(936.07 Grs)
T.P			8.47	933.91	(933.90 Grs)
	8.34	942.25			
6003			5.44	936.81	

2-4-10/2-5-10 (6)

* THIS PAGE ONLY *

P:\SKIPRO PROJECTS\RVALLEY8\RVALLEY8-CULVERT_3.XLS

NOTE: CULVERT DETAIL IN F.B. #2016, PG. (20)

REMARKS

1ST SHOT BGN CULVERT #3 TOPO

EDGE OF SHOULDER TYP.

EDGE OF ROADWAY TYP.

℄ TYP.

EDGE OF ROADWAY TYP.

EDGE OF SHOULDER TYP.

√-SHOT # 6003 CQ = 0.06, 0.04

SHOULDER / LAST SHOT ROADWAY X-SEC

FACE OF 8" HDWL (BOTTOM HDWL BURIED)

TOP FACE OF HDWL @ ℄ 5' C.M.P. TYP. 8" HDWL

FACE OF 8" HDWL @ BOTTOM

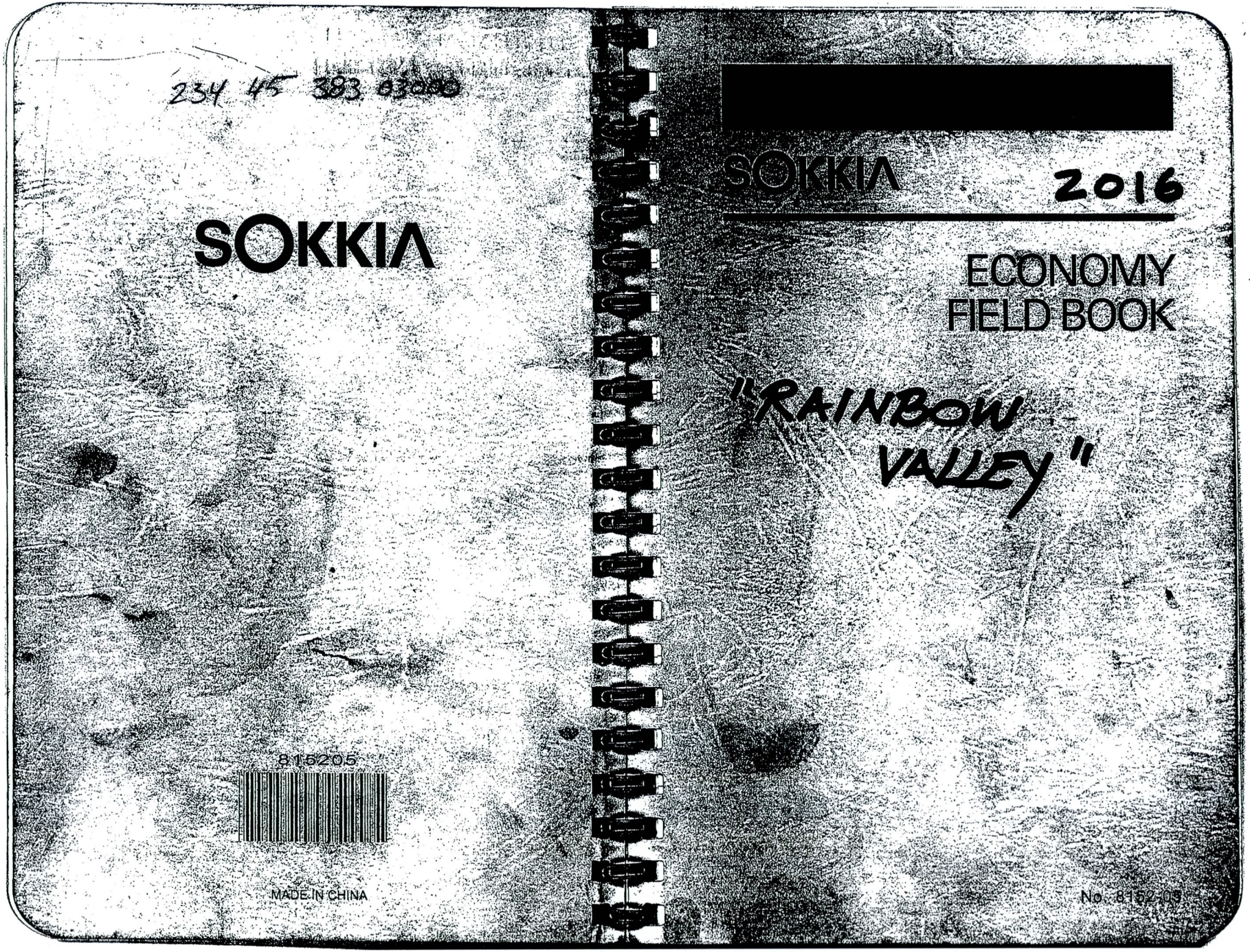
" " " " (BOTTOM BURIED) LAST SHOT

P.K. NAIL

TOP HDWL S. SIDE YINE/ARD

TOP " N. " "

√-IN 6003

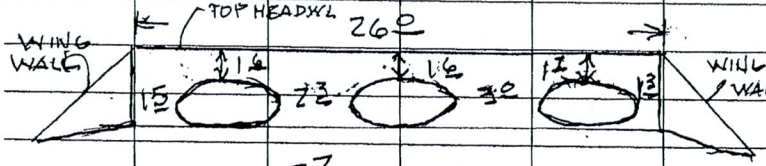

234 45 383 03000
SOKKIA
816205
MADE IN CHINA
SOKKIA
2016
ECONOMY
FIELD BOOK
"RAINBOW
VALLEY"
No. 816205

2016

CULVERT DETAILS

CULVERT #1

UPSTREAM LOOKING NORTH
(SOUTH SIDE OF VINEYARD)



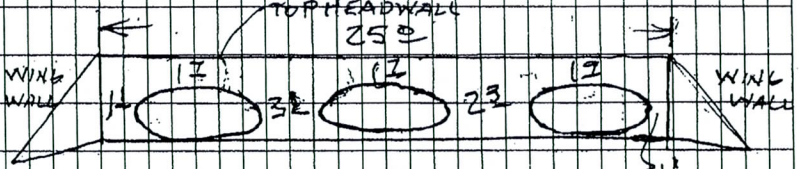
5± TYP. OPENING WIDTH
3± TYP. OPENING HEIGHT

N.T.S.

2-4-10 (18)

C. MIHELICH
D. KNEZEVIC

DOWNSTREAM LOOKING SOUTH
(NORTH SIDE OF VINEYARD)



5.7± TYP OPENING WIDTH
– PIPES ARE HALF SILTED W/DIRT –

N.T.S.

NOTE: CULVERT TOPO IN F.B. # 2025, PG. (8)

234 453 83.03000
Adobe CC # 2016

Bennett 10000
Dean 5000

SOKKIA

815205

MADE IN CHINA

SOKKIA 2025

ECONOMY FIELD BOOK

RAINBOW VALLEY

Rainbow
"Rainbow"

NO. 8152-05

2025 CULVERT #2 TOPO

PROJECT: RVALLEY8

CODED SYS: AZ CENT 88

Pt#	CODE	DESC.
6158	15371	P.K NAIL
6159	13600	GROUND
6242	13600	"
6275	13600	GROUND

Pt	+	H.I	−	ELEV.	
6002	5.51	943.56		938.05	(938.03 GPS)
S.S.			5.19	938.37	(938.38 GPS)
S.S.			7.95	935.61	(935.60 GPS)
	7.81	943.42			
6002			5.36	938.06	

2-5-10 (7)

C.MITHELL
D. KNEZEVIC

REMARKS

V-SHOT #6002 @ 0.04, 0.04, 0.04

GROUND SHOT @ EDGE SHOULDER/BGNK-SEC

" " " " " /END K-SEC

GROUND SHOT / LAST SHOT

DESC.

P.K. NAIL

TOP HDWL S. SIDE VINEYARD

TOP HDWL N. SIDE VINEYARD

V-IN P.O.B.

* THIS PAGE ONLY *

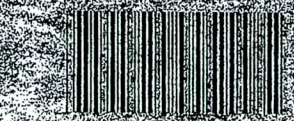
P:\SKIPRO PROJECTS\RVALLEY8\RVALLEY8-CULVERT_2.XLS

NOTE: CULVERT DETAIL IN F.B. # 2016, PG. (19)

234 45 383 03000

SOKKIA

8152-05



MADE IN CHINA

SOKKIA 2016

ECONOMY
FIELD BOOK

"RAINBOW
VALLEY"

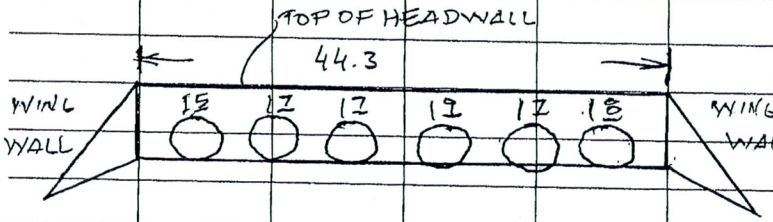
No. 8152-05

2016

CULVERT DETAILS (CONT.)

CULVERT #3

UPSTREAM LOOKING NORTH
(SOUTH SIDE OF VINEYARD)



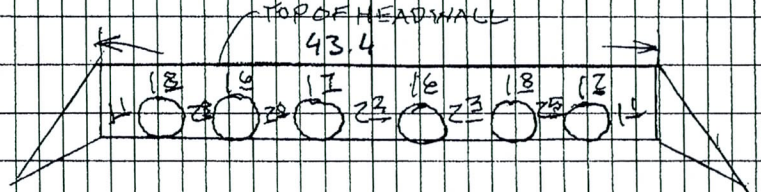
5¢ PIPE DIA. TYP.
— PIPES ARE HALF SILTED & FULL OF DEBRIS. — CANNOT ACCURATELY MEAS SPACING —

N.T.S.

02-04-10

(20)

DOWNSTREAM LOOKING SOUTH
(NORTH SIDE OF VINEYARD)



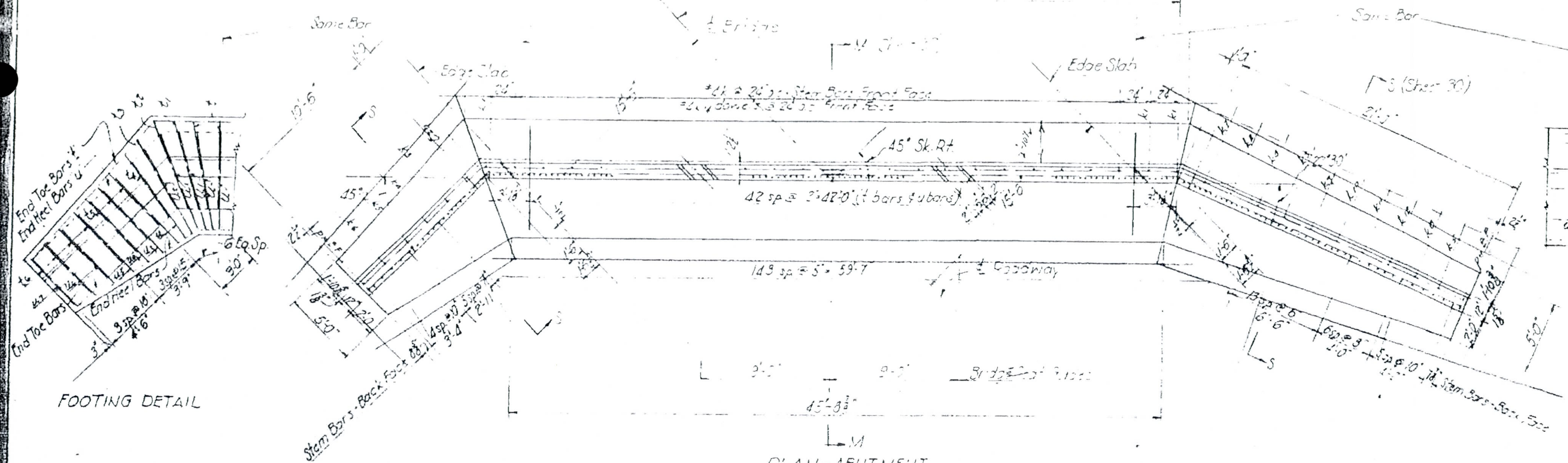
5¢ PIPE DIA. TYP.
— PIPES ARE HALF SILTED —

N.T.S.

NOTE: CULVERT TOPO IN F.B. # 2025, PG. (6)

C.3 STRUCTURE AS-BUILTS

MARICOPA CO.

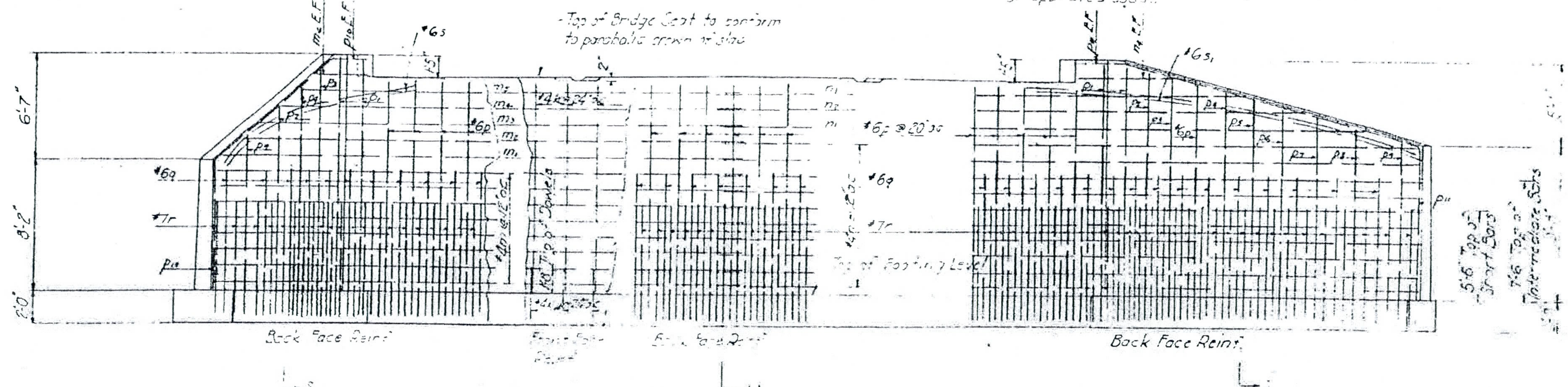


ENDS OF VERTICAL BARS STEM ABOVE TOP OF FOOTING			
MARK	HT.	MARK	HT.
p	3'-0"	p6	[illegible]
p1	2'-6"	p7	[illegible]
p2	14'-0"	p8	[illegible]
p3	3'-3"	p9	9[illegible]
p4	13'-9"		
p5	12'-3"		

Place in Bridge Seat Guides, 2 layers asbestos sheet packing 1/8" thick, Style 60, bottom layer cemented on. Place on Bridge Seat, 2 layers white top asbestos roofing paper (50# net), bottom layer cemented on.

Note: 2' Min. Lap on all Tie Bars

Top of Bridge Seat to conform to parabolic crown of slab



ELEVATION

Footing Reinforcing
Heel - #7 bars spaced as shown
Toe - #8 bars spaced as shown
Tie Bars - #4 bars spaced as shown (See Sect. M-M & S-S - Sheet 30) #4 v bars

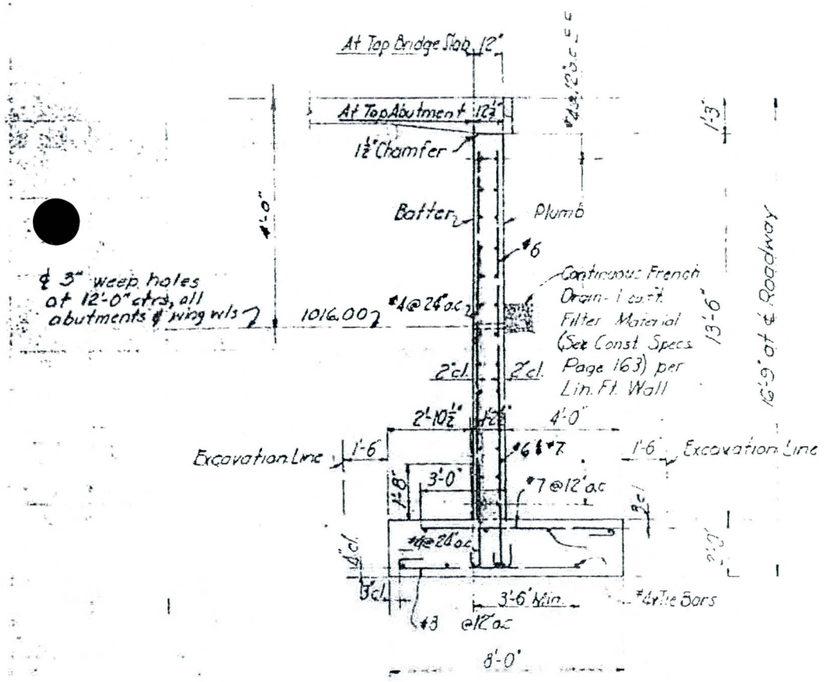
Stem Reinforcing
Front Face Vert. - #4 bars @ 24" o.c.
Back Face Vert. - Alt. #7 bars & #6 Inter. & long bars as shown
Both Faces Horiz. - #4 bars @ 12" o.c.

REDUCED SIZ
DO NOT SCA

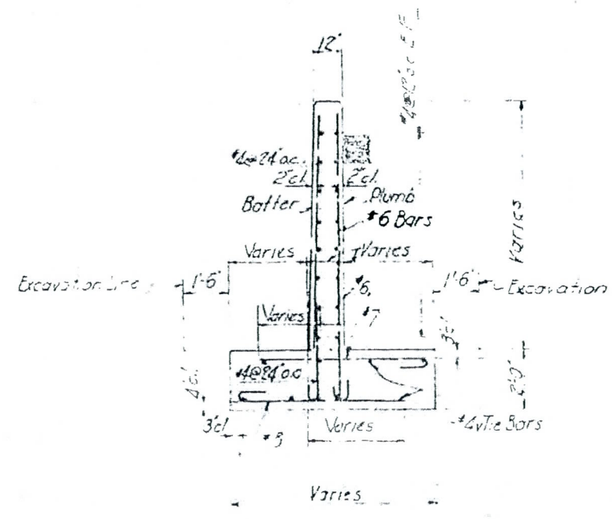
STA. 158+
WATERMAN WASH BRI
ABUTMENTS & WING WA
PLAN & ELEVATION

RAINBOW VALLEY
MARICOPA CO.

FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
7	ARIZ.	S 368(2)	30	30	

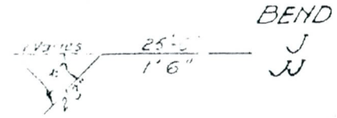


SECTION M-M
Scale ¾" = 1'-0"

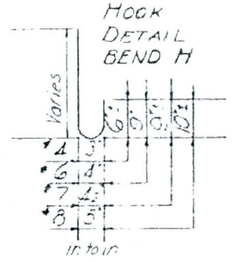


SECTION S-S
Scale ¾" = 1'-0"

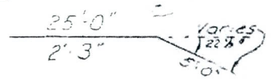
BEND J JJ



HOOK DETAIL BEND H



BEND K KK

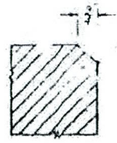


ONE ABUTMENT & WING WALL STEEL LIST - 2 Reqd.

Mark	No.	Size	Length	Bend
k	22	4	13'-0"	Str.
k_1	3	4	15'-6"	✓
k_2	2	4	13'-9"	✓
k_3	2	4	12'-9"	✓
k_4	1	4	11'-6"	✓
k_5	2	4	10'-0"	✓
k_6	1	4	8'-9"	✓
k_7	1	4	14'-3"	✓
k_8	1	4	13'-3"	✓
k_9	1	4	12'-3"	✓
k_{10}	1	4	11'-9"	✓
k_{11}	1	4	11'-3"	✓
k_{12}	1	4	10'-9"	✓
k_{13}	1	4	10'-6"	Str.
k_{14}	42	4	4'-1"	Hook
m	16	4	36'-3"	J
m_1	2	4	36'-0"	✓
m_2	2	4	34'-0"	✓
m_3	2	4	32'-3"	✓
m_4	2	4	30'-9"	✓
m_5	2	4	29'-0"	J
m_6	2	4	3'-9"	JJ
n	20	4	46'-10"	K
n_1	2	4	42'-9"	✓
n_2	2	4	38'-6"	✓
n_3	2	4	34'-6"	K
n_4	2	4	7'-3"	KK
p	28	6	15'-8"	H
p_1	4	6	17'-3"	✓
p_2	1	6	16'-9"	✓
p_3	2	6	16'-6"	✓
p_4	2	6	15'-6"	✓
p_5	1	6	15'-0"	✓
p_6	1	6	14'-6"	✓
p_7	2	6	14'-0"	✓
p_8	1	6	13'-3"	✓
p_9	2	6	12'-6"	H
p_{10}	2	6	22'-0"	Field Bend
p_{11}	2	6	33'-0"	Field Bend
q	44	6	10'-3"	H

Mark	No.	Size	Length	Bend
r	127	7	8'-3"	H
s	2	6	14'-6"	Field Bend
s_1	2	6	25'-0"	Field Bend
t	43	8	7'-3"	H
t_1	1	8	7'-6"	✓
t_2	1	8	7'-9"	✓
t_3	4	8	6'-9"	✓
t_4	1	8	6'-6"	✓
t_5	6	8	6'-3"	✓
t_6	8	8	6'-0"	✓
t_7	3	8	7'-0"	✓
u	52	7	7'-9"	✓
u_1	2	7	8'-3"	✓
u_2	1	7	6'-0"	✓
u_3	4	7	7'-3"	✓
u_4	1	7	7'-0"	✓
u_5	4	7	6'-9"	✓
u_6	4	7	6'-3"	✓
u_7	4	7	5'-3"	H
v	16	4	41'-3"	Field Bend

REDUCED SIZE
DO NOT SCALE

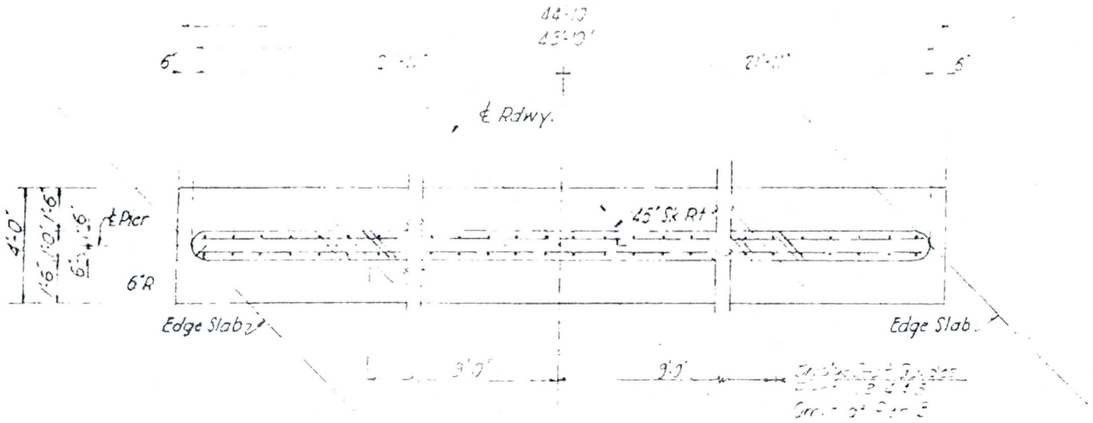


Chamfer all exposed corners thus unless otherwise noted.

REGISTERED STRUCTURAL ENGINEER
CERTIFICATE NO.
HANEN H.
ARIZ.
DEC. 31, 19

Sta. 158+
WATERMAN WASH BRIDGE
ABUTMENT & WING WALLS
SECTIONS

DESIGNED BY	DRAWN BY	CHECKED BY	DATE
	A.S.		



PLAN OF PIER - TYPICAL
5 REQUIRED
Scale $\frac{3}{8}$"=1'-0"

Chamfer all exposed corners thus unless otherwise noted.

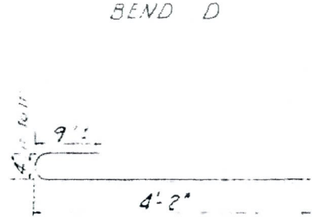
PIER STEEL LIST

ONE PIER (5 REQUIRED)				
Mark	No	Size	Length	Ben
a	30	6	3'-6"	C
e	45	4	5'-0"	C
f	6	4	44'-6"	Str.
g	88	6	5'-3"	E
h	18	4	46'-3"	Str.
j	88	6	3'-0"	Str.

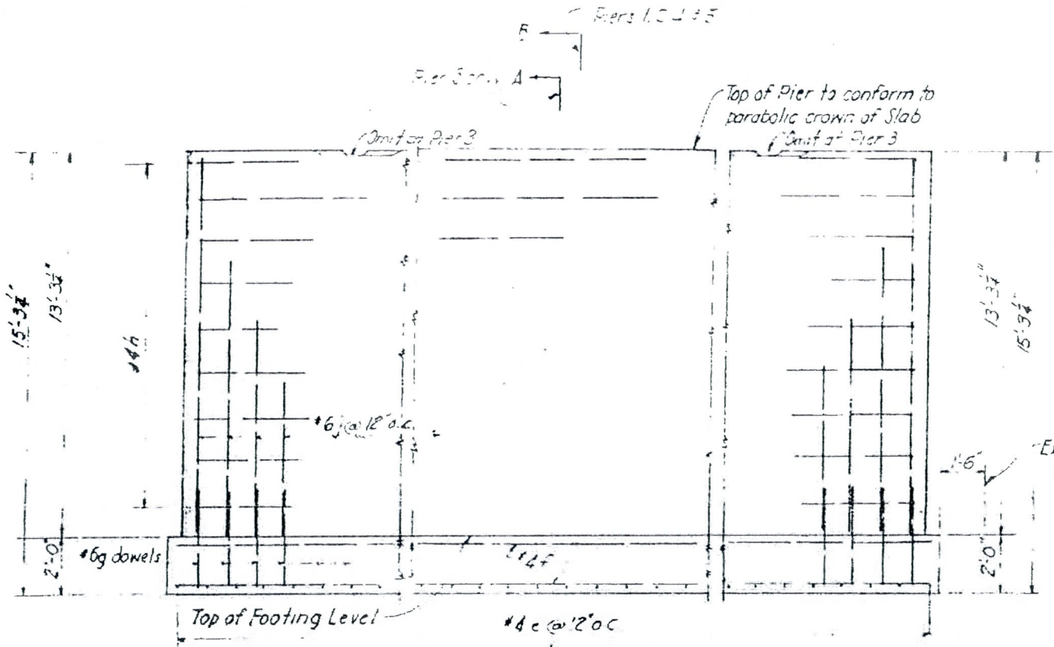
Pier 3 only →

BEND C

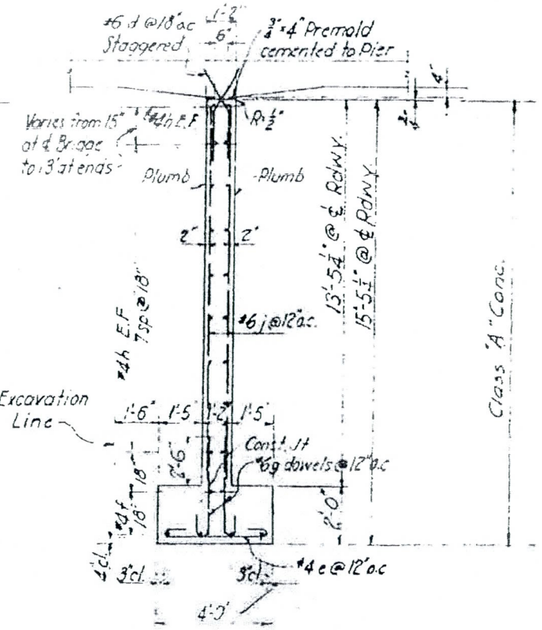
BEND D



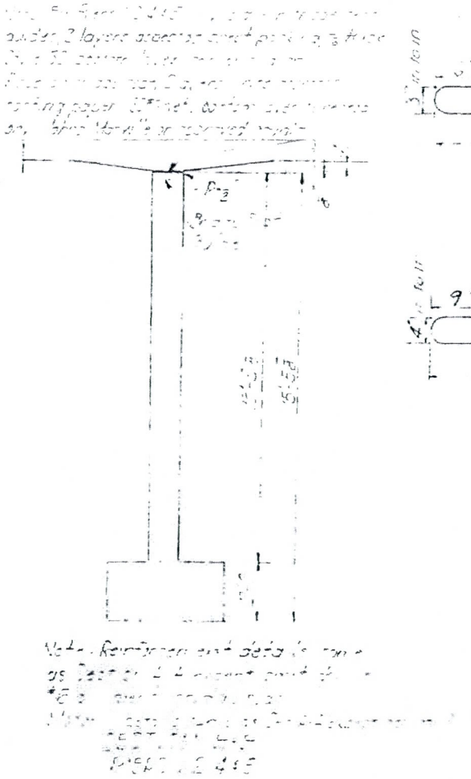
BEND E



ELEVATION



SECTION A-A
CERTIFIED



Note: Reinforcement and details for ... as per ... [illegible]

REDUCED SIZE
DO NOT SCALE

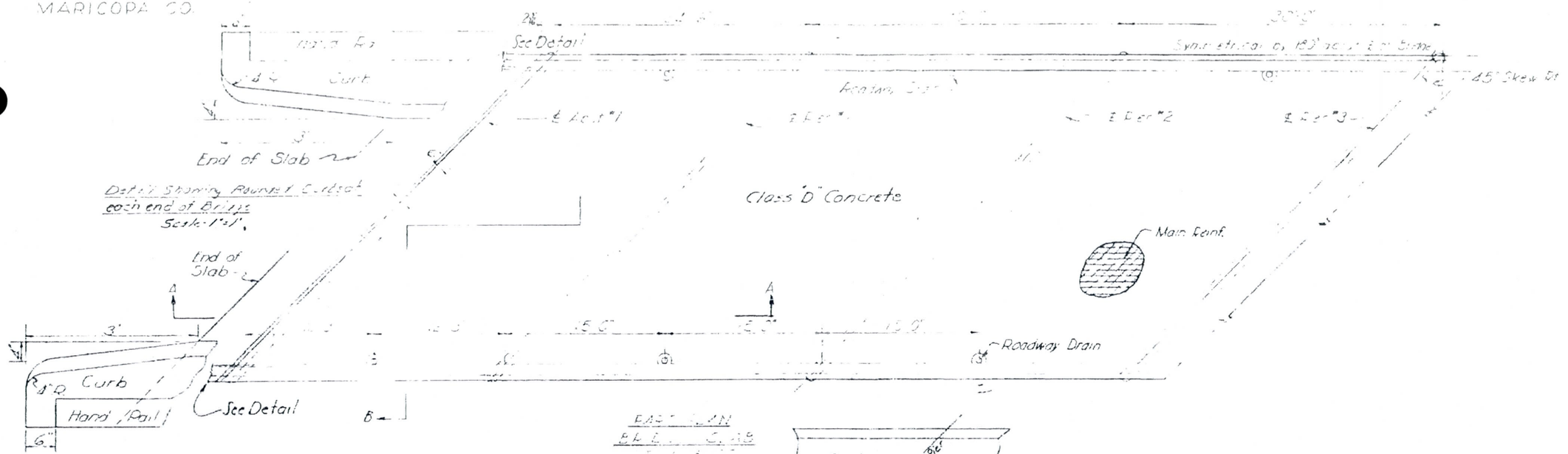
STA 158+
WATERMAN WASH BRIDGE
PIER DETAILS

DESIGNED BY	DRAWN BY	CHECKED BY	DATE
H.H.W.	A.S.	H.H.W.	APRIL '51

PREPARED BY [illegible]

MARICOPA CO.

FED. ROAD DIV. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
	ARIZ	S 368(11)	27	30



Detail Showing Rounded Curb at each end of Bridge
Scale 1"=1'-0"

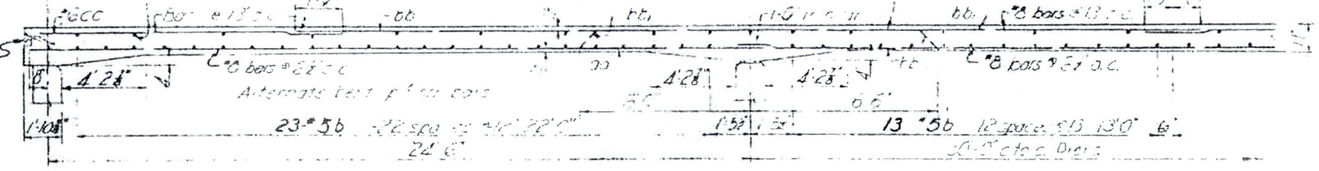
EAST SPAN
BK. ℄ CURB

BRIDGE SLAB STEEL LIST

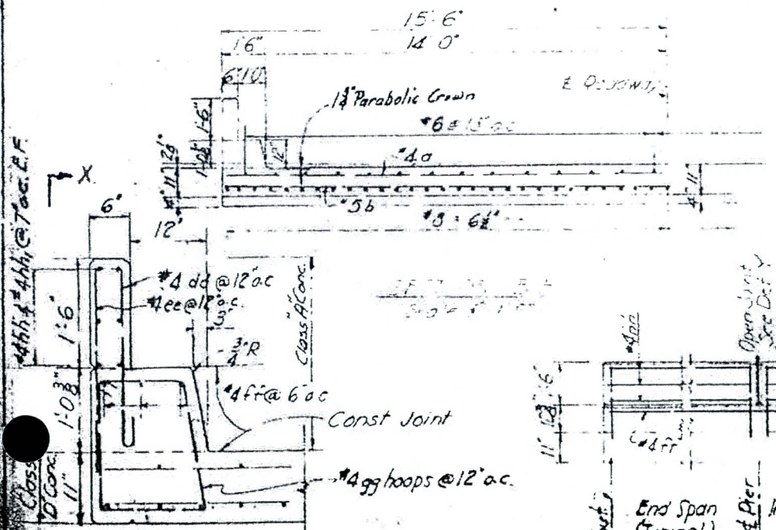
Mark	No.	Size	Length	B
a	60	4	43'-6"	3
b	150	5	43'-6"	
aa	57	8	25'-9"	
bb	228	8	46'-9"	A
bb₁	57	8	41'-6"	
cc	57	6	10'-6"	S
dd	348	4	3'-3"	F
ee	348	4	2'-9"	S
ff	30	4	35'-6"	
gg	338	4	7'-0"	G
hh	24	4	25'-3"	S
hh₁	48	4	29'-6"	

NOTE:
Deck details are from A.S.H.D. Drawing No. CS-2-15

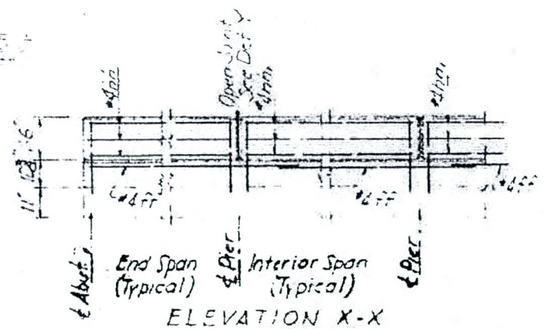
REDUCED SIZ
DO NOT SCAL



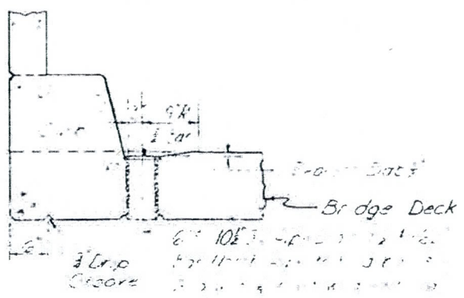
SECTION A-A
Scale ½"=1'-0"

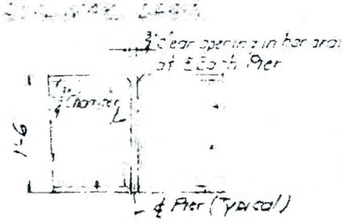


CURB & HANDRAIL
Scale 1"=1'-0"

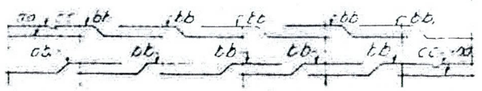


ELEVATION X-X
Scale ½"=1'-0"

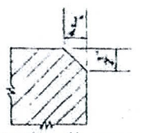




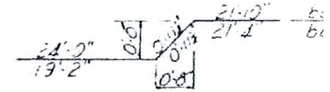
DETAIL Y
Scale 1"=1'-0"



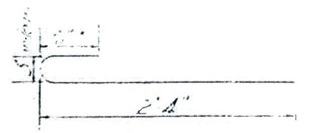
SLAB STEEL PLACING DIAGRAM



Chamfer all exposed corners thus unless otherwise noted.



BEND A



BEND F

BEND J

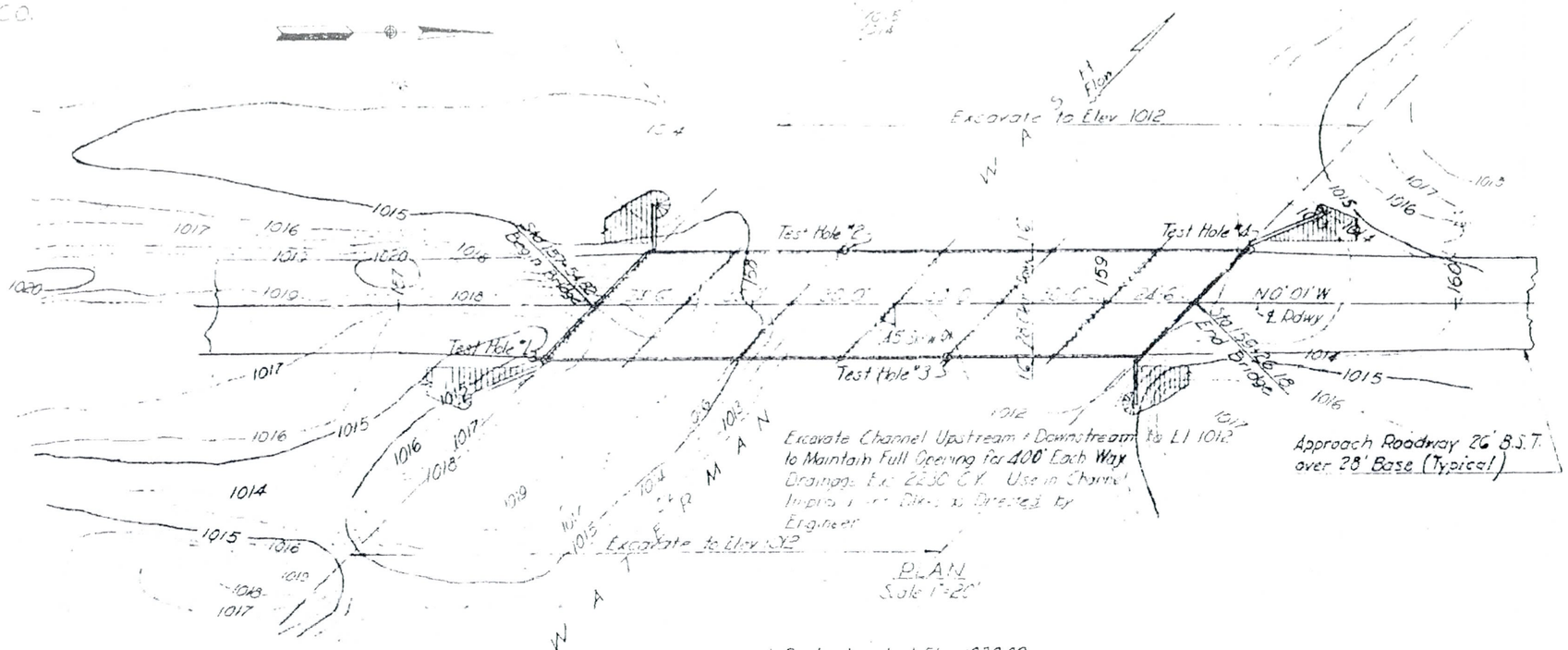
REGISTERED STRUCTURAL ENGINEER — HAROLD H. WILLIAMS — DEC. 31, 19[illegible] — ARIZONA, U.S.A.

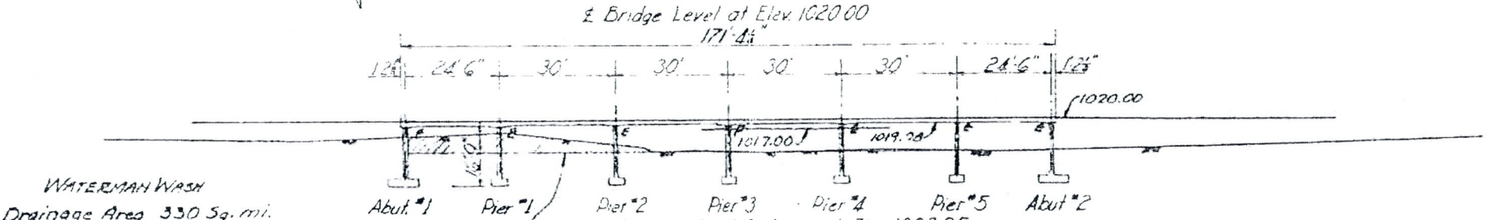
STA 158+

WATERMAN WASH BRI
BRIDGE SLAB,
CURB & HANDRAIL DETA

DESIGNED BY	DRAWN BY	CHECKED BY	QUAN.
H.H.W.			

MARICOPA CO.





WATERMAN WASH
Drainage Area 330 Sq. mi.
Waterway area to elevation 1017.00 570 S.F.
Additional Waterway area to elev. 1018.50 by Dip at Sta. 150 = 925 S.F.
Total Waterway area = 1495 S.F.

SECTION AT ℄ ROADWAY
Scale 1"=20' Vert. & Hor.

GENERAL NOTES

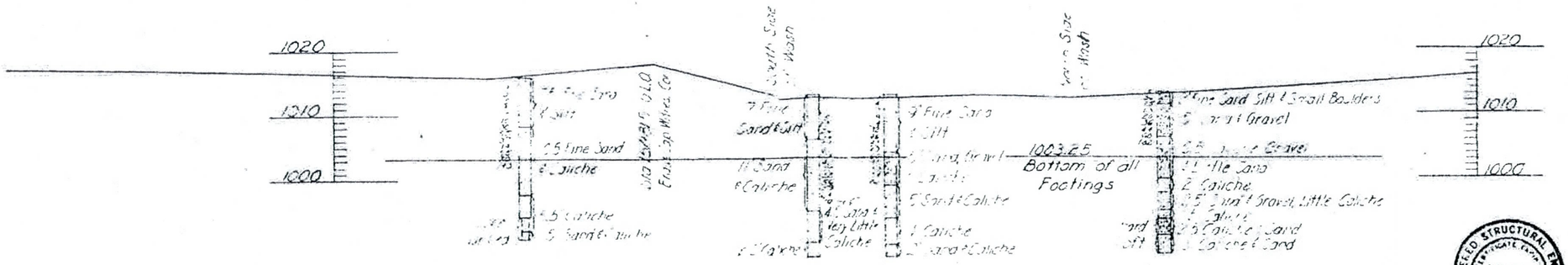
Construction Specifications Arizona Highway Department Edition of 1946
Design Specifications AASHO 1953 Revised to Date
Loading Class H15-S12-44
Distribution Truck 6'-0" Lane 22' Width of Roadway
Stresses - See below.
Reinforcing steel shall be intermediate grade and shall conform to ASTM Spec. A-305.
No wearing surface allowance in deck slab design.
Forms shall be cambered as per Construction Specification See Page 135.
Curbs shall be poured to grade without camber after falsework has been struck.
Piers, Abutments and handrail Class "A" Conc.
Bridge Slab and Curbs Class "D" Conc.

APPROXIMATE QUANTITIES

Item	Std. No.	Sheet No.	Unclass. Exc. C.Y.	Conc. Class A	Conc. Class D	Reinf. Steel Lbs.
Abutment #1	Spec.	29&30	420	88.02		877
Pier #1	✓	28	170	39.69		3240
Pier #2	✓	✓	140	✓		3240
Pier #3	✓	✓	110	✓		3240
Pier #4	✓	✓	110	✓		3240
Pier #5	✓	✓	110	✓		3240
Abutment #2	✓	29&30	270	38.32		877
Bridge Slab	✓	27			193.36	4814
Curb	✓	27			17.06	229
Handrail	✓	27		9.52		274
Totals			1330	384.01	216.92	87,12

Stresses	Cl. A Conc.	Cl. D Conc.	LL De
fc	20,000	20,000	
fc'	2,500	3000	
fs	1,000	1,200	
n	12	10	8

NOT A CONTRACT DRAWI



Scale: Hor. 1"=20'
Vert 1"=10'

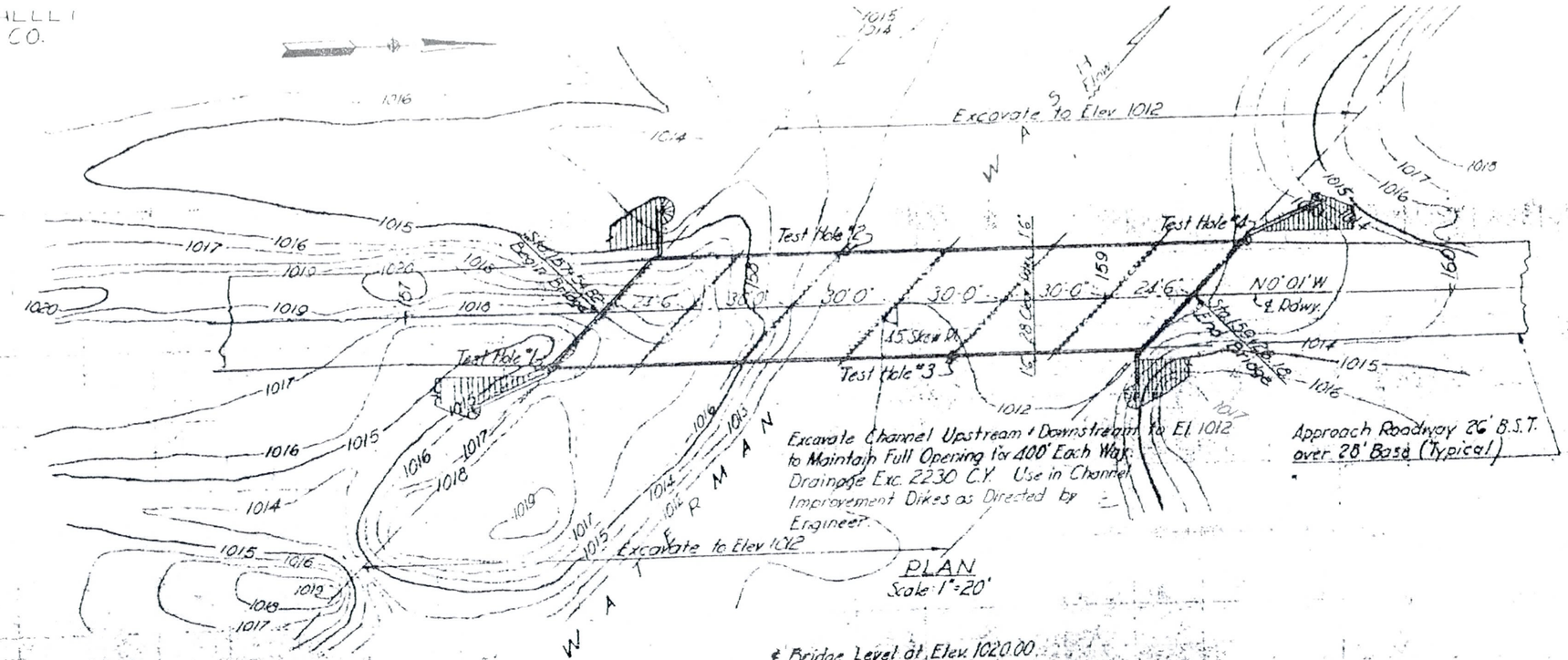
REGISTERED STRUCTURAL ENGINEER
CERTIFICATE NUMBER
HAYDEN III
ARIZONA
DEC. 31, 19
PHOENIX, U.S.A.

Rev.	Revised Stru. Specifications &
Rev 1	Added Datum Lines to Test Hole Profiles

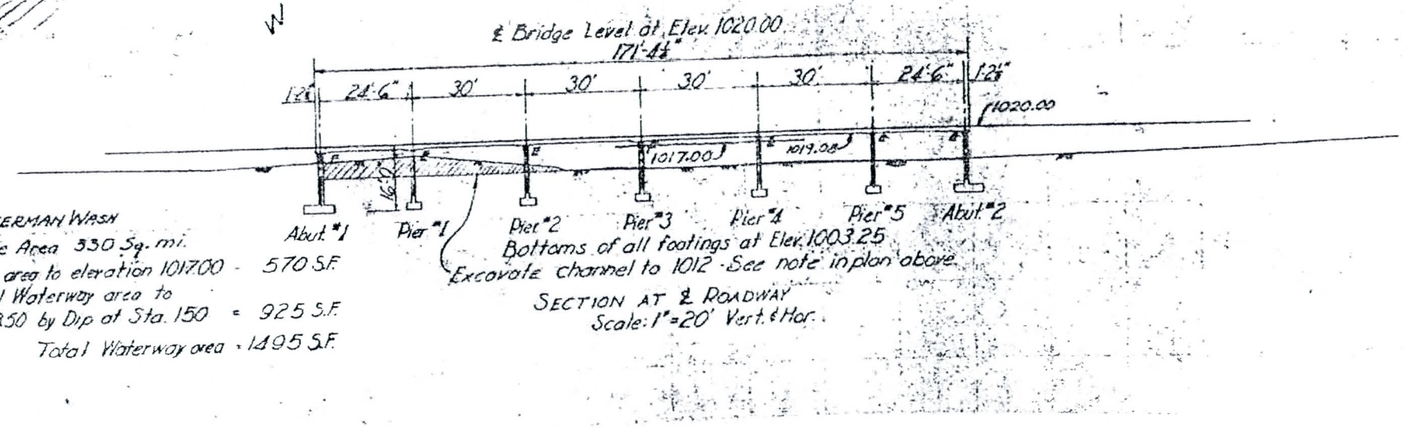
STA. 158+
WATERMAN WASH BRIDGE
LOCATION PLAN

DESIGNED BY H.H.W.	DRAWN BY J.R.F.	CHECKED BY	DATE APRIL

AINDOW VALLEY
MARICOPA CO.



PLAN
Scale: 1"=20'



WATERMAN WASH
Drainage Area 330 Sq. mi.
Waterway area to elevation 1017.00 = 570 S.F.
Additional Waterway area to elev. 1018.50 by Dip at Sta. 150 = 925 S.F.
Total Waterway area = 1495 S.F.

Bottoms of all footings at Elev. 1003.25
Excavate channel to 1012 - See note in plan above.

SECTION AT ℄ ROADWAY
Scale: 1"=20' Vert. & Hor.

GENERAL NOTES
Construction Specifications Arizona Highway Department Edition of 1948
Design Specifications AASHO 1953 Revised to Date
Loading Class H15-S12-44
Distribution - Truck 6.0'-Lane-28' Width of Roadway
Stresses - See below.
Reinforcing steel shall be intermediate grade and shall conform to ASTM. Spec. A-305.
No wearing surface allowance in deck slab design.
Forms shall be cambered as per Construction Specification See Page 135.
Curbs shall be poured to grade without camber after falsework has been struck.
Piers, Abutments and handrail Class "A" Conc.
Bridge Slab and Curbs Class "D" Conc.

APPROXIMATE QUANTITIES

Item	Std. No.	Sheet No.	Struct. Excav. C.Y.	Conc. C.Y. Class A	Conc. C.Y. Class D	Reinf. Steel Lbs.
Abutment "1	Spec.	29130	420	88.02		87732
Pier "1	✓	28	170	39.69		32488.8
Pier "2	✓	✓	140	✓		32488.8
Pier "3	✓	✓	110	✓		3406.56
Pier "4	✓	✓	110	✓		3246.88
Pier "5	✓	✓	110	✓		3216.88
Abutment "2	✓	29130	270	88.02		87732
Bridge Slab	✓	27			198.96	40142.32
Curb	✓	27			17.96	2291.91
Handrail	✓	27		9.52		2745.60
Totals			1330	344.01	216.92	361188.00

Stresses	Cl. A Conc.	Cl. D Conc.	L.L. Defl.
f_s	20,000	20,000	
f_c	2,500	3,000	
f_c	1,000	1,200	
n	12	10	8

CO #4 Typical [illegible] pads under footings
Abut 1, [illegible] 1,2,384 Pads 4"
wider than footings & varies in depth

Structure No. 9452

Rev 1	Revised Steel Quantities & Added Datum Lines to Test Hole Profile	AL-JR	3-5-58

STA. 158+
WATERMAN WASH BRIDGE
LOCATION PLAN

DESIGNED BY	DRAWN BY	CHECKED BY	DATE
K.H.W.	J.R.T.		APRIL, 1956

REGISTERED STRUCTURAL ENGINEER — HAHEN H. WILLIAMS — PHOENIX, ARIZONA, U.S.A.

PREPARED BY WILLIAMS ENGINEERING CO. PHOENIX, ARIZONA