Meeting of the Central Valley Flood Protection Board
January 28, 2011

Requested Action

Fresno River Road 9 Structure
Madera County

1.0 – ITEM

Consider approval of Resolution No. 11-05 (Attachment A) directing staff to initiate work on the environmental compliance documents; secure funding for the design and construction of the selected alternative.

2.0 – LOCATION

The project is located near Road 9 in Madera County, just north of where the Fresno River and Chowchilla Canal Bypass join and becomes the Eastside Bypass. See Figure 1 and 2 below for location and vicinity map.

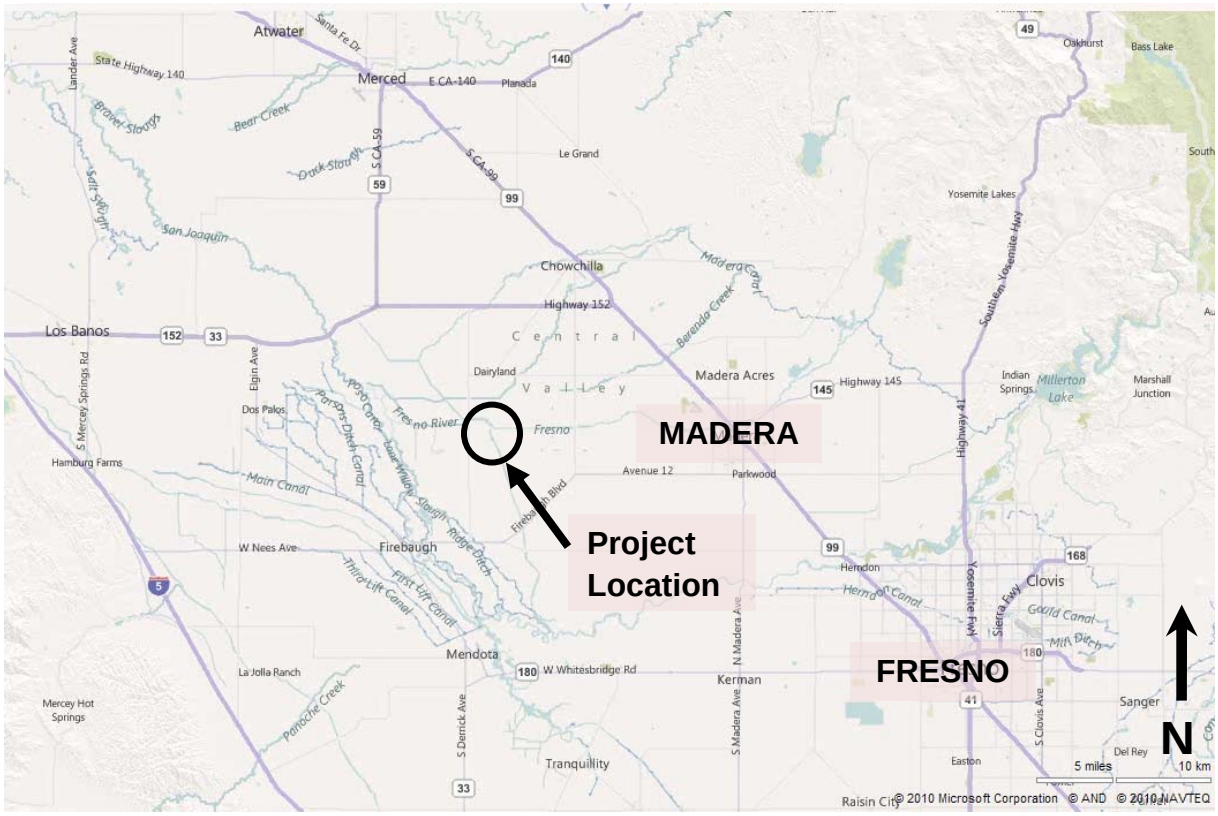


Figure 2a- Location Map (Source: Bing Maps)

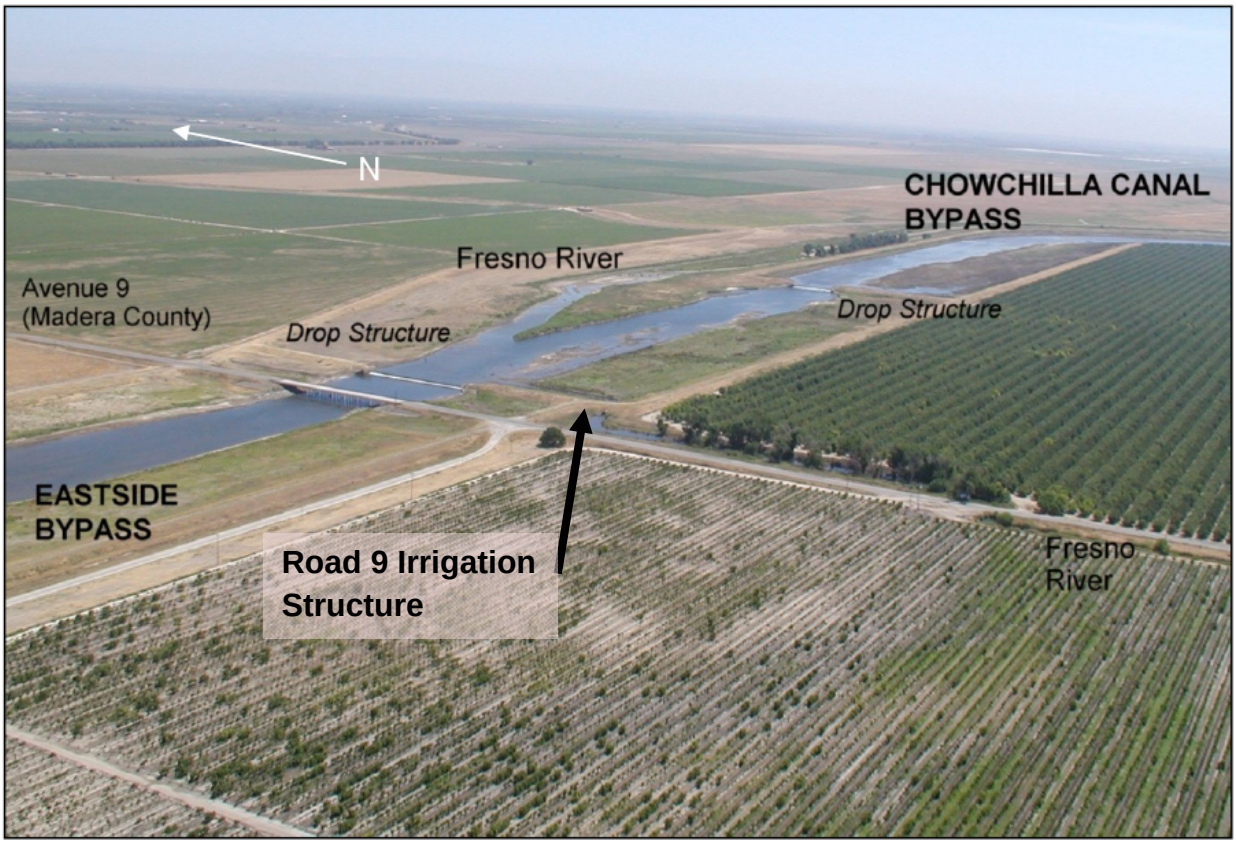


Figure 2b - Aerial of the project area (source: DWR DOE Hydraulic Analysis Report)

3.0 – BACKGROUND

The Fresno River-Road 9 Structure is a component of the Lower San Joaquin River Flood Control Project (LSJR FCP). The LSJR FCP was planned, designed, and constructed by the Department of Water Resources on behalf of the Central Valley Flood Protection Board in the early 1960's. The purpose of the Road 9 structure is to divert Fresno River flows out of the Eastside Bypass back into the Fresno River on the west side of the Eastside Bypass. A schematic of the Fresno River diversion structure is shown on Figure 3. Refer to Attachment B for photos of the structure and related facilities. The 6-foot wide by 4-foot high concrete box culvert structure was designed to convey up to 100 cfs beneath the Eastside Bypass left bank levee and discharge the flows into an improved channel. Flow through the structure can be regulated by operation of a slide gate shown in Attachment C. The flows in the improved channel move by gravity to two 48-inch diameter culverts beneath Road 9 that convey the flows back into the Fresno River.

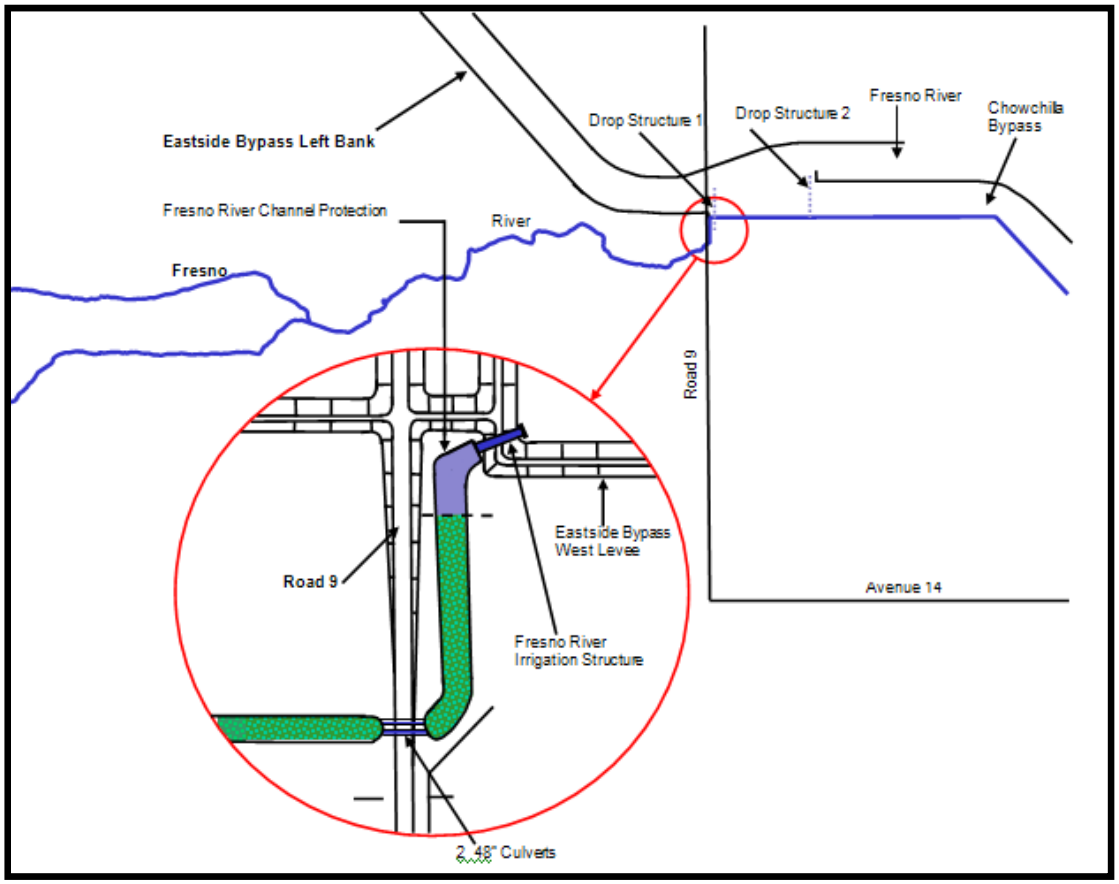


Figure 3- Fresno River- Road 9 Schematic Diagram (Source: DWR DFM staff 2003 CVFPB Presentation)

Landowners along the Fresno River downstream from Road 9 include Triangle T Ranch, Harmon Brothers Ranch, and Menefee Ranch. Starting in 1967, these property owners began to complain that they were not receiving sufficient water. One of the reasons for this statement was that the diversion structure was inadequately designed to provide the 100 cfs.

This issue was presented to the Board in November 17, 1995. Mr. Schafer testified that the Road 9 Structure, even if operated to its full capacity of 100 cfs, is inadequate to deliver water to riparians downstream of Triangle T Ranch. Board directed staff to meet with R.L. Schafer, listen to his request, and determine if any action is required by the Board and present proper recommendations at a future meeting.

Between 1995 and 2003, various documents, meetings and conferences took place in an effort to resolve this issue. In April 25, 2003, this issue was brought back to the Board. Board staff presented a report on the status and outstanding issues with the Road 9 Structure (See Attachment E for copy of Staff Report from April 25, 2003 meeting). At this meeting, no decision was made on the capacity of the Road 9 Structure, responsibility on the operations and maintenance or whether the Board had

an obligation to modify the existing system to provide the 100 cfs. The Board offered to assist Mr. Schafer and the other parties to re-initiate discussions on the matter (See Attachment E for copies of official transcript of this meeting).

On April 6th, 2010, Board staff and Board members John Brown and Butch Hodgkins attended the Central Valley Tour which included a site visit to the Fresno River Road 9 Structure. Following this site visit, Board staff was directed to reinitiate discussions on this issue. Department of Water Resources Division of Engineering, Field Surveys Branch performed a site survey in late July 2010. The survey was submitted to Board staff on August 4th, 2010 (see Attachment F). Once the survey was completed, DWR Division of Engineering (DOE) began their analysis and provided report on December 3, 2010 summarizing their findings and alternatives (See Attachment G). The alternatives are further discussed in Section 5.0 of this report.

Furthermore, the water right owners filed a complaint with the State Water Resources Control Board (SWRCB). On March 3, 1999, the SWRCB issued its order (Order WR 99-01, see to Attachment H) with the following findings summarized:

- The capacity of Road 9 Structure has decreased from its original design of 100 cfs to 60 cfs.
- Complainants want the capacity of the Road 9 Structure to be restored by the CVFPB and the Lower San Joaquin Levee District (LSJLD) to its original capacity of 100 cfs.
- Triangle T Ranch has 2,576 acres of land with riparian rights
- Triangle T Ranch has appropriative rights that is senior to the SWRCB permit issued to the United States Bureau of Reclamation (USBR)
- The USBR may have violated its permit when it did not release the proper amount of flow during a certain period.
- Triangle T Ranch did not prove its claim of prescriptive right

4.0 – EASEMENTS

The Central Valley Flood Protection Board (CVFPB), through the Sacramento and San Joaquin Drainage District (SSJDD), acquired the land and easements for the improved channel between the irrigation structure and the two 48-inch culverts. Parcels 4970A and 4970B cover the southern portion of the improved channel, approximately 80 feet south of the box culvert to the 2-48 inch pipes beneath Road 9. Refer to Attachment D for map showing the limits of these easements.

The northern portion of the channel is owned in fee by CVFPB recorded on Deed No. 3727 on September 28, 1964 on Book 914 Page 587 (see Attachment D, Exhibit C).

Parcel 4970A is owned in fee by the CVFPB, which was obtained through Deed 4313 recorded on May 31, 1972 on Book 1126 Page 169 (see Attachment D, Exhibit A)

On May 31, 1972, the SSJDD obtained Deed 4313 for Parcel 4970B recorded on Book 1126 Page 174 from C.F. Andresen and Winifred C. Andresen (see Attachment D, Exhibit B). Some of the rights granted on the deed include the following:

"*…the following perpetual rights of way and easements in the hereinafter described real property situated in the County of Madera, State of California:*

(a) To clear, construct, reconstruct, enlarge, repair, fence, operate, and maintain levees, by-passes, and other flood control works on the hereinafter described real property. Said flood control works shall include, but not be limited to, all embankments, ditches, channels, berms, fences and appurtenant structures;
(b) To relocate or relocate, at the discretion of the Grantee [SSJDD], public facilities, and to grant to others the right to relocate or relocate facilities described to a public use; …
(g) To clear and remove from said property, any and all trees and any and all other vegetation and other natural or artificial obstruction, which the Reclamation Board [now CVFPB]*, its successors or agents, may find necessary to clear or remove;"*

A right of way contract was executed on July 20, 1966 between Triangle T. Ranch and the SSJDD which included the following:

"*It is understood that upon completion of construction of the flood control by-pass project currently in progress, waters of the Berenda Slough and the Fresno River will flow into the by-pass structure. However, an outlet structure is provided through the left bank levee which will allow up to a 100 cubic feet per second flow down the Fresno River Channel westerly of the By-Pass.*" (ROW Contract, page 3, paragraph #4).

5.0 – STAFF ANALYSIS

The first step in identifying potential alternatives for this project was to perform a site survey and obtain actual profile and cross sections of the water delivery channel and allow for accurate data to be used for the hydraulic model. Therefore, DWR DOE Field Surveys Division was contacted and tasked with performing a survey of the project area. The survey was completed in July 2009 and submitted to Board staff in August 2010 (See Attachment G). Following completion of the survey, DWR DOE was tasked

with performing a hydraulic analysis and providing alternatives. These alternatives are presented in their report (see Attachment B) and are summarized in Section 5.1 of this report.

5.1 - Alternatives

Alternative A

Alternative A proposes lining the channel with concrete, starting at approximately 350 feet north of the structure up through the pipe culvert inlet beneath Road 9. This is approximately 1,300 linear feet. This alternative provides 80 cfs of flow with an estimated cost of $50,000.

Alternative B

Alternative B proposes raising the existing Bypass drop structure, just downstream of where the Fresno River diverts into the box culvert. Raising the drop structure to an elevation of 144.16’ (NAVD 88), approximately 0.6 ft on the north end and 0.3 ft on the south end, would provide 100cfs. The proposed method of achieving this alternative is by placing temporary flashboards or sand bags at the crest of the drop structure. The estimated cost of this alternative is $51,200.

Alternative C

Alternative C proposes replacing the existing 6’x4’ box culvert with two 6’x4’ culverts. This alternative provides approximately 101 cfs with an estimated cost of $584,000.

Alternative D

Alternative D proposes increasing the capacity of the existing culverts beneath Road 9 by replacing the existing 2-48” CMP pipes with 2-60” RCP pipes. This alternative provides 79 cfs with an estimated cost of $288,200.

Alternative E

Alternative E proposes combining Alternatives C and D (increasing the capacity of the box culvert and the RCP pipes beneath Road 9). This alternative provides approximately 114 cfs with an estimated cost of $872,000.

Alternative F

Alternative F proposes combining Alternatives C and B (increasing the capacity of the box culvert and raising the drop structure). This alternative provides approximately 110 cfs with an estimated cost of $632,000.

Alternative G

Alternative G proposes no action to be taken and therefore the system will remain as it exists today. Based on the existing conditions of the channel, the analysis estimated that 74cfs of flow can be delivered through the channel.

5.2 – Recommended Alternative

Alternatives A and D are eliminated as they do not meet the 100 cfs for water delivery. Although Alternative B is the second most inexpensive option, it only provides a temporary fix and requires on-going operations and maintenance to install and remove the flashboards. The O&M activities and responsibilities are currently in disagreement among all the involved parties. Furthermore, this alternative may not be acceptable to the U.S. Army Corps of Engineers and requires a more extensive analysis to look into any potential upstream hydraulic effects. Alternatives E and F are eliminated as they are the two most expensive options and do not provide a significant amount of flow from the other alternatives. Alternative G is eliminated as it does not address the current issue. Therefore, alternative C is the preferred remediation option for increasing flow through the channel. This alternative provides a permanent solution and falls within the average cost of the other alternatives.

6.0 – OPERATIONS & MAINTENANCE

The operations and maintenance of the structure and channel has been one of the on-going discussions between the water rights owners and Lower San Joaquin Levee District (LSJLD).

6.1 - Operations

The LSJR FCP Operations and Maintenance Manual states that: “*Maintenance of irrigation structures is the responsibility of the individual property owner unless the district has agreed to maintain the structure*.” (LSJR FCP O&M Manual Section 4220, page 58). The irrigation structure has been operated by Triangle T Ranch and is therefore in accordance with the O&M Manual.

6.2 - Maintenance

Maintenance of the irrigation structure and the channel has been an on-going disagreement among the water rights owners and the LSJLD. LSJLD believes it has no authority or interest in operating or maintaining the irrigation structure or channel improvements downstream of the structure, as stated in letter from their attorney to Don Mooney dated July 8, 1998, which states the following: "*The District does not have any legal responsibility for or authority over the Road 9 structure nor the river bed which is the subject of your clients' dispute*" (See Attachment F).

On letter dated October 31, 1998 from R.L. Schafer & Associates to the CVFPB, states "*The details…clearly identify that the lands upon which the Road 9 drainage structure and discharge channel for continuation of flows of the Fresno River were constructed and are owned by the Sacramento and San Joaquin Drainage District…It is further clear that The Reclamation Board has assigned to the Lower San Joaquin Levee District, as assignee of the Lower San Joaquin River Flood Control Project by the Sacramento and San Joaquin Drainage District, the responsibility for the maintenance and operation of "all levee and channel improvements together with all other project works" of improvement for flood control*."

The channel south of the irrigation structure up to the 2-48" CMP culverts is not specifically discussed on the O&M manual. However, as stated in Section 4 of this report, the Board has fee or easement rights for this portion of the channel. As the project moves forward with a preferred alternative, Board staff will initiate communications among all the interested parties to reach a solution that is acceptable to all.

7.0 –ENVIRONMENTAL DOCUMENTATION

Environmental Scientists within DWR were consulted to provide Board staff an estimated cost and possible environmental documentation that would be required in order to comply with the California Environmental Quality Act (CEQA). Their initial recommendation, based on a draft copy of the hydraulic analysis performed by DWR, is that a Mitigated Negative Declaration (MND) would be required for the project.

8.0 – AGENCY COMMENTS

The following comments were received in regards to this project:

- R.L. Schafer & Associates recommends that the selected alternative be the raising of the existing drop structure and also increasing the size of the culverts beneath Road 9 as stated on letter dated January 19, 2011 (see Attachment I).

9.0 – SUMMARY

Staff recommends that the Board adopt Resolution No. 11-05, which constitutes the Board written findings and decision on the matter of the Fresno River Road 9 Structure. The Resolution contains the basis for the preferred alternative for the Fresno River Road 9 Structure and an order to direct staff to initiate work on the environmental compliance documents and secure funding for the design and construction of the selected alternative.

10.0 – LIST OF ATTACHMENTS

A. Resolution 11-05
B. DWR DOE Hydraulic Analysis Report dated December 2010
C. Site Photos
D. Easements
   Exhibit A: Deed 4313 recorded on May 31, 1972 on Book 1126 Page 169
   Exhibit B: Deed 4313 recorded on May 31, 1972 on Book 1126 Page 174
   Exhibit C: Deed 3727 recorded on September 28, 1964 on Book 914 Page 587
E. April 25, 2003 Staff Report and Transcript (pages only pertaining to Road 9)
F. LSJRLD Letter to Mr. Mooney dated July 8, 1998
G. DWR Survey dated August 4, 2010
H. SWRCB Order No. WR 99-01 (summary only)
I. Proposed Alternatives Comment letter from R.L. Schafer dated January 19, 2011

Design review:	Angeles Caliso
Document Review:	Ali Porbaha, Len Marino

STATE OF CALIFORNIA
THE RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 11-05

FINDINGS AND DECISION FOR
FRESNO RIVER ROAD 9 STRUCTURE
SECTION 13 TOWNSHIP 11S RANGE 14E MDB&M
FRESNO RIVER, MADERA COUNTY

WHEREAS, the Fresno River Road Structure is a component of the Lower San Joaquin River Flood Control Project (LSJR FCP) that was planned, designed and constructed by the Department of Water Resources (DWR) on behalf of the Central Valley Flood Protection Board ("Board") in the early 1960's; and

WHEREAS, the purpose of the Road 9 structure is to divert Fresno River flows out of the Eastside Bypass back into the Fresno River on the west side of the Eastside Bypass.; and

WHEREAS, beginning in 1967 landowners along the Fresno River downstream from Road 9 began to complain that they were not receiving sufficient water. One of the reasons for this statement was that the diversion structure was inadequately designed to provide the 100 cfs; and

WHEREAS, the 6-foot wide by 4-foot high concrete box culvert structure was designed to convey up to 100 cfs beneath the Eastside Bypass left bank levee and discharge the flows into an improved channel. The flows in the improved channel move by gravity to two 48-inch diameter culverts beneath Road 9 that convey the flows back into the Fresno River; and

WHEREAS, for the reasons stated on the staff report, staff recommends the Board direct staff to initiate work on the environmental compliance documents, secure funding for the design and construction of the selected alternative; and

WHEREAS, the Board has conducted a public hearing on the Fresno River Road 9 Structure and has reviewed the Staff Report, the documents and correspondence in its file, and given the all interested parties the right to testify and present evidence on their behalf;

NOW, THEREFORE, BE IT RESOLVED THAT,

Findings of Fact:

1. The Central Valley Flood Protection Board hereby adopts as findings the facts set forth in the Staff Report.

2. The Central Valley Flood Protection Board hereby adopts as findings the facts set forth in the Staff Report. The Board has reviewed the Figures, Attachments, and References listed in the Staff Report.

CEQA Considerations

3. Upon approval of this resolution, CEQA documentation will be prepared by the Department of Water Resources, on behalf of the Board, for the selected alternative.

4. **Custodian of Record**. The custodian of the CEQA record for the Board is its Executive Officer, Jay Punia, at the Central Valley Flood Protection Board Offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

Other Findings Conclusions regarding Permit Application

5. The Board hereby directs staff to initiate work on the environmental compliance documents and secure funding for the design and construction of the selected alternative.

6. This resolution shall constitute the written decision of the Central Valley Flood Protection Board in the matter of the Fresno River Road 9 Structure.

PASSED AND ADOPTED by vote of the Board on _____, 2011

_____
Benjamin F. Carter
President

_____
Francis ("Butch") Hodgkins
Secretary

ATTACHMENT B

State of California
California Natural Resources Agency
Department of Water Resources
Division of Engineering

FRESNO RIVER

DIVERSION STRUCTURE

HYDRAULIC ANAYLSIS

December 2010

STATE OF CALIFORNIA
Arnold Schwarzenegger, Governor

CALIFORNIA NATURAL RESOURCES AGENCY
Lester A. Snow, Secretary for Resources

DEPARTMENT OF WATER RESOURCES
Mark Cowin, Director

STATE WATER PROJECT
Raphael A. Torres, Deputy Director

DIVISION OF ENGINEERING

Richard Sanchez ..... Division Chief
Jeanne Kuttel .....Chief, Geotechnical and Structures Branch
Joe Royer.....Chief, Dams and Canals Section

FRESNO RIVER DIVERSION STRUCTURE
HYDRAULIC ANALYSIS

This report was prepared in the
Dams and Canals Section
under the direction of

Philip LeCocq .....Senior Engineer, W.R

By

Christina Kashiwada..... Engineer, W.R,

With assistance from

Freydoune Seddick .....Retired Annuitant
Annie Wagner ..... Engineer, W.R.

State of California
California Natural Resources Agency
Department of Water Resources
DIVISION OF ENGINEERING

ENGINEERING CERTIFICATION

This report has been prepared under my direction as the professional engineer in direct responsible charge of the work, in accordance with the provisions of the Professional Engineer's Act of the State of California.

_____
Philip C. LeCocq
Registration No. C68336
Date: September 30, 2011

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1 INTRODUCTION

At the request of the Central Valley Flood Protection Board (CVFPB), the Department of Water Resources', (DWR) Division of Engineering (DOE) performed a hydraulic analysis of the existing water delivery channel (WDC) for the Fresno River at the East Side Bypass Diversion Structure. DOE conducted the analysis to determine the flow capacity of the existing system and to provide recommendations for remediation, if required, to achieve a flow of 100 cfs when water levels are approximately at the current crest of the existing drop structure.

1.1 SCOPE OF WORK

Ongoing discussions between the CVFPB, Madera Irrigation District (MID), and the riparian owners downstream of the diversion structure initiated the study. The CVFPB would like to determine what improvements, if any, would be required to support a flow capacity of 100 cfs through the existing water delivery channel.

The scope of work included:

1. Researching past studies completed on the Fresno River Diversion Structure, including the 2003 study prepared by the Division of Flood Management (DFM)

2. Determining the capacity of the water delivery channel under existing conditions by performing a hydraulic analysis.

3. Providing recommendations for any modifications to achieve a flow of 100 cfs through the water delivery channel when water levels are approximately at the current crest of the existing drop structure.

1.2 PROJECT DESCRIPTION

The study area is located near Road 9 in Madera County where the Fresno River and the Chowchilla Canal Bypass join and become the Eastside Bypass (Latitude: 36°58'31"N, Longitude: 120°22'54"W, USGS Quad Maps: Firebaugh NE and Poso Farm). The Fresno River Diversion Structure was built as part of the Lower San Joaquin River Flood Control Project (LSJR FCP). The purpose of the structure is to divert Fresno River flows out of the Eastside Bypass back into the Fresno River. The LSJR FCP consists of levees along the San Joaquin River and bypasses that DWR constructed) for the Reclamation Board (now CVFPB) during the 1960's. The Eastside Bypass Drop Structure No. 1 serves as a drop structure for the Eastside Bypass and as the diversion weir for flows conveyed back into the Fresno River. This area is located about 17 miles west of the city of Madera. See Figure 1 and Figure 2 for the project location and vicinity maps.

The WDC modeled in this study is approximately 1400 feet in length from the point at the Eastside Bypass drop structure to the outlet of the two 48-inch corrugated metal pipe (CMP) culverts downstream at Road 9. The WDC begins at the existing ditch just upstream of a 240-foot-long drop structure near the center of the Eastside Bypass. The ditch leads to an existing concrete box culvert with a span of 6-feet and a height of 4-feet (6'x4') located approximately 500 feet downstream of the start of the channel. The box culvert is approximately 80 feet long and flows under the bypass levee. The operation of a slide gate regulates flows through the box culvert. The WDC exits the box culvert, turns parallel to Road 9, and flows approximately 870 feet where it flows through the two 48-inch CMPs under Road 9. Currently, the channel has significant vegetation on both banks and some vegetation in the main channel through the downstream end. See Figure 3 for an aerial view of the project features.



Figure 1 – Project Location Map, Source - Google Maps

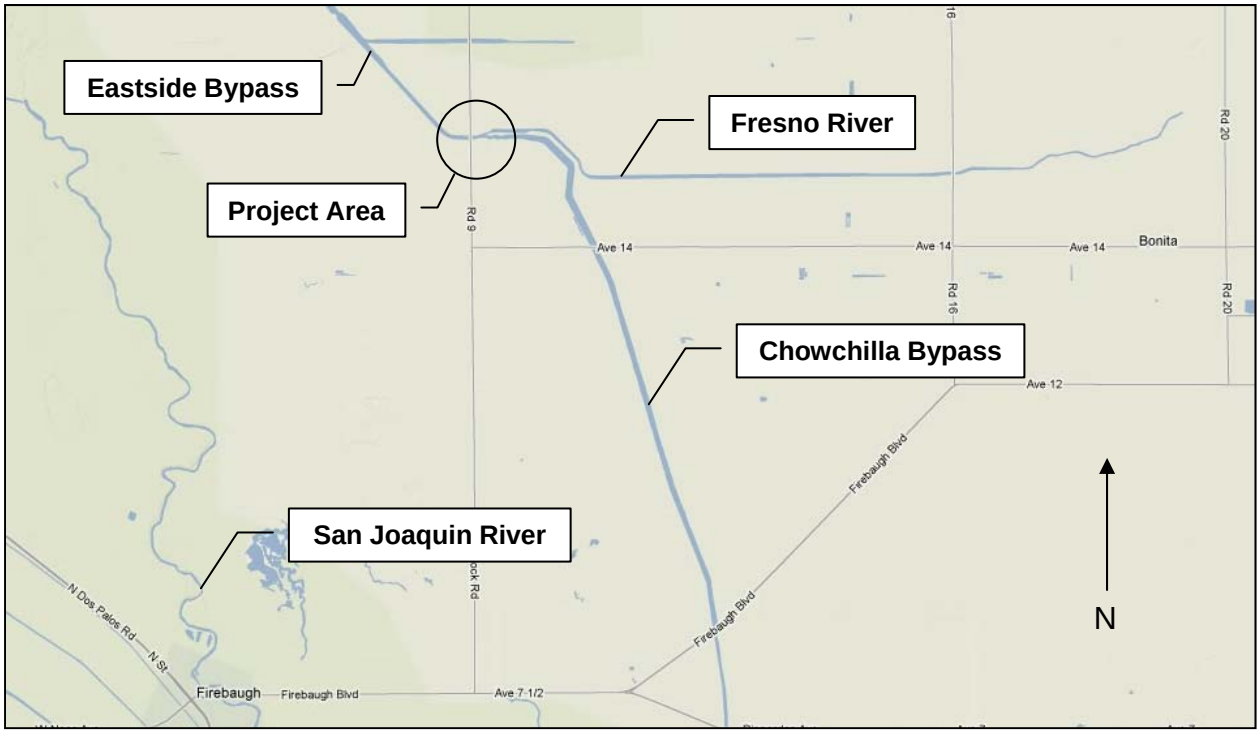


Figure 2 – Vicinity Map, Source – Google Maps

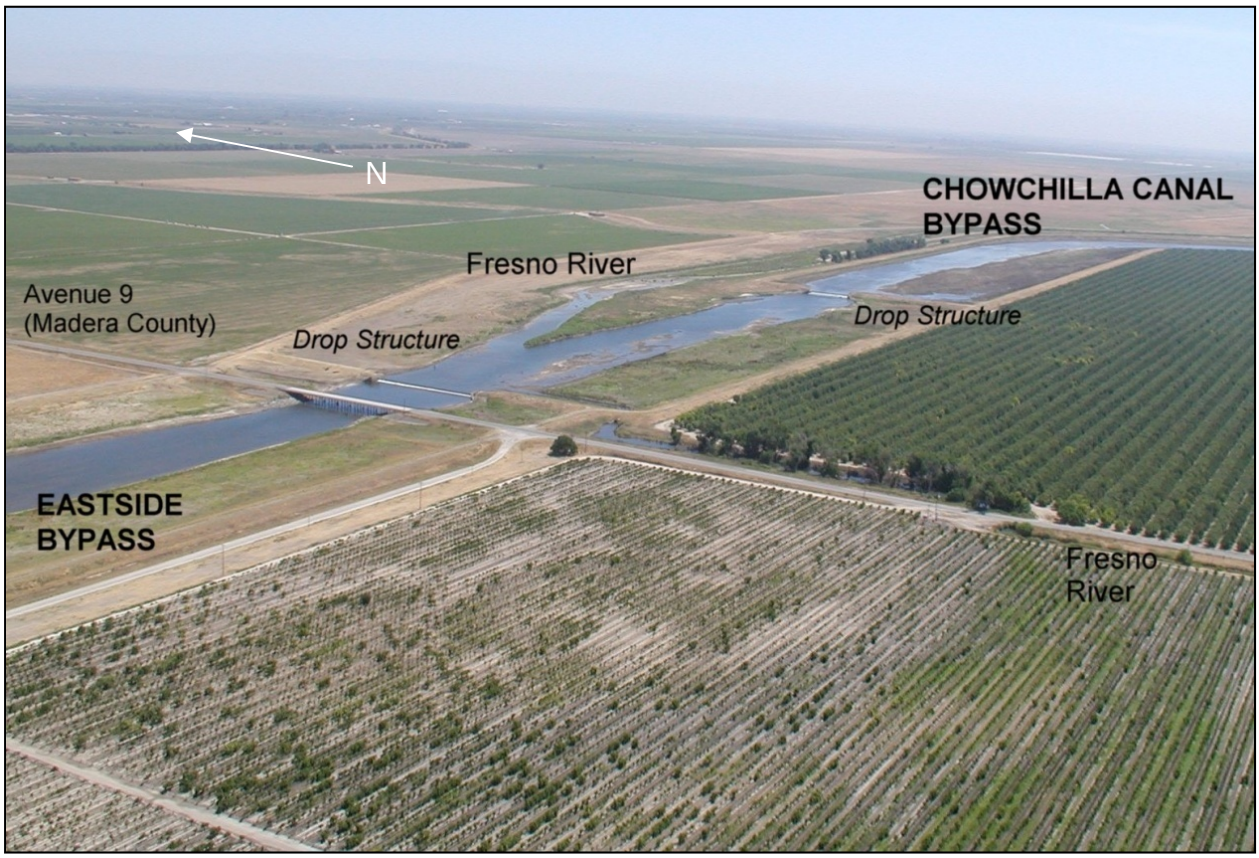


Figure 3 – Project Features, 2006, Source - San Joaquin Field Division

2 HYDRAULIC ANALYSIS

2.1 MODEL SET-UP

A hydraulic analysis was performed using the Hydraulic Engineering Center – River Analysis System (HEC-RAS) program, developed by the US Army Corps of Engineers, to model existing flow capacity conditions through the WDC. DOE's Field Survey group in the Geodetic Branch conducted a survey in August of 2010 and DOE used the data (NAVD 88) to develop model cross sections. In addition, the reports listed in the References section were used to aid in the development of the model. Figure 4 below serves as an illustration of the model components.

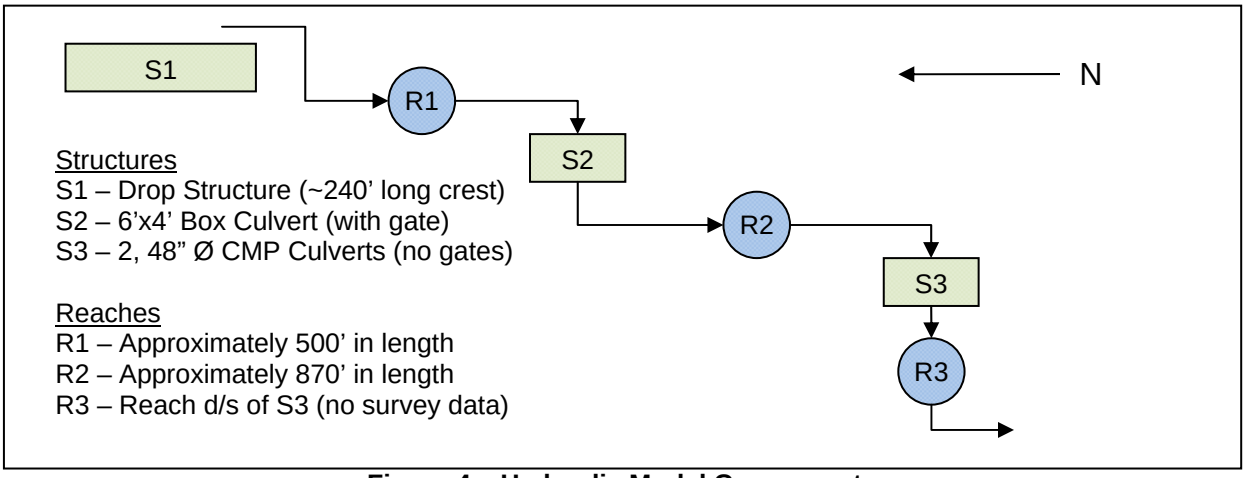


Figure 4 – Hydraulic Model Components

The survey performed in August 2010 provided information between stations 25+00 and 10+50. The model was extended 1,050 feet downstream to station 0+00 by copying the cross section at station 10+50 to station 5+00 and 0+00. Extending the model to this location provides for a more accurate model of a downstream controlled system and a broader understanding of the system being modeled. The upstream end of the model (R1) begins where the diversion channel branches off near the center of the Eastside Bypass channel. Refer to Appendix A for more information regarding the model.

2.2 ASSUMPTIONS

A site visit was conducted on September 23, 2010 to evaluate the existing conditions and approximate the roughness coefficients (Manning's n-values) to be used in the analyses. Appendix A provides a table of the roughness coefficients used for each section along the channel. Survey data provided by R.L. Shafer & Associates from 1999 was used to determine the channel slope (S = 0.0012) between stations 10+50 and 0+00. Based on engineering judgment, the model was initially set to a downstream control with normal depth boundary condition. However, after performing a sensitivity analysis as described in the section 2.4.3, it was determined that a more reasonable assumption would be to set a downstream control with a known water surface elevation.

2.3 ALTERNATIVES

Hydraulic analyses were performed for the conditions and alternatives described below (refer to Figure 4 for references to reach and structure abbreviations):

- **Existing conditions**
  (Survey data from August 2010)
  Refer to Appendix A for specific information and assumptions used in this model.

- **Alternative A: Concrete Line the channel**
  (Modify R1 and R2)
  The water delivery channel is lined with concrete (Manning's n-value of 0.013) and assumed to be kept free of debris and vegetation.

- **Alternative B: Raise Drop Structure**
  (Modify S1)
  The drop structure is raised to an elevation of 144.16'.

- **Alternative C: Increase Capacity of Box Culvert**
  (Modify S2)
  The box culvert is increased to two 6' wide X 4' high box culverts. An analysis was performed to determine which box culvert size would be feasible. Refer to Figure 5 for the results of those runs.

- **Alternative D: Increase Capacity of CMP Culverts**
  (Modify S3)
  The two 48-inch CMP culverts at the downstream end are replaced with two 60-inch reinforced concrete pipes (RCP).

- **Alternative E: Increase Capacity of Box Culvert and CMP Culverts**
  (Modify S2 and S3)
  The box culvert is increased to two 6' wide X 4' high box culverts and the two 48-inch CMP culverts at the downstream end are replaced with two 60-inch reinforced concrete pipes (RCP)

- **Alternative F: Increase Capacity of Box Culvert and Raise Drop Structure**
  (Modify S1 and S2)
  The box culvert is increased to two 6' wide X 4' high box culverts and the drop structure is raised to an elevation of 143.8'.

2.4 CALIBRATION AND DATA AVAILABLE

Data that could be used to calibrate the model of existing conditions was not available. The model is based on the energy equation (Standard Step Method) which has two unknowns that need to be solved for. To properly calibrate the model, both a flow through the channel and a downstream water surface elevation is required. Sierra Hydrographics and Madera Irrigation District (MID) provided information for flows at the outlet of the existing box culvert for dates ranging from April through August 2010 based on a rating curve developed by Sierra Hydrographics. Unfortunately, a water surface elevation downstream of the existing CMP culverts was not recorded to correlate the flows. Notes provided with the data indicate that correlating documented flows with this hydraulic analysis may not accurately represent the model created because debris may have been present in the existing CMP culverts, sandbags may have been present on the drop structure, and the water delivery channel downstream of the existing box culvert (approximately between stations 20+00 and 12+00) may have been cleared sometime after the recorded flows and when a survey was performed in August 2010.

Along with the data provided by Sierra Hydrographics and MID, two other sources of information were used to further understand the system being modeled. This information is documented and described in sections 2.4.1 and 2.4.2.

Because the data was not directly used in the calibration of the existing condition model, a sensitivity analysis was performed and engineering judgment used to substantiate the model and is described in section 2.4.3.

2.4.1 Assumed 20 cfs flows, April 6, 2010

The CVFPB provided photographs from a site visit on April 6, 2010 (See Appendix A) that show model components and relative water surface elevations. This information was used in an overall understanding of the system being modeled. Water is just spilling over the north end of the drop structure which leads to the assumption that the upstream water surface elevation is approximately 143.63' (NAVD 88). Additionally, the photos included in Appendix A show measurements to the water surface elevation upstream and downstream from the existing box culvert where the gate is assumed to be approximately 2.5 feet open. The conditions at the two 48-inch diameter CMP culverts were also observed and compared with current conditions. Notes on the photos (as well as correlation with the data provided by Sierra Hydrographics and MID) indicate that the flow was assumed to be approximately 20 cfs. Use of this information aided in verification of some of the assumptions used in the model but was neither applied directly nor used in calibration. Most notably, the water surface downstream of the CMP culverts was observed which aided in setting up the model. This led to the assumption of a downstream control boundary condition.

2.4.2 Stated flows of 60 cfs

The Fresno River / Road 9 Irrigation Structure Report prepared by Ricardo S. Pineda dated April 25, 2003 references a flow of approximately 60 cfs:

"In State Water Resources Control Board Order WR 99-001 (Letter No. 30, Attachment No. 7) the current capacity of the irrigation structure is approximately 60 cfs with the upstream water surface in the Eastside Bypass at the crest of drop structure no. 1. According to the Madera Irrigation District, the 60 cfs estimate is based on physical measurements at the downstream end of the structure (location of measurement gage)."

Based on conversations with other agencies, during the time that this 60 cfs flow was estimated, the WDC had not been cleared and was still highly vegetated. The WDC and both culverts were observed to have a large amount of debris which would reduce the flow through the channel. Since then, the channel has been cleared and the debris removed allowing for a higher flow capacity. In addition, water surface elevations were not measured during this time. As a result, this data was not suitable to use for calibration of the model.

2.4.3 Sensitivity analysis

Because comparable data was not available to properly calibrate the model, a sensitivity analysis was performed on the existing condition model by running six different profiles of various downstream boundary conditions with a range of water surface elevations (varying the downstream water depth from 1.4 feet through 6.4 feet in one foot increments). The upstream water surface elevation at the crest of the drop structure was not affected for depths downstream of the CMP culverts up to 4.4 feet. To further refine this sensitivity analysis, the same process was repeated for downstream water depths ranging from 4.28 feet through 5.38 feet in 0.1-foot increments. It was determined that the upstream water surface elevation for this analysis was not affected for depths up to 4.68 feet. To conservatively model the existing conditions, the downstream boundary condition was set for a known water surface elevation of 142.1 feet (depth of 4.88 feet, approximately 2.5 inches above the depth described above) at the downstream end for all model runs. In addition, the model was re-run for Alternative C using all six profiles which verified that the assumption used for a known downstream depth was reasonable.

2.5 MODEL RUNS

To determine the capacity of the existing channel, the model was run starting with an input flow of 100 cfs and determining the upstream water surface elevation. This process was repeated by varying the input flows until the upstream water surface elevation (in R1) matched the existing elevation of the lowest point on the drop structure, Elevation 143.63'. For Alternatives A, C, D, and E, the results from the analysis performed are shown in Table 1 and present the maximum flow that can be delivered by the channel with the water surface elevation at the crest of the existing drop structure. To analyze Alternative B, the existing conditions were modeled with an input flow of 100 cfs and the output water surface elevation determined the required elevation of a raised drop structure in order for the input flow to be achieved. Similarly, to analyze Alternative F, the model was run using the Alternative C model with an input flow of 110 cfs and the output water surface elevation determined the required elevation of a raised drop structure in conjunction with the increased capacity of the box culvert. Detailed descriptions of the findings for each alternative are described in the following section.

3 FINDINGS

3.1 RESULTS

After setting up the hydraulic model, all of the alternatives were run and a summary of the results is shown in Table 1 below:

Table 1 – Alternatives Considered in Analysis

Alt	Description	Maximum Flow (cfs)
	Existing Conditions	74
A	Concrete Line the Channel	80
B	Raise Drop Structure	100
C	Increase Capacity of Box Culvert	101
D	Increase Capacity of CMP Culverts	79
E	Increase Capacity of Box Culvert and CMP Culverts	114
F	Increase Capacity of Box Culvert and Raise Drop Structure	110

Based on the existing condition model, a flow of approximately 74 cfs could theoretically be delivered through the channel from the Fresno River to the outlet of the two 48-inch CMP culverts at the downstream end assuming downstream control. Concrete-lining the channel (Alternative A) would only increase the flow capacity to approximately 80 cfs. Only a slight change from the existing condition was observed when the capacity of the CMP culverts was increased (Alternative D), which implies that the CMP culverts are not the limiting factor in the system.

Table 1 indicates that Alternatives B, C, E, and F are the options that were observed to achieve a flow of 100 cfs. A more in depth analysis was performed on Alternative C to determine the optimum box culvert size that would provide the required flow. As the size of the box culvert was enlarged in the model, the maximum flow through the channel also increased, indicating that the box culvert was the limiting factor in the system. The maximum flows that were calculated for the various sizes of box culverts analyzed are shown in Figure 5. As shown in the figure, a double 7-foot by 4-foot box culvert would not provide a significant increase in maximum flow in comparison to the double 6-foot by 4-foot box culvert. Once the capacity of the box culvert is increased to a double 6-foot by 4-foot box culvert, the CMPs become the limiting factor in the WDC.

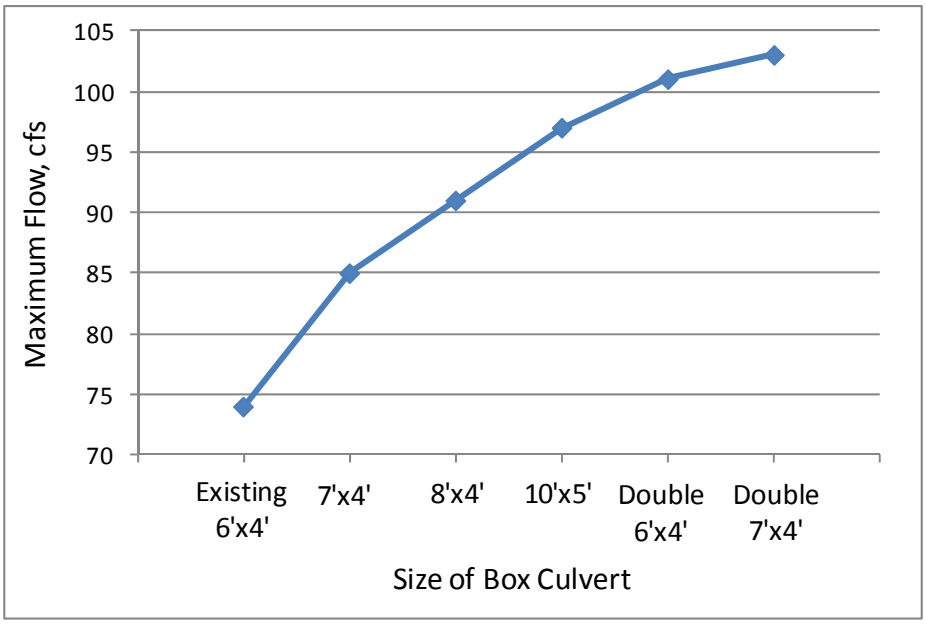


Figure 5 – Maximum Flow Achieved with Size of Box Culvert

Alternative B would provide a flow of 100 cfs through the WDC if the entire drop structure were raised to an elevation of 144.16 ft. This alternative would require raising the drop structure approximately 0.6 ft. on the north end and 0.3 ft. on the south end. Alternatives E and F would both provide higher flows through the WDC than Alternatives B and C, however, both of these alternatives require a more extensive remediation and thus a more involved design and higher construction cost.

3.2 DISCUSSION

The results from the analyses are heavily weighted on the assumptions that were made for the initial set up of the model, particularly the downstream water surface elevation. Varying conditions in the channel, such as debris and the lack of gravity flow from the CMP culverts to the riparian owners, could affect the actual downstream depth of water and thus alter the results and achievable flow. To analyze the effect of the variations in the downstream depth of water, a sensitivity analysis was performed on the existing conditions by modeling various downstream water surface elevations (the amount the CMP culverts are submerged on the downstream side) and determining the correlating flow capacity through the channel. As shown in Figure 6, once the CMP culverts become submerged by 9 inches or more, the flow through the channel starts to dramatically decrease. Thus, if the actual submergence of the CMP culverts ever becomes greater than what was assumed for our models (submergence of 6 inches), the maximum flows through the channel for each alternative will mostly likely be less than what is shown in Table 1.

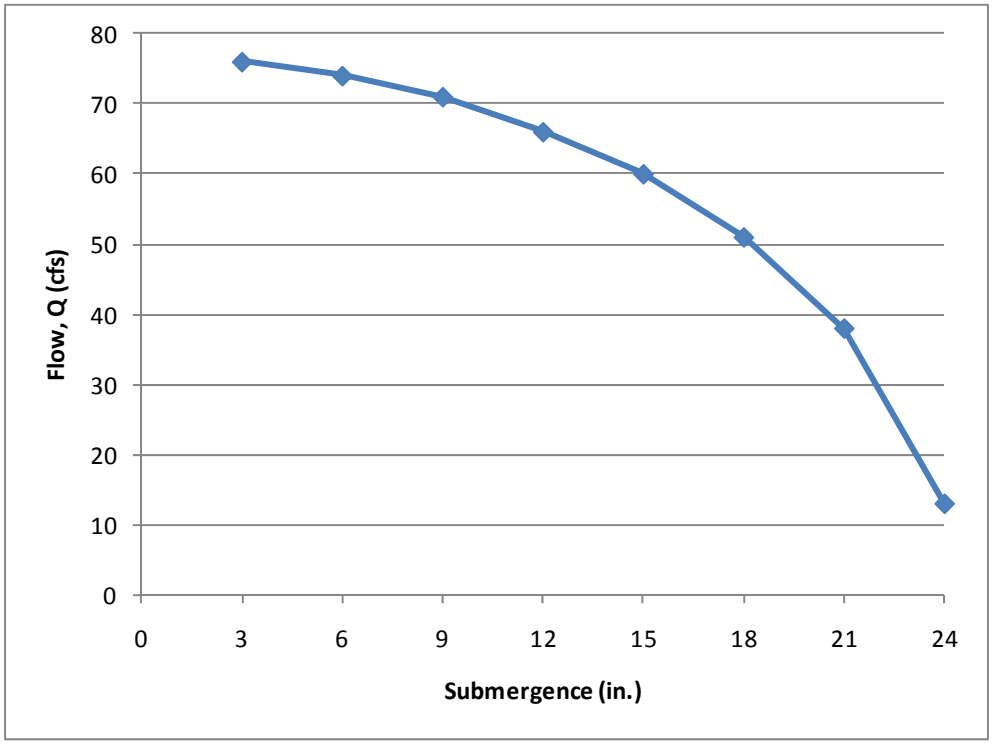


Figure 6 – Maximum Flow for Various Submergence Depths of CMPs for Existing Conditions

4 CONCLUSION AND RECOMMENDATION

4.1 EXISTING CONDITIONS

The estimated maximum flow for the portion of the water delivery channel system that was modeled under current conditions is 74 cfs. This value is based on the findings of the hydraulic analysis performed as described in the preceding sections of this report.

4.2 RECOMMENDATIONS FOR INCREASING FLOW

DOE recommends Alternative C, increasing the capacity of the box culvert, as the preferred remediation option for increasing the flow through the WDC. The existing box culvert would be replaced with a double 6-foot wide by 4-foot high concrete box culvert. The results from the hydraulic analysis indicate that the maximum flow capacity through the channel with the new box culvert system will be 101 cfs and thus achieving the required flow of 100 cfs.

4.3 FUTURE STUDIES / IMPROVEMENTS

Following the remediation of the channel, future studies on the resulting increased flow should be performed to verify the performance of the channel. These results should be observed and evaluated and subsequently used to determine if further improvements are required to achieve the required flows. If necessary, flashboards or another similar system could be installed at the drop structure to increase the water surface elevation at the start of the WDC. Additionally, the CMP culverts could be modified by either cutting back the CMPs to the embankment slope to reduce the entrance and exit losses or replacing the existing CMPs with 60-inch concrete pipes. The combination of the enlarged box culvert and the downstream culverts will further increase capacity through the channel.

5 REFERENCES

1. Department of Water Resources, November 2003, Fresno River Diversion Structure Capacity Analysis – Draft Results, Division of Flood Management

2. Department of Water Resources, August 2010, Survey Data, Division of Engineering, Job # SR10-13.

3. Department of Water Resources, September 2010, Fresno River – Road 9 – Hydraulic Analysis – Trip Report, Division of Engineering

4. R.L. Shafer & Associates, April 2003, Fresno River, Road 9 Structure

5. Department of Water Resources, April 25, 2003, Fresno River / Road 9 Irrigation Structure Report, Ricardo S. Pineda

APPENDIX A
HYDRAULIC MODEL SET-UP

Figure A1 – Schematic of Hydraulic Analysis Set-Up
Table A1 – HEC-RAS Model Set-Up
Table A2 - Roughness Coefficients used in HEC-RAS (Manning's n-values)
Table A3 – HEC-RAS Model Inputs for Existing Box Culvert
Table A4 – HEC-RAS Model Inputs for Existing CMP Culverts
Figure A2 – Photos of Existing Drop Structure
Figure A3 – Photos of Existing 6-foot wide x 4-foot tall Box Culvert
Figure A4 – Photos of Existing Gate at 6-foot wide x 4-foot tall Box Culvert
Figure A5 – Photos of Existing 48-inch diameter CMP Culverts

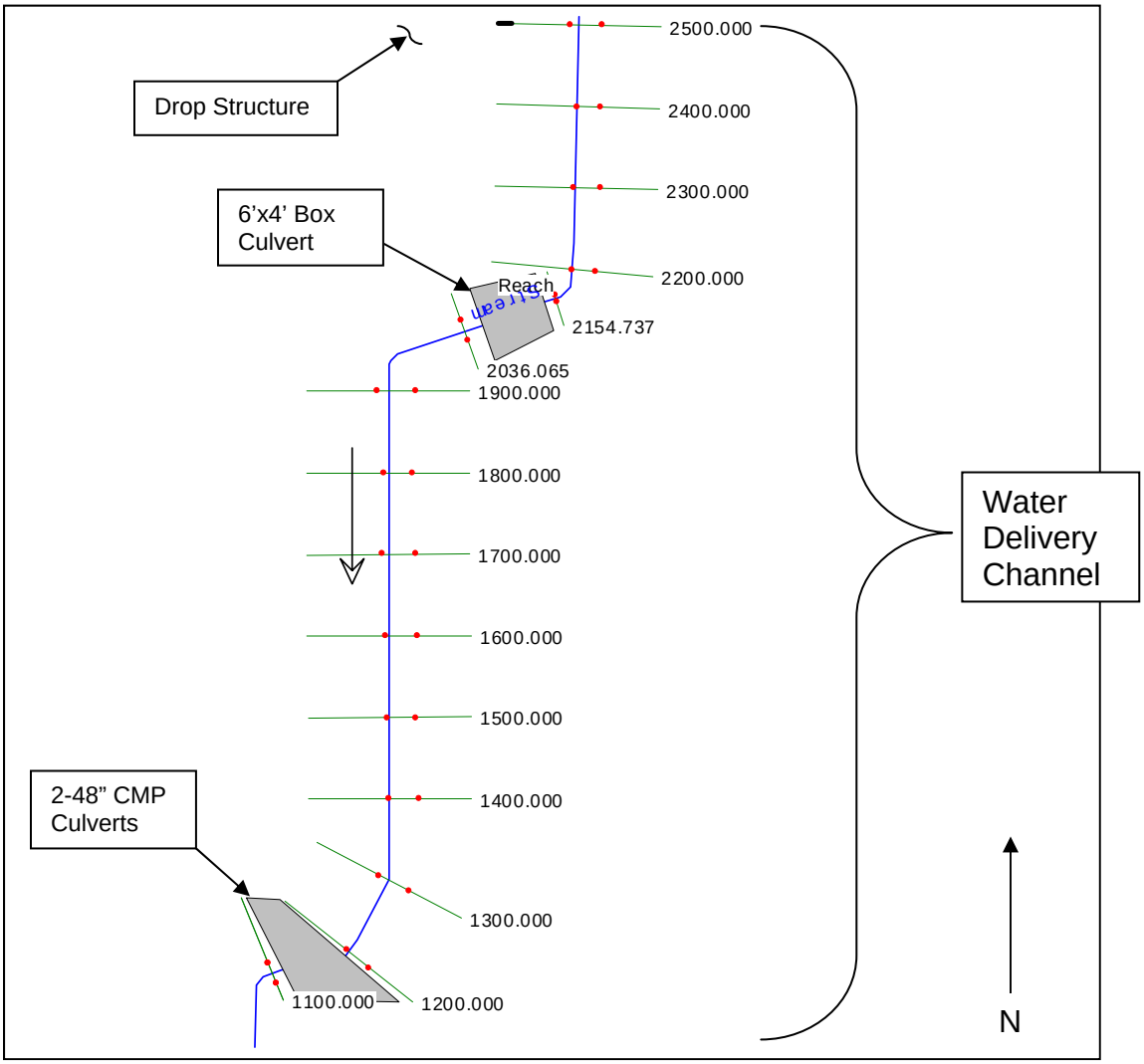


Figure A 1 – Schematic of Hydraulic Analysis Set-Up

Table A 1 – HEC-RAS Model Set-Up

Drop Structure	Crest Elevation - North End	143.625'
	Crest Elevation - South End	143.872'
	Length	240'
Water Delivery Channel	Length from Fresno River to Box Culvert	370'
	Box Culvert - Size	6' x 4'
	Box Culvert - Invert Elev.	140.52'
	Length from Box Culvert to CMP Culverts	869'
	CMP Culverts - Size	2-48" CMP
	CMP Culverts - Invert Elev.	138.15'

Table A 2 – Roughness Coefficients used in HEC-RAS (Manning's n-values)

Station (from upstream to downstream)	Manning's n-value		
	Left Bank	Channel	Right Bank
2500 (at start of channel)	0.055	0.05	0.055
2400	0.055	0.05	0.055
2300	0.055	0.05	0.055
2200	0.06	0.05	0.06
2155 (just before box culvert)	0.05	0.05	0.05
6'x4' concrete box culvert	0.014		
2036 (just after box culvert)	0.05	0.05	0.05
1900	0.05	0.05	0.05
1800	0.05	0.05	0.05
1700	0.05	0.05	0.05
1600	0.05	0.05	0.05
1500	0.06	0.05	0.06
1400	0.06	0.05	0.06
1300	0.065	0.05	0.065
1200 (just before pipe culverts)	0.065	0.05	0.065
2-48" CMP culverts	0.024		
1100 (just after pipe culverts)	0.05	0.05	0.05

Table A 3 – HEC-RAS Model Inputs for Existing Box Culvert

Box Culvert - Existing Conditions	
Description	Input
Shape	Box
Span	6'
Rise	4'
Chart #	8 - Flared Wingwalls
Scale #	1 - Wingwall flared 30 to 75 deg.
Culvert Length	81.86'
Entrance Loss Coeff	0.5
Exit Loss Coeff	1
Manning's n for Top	0.014
Manning's n for Bottom	0.014
Upstream Invert Elev.	140.52'
Downstream Invert Elev.	139.7

Table A 4 – HEC-RAS Model Inputs for Existing CMP Culverts

Pipe Culvert - Existing Conditions	
Description	Input
Shape	Circular
Diam.	4'
Chart #	2 - Corrugated Metal Pipe Culvert
Scale #	3 - Pipe projecting from fill
Culvert Length	77.45'
Entrance Loss Coeff	0.9
Exit Loss Coeff	1
Manning's n for Top	0.024
Manning's n for Bottom	0.024
Upstream Invert Elev.	138.15
Downstream Invert Elev.	137.6
# Identical Barrels	2

Observed Conditions on April 6, 2010 unless otherwise noted. Notes on photographs provided by the CVFPB indicate that flows on this day are estimated at 20 cfs.



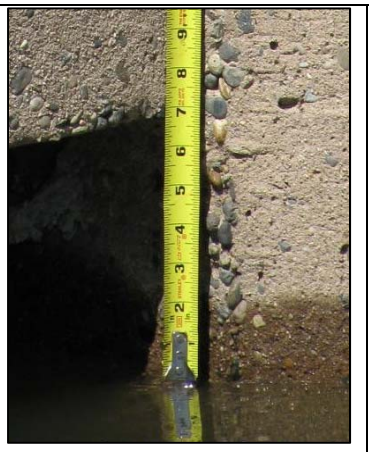
1 – Looking North, notice that the South side is higher



2 – Looking Northeast

Figure A 2 – Photos of Existing Drop Structure





1 – Upstream side





2 – Downstream side

Figure A 3 – Photos of Existing 6-foot wide x 4-foot tall Box Culvert



1 – The gate was assumed to be 2.5’ open.



2 – Looking down on the gate at the existing 6’x4’ box culvert, notice debris

Figure A 4 – Photos of Existing Gate at 6-foot wide x 4-foot tall Box Culvert



1 – Upstream side of existing two, 48-inch diameter CMP culverts



2 – Downstream side of existing two, 48-inch diameter CMP culverts



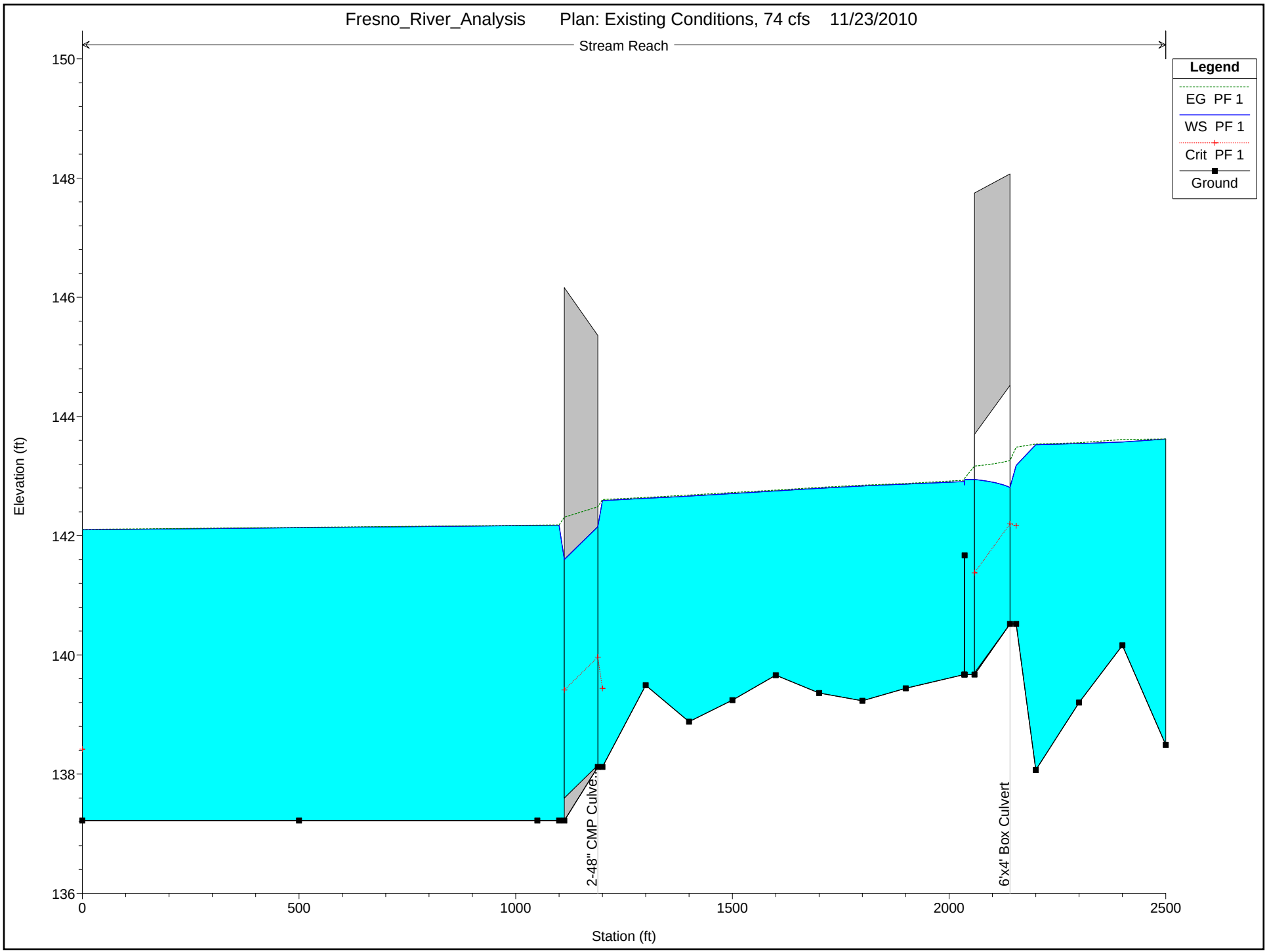
3 – Downstream side of existing two, 48-inch diameter CMP culverts on Sep. 23, 2010.

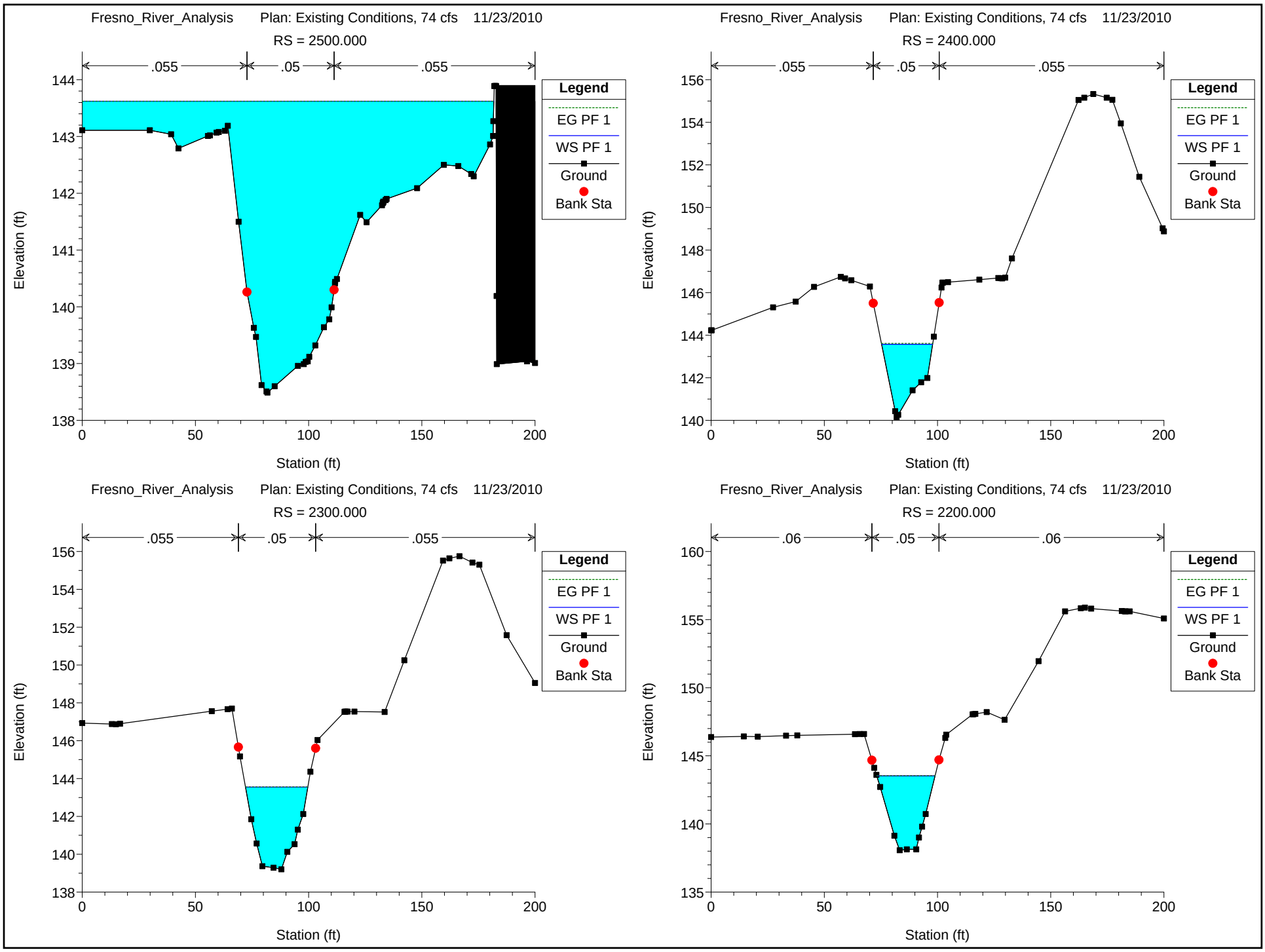
Figure A 5 – Photos of Existing 48-inch diameter CMP Culverts

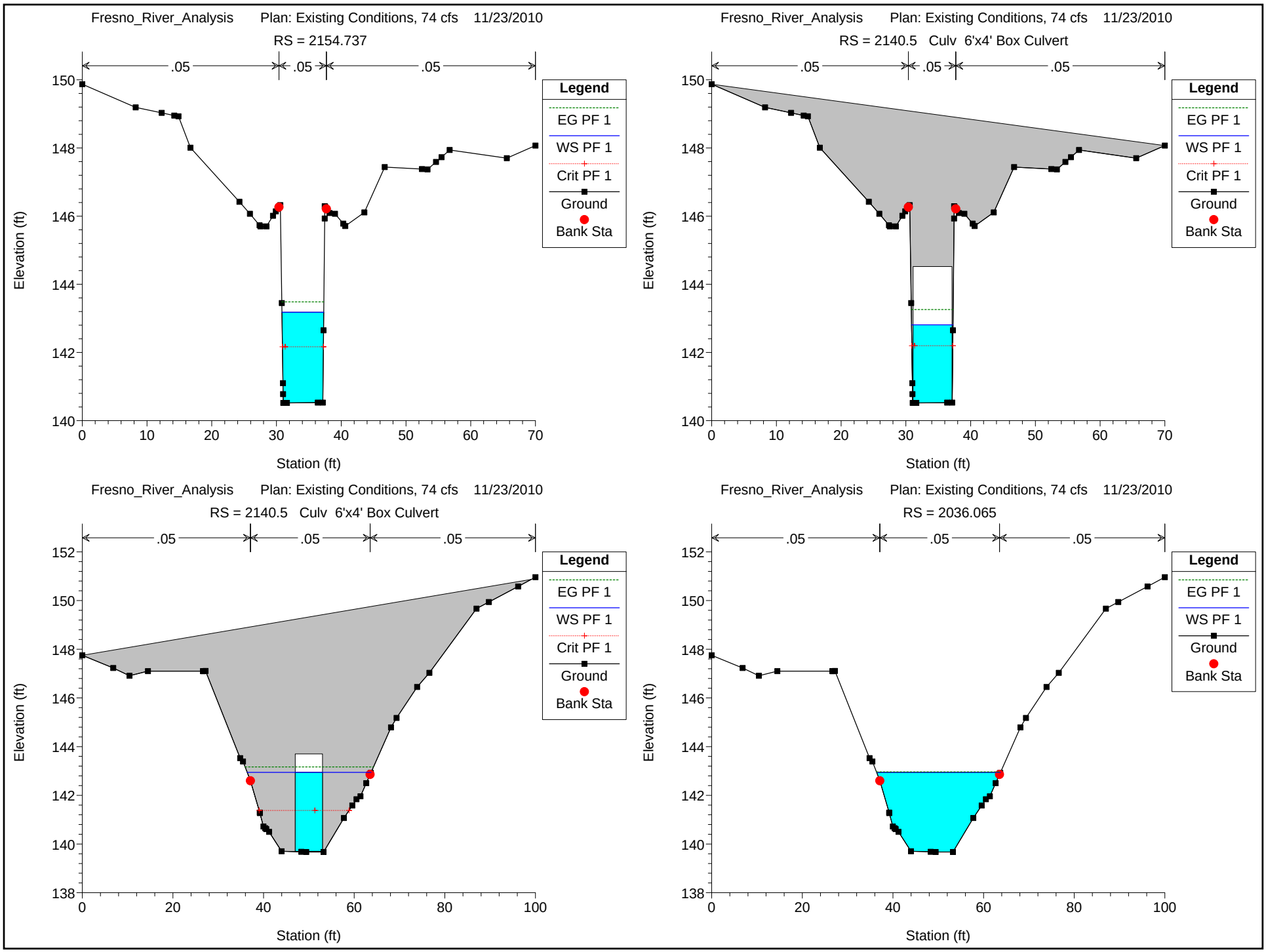
APPENDIX B
HEC-RAS OUTPUT & RESULTS

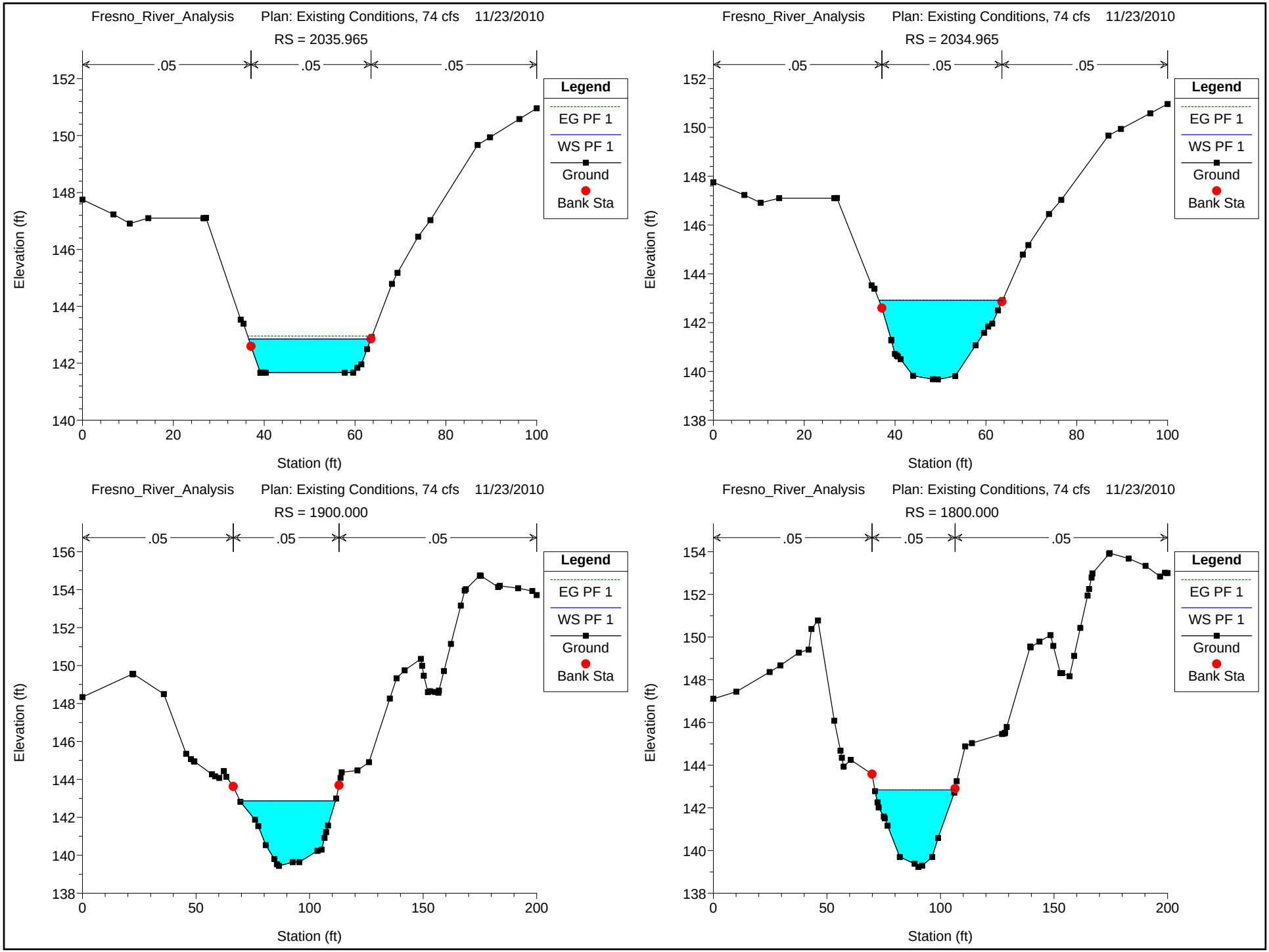
Existing Conditions – Profile, Cross Sections, and Output Data Table
Preferred Alternative – Profile, Cross Sections, and Output Data Table

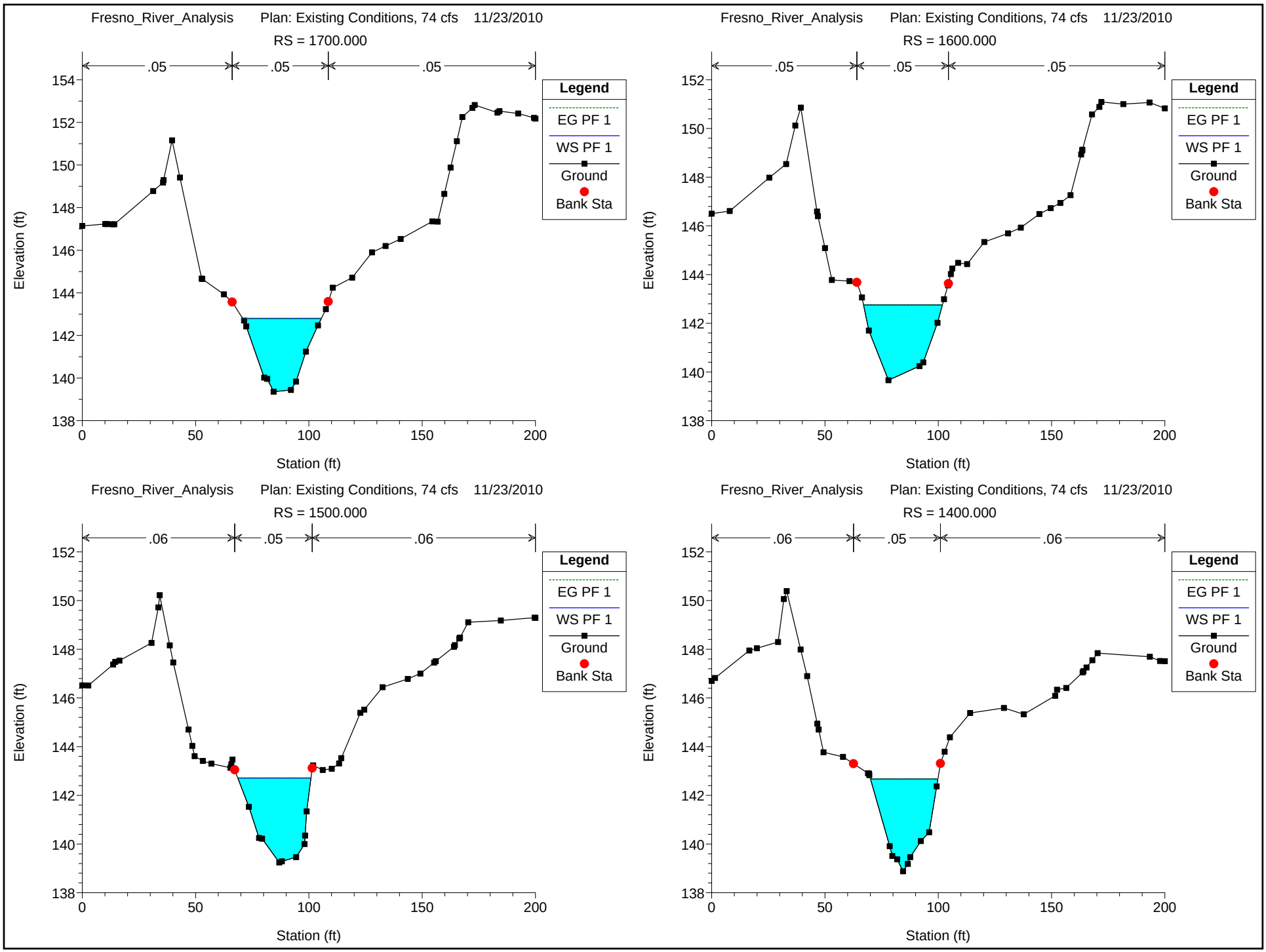
ATTACHMENT B

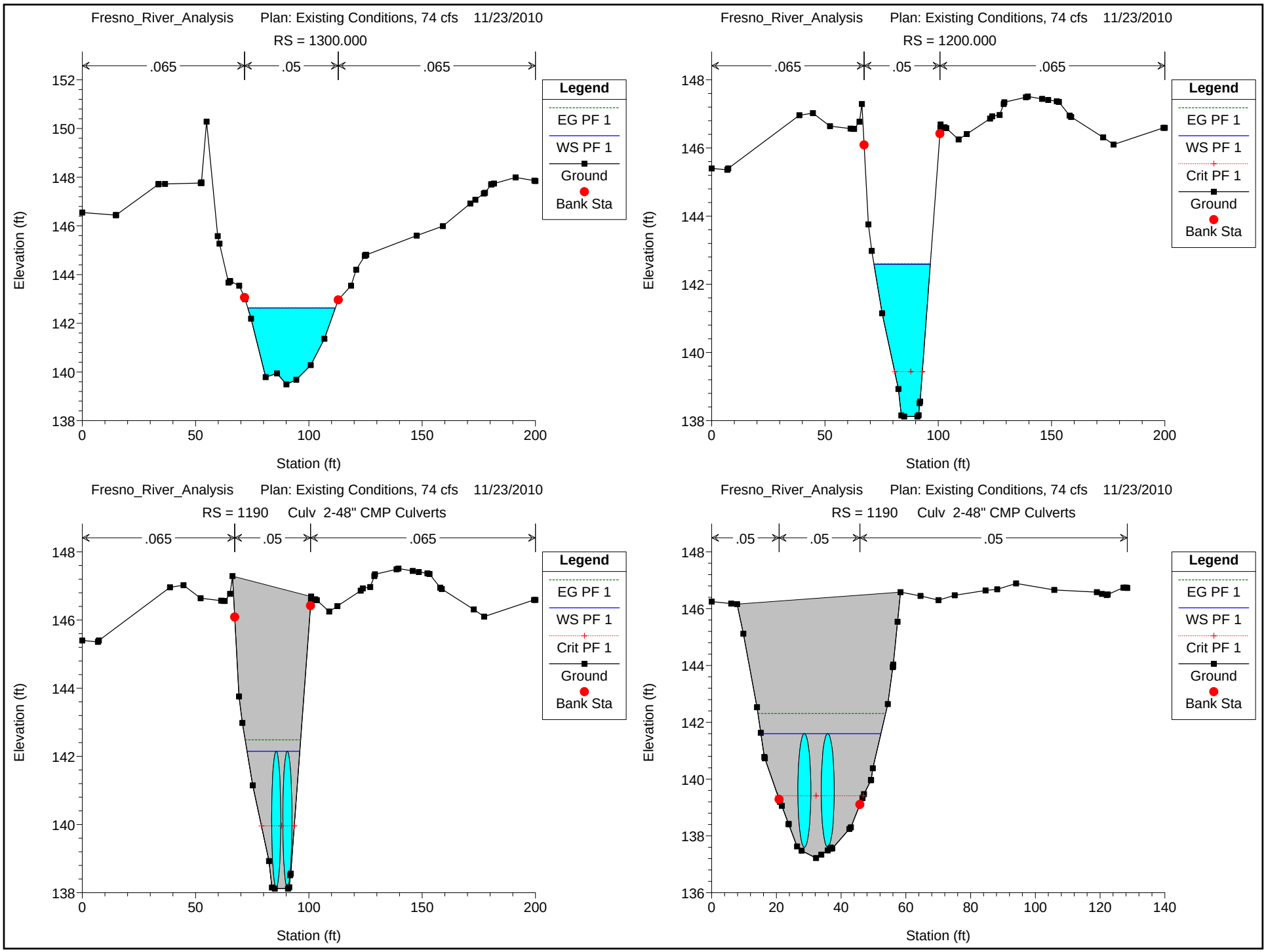


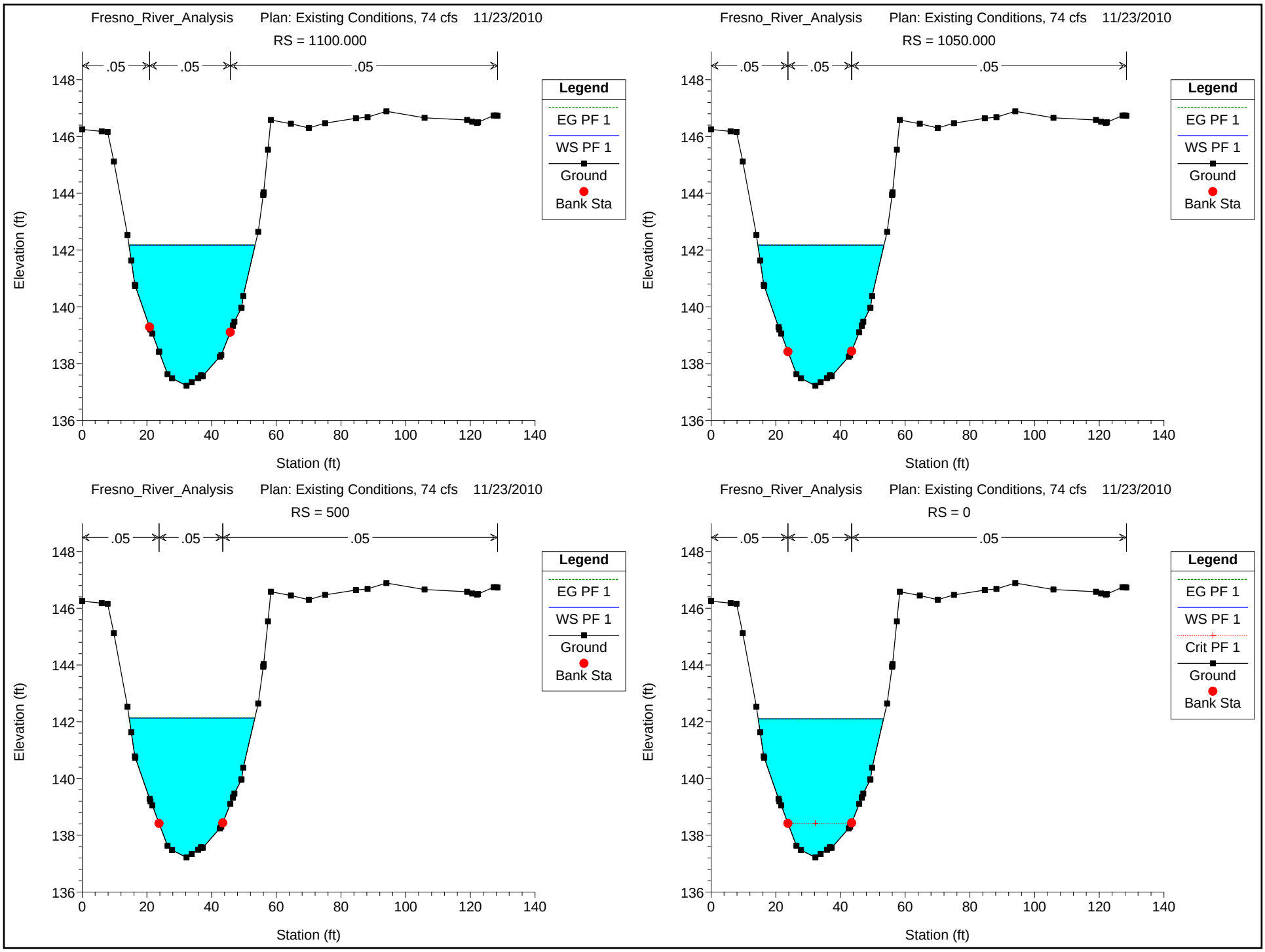

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Elevation (ft)
Station (ft)
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Station (ft)
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Station (ft)
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Bank Sta
Elevation (ft)
Station (ft)


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Crit PF 1
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Bank Sta
Elevation (ft)
Station (ft)
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Station (ft)


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Station (ft)
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Station (ft)

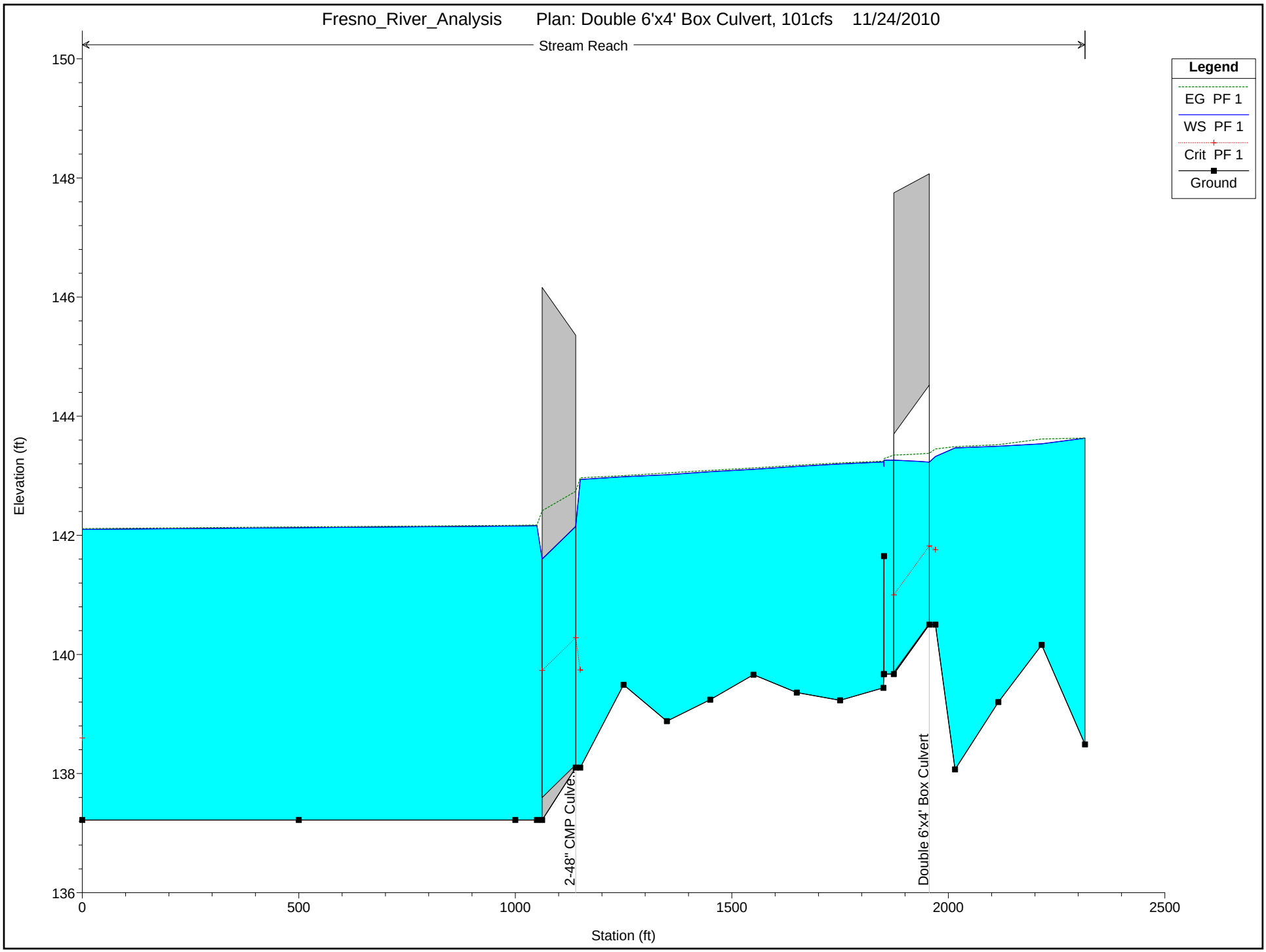

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Bank Sta
Elevation (ft)
Station (ft)

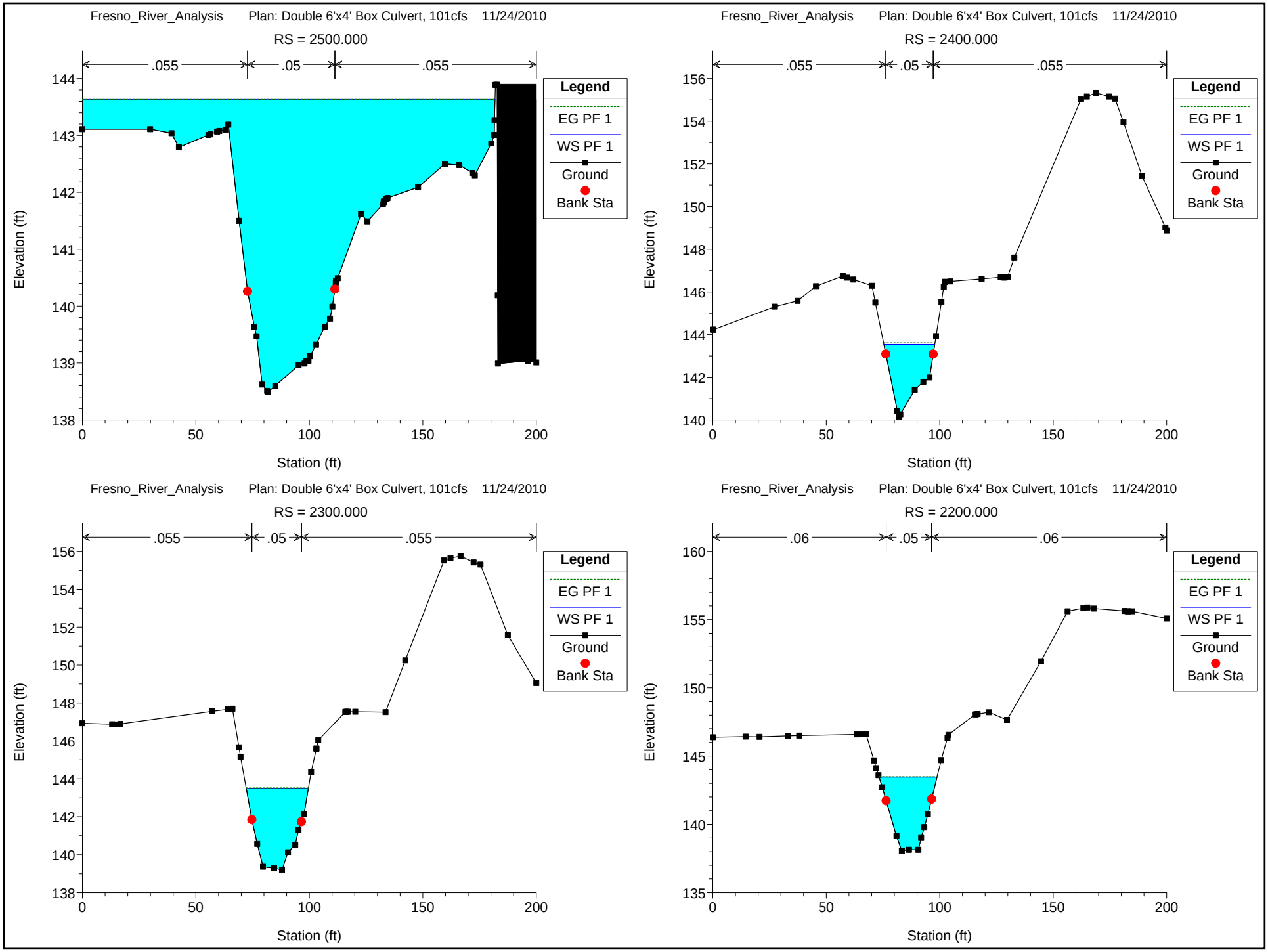

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Bank Sta
Elevation (ft)
Station (ft)
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WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
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WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Existing Conditions, 74 cfs 11/23/2010
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Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

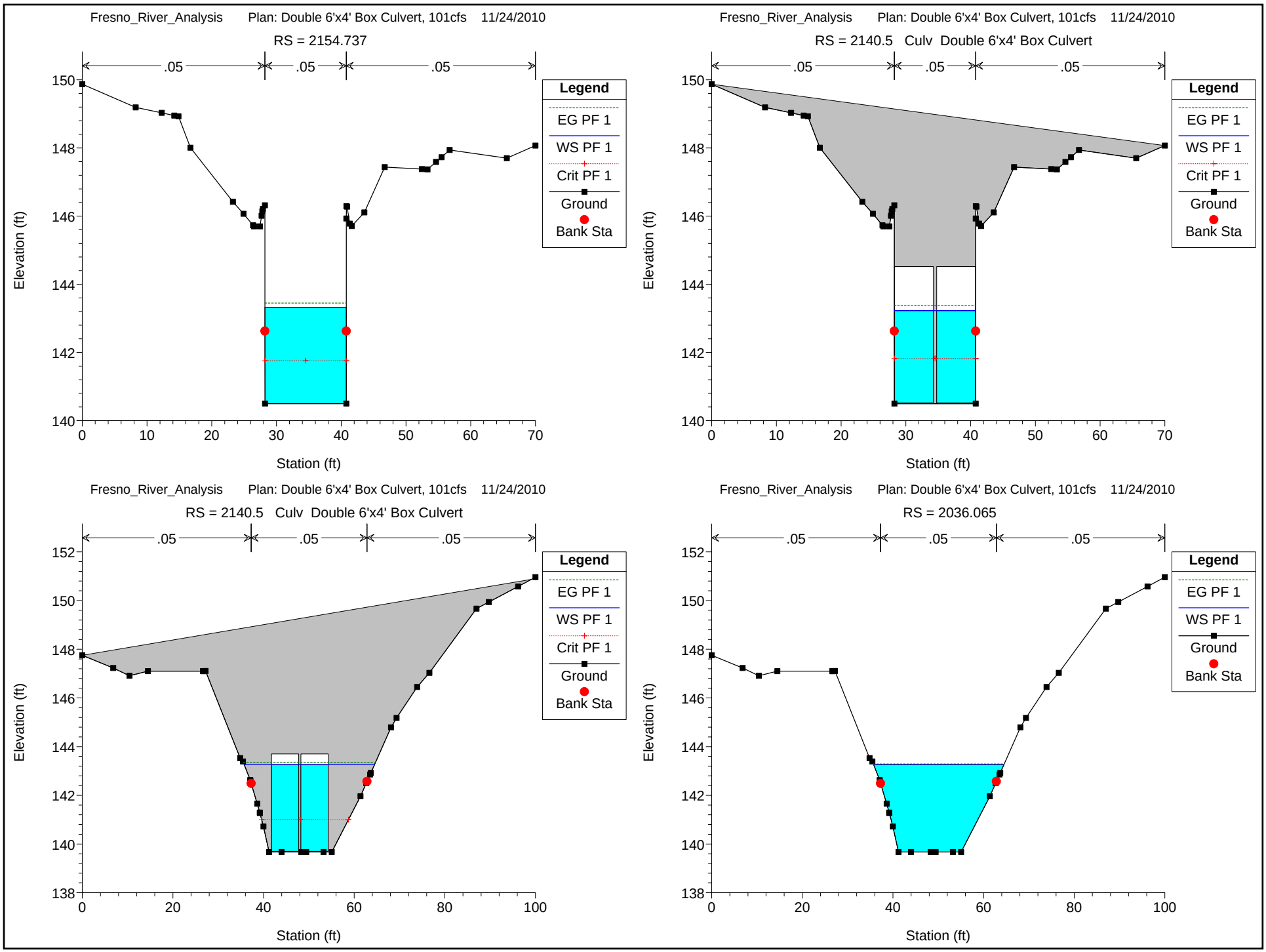

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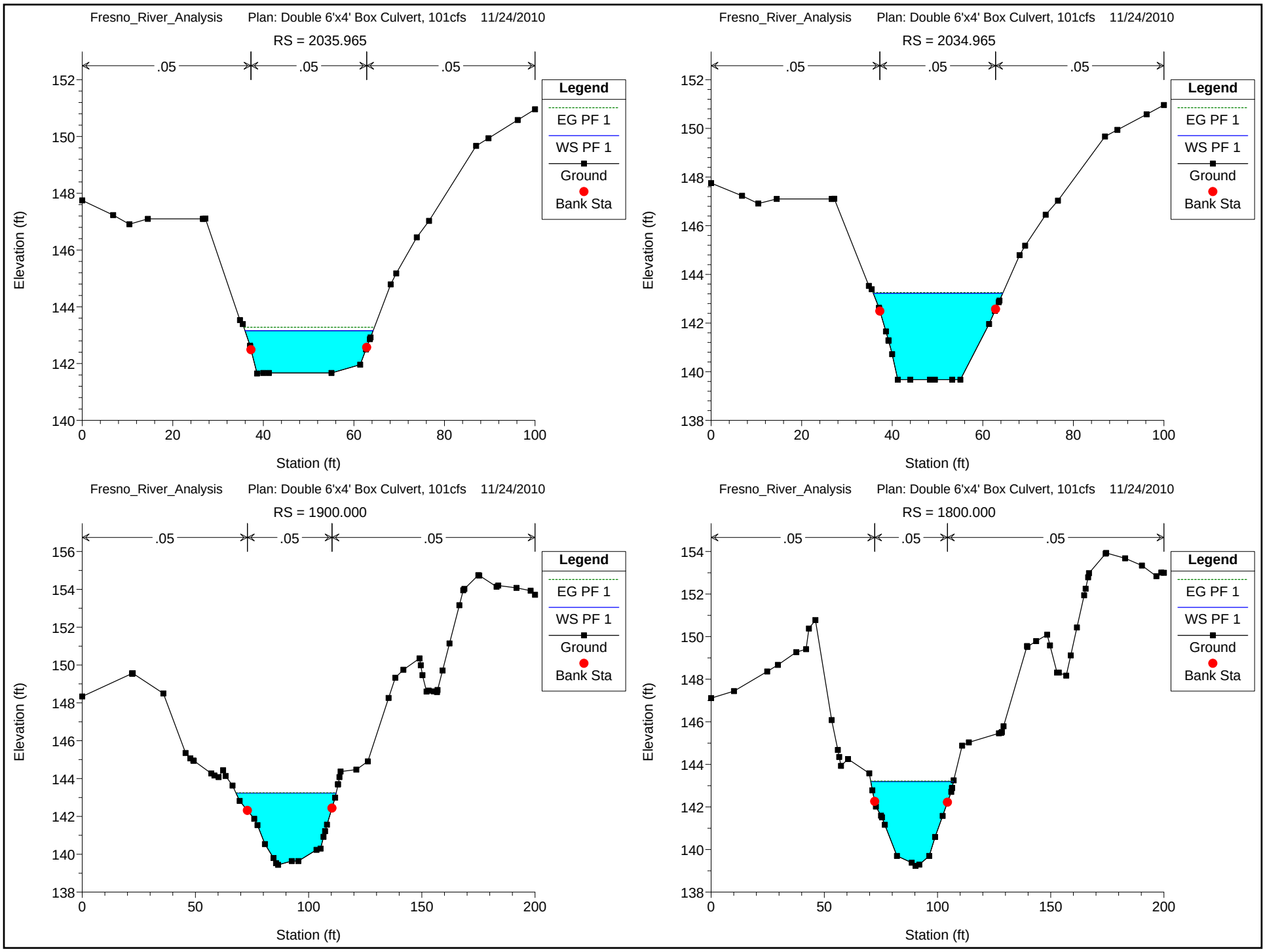
HEC-RAS Plan: Existing, 74 River: Stream Reach: Reach Profile: PF 1

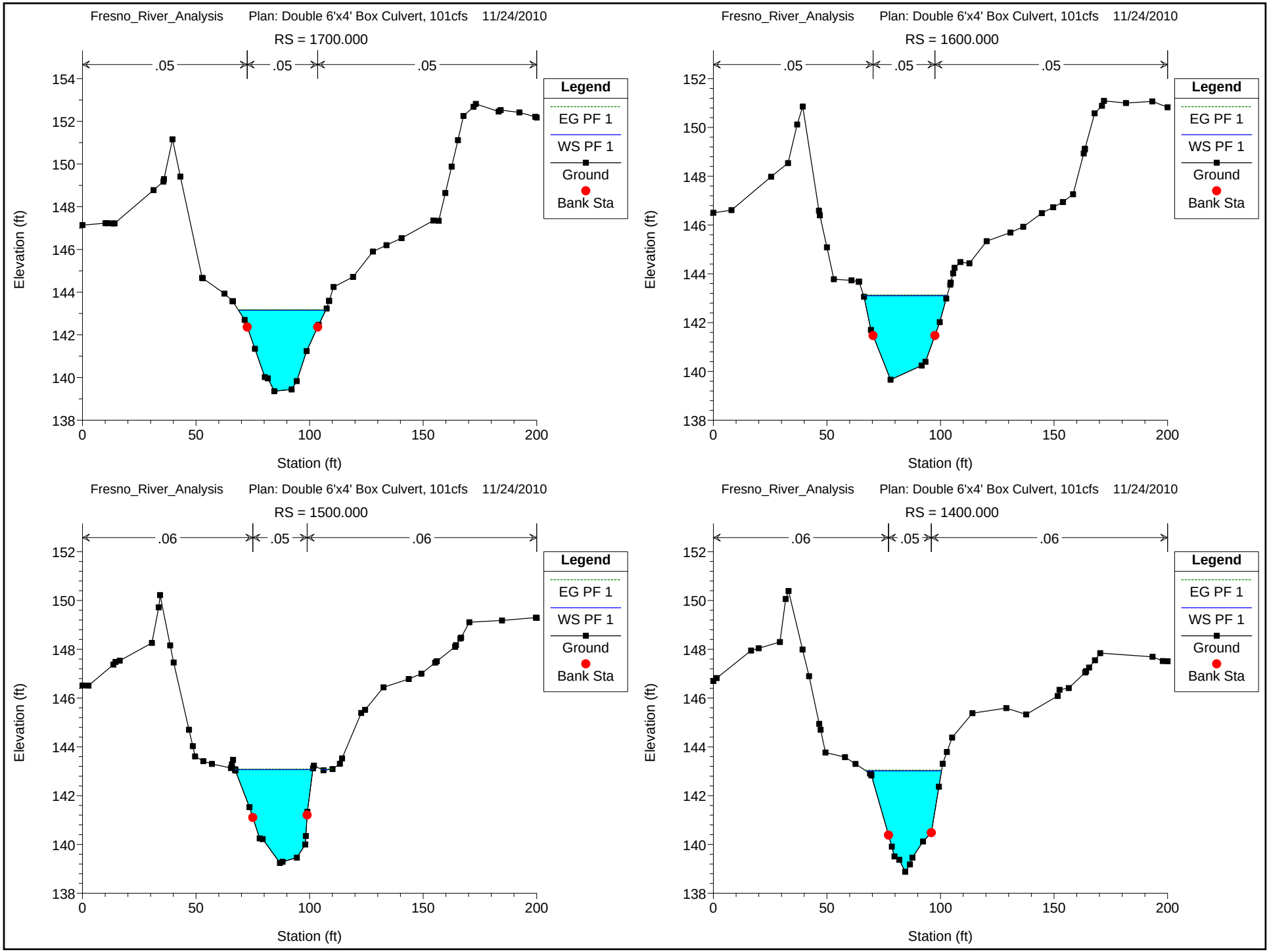
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			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	2500.000	PF 1	74.00	138.49	143.62	5.13		143.62	0.000015	0.31	340.88	181.81	0.03
Reach	2400.000	PF 1	74.00	140.16	143.57	3.41		143.61	0.001311	1.64	45.13	22.54	0.20
Reach	2300.000	PF 1	74.00	139.20	143.55	4.35		143.56	0.000232	0.90	82.49	27.50	0.09
Reach	2200.000	PF 1	74.00	138.07	143.53	5.46		143.54	0.000163	0.82	90.63	25.75	0.08
Reach	2154.737	PF 1	74.00	140.52	143.18	2.66	142.17	143.48	0.013458	4.43	16.69	6.46	0.49
Reach	2140.5		Culvert										
Reach	2036.065	PF 1	74.00	139.67	142.94	3.27		142.96	0.000538	1.19	62.47	27.32	0.14
Reach	2035.965	PF 1	74.00	141.67	142.85	1.18		142.96	0.007132	2.61	28.43	26.91	0.44
Reach	2034.965	PF 1	74.00	139.67	142.91	3.24		142.93	0.000597	1.23	60.47	27.16	0.14
Reach	1900.000	PF 1	74.00	139.44	142.87	3.43		142.88	0.000255	0.80	93.06	42.01	0.09
Reach	1800.000	PF 1	74.00	139.23	142.83	3.60		142.85	0.000312	0.90	81.81	35.18	0.10
Reach	1700.000	PF 1	74.00	139.36	142.79	3.43		142.81	0.000436	1.01	73.48	34.67	0.12
Reach	1600.000	PF 1	74.00	139.66	142.75	3.09		142.77	0.000467	1.03	72.01	34.79	0.13
Reach	1500.000	PF 1	74.00	139.24	142.71	3.47		142.72	0.000363	0.97	76.17	32.28	0.11
Reach	1400.000	PF 1	74.00	138.88	142.66	3.78		142.68	0.000454	1.08	68.72	29.72	0.12
Reach	1300.000	PF 1	74.00	139.49	142.63	3.14		142.64	0.000364	0.92	80.87	38.63	0.11
Reach	1200.000	PF 1	74.00	138.12	142.59	4.47	139.44	142.61	0.000329	1.03	72.02	24.84	0.11
Reach	1190		Culvert										
Reach	1100.000	PF 1	74.00	137.22	142.18	4.96		142.18	0.000064	0.62	130.97	39.00	0.05
Reach	1050.000	PF 1	74.00	137.22	142.17	4.95		142.18	0.000066	0.65	130.82	38.99	0.05
Reach	500	PF 1	74.00	137.22	142.13	4.91		142.14	0.000068	0.66	129.39	38.86	0.05
Reach	0	PF 1	74.00	137.22	142.10	4.88	138.42	142.11	0.000070	0.67	128.06	38.75	0.06

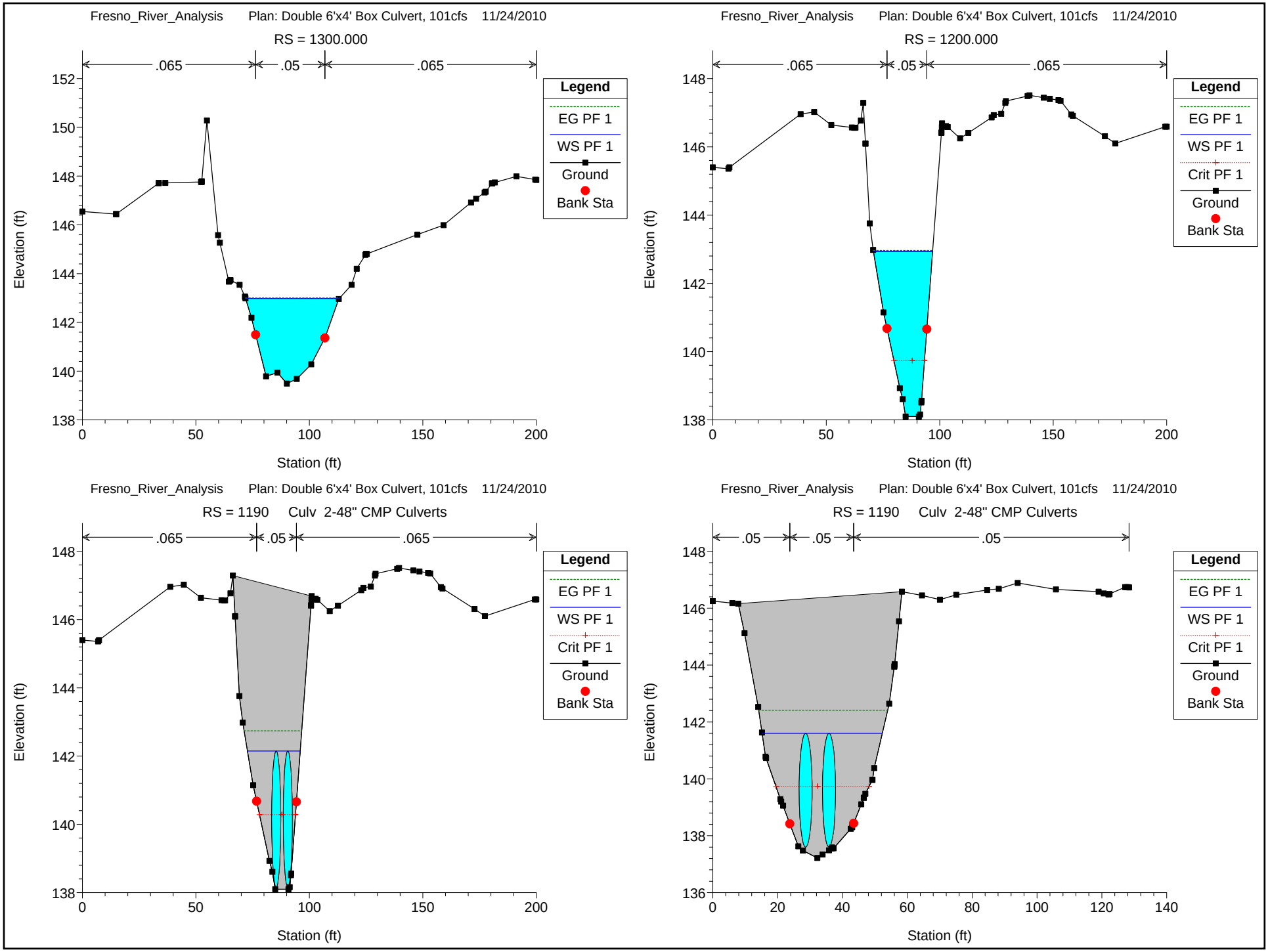

Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
Stream Reach
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Elevation (ft)
150
148
146
144
142
140
138
136
0
500
1000
1500
2000
2500
Station (ft)
2-48" CMP Culvert
Double 6'x4' Box Culvert

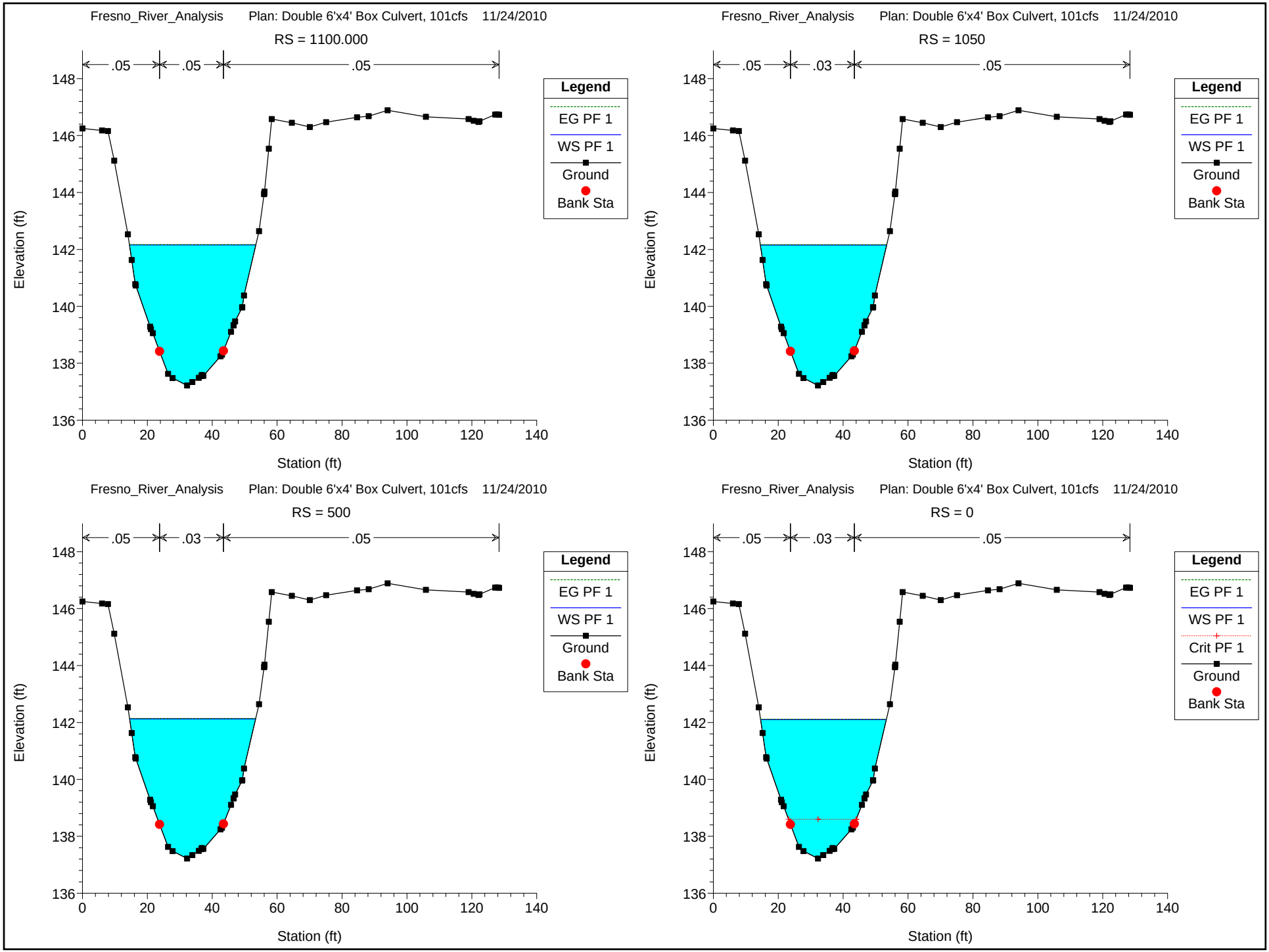

Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2500.000
.055
.05
.055
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2400.000
.055
.05
.055
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2300.000
.055
.05
.055
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2200.000
.06
.05
.06
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2154.737
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2140.5 Culv Double 6'x4' Box Culvert
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2140.5 Culv Double 6'x4' Box Culvert
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2036.065
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2035.965
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 2034.965
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1900.000
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1800.000
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1700.000
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1600.000
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1500.000
.06
.05
.06
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1400.000
.06
.05
.06
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1300.000
.065
.05
.065
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1200.000
.065
.05
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1190 Culv 2-48" CMP Culverts
.065
.05
.065
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1190 Culv 2-48" CMP Culverts
.05
.05
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1100.000
.05
.05
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 1050
.05
.03
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 500
.05
.03
.05
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
Fresno_River_Analysis Plan: Double 6'x4' Box Culvert, 101cfs 11/24/2010
RS = 0
.05
.03
.05
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

HEC-RAS Plan: DblBox101cfs River: Stream Reach: Reach Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Max Chl Dpth	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach	2500.000	PF 1	101.00	138.49	143.63	5.14		143.63	0.000027	0.42	342.85	181.81	0.03
Reach	2400.000	PF 1	101.00	140.16	143.54	3.38		143.62	0.002374	2.29	44.32	22.41	0.28
Reach	2300.000	PF 1	101.00	139.20	143.50	4.30		143.52	0.000385	1.30	81.13	27.35	0.12
Reach	2200.000	PF 1	101.00	138.07	143.47	5.40		143.49	0.000262	1.18	89.09	25.54	0.10
Reach	2154.737	PF 1	101.00	140.50	143.32	2.82	141.76	143.45	0.003390	2.85	35.49	12.57	0.30
Reach	2140.5		Culvert										
Reach	2036.065	PF 1	101.00	139.67	143.26	3.59		143.29	0.000526	1.35	75.94	28.74	0.14
Reach	2035.965	PF 1	101.00	141.65	143.16	1.51		143.28	0.005812	2.81	36.55	28.28	0.42
Reach	2034.965	PF 1	101.00	139.67	143.22	3.55		143.25	0.000551	1.36	74.83	28.57	0.14
Reach	1900.000	PF 1	101.00	139.44	143.23	3.79		143.25	0.000262	0.95	108.85	44.19	0.10
Reach	1800.000	PF 1	101.00	139.23	143.20	3.97		143.22	0.000335	1.08	94.83	36.53	0.11
Reach	1700.000	PF 1	101.00	139.36	143.16	3.80		143.18	0.000442	1.19	86.67	38.49	0.13
Reach	1600.000	PF 1	101.00	139.66	143.11	3.45		143.13	0.000460	1.26	84.85	36.73	0.13
Reach	1500.000	PF 1	101.00	139.24	143.07	3.83		143.09	0.000372	1.23	88.14	37.01	0.12
Reach	1400.000	PF 1	101.00	138.88	143.02	4.14		143.05	0.000486	1.45	79.61	33.22	0.14
Reach	1300.000	PF 1	101.00	139.49	142.98	3.49		143.00	0.000365	1.13	95.05	41.28	0.12
Reach	1200.000	PF 1	101.00	138.10	142.94	4.84	139.74	142.96	0.000367	1.37	80.44	26.09	0.12
Reach	1190		Culvert										
Reach	1100.000	PF 1	101.00	137.22	142.16	4.94		142.17	0.000123	0.89	130.47	38.96	0.07
Reach	1050	PF 1	101.00	137.22	142.16	4.94		142.17	0.000053	0.98	130.20	38.93	0.08
Reach	500	PF 1	101.00	137.22	142.13	4.91		142.14	0.000055	0.99	129.14	38.84	0.08
Reach	0	PF 1	101.00	137.22	142.10	4.88	138.60	142.11	0.000056	0.99	128.06	38.75	0.08

State of California **California Natural Resources Agency**

M e m o r a n d u m

Date: December 3, 2010

To: Jeanne Kuttel, Chief
Geotechnical and Structures Branch

From: Joe Royer, Chief
Dams and Canals Section
Geotechnical and Structures Branch
Division of Engineering
Department of Water Resources

Subject: Cost Estimate Based on Alternatives from the Fresno River Diversion Structure Hydraulic Analysis Report

This memorandum presents the Division of Engineering's (DOE) cost estimates prepared by the Cost Estimating unit in the Planning and Scheduling Section of the Construction Office. These cost estimates should be used in conjunction with the Fresno River Diversion Structure Hydraulic Analysis Report (Report) dated December 2010.

Costs

The table below provides a summary of the preliminary cost estimates associated with each alternative presented in the Report. The itemized cost estimates are attached.

Alt	Description	Cost Estimate
B	Raise Drop Structure	$ 51,200
C	Increase Capacity of Box Culvert	$ 584,000
D	Increase Capacity of CMP Culverts	$ 288,200
E	Increase Capacity of Box Culvert and CMP Culverts	$ 872,200
F	Increase Capacity of Box Culvert and Raise Drop Structure	$ 635,200

Discussion

- Alternative B – The drop structure is raised by means of installing flashboards at the crest as reflected in the quantities of the detailed cost estimate attached. It should be noted that although Alternative B is the least costly alternative, DOE did not examine the upstream hydraulic effects of this remediation nor any other more robust remediation.

- Alternative C – Increasing the capacity of the box culvert was selected as the preferred alternative based on DOE's hydraulic analysis results. This alternative includes replacing the existing box culvert with a double 6-foot wide by 4-foot tall concrete box culvert.

- Alternative D – As discussed in the Report, this alternative alone would not provide a significant increase in the maximum flows through the system. Increasing the capacity of the CMP culverts by replacing the two existing 48-inch CMP culverts with two 60-inch concrete pipes would only increase the flows through the channel if coupled with Alternative C, as described below.

- Alternative E – This alternative combines the remediation of Alternatives C and D. Based on the hydraulic analysis and existing conditions, the box culvert is the limiting factor in the system. However, once the capacity of the box culvert is increased, the CMP culverts become the limiting factor in the system. Thus, the combination of increasing the capacity of both the box culvert and the CMP culverts would provide higher flows through the channel. The success of this alternative as presented in the Report also relies on the ability of the water to be flow downstream away from the new concrete pipe culverts at an adequate rate.

- Alternative F – This alternative combines the remediation of Alternatives B and C. Based on the hydraulic analysis, Alternative B alone would provide adequate flows through the channel. However, to increase the maximum flows by a larger amount, flashboards can also be installed to raise the available head at the drop structure.

Future Studies

The preferred alternative presented here is based on the conclusion of the hydraulic analysis presented in the Report. The cost estimates provided here are to be considered preliminary costs from DOE's Cost Estimating unit. DOE is willing to perform further studies to provide a recommendation for a preferred alternative based on constructability and cost.

California Department Of Water Resources

Division Of Engineering
Cost Estimating Section
Sacramento, CA 95814

Alternative B - Raise Drop Structure via Flashboards

Item Price Summary Report

Project Name:	Flashboards	**Customer:**	DOE
Job Number:		**Billing Address:**	Sacramento
Bid As:			
Estimator:	Ted Kress	**Phone:**	916-651-9831
Project Address:		**Contact:**	Christina Kashiwada
Completion Date:			

Pay Items

Description	Job Cost ID	Bid Quantity	UM	Unit Bid Price	Total Bid Price
1 - Installation		1.00	LS	$33,900.00	$33,900.00
2 - Flashboards		40.00	EACH	$163.00	$6,520.00
3 - Wide Flange Steel Beams, W8x21		41.00	EACH	$130.00	$5,330.00
4 - Concrete Footings		2.00	CY	$375.00	$750.00
Pay Items Total:					$46,500.00

Contingency +/- 10% $ 4,700

Total $51,200

California Department Of Water Resources

Division Of Engineering
Cost Estimating Section
Sacramento, CA 95814

Alternative C - Increase Capacity of Box Culvert by replacing the existing box culvert with a Double 6-foot wide by 4-foot high Concrete Box Culvert

Item Price Summary Report

Project Name:	Double 4'x6' Concrete Box Culvert	**Customer:**	DOE
Job Number:		**Billing Address:**	Sacramento
Bid As:			
Estimator:	Ted Kress	**Phone:**	916-651-9831
Project Address:		**Contact:**	Christina Kashiwada
Completion Date:			

Pay Items

Description	Job Cost ID	Bid Quantity	UM	Unit Bid Price	Total Bid Price
1 - Mobilization & Demobilization		1.00	LS	$14,300.00	$14,300.00
2 - Demolition		1.00	LS	$12,100.00	$12,100.00
3 - Excavation		3,680.00	CY	$24.00	$88,320.00
4 - Backfill		3,530.00	CY	$31.00	$109,430.00
5 - Concrete		125.00	CY	$820.00	$102,500.00
6 - Reinforcing Steel		16,200.00	LB	$1.20	$19,440.00
7 - Cast Iron 6'W x 4'H Sluice Gates		2.00	EACH	$38,500.00	$77,000.00
8 - Aggregate Base		490.00	TON	$47.00	$23,030.00
9 - Rip Rap		190.00	TON	$76.00	$14,440.00
10 - Seeding		0.20	ACRE	$5,000.00	$1,000.00
11 - Remove and Reuse Gage and Electrical Wiring		1.00	LS	$5,640.00	$5,640.00
Pay Items Total:					$467,200.00

Contingency +/- 25%	$166,800

Total	$584,000

California Department Of Water Resources

Division Of Engineering
Cost Estimating Section
Sacramento, CA 95814

Alternative D - Increase Capacity of CMP Culverts by replacing the two existing 48-inch CMPs with two 60-inch concrete pipes

Item Price Summary Report

Project Name:	Enlarge CMP Culverts	**Customer:**	DOE
Job Number:		**Billing Address:**	Sacramento
Bid As:			
Estimator:	Ted Kress	**Phone:**	916-653-8646
Project Address:		**Contact:**	Christina Kashiwada
Completion Date:			

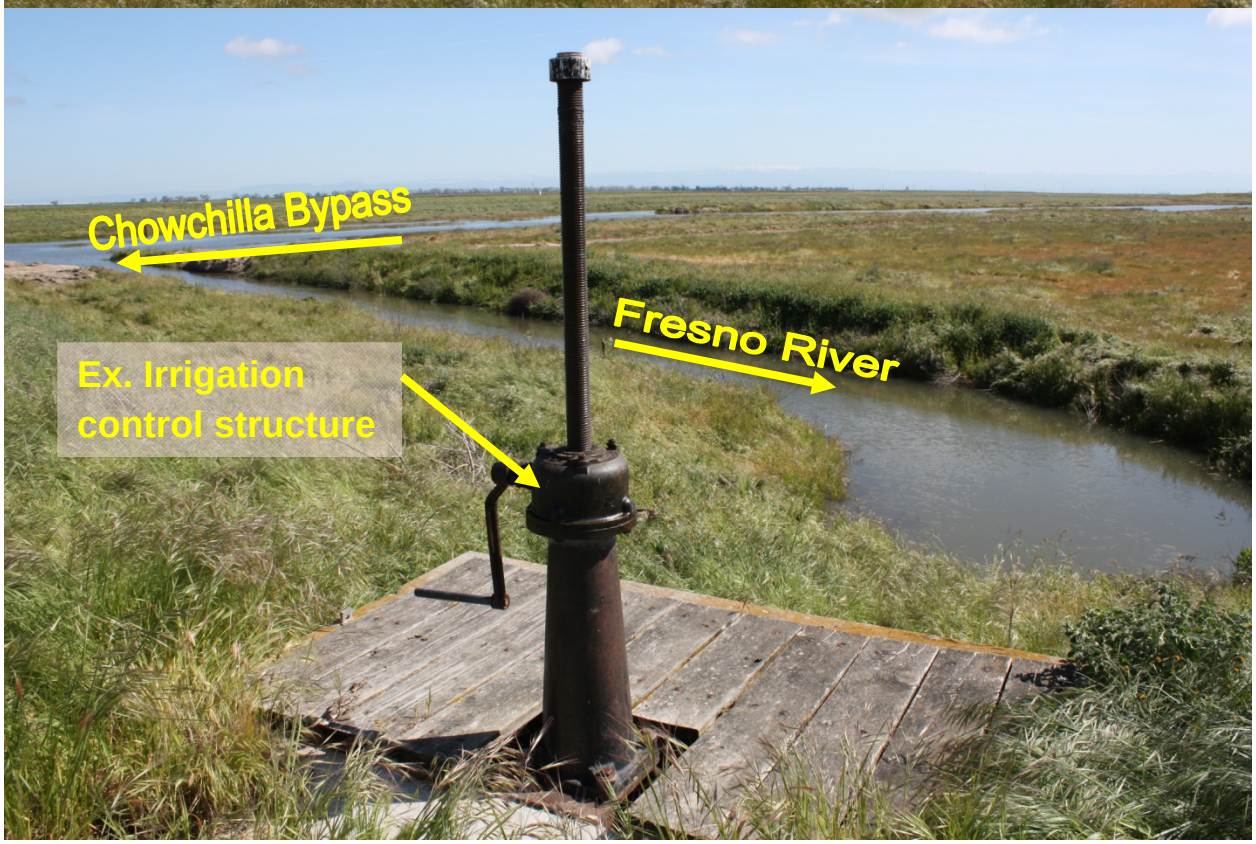
Pay Items

Description	Job Cost ID	Bid Quantity	UM	Unit Bid Price	Total Bid Price
1 - Mobilization & Demobilization		1.00	LS	$17,700.00	$17,700.00
2 - Demolition (existing 48" CMP culvers)		1.00	LS	$4,870.00	$4,870.00
3 - Excavation		1,740.00	CY	$24.00	$41,760.00
4 - Backfill		1,710.00	CY	$31.00	$53,010.00
5 - Furnish and Install 60" concrete pipe		160.00	LF	$440.00	$70,400.00
6 - Aggregate Base		130.00	TON	$53.00	$6,890.00
7 - Rip Rap		90.00	TON	$85.00	$7,650.00
8 - Seeding		0.10	ACRE	$10,000.00	$1,000.00
9 - Roadway Surface		70.00	LF	$390.00	$27,300.00
Pay Items Total:					$230,580.00

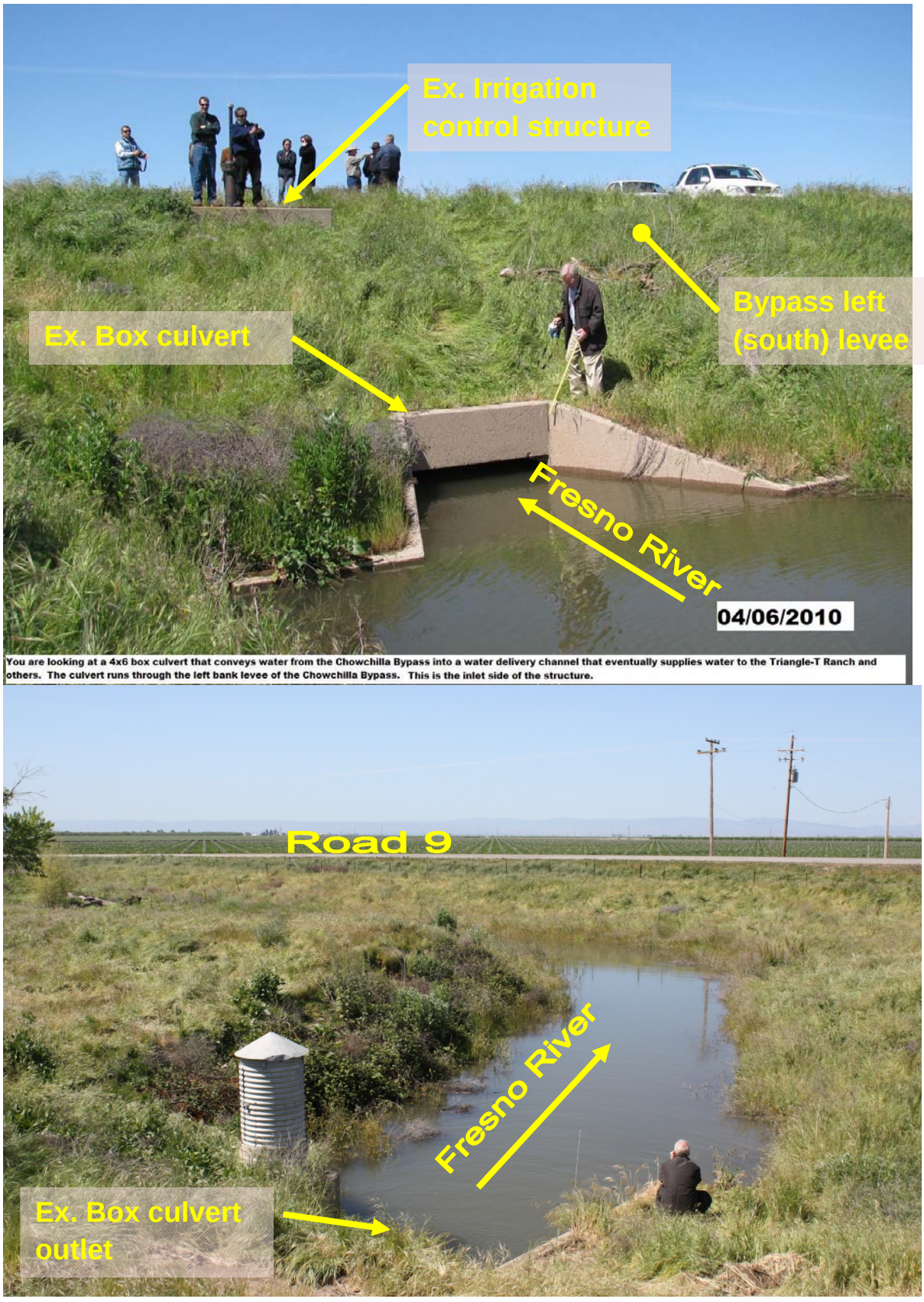
Contingency +/- 25%	$ 57,620

Total	$288,200

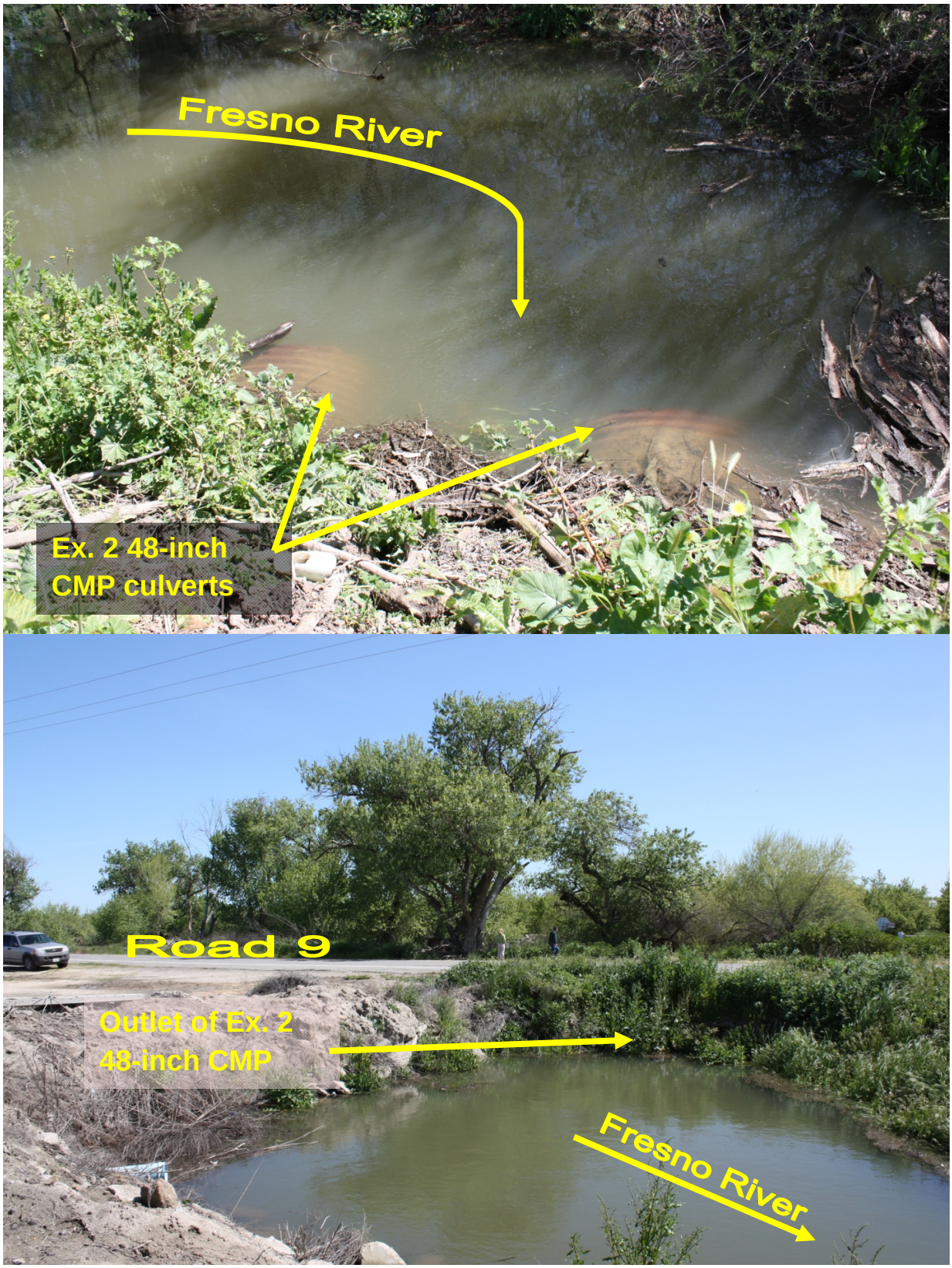




Source: Board staff site visit on April 6, 2009



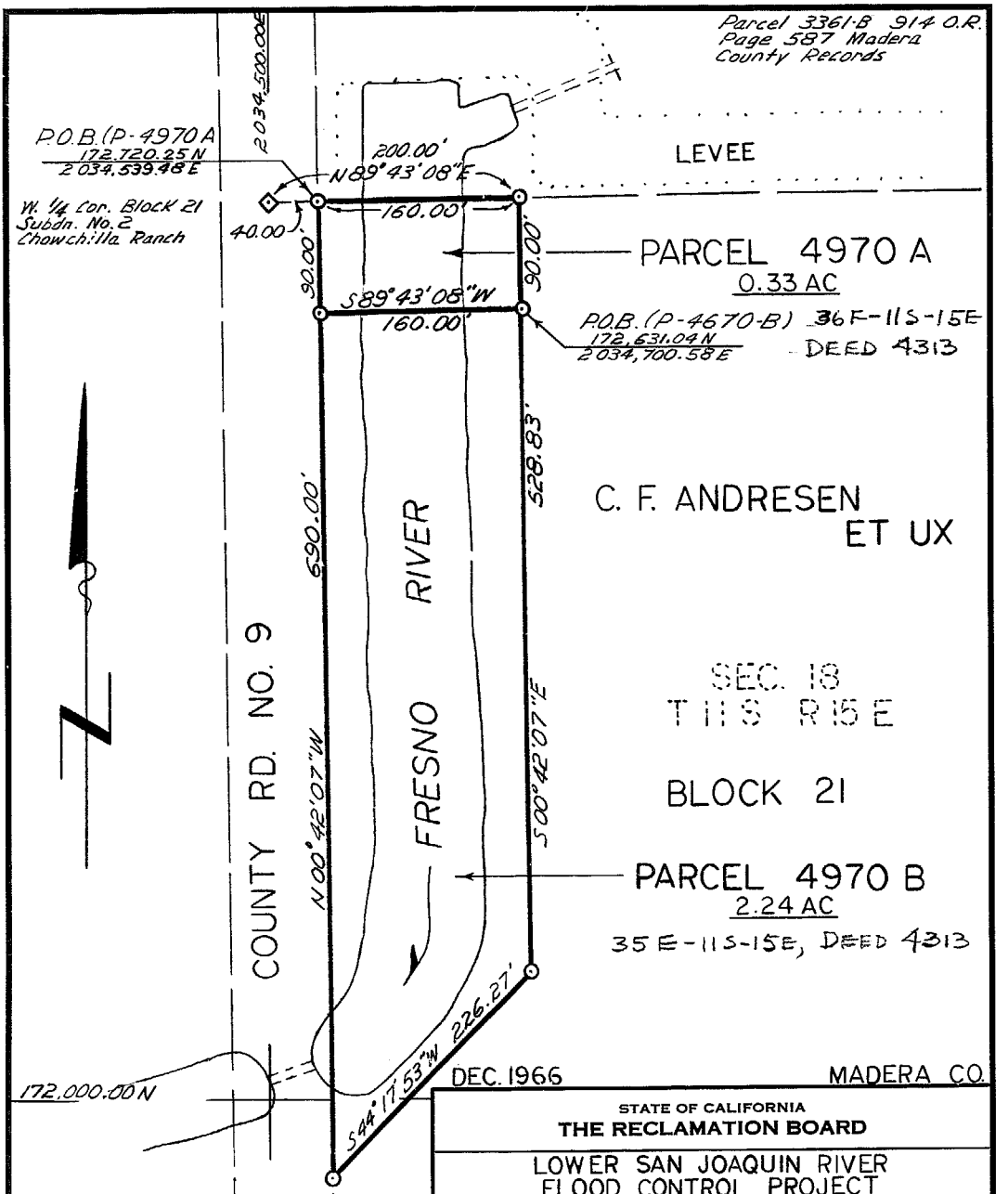
Source: Board staff site visit on April 6, 2009



Source: Board staff site visit on April 6, 2009

61932-C 3-62 500 SPO

ATTACHMENT D



STATE OF CALIFORNIA
THE RECLAMATION BOARD

LOWER SAN JOAQUIN RIVER
FLOOD CONTROL PROJECT
UNIT NO. 5

C. F. ANDRESEN ET UX

REVISION	DATE	DESCRIPTION	BY	APP'D

COMP. BK. 63 L	FIELD BK.	C. OF E. FILE	SCALE 1" = 100'

PREPARED: Paul R. Scott
PAUL R. SCOTT
ASST CIVIL ENGR

SUBMITTED: R.E. 8494
O.C. Walters
P.C. WALTERS SR. CIVIL ENGR.

RECOMMENDED:

APPROVED: R.E. 6797
Howard S. Hitchcock
HOWARD S. HITCHCOCK
ASST CHIEF ENGR.

TR. 3-2566

MAP

SHEET 1 OF 1

ATTACHMENT D, EXHIBIT A

RECORDING REQUESTED BY

WHEN RECORDED MAIL TO

THE RECLAMATION BOARD
Resources Building
9th & O Streets
Sacramento, California 95814

RECORDED BY SECURITY TITLE INS. CO. AT 2:30 P.M.
ON MAY 31 1972 BOOK 1126 PAGE 169
OFFICIAL RECORDS OF MADERA COUNTY, CALIFORNIA
EVELYN C. BRANSTETTER, COUNTY CLERK RECORDER
N. Van Auren DEPUTY
NO FEE

Space above this line for Recorder's use

Parcel No. 4970-A

File No. 5202.38.302

GRANT DEED

(Individual)

C. F. ANDRESEN and WINIFRED C. ANDRESEN, husband and wife

_____, hereinafter referred to as Grantor, grants to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, all that real property in the County of Madera, State of California, more particularly described as follows:

PARCEL 4970-A:

A portion of Section 18, Township 11 South, Range 15 East, M.D.M., and being also portions of Block 21 in Subdivision No. 2 of the Chowchilla Ranch, according to the map entitled "Map of Subdivision No. 2 of the Chowchilla Ranch", recorded October 10, 1912, in Volume 3 of Maps, at page 9, Official Records of Madera County, being more particularly described as follows:

Beginning at the intersection of the East right of way line of that certain county road known as County Road No. 9 with

DOCUMENTARY TRANSFER TAX $ 0
COMPUTED ON FULL VALUE CONVEYED.
OR COMPUTED ON FULL VALUE LESS LIENS AND ENCUMBRANCES REMAINING AT TIME OF SALE.
Brenda Kellen for SECURITY TITLE INS. CO.
Signature of Declarant or Agent determining tax. Firm Name

Form SRB-518
Revised 1-65

BOOK 1126 PAGE 169

36 F-11S-15E

the southerly boundary of that certain 154.05 acre parcel designated Parcel 3361B as described by deed from Hill and Howe, a partnership, to the Sacramento and San Joaquin Drainage District, recorded September 28, 1964 in Book 914, page 587, Official Records of Madera County, California, said point being located North 89° 43' 08" East 40.00 feet from the West one-quarter of said Block 21, said West one-quarter corner having Coordinates Y=172,720.05 and X=2,034,499.48; THENCE FROM SAID POINT OF BEGINNING, along said southerly boundary, North 89° 43' 08" East 160.00 feet; thence leaving said southerly boundary, South 00° 42' 07" East 90.00 feet; thence South 89° 43' 08" West 160.00 feet to a point in said East right of way line of County Road No. 9; thence, along said East right of way line, North 00° 42' 07" West 90.00 feet to the point of beginning, containing 0.33 of an acre, more or less.

Coordinates, bearings and distances in the above description are based on the California Coordinate System, Zone III.

Excepting therefrom all oil, oil rights, minerals, mineral rights, natural gas, natural gas rights, and other hydrocarbons by whatsoever name known that may be within or under the parcel of land hereinabove described, together with the perpetual right of drilling, mining, exploring and operating therefor and removing the same from said land or any other land, including the right to whipstock or directionally drill and mine from lands other than those hereinabove described, oil or gas wells, tunnels and shafts into, through or across the subsurface of the land hereinabove described and to bottom such whipstocked or directionally drilled wells, tunnels and shafts under and beneath or beyond the exterior limits thereof, and to redrill, retunnel, equip, maintain, repair, deepen and operate any such wells or mines, without, however, the right to drill, mine, explore and operate through the surface or the upper 100 feet of the subsurface of the land hereinabove described or otherwise in such manner as to endanger the safety of any levee or other improvements that may be constructed on said lands.

The grantor, for himself, his successors and assigns hereby waives any claims for any and all damages to the grantors remaining property resulting from the severance of the hereby conveyed real property from grantor's remaining property.

Executed on: Feb. 3 1967

Signed and delivered in the presence of:

x C. J. Andresen

x Winifred C. Andresen

GRANTOR(S)

STATE OF CALIFORNIA } ss.
COUNTY OF .....

On ....., 19..... before me, the undersigned, a Notary Public in and for the State of California, personally appeared .....

known to me to be the person.... whose name.... subscribed to the within instrument and acknowledged that.....executed the same.

WITNESS my hand and official seal.

(Seal) .....

Name (Typed or Printed)
Notary Public in and for the State of California

SUBSCRIBING WITNESS

STATE OF CALIFORNIA } ss.
COUNTY OF Sacramento

On February 9, 1967 before me, the undersigned, a Notary Public in and for the State of California, personally appeared Dee M. Wade, known to me to be the person whose name is subscribed to the within instrument as a witness thereto, who, being by me duly sworn, deposed and said: that he resides in the County of Sacramento, State of California; that he was present and saw C. J. Andresen and Winifred C. Andresen, personally known to him to be the person described in and whose name is subscribed to the within instrument, execute the same; and that affiant subscribed his name thereto as a witness to said execution.

WITNESS my hand and official seal.

..... (Seal)

Mary K. Hicks

Name (Typed or Printed)
Notary Public in and for the State of California

MARY K. HICKS
NOTARY PUBLIC — CALIFORNIA
PRINCIPAL OFFICE IN
SACRAMENTO COUNTY

Form SRB-513

CERTIFICATE OF ACCEPTANCE, GOVERNMENT CODE, SECTION 27281

This Is To Certify, That the real property or interests therein described in the within deed to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, is hereby accepted by the undersigned officer on behalf of the grantee pursuant to authority conferred by resolution of said grantee adopted on December 6, 1962, and the grantee consents to the recordation by its duly authorized officer.

DATED: October 23, 1970.

A. P. McCollam
General Manager
THE RECLAMATION BOARD

Form SRB-518
Revised 1-65

END OF DOCUMENT

7641

RECORDING REQUESTED BY

RECORDED BY SECURITY TITLE INS. CO. AT 2:30 P.M.
ON MAY 31 1972 BOOK 1126 PAGE 174
OFFICIAL RECORDS OF MADERA COUNTY, CALIFORNIA
EVELYN C. BRANSTETTER, COUNTY CLERK RECORDER
NO FEE W. Van Curen DEPUTY

WHEN RECORDED MAIL TO

The Reclamation Board
Resources Building
9th & O Streets
Sacramento, California 95814

Space above this line for Recorder's use

Parcel No. 4970-B

EASEMENT DEED

File No. 5202.38.302

C. F. ANDRESEN and WINIFRED C. ANDRESEN, husband and wife

_____, hereinafter referred to as Grantor, grants to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, hereinafter called Grantee, the following perpetual rights of way and easements in the hereinafter described real property situated in the County of Madera, State of California:

(a) To clear, construct, reconstruct, enlarge, repair fence, operate, and maintain levees, by-passes, and other flood control works on the hereinafter described real property. Said flood control works shall include, but not be limited to, all embankments, ditches, channels, berms, fences and appurtenant structures;

(b) To locate or relocate, at the discretion of the grantee, public facilities, and to grant to others the right to locate or relocate facilities dedicated to a public use;

DOCUMENTARY TRANSFER TAX $ 0
COMPUTED ON ... PROPERTY CONVEYED;
OR ...
ENCUMB... SALE.
Brenda Reeves for SECURITY TITLE INS. CO.
Signature of Declarant or Agent determining tax. Firm Name

Form SRB-509
Revised 1-65

(c) To construct, reconstruct, repair, operate, maintain, fence and use access, haul and patrol roads;

(d) To waste or spoil material as may be found necessary in the present or future construction, reconstruction, repair, operation or maintenance of the aforesaid works and any appurtenances thereto;

(e) To excavate and remove material therefrom for the present or future construction, reconstruction, repair or maintenance of the aforesaid works and any appurtenances thereto;

(f) To flow over, upon and across, or to deposit, without recourse by grantors for compensation for damages therefrom, any and all waters and materials which may, as a result of any present or future flood control project in the State of California, from time to time inundate, cover or be carried upon the said real property;

(g) To clear and remove from said property, any and all trees and any and all other vegetation and other natural or artificial obstruction, which The Reclamation Board, its successors or agents, may find necessary to clear or remove;

(h) To otherwise utilize the described property as may be found necessary for the construction, reconstruction, operation, repair or maintenance of the works referred to above, including but not limited to the promotion of the growth of sod and such vegetation as the grantee, its agents or assigns may deem necessary for the operation and maintenance of said works;

Said rights shall include, but not be limited to, the right to operate and maintain the flood control project of which said real property is a part, in conformity with the regulations of the Secretary of the Army, as prescribed in Section 208.10, Title 33, Code of Federal Regulations, the Corps of Engineers Standard Operation and Maintenance Manuals for the project, and State of California standards.

PARCEL 4970-B

A portion of Section 18, Township 11 South, Range 15 East, M.D.M., and being also portions of Block 21 in Subdivision No. 2 of the Chowchilla Ranch, according to the map entitled "Map of Subdivision No. 2 of the Chowchilla Ranch", recorded October 10, 1912, in Volume 3 of Maps, at page 9, Official Records of Madera County, being more particularly described as follows:

Beginning at the northeasterly corner of the herein-described parcel, said point being located North 89° 43' 08" East 200.00 feet; thence South 00° 42' 07" East 90.00 feet from the West ¼ corner of said Block 21; THENCE FROM SAID POINT OF BEGINNING South 00° 42' 07" East 528.83 feet; thence South 44° 17' 53" West 226.27 feet to a point in the East right of way line of County Road No. 9; thence, along said East right of way line, North 00° 42' 07" West 690.00 feet; thence, leaving said East right of way line, North 89° 43' 08" East 160.00 feet to the point of beginning, containing 2.24 acres, more or less.

Coordinates, bearings and distances in the above description are based on the California Coordinate System, Zone III.

The grantor, for himself, his successors and assigns hereby waives any claims for any and all damages to the grantors remaining property resulting from the severance of the hereby conveyed real property from grantor's remaining property.

Executed on: Feb 3 1967

Signed and delivered in the presence of:

Goodwin

× C. F. Andresen

× Winifred C. Andresen

GRANTOR(S)

STATE OF CALIFORNIA }
COUNTY OF ..... } ss.

On ....., 19..... before me, the undersigned, a Notary Public in and for the State of California, personally appeared .....

known to me to be the person ... whose name ... subscribed to the within instrument and acknowledged that ... executed the same.

WITNESS my hand and official seal.

(Seal) .....

.....
Name (Typed or Printed)
Notary Public in and for the State of California

SUBSCRIBING WITNESS

STATE OF CALIFORNIA }
COUNTY OF Sacramento } ss.

On February 9, 1967 before me, the undersigned, a Notary Public in and for the State of California, personally appeared Geo. W. Hicks, known to me to be the person whose name is subscribed to the within instrument as a witness thereto, who, being by me duly sworn, deposed and said: that he resides in the County of Sacramento, State of California; that he was present and saw C. F. Andresen and Winifred C. Andresen .....,

personally known to him to be the person ~~s~~ described in and whose name ~~s~~ are subscribed to the within instrument, execute the same; and that affiant subscribed his name thereto as a witness to said execution.

WITNESS my hand and official seal.

..... (Seal)

Mary K. Hicks
Name (Typed or Printed)
Notary Public in and for the State of California

MARY K. HICKS
NOTARY PUBLIC — CALIFORNIA
PRINCIPAL OFFICE IN
SACRAMENTO COUNTY

CERTIFICATE OF ACCEPTANCE, GOVERNMENT CODE, SECTION 27281

This Is To Certify, That the real property or interests therein described in the within deed to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, is hereby accepted by the undersigned officer on behalf of the grantee pursuant to authority conferred by resolution of said grantee adopted on December 6, 1962, and the grantee consents to the recordation by its duly authorized officer.

DATED: October 23, 1970.

A E m Collam
General Manager
THE RECLAMATION BOARD

Form SRB-518
Revised 1-65

END OF DOCUMENT

RNH:clt 7/1/64

RECORDING REQUESTED BY

WHEN RECORDED MAIL TO
THE RECLAMATION BOARD
1215 "O" Street
Sacramento 14, California

12541 Book 914 Page 587

RECORDED BY SECURITY TITLE INSURANCE COMPANY
AT 4:33 P.M.
ON SEP 28 1964 IN Book 914 Page 587
OFFICIAL RECORDS OF MADERA COUNTY, CALIFORNIA
ERMA E. CREEVRONT, RECORDER

NO FEE

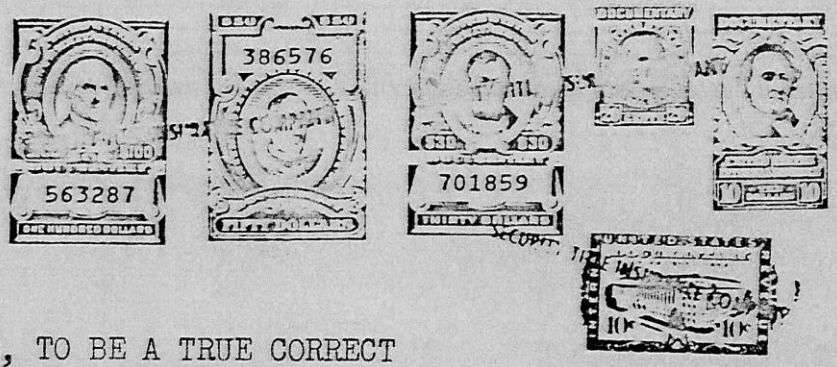
Space above this line for Recorder's use

Project: San Joaquin River from Ave. 12 to the San Joaquin River - 5202.38.302 to 38.303

GRANT DEED
(Partnership)

SRB DEED NO 3727
Parcel No. 3361 and 3217

HILL and HOWE, a partnership organized and existing under and by virtue of the laws of the State of California, does hereby grant to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, hereinafter called Grantee, all that real property in the County of Madera. State of California, described as:



CERTIFIED, TO BE A TRUE CORRECT
COPY OF THE ORIGINAL.

SECURITY TITLE INSURANCE COMPANY

By: ANDREW MORGAN
Escrow Officer

SEP 28 1964
No. 12541

ATTACHMENT D, EXHIBIT C

Those portions of Sections Seven (7), Eighteen (18), Twenty (20), Twenty-Eight (28), Twenty-Nine (29) and Thirty-Three (33), Township Eleven (11) South, Range Fifteen (15) East, M.D.M., being also a portion of Blocks Eight (8), Twenty-One (21), Twenty-Three (23), Twenty-Five (25), Twenty-Six (26) and Thirty (30) in Subdivision No. 2 of the Chowchilla Ranch, according to the Map entitled, "Map of Subdivision No. 2 of the Chowchilla Ranch", recorded October 10, 1912, in Volume 3 of Maps, at page 9, Official Records of Madera County, described as follows:

PARCEL 3361A:

BEGINNING at the Northwest corner of said Block 8, said point of beginning having Coordinates Y=1 0,044.09 and X=2,034,403.78; THENCE along the North line of said Block 8, North 89° 48' 45" East 2,700.09 feet to a point on the Westerly line of the Chowchilla Canal; thence along said Westerly line South 15° 49' 15" East 234.39 feet to a 3/4-inch iron pipe with brass plug marked C5-34; thence leaving said line South 89° 48' 45" West 2,662.87 feet to a 3/4-inch iron pipe with brass plug marked C5-32; thence South 00° 11' 15" East 6.00 feet to a 3/4-inch iron pipe with brass plug marked C5-30; thence South 89° 48' 45" West 95.00 feet; thence South 00° 37' 40" West 199.00 feet to a 3/4-inch iron pipe with brass plug marked C5-28, said pipe being on the East right-of-way line of County Road No. 9; thence South 89° 13' 47" West 40.00 feet to the centerline of said road; thence along said centerline North 00° 41' 13" West 437.54 feet to the point of beginning.

Containing an area of 14.93 acres, more or less, of which 0.40 of an acre lies in County Road No. 9.

PARCEL 3361B:

BEGINNING at the West one-quarter corner of said Block 21, said point of beginning having Coordinates Y=172,720.05 and X=2,034,499.46; THENCE FROM SAID POINT OF BEGINNING and along the West line of said Block, North 00° 42' 07" West 929.00 feet to a 3/4-inch iron pipe with brass plug marked C5-39; thence leaving said West line North 70° 14' 30" East 1,058.93 feet to a 3/4-inch iron pipe with brass plug marked C5-39A; thence along a curve to the right having a radius of 1,955.00 feet, through a central angle of 19° 28' 38", an arc distance of 521.81 feet to a 3/4-inch iron pipe with brass plug marked C5-39B; thence North 89° 43' 08" East 2,035.97 feet to a 3/4-inch iron pipe with brass plug marked C5-43, said pipe being on the Westerly right-of-way line of the Chowchilla Canal; thence along said Westerly line South 31° 30' 53" East 1,031.32 feet; thence continuing along said Westerly line, South 45° 15' 13" East 974.00 feet to a 3/4-inch iron pipe with brass plug marked C5-52, said pipe being on the East and West centerline of said Block; thence leaving said Westerly line, and along said centerline, South 89° 43' 08" West 5,329.60 feet to the point of beginning.

Containing an area of 154.05 acres, more or less, of which 0.05 of an acre lies in County Road.

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PARCEL 3361C:

BEGINNING at the 3/4-inch iron pipe with brass plug marked C5-28, as described in Parcel 3361A above, said point of beginning having Coordinates Y=180,207.86 and X=2,034,449.02; THENCE FROM SAID POINT OF BEGINNING, and along the East right-of-way line of County Road No. 9, South 00° 41' 13" East 310.00 feet; thence leaving said right-of-way line South 89° 18' 47" West 40.00 feet to a point on the centerline of County Road No. 9; thence along said centerline North 00° 41' 13" West 310.00 feet to a point on the South line of said Parcel 3361A; thence leaving said centerline, and along said South line, North 89° 18' 47' East 40.00 feet to the point of beginning.

53F-11S-15E

Containing an area of 0.29 of an acre, more or less, all in County Road No. 9.

PARCEL 3361D:

BEGINNING at the 3/4-inch iron pipe with brass plug marked C5-39, as described in Parcel 3361B above, said point of beginning having Coordinates Y=173,648.90 and X=2,034,466.10; THENCE FROM SAID POINT OF BEGINNING, and along the West line of said Block 21, being also the centerline of County Road No. 9, North 00° 42' 07" West 700.00 feet; thence leaving said West line North 89° 17' 53" East 40.00 feet to a point on the East right-of-way line of said County Road; thence along said right-of-way, South 00° 42' 07" East 656.16 feet to a point on the North line of said Parcel 3361B, said point being designated "C"; thence leaving said right-of-way line, and along said North line, South 70° 14' 30" West 42.32 feet to the point of beginning.

44F-11S-15E

Containing an area of 0.64 of an acre, more or less, all in County Road No. 9.

PARCEL 3361E:

BEGINNING at the West quarter ($W\frac{1}{4}$) corner of said Block 21, as described in Parcel 3361B above, said point of beginning having Coordinates Y=172,720.05 and X=2,034,499.48; THENCE FROM SAID POINT OF BEGINNING and along the South line of said Parcel 3361B, North 89° 43' 06" East 40.00 feet to the East right-of-way line of County Road No. 9; thence leaving said South line, and along said right-of-way line, South 00° 42' 07" East 609.71 feet; thence leaving said right-of-way line South 89° 17' 53" West 40.00 feet to the West line of said Block 21, being also the centerline of said County Road; thence along said West line North 00° 42' 07" West 610.00 feet to the point of beginning.

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Containing an area of 0.56 of an acre, more or less, all in County Road No. 9.

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PARCEL 3361EE:

WELL NO. 15: A well, including the surface area, lying in the center of a 15 foot radius circle and said circle being within the northeast quarter of Block 21 of Chowchilla Ranch Subdivision No. 2, the said subdivision being shown and designated by a map recorded in Volume 3 of Maps, at page 9, Records of Madera County, California, the center of the said circle bearing South 89° 56' West 1030 feet, South 32° 53' West 740 feet, South 8° 29' East 180 feet, South 31° 11' East 730 feet, South 33° 03' East 635 feet, South 45° 27' East 115 feet and South 46° 33' West 20 feet from the Northeast corner of the said Block 21; and a right of way for a pipe line, extending from the circumference of the said circle to the westerly right of way line of the Chowchilla Canal, the said right of way lying 10 feet on each side of the following described line, beginning at the center of the said circle, thence South 46° 33' West to the said right of way line.

44F-11S-15E

PARCEL 3217:

BEGINNING at the South 1/4 corner of said Block 30, said corner having Coordinates Y=154,298.42 and X=2,046,053.69; THENCE FROM SAID POINT OF BEGINNING, and along the South line of said Block, South 89° 45' 56" West 713.41 feet to the Easterly right-of-way line of Chowchilla Canal; thence leaving said South line, and along said Easterly line, North 16° 29' 37" West 5600.79 feet; thence North 16° 59' 13" West 2601.49 feet; thence North 26° 30' 47" West 7,444.20 feet; thence North 06° 32' 28" East 1,293.90 feet to a point on the North line of said Block 23; thence leaving said Easterly line, and along said North line, North 89° 33' 03" East 782.39 feet to the North 1/4 corner of said Block 23; thence continuing North 89° 33' 03" East 73.98 feet to a 3/4-inch iron pipe with brass plug marked C7-9; thence leaving said North line South 06° 32' 28" West 1,042.05 feet to a 3/4-inch iron pipe with brass plug marked C7-11; thence along a curve to the left having a radius of 350.00 feet, through a central angle of 33° 03' 15", an arc distance of 201.92 feet to a 3/4-inch iron pipe with brass plug marked C7-13; thence South 26° 30' 47" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-15; thence continuing South 26° 30' 47" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-17; thence continuing South 26° 30' 47" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-19; thence continuing South 26° 30' 47" East 1,158.95 feet to a 3/4-inch iron pipe with brass plug marked C7-21; thence South 16° 59' 13" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-23; thence continuing South 16° 59' 13" East 675.97 feet to a 3/4-inch iron pipe with brass plug marked C7-25; thence South 16° 29' 37" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-27; thence continuing South 16° 29' 37" East 2,000.00 feet to a 3/4-inch iron pipe with brass plug marked C7-29; thence continuing South 16° 29' 37" East 1,004.96 feet to a 3/4-inch iron pipe with brass plug marked C7-31; thence South 16° 28' 33" East 247.77 feet to a 3/4-inch iron pipe with brass plug marked C7-33,

25F-11S-15E

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No. 12541

said pipe being located on the South line of said Block 30; thence South 89° 43' 07" West 171.94 feet along said line to the point of beginning.

Containing an area of 330.58 acres, more or less, of which 1.74 acres lies in Avenue 14.

Coordinates, bearings and distances in the above description are based on the California Coordinate System, Zone III.

SEP 28 1964
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Reserving unto the remaining lands of grantors, their successors and assigns, which are contiguous to the real property being conveyed herein, any and all riparian rights which may now be appurtenant to said remaining lands including a reasonable right of access for the exercise of said rights; and reserving unto the grantors all deposits of minerals, including oil and gas in said parcels, together with the right to prospect and remove such deposits therefrom, without, however, the right to drill, mine, explore or operate through the surface or upper 100 feet of the subsurface of the parcels or otherwise in such manner as to endanger the safety of any levee or other improvements that may be constructed on said parcels.

SEP 28 1964
No. 12541

BOOK 914 PAGE 593
3361 3217

IN WITNESS WHEREOF, said HILL AND HOWE, a partnership, has caused its partnership name to be hereunto subscribed, this ____ day of _____, 1964.

HILL AND HOWE, a partnership

By _____
Roland F. Hill, Partner

STATE OF CALIFORNIA)
)ss
COUNTY OF)

On this ____ day of _____, in the year 1964, before me _____, personally appeared ROLAND F. HILL, known to me (or proved to me on oath of _____) to be one of the partners of the partnership that executed the within instrument, and acknowledged to me that such partnership executed the same.

_____
Notary Public in and for the
County of _____
State of California

My commission expires:

_____

CERTIFICATE OF ACCEPTANCE, GOVERNMENT CODE, SECTION 27281

This is to certify, that the real property or interests therein described in the within deed to the SACRAMENTO AND SAN JOAQUIN DRAINAGE DISTRICT, acting by and through The Reclamation Board of the State of California, a public agency, is hereby accepted by the undersigned officer on behalf of the grantee pursuant to authority conferred by resolution or said grantee adopted on Dec. 6, 1962, and the grantee consents to the recordation by its duly authorized officer.

DATED: 8-6, 1964.

_____
General Manager
THE RECLAMATION BOARD

DEPARTMENT OF GENERAL SERVICES
APPROVED
SEP 15 1964
By _____
Senior Land Agent

SEP 28 1964
No. 12541

Agenda Item No. 9

Fresno River / Road 9 Irrigation Structure

Report prepared by
Ricardo S. Pineda, Chief
Floodplain Management Branch
Department of Water Resources

April 25, 2003

(This report is based on field investigations and a chronology of correspondence associated with the Fresno River / Road 9 irrigation structure is herein included as Attachment 1.)

Lower San Joaquin River Flood Control Project

The Fresno River/Road 9 irrigation structure is a component of the Lower San Joaquin River Flood Control Project (LSJR FCP).

The LSJR FCP was planned, designed, and constructed by the Department of Water Resources on behalf of the Reclamation Board during the first half of the 1960's. A schematic diagram of the project is shown on Attachment 2A.

The project consists of levees along the San Joaquin River, tributaries to the San Joaquin River and along the Eastside Bypass, Mariposa Bypass, and Chowchilla Bypass. Similar to the Sacramento River FCP, the bypasses with levees contain and convey flood-flows that under normal conditions exceed the capacity of the San Joaquin River.

The project, along with the Merced Streams Group Project (never completed), was originally designed to provide an approximately 50-year level of protection to approximately 96,000 acres of farmland in Merced, Madera, and Fresno Counties.

Since the 1997 flood event, and since the Merced Stream Group Project was not completed, the level of protection provided by the LSJR FCP is significantly less than the original 50-year estimate. Regardless of the exact level of protection, the project has significantly reduced expected flood damages during major flood events (i.e. 1969 and 1997 events).

Operations and Maintenance of the LSJR FCP

The Lower San Joaquin River Levee District maintains the project. The district has jurisdiction over 334,000 acres of land and is responsible for operations, maintenance and repair of levees, works structures, and other facilities in connection

with the improvement plan for the San Joaquin River and tributaries. The LSJR FCP was created by the State Legislature in 1955 and began maintenance activities in 1960.

Fresno River / Road 9 Irrigation Structure

The purpose of the Road 9 irrigation structure is to divert Fresno River flows out of the Eastside Bypass back into the Fresno River on the west side of the Eastside Bypass. A schematic of the irrigation structure is shown as Attachment 2B. (Photos of the irrigation structure and related facilities are shown in Attachment 3 Photos No. 6, 7, 8, and 9.)

The 6-foot wide by 4-foot high concrete box culvert irrigation structure was designed to convey up to 100 cfs beneath the Eastside Bypass left bank levee and discharge the flows into an improved channel. Flow through the irrigation structure can be regulated by operation of a slide gate shown in Photo No. 8.

The flows in the improved channel move by gravity to two 48-inch diameter culverts beneath Road 9 that convey the flows back into the Fresno River.

The Reclamation Board, through the Sacramento and San Joaquin Drainage District, acquired the land for the improved channel between the irrigation structure and the Road 9 48-inch culverts and continues to own this land.

Landowners along the Fresno River downstream from Road 9 include Triangle T Ranch, Harmon Brothers Ranch, and Menefee Ranch.

Eastside Bypass in vicinity of Irrigation Structure

The design flow capacity of the Eastside Bypass in the vicinity of the irrigation structure is 10,000 cfs. As shown on Attachment 2B and Photo 1, the Eastside Bypass drop structure No. 1 and the Road 9 bridge are located downstream of the irrigation structure. The confluence of the Fresno River and the Chowchilla Bypass is upstream of the irrigation structure. Eastside Bypass drop structure No. 2 is located at the grade change between the Eastside Bypass and the Chowchilla Bypass. The drop structures suffered erosion damage from the 1969 and 1997 flood events.

Issues

The following issues were compiled from the chronology of correspondence in Attachment 1, specifically Letters No. 18, 32, 33, and 39 (Attachment No. 5, 8, 9, and 13).

Q: Who operates and maintains the irrigation structure and is it the appropriate party?

A: The irrigation structure and downstream channel are currently operated and maintained by the Triangle T Ranch.

The Project Operations and Maintenance Manual (Attachment 4) states that "Maintenance of irrigation structures is the responsibility of the individual property owner unless the district has agreed to maintain the structure."

Letter No. 25 (Attachment No. 6) from General Manager Pete Rabbon to Mr. Donald Mooney (Attorney for Menefee River Ranch and Harmon Brothers Ranch) confirms that Triangle T Ranch operates the irrigation structure and that the structure is being operated by the appropriate entity. The letter also states that the structure is being operated as required by the O&M manual "to prevent or reduce flooding during the flood season and periods of high water.

Letter No. 41 (Attachment 15) from the attorney for the LSJRLD to Don Mooney states "The District does not have any legal responsibility for or authority over the Road 9 structure nor the river bed which is the subject of your clients' dispute." Because the LSJRLD is not involved in water supply issues, it believes it has no authority or interest in operating or maintaining the irrigation structure or channel improvements downstream of the structure.

Q: What is the current design capacity of the irrigation structure and at what upstream water surface elevation should the structure discharge at least 100 cfs?

A: The design capacity of the irrigation structure is 100 cfs.

In State Water Resources Control Board Order WR 99-001 (Letter No. 30, Attachment No. 7) the current capacity of the irrigation structure is approximately 60 cfs with the upstream water surface in the Eastside Bypass at the crest of drop structure no. 1. According to the Madera Irrigation District, the 60 cfs estimate is based on physical measurements at the downstream end of the structure (location of measurement gage).

There is also testimony referred to in the SWRCB report (Letter 30, Attachment 7) and in General Manager Rabbon's response to the Menefee and Harmon Brothers SWRCB complaint (Letter No. 37, Attachment No. 12) that more than 60 cfs flows through the irrigation structure when flows in the Eastside Bypass are at stages higher than the crest of drop structure no. 1.

In General Manager Rabbon's response to the water rights complain (Letter 37, Attachment 12) he states, " The outlet capacity of the Fresno River bypass gated structure is greater than 100 cfs at design flow of the Eastside Bypass and thus exceeds the contract requirements as stated in the July 20, 1966 right-of-way contract. The 60 cfs outlet capacity is unconfirmed by the State when water levels in the Eastside Bypass are at the crest of the downstream Eastside Bypass drop structure."

Reclamation Board staff completed hydraulic capacity calculations for the irrigation structure which indicate that the structure could pass 100 cfs with the water surface at the crest of the drop structure if there is no downstream control below the two 48-inch culverts which cross beneath Road 9. If there is downstream control

(downstream submergence of the Road 9 culverts), the capacity of the irrigation structure may be less than 100 cfs when the water surface is at the crest of the drop structure. Staff currently does not have surveyed channel profiles or cross sections for the improved channel downstream of the irrigation structure or the Fresno River channel downstream of the Road 9 culverts. The channel surveys would be necessary for staff to further investigate the capacity of the Road 9 structure.

Q: Does the Reclamation Board have an obligation to modify the irrigation structure, the drop structure, and/or the channel system in order to ensure passage of at least 100 cfs under certain hydraulic conditions?

A: The Reclamation Board responded to requests by Mr. Mr. R.L. Schafer raised in Letters 33 and 39 (Attachments 9 and 13). In these letters, Mr. Schafer requests that "The Reclamation Board budget, design, and construct a Fresno River bypass structure that will allow the continuation of 100 cfs flow in the Fresno River below Road 9, without flow in the Eastside Bypass flood channel, as originally committed under the Lower San Joaquin River Flood control Project."

Reclamation Board staff Peter Rabbon and Ricardo Pineda responded to letters from Mr. Schafer with Letters No. 34 and 40 (Attachments No. 10 and 14). These Reclamation Board response letters essentially state that the board has no plans to modify the Fresno River / Road 9 structure and that the Board encourages Mr. Schafer to seek a Reclamation Board permit for any desired modifications to the Road 9 irrigation structure. Board staff is willing to provide Mr. Schafer technical advice to pursue his concerns through other avenues.

List of Attachments:

1. Chronology of Fresno River / Road 9 Irrigation Structure Correspondence

2. A. Schematic of Lower San Joaquin River Flood Control Project
   B. Schematic of Eastside Bypass

3. Photos of Fresno River / Road 9 Irrigation Structure

4. Excerpt from Lower San Joaquin River Flood Control Project Operations and Maintenance Manual

5. Letter No. 18 – dated June 22, 1998 from Attorney Donald B. Mooney to Raymond E. Barsch (as General Manager for the Reclamation Board) and Reggie Hill (General Manager for the Lower San Joaquin Levee District)

6. Letter No. 25 – reply dated August 5, 1998 from Peter D. Rabbon (General Manager for the Reclamation Board) to Mr. Mooney

7. Letter No. 30 – pages 11 and 12 (out of 16) of the State Water Resources Control Board's 1999 Water Right Orders

8. Letter No. 32 – dated April 7, 1999 from Attorney Sandra K. Dunn to Peter D. Rabbon

9. Letter No. 33 – dated March 13, 2000 from Mr. R. L. Schafer to Peter D. Rabbon

10. Letter No. 34 – reply dated April 18, 2000 from Ricardo S. Pineda (Chief Engineer for the Reclamation Board) to Mr. Schafer

11. Letter No. 36 – dated June 23, 2000 from Mr. Charles A. Rich, Chief, State Water Resources Control Board, Division of Water Rights, Complaint Unit to Peter D. Rabbon

12. Letter No. 37 – SWRCB Answer to and Comments on Complaint

13. Letter No. 39 – dated November 27, 2000 from Mr. R. L. Schafer to Peter D. Rabbon

14. Letter No. 40 – reply dated December 13, 2000 from Peter D. Rabbon to Mr. R. L. Schafer

15. Letter No. 41 – dated July 8, 1998 from Attorney Thomas J. Keene to Mr. Donald B. Mooney (out of chronological order)

Attachment 1

Chronology of Fresno River / Road 9 Irrigation Structure Correspondence

1. July 20, 1966. Right of Way contract signed between the Lower San Joaquin Levee District/State Reclamation Board and Triangle T Ranch.
2. April 4, 1967. Letter from former Board member George Nickel, Jr. to Board GM Colonel McCollum stating that Virgil Menefee was having difficulty getting Fresno River waters released to him. Letter also inquired about the operating criteria for releasing Fresno River water through the turnout in the Eastside Bypass. Letter further stated that Bill Sweet, Engineer for LSJLD, provided an opinion to the effect that the State had designed an inadequate diversion structure.
3. April 21, 1967. Letter from C.E. Van Atta, representing Menefee, requesting a copy of the agreement between the LSJLD/Reclamation Board and Triangle T Ranch.
4. May 3, 1967. Letter from GM McCollum to Menefee's representatives in response to the April 21, 1967 letter. Letter stated that the design and construction of the flood control project provided a diversion structure through the left bank levee of the Eastside Bypass, which allows a capacity of approximately 100 cfs to flow into the old Fresno River channel.
5. April 10, 1970. Letter from DWR's Planning and Operations Section to LSJLD laying out a proposal for 1) DWR to design a relocated channel and add additional culvert under Road 9, 2) Mr. Bellando to provide right of way for the relocated channel and do the maintenance, 3) Triangle T Ranch to construct the relocated channel and pipe or culvert as necessary, and 4) LSJLD to maintain the Fresno River from the outlet structure to where it passes beneath Road 9.
6. April 24, 1970. Letter from DWR's Planning and Operations Section to an attorney Stacy Dobrzensky discussing the design and cost of the Fresno River channel relocation downstream of the Road 9.
7. May 8, 1970. Board meeting minutes indicate that the land along the Eastside Bypass and the San Joaquin River (Menefee, Harman Brothers, and Triangle T Ranch) was once owned by the State and reserved for flood storage. This was prior to the construction of Hidden Dam upstream on the Fresno River.
8. May 11, 1970. A DWR memorandum by G.K. Mork stating that the Chowchilla Bypass was constructed adjacent to the lower Fresno River.
9. March 16, 1993. Letter from DeCuir and Somach, representing Menefee, to DWR requesting copies of all reports, correspondences, memoradums, and maps that DWR may have from 1960 to 1975 pertaining to the Eastside Bypass and Road 9 Structure.
10. April 5, 1993. Letter from Board counsel Neil Gould to DeCuir and Somach indicating that requested information had been sent out.

11. June 25, 1993. Letter from R.L. Schafer and Associates to the Board registering a complaint on behalf of Menefee and stating that Menefee was denied Fresno River water by Triangle T Ranch during February, March, and April of 1993.

12. May 31, 1994. Letter from Schafer and Associates, representing Menefee and other landowners, to the Reclamation Board requesting a Board hearing from discussion and clarification of the responsibilities of the Board and LSJLD with respect to the Lower San Joaquin Flood Control Project.

13. August 14, 1995. Letter from Schafer and Associates to DWR requesting a follow-up meeting to resolve Menefee's loss of water rights and additional cost of pumping replacement water during 1993 and 1995.

14. October 3, 1995. Letter form Schafer and Associates to the Board requesting a formal workshop for review and discussion of the history and problems created by the Lower San Joaquin River Flood Control Project.

15. November 17, 1995. Board Meeting Minutes: R.L. Schafer testified that the Road 9 Structure, even if operated to its full capacity of 100 cfs, is inadequate to deliver water to riparians downstream of Triangle T Ranch. Board President Stearns stated that the Board couldn't envision being involved in something that is out of its jurisdiction. Board counsel Ward Tabor suggested that the parties need to apply for a Board permit. R.L. Schafer also stated that requiring the riparians to pay for modifications of a structure that was designed and built by the State was unfair. Schafer further stated that it was the State and the USBR who created the problem in the first place and should get involved in trying to resolve it. Board members directed staff to meet with R.L. Schafer, listen to his request, and see whether the Board has a responsibility in this request or if there is any action the Board needs to take further. Staff was told to come back to the Board with the proper recommendations.

16. November 20, 1995. Letter from Schafer and Associates claiming that Paul Minasian, representing the Exchange Contractors, made faulty comments at the November 17, 1995 Board meeting.

17. November 22, 1995. Letter from Madera Irrigation District requesting participation in continued discussion with Schafer and Associates.

18. June 22, 1998. Letter from attorney Donald Mooney, to GM Ray Barsch and Reggie Hill, stating that the Board and SWRCB are allowing Triangle T to operate Road 9 structure, thus impairing downstream water rights of the Menefee River Ranch and the Harman Brothers Ranch.

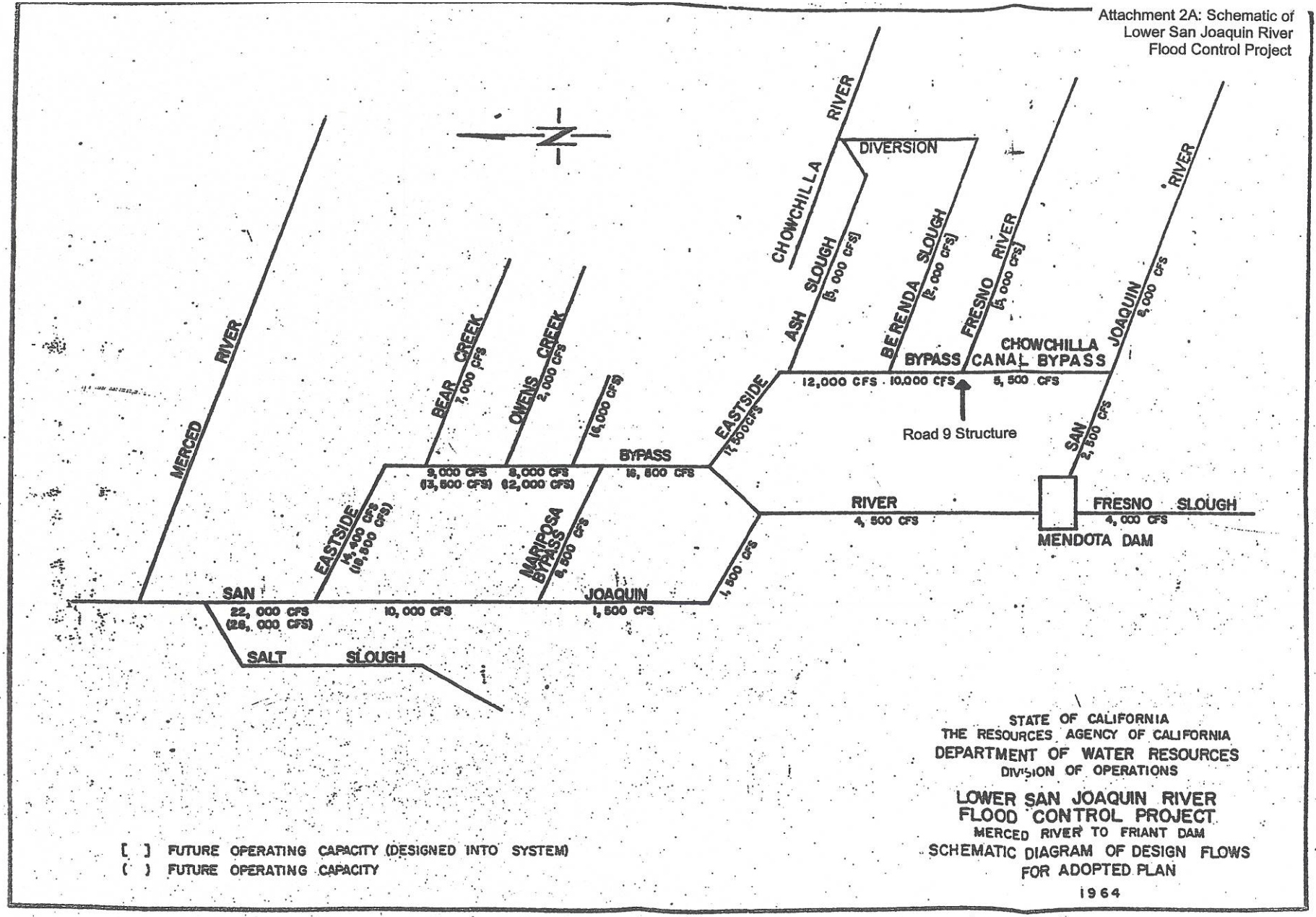
19. July 2, 1998. Letter from Madera Irrigation District to the Board GM indicating that MID has an agreement with Triangle T Ranch for riparian and appropriative flows from the Fresno River. Letter stated that Menefee and Harman Brothers lost any rights to the Fresno River waters. Letter requested that the Board delay any actions until the SWRCB has decided on the water rights issue.

20. July 8, 1998. Letter from the attorney of LSJLD to Don Mooney stating that 1) the State owns the levees and bypass, 2) LSJLD maintains a portion of the bypass, 3) LSJLS has no jurisdiction over Road 9 Structure and 4) LSJLD has not "abdicated" its public responsibilities in favor of anyone.
21. July 13, 1998. Letter from R.L. Schafer to DeCuir and Somach stating that Board staff has not done what the Board directed in its November 17, 1995 meeting. Letter further stated that nothing would be done without legal action for the appropriate recognition of the issues by a court.
22. July 15, 1998. Letter from an attorney of Triangle T Ranch to the Board and LSJLD stating that pending the SWRCB hearing, any assumption on the part of the Board or LSJLD with respect to the existence or extent of those rights would be inappropriate. Letter asked to direct attention to the provisions of the Right of Way Contract made on July 20, 1966 by Triangle T Ranch and the Board & LSJLD.
23. July 15, 1998. Internal memo from Ricardo Pineda to GM Pete Rabbon on issue of Road 9 Structure.
24. No Date(July 1998?). Internal memo from Ricardo Pineda to Pete Rabbon stating the Menefee and Harman Brothers can apply for a permit to enlarge Road 9 Structure, but would have to pay for the modifications, which could result in flooding Triangle T Ranch since the channel has been filled in.
25. August 5, 1998. Letter from GM Rabbon to Don Mooney stating that Board staff will wait until the SWRCB issues its water rights decision before determining what the Board's role will be. Letter further stated that the Road 9 Structure was being operated by the appropriate entity and as required by the O&M manual for the purpose of flood protection. Letter also stated that at its November 1995 meeting, no action was taken by the Board.
26. August 13, 1998. Letter from GM Rabbon to Don Mooney informing that a workshop meeting date has been set for August 21, 1998.
27. August 21, 1998. On site workshop on Road 9 Structure. Schafer and Associates is to develop a report for Road 9 Structure (see October 31, 1998 Schafer and Associates report)
28. August 26, 1998. Fax from R.L. Schafer summarizing discussion at the August 13, 1998 workshop.
29. October 31, 1998. Engineering report by R.L Schafer and Associates specifying information regarding the ownership, correspondence, and operation and maintenance of the Road 9 Structure.

30. March 3, 1999. Date order was signed. The following is a summary of findings by the State Water Resources Control Board regarding the dispute (ORDER WR 99- 001):
    -Triangle T Ranch has 2,576 acres of land with riparian rights
    -Triangle T Ranch has appropriative rights that is senior to the USBR
    -Triangle T Ranch did not prove its claim of prescriptive right
    -Triangle T Ranch used water on non-riparian land and violated division 2 of the Water Code. SWRCB will initiate enforcement proceedings if upon future investigation it appears enforcement is warranted. Triangle T Ranch should cease obstructing Fresno River flows except to the extent that it is diverting water and applying it to…use consistent with its water rights. It should install pipes sufficient to bypass water to satisfy complainants' rights in full.
    -The capacity of Road 9 Structure has been reduced from its original design of 100 cfs to the current 60 cfs.
    -The USBR may have violated its permit when it did not release the proper amount of flow during a certain period.
    -Complainants want capacity of Road 9 Structure restored by the Reclamation Board and the LSJLD to its original capacity of 100 cfs.
31. March 29, 1999. Letter from Harry M. Schueller with SWRCB stating that the Road 9 structure is owned, maintained, and operated by Lower San Joaquin Levee District and should not be operated by any unauthorized parities.
32. April 7, 1999. Letter from an attorney of Menefee and Harman Brothers to the Board pointing out 3 issues: 1) determining how and how and who should operate Road 9 Structure, 2) maintenance of the structure to ensure it functions at full capacity, and 3) whether or not Road 9 Structure was designed properly to meet the property interests of the downstream landowners. The proposed operation study is being discussed with the USBR will assist in answering item 3.
33. March 13, 2000. Letter from R.L. Schafer to GM Rabbon providing hydraulic calculations on how to modify the drop structure to fulfill the State's 1965 commitment.
34. April 18, 2000. Letter from Ricardo Pineda to R.L. Schafer informing him to seek a Board application for any experiment with the drop structure and offer to coordinate a field visit.
35. June 2, 2000. Menefee and Harman Brothers filed a Water Right Complaint with the SWRCB alleging that Road 9 Structure designed and constructed by the Board in 1966 only allows the diversion of 60 cfs instead of the 100 cfs, for the structure was designed. The complaint further suggests that the Board design and construct a drop structure under Road 9 with a 130 cfs capacity.
36. June 23, 2000. Letter form the SWRCB requesting the Board to respond to the June 2, 2000 Water Right Complaint.

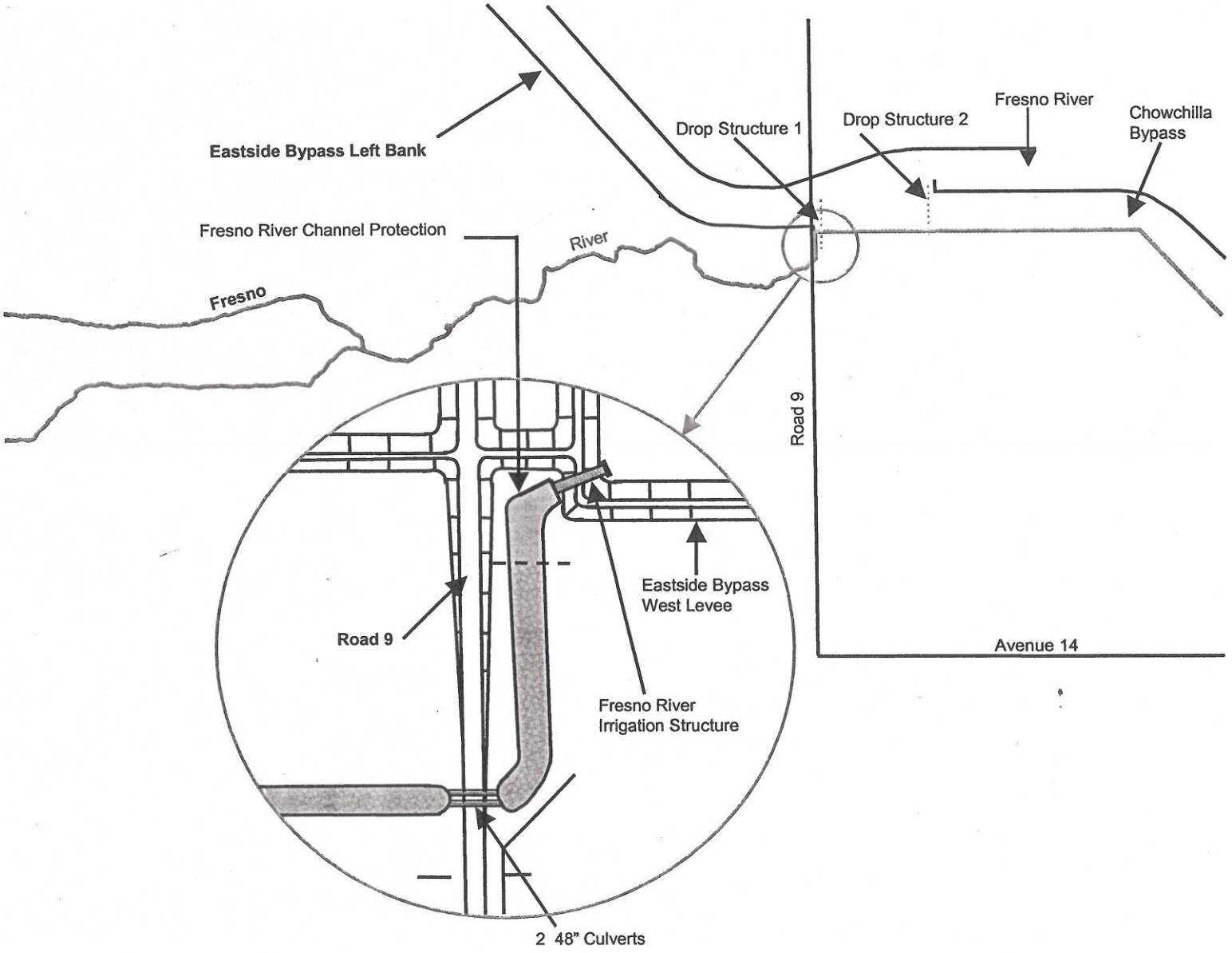
37. July 7, 2000. Answer to Complaint form was returned to the SWRCB stating that the Road 9 Structure has a capacity greater than 100 cfs and that the 60 cfs outlet capacity is unconfirmed by the State when water levels in the Eastside Bypass are at the crest of the drop structure.
38. October 30, 2000. Notice from Charles Rich, with the Complaint Unit of the SWRCB, notifying all parties with vested interest in Fresno River water rights to meet at a December 7, 2000 meeting to be held in Madera.
39. November 27, 2000. Letter from Richard Schafer to the Board quoting past correspondences regarding Road 9 Structure. He requested that the Board budget, design, and construct a Road 9 structure that will allow the continuation of 100 cfs, as originally committed under the LSJR Flood Control Project.
40. December 13, 2000. Letter from GM Pete to R.L. Schafer stating that the Board will take into consideration Mr. Schafer's request after the water right complaint has been settled.
41. July 8, 1998(out of order). Letter from Thomas Keene (attorney for LSJLD) to attorney Don Mooney concerning LSJLD responsibilities for operations and maintenance of Fresno River irrigation structure.

Attachment 2A: Schematic of Lower San Joaquin River Flood Control Project



ATTACHMENT E

Attachment 2B:
Schematic of Eastside Bypass near Fresno River / Road 9 Irrigation Structure



ATTACHMENT E

Attachment 3: Photos

Photo 1

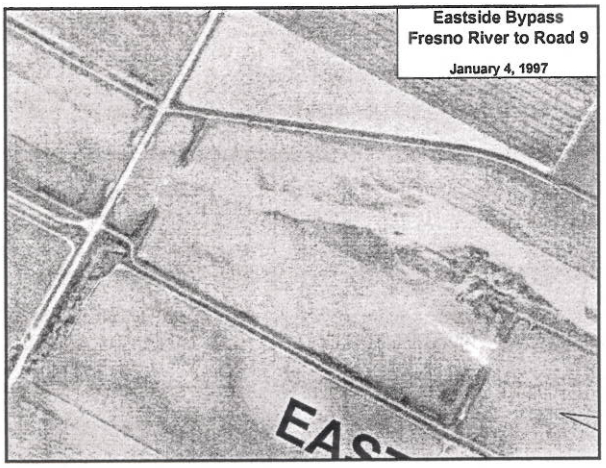


Photo 2

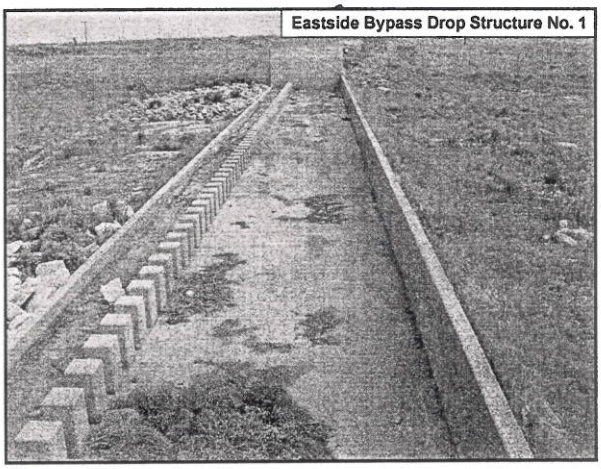


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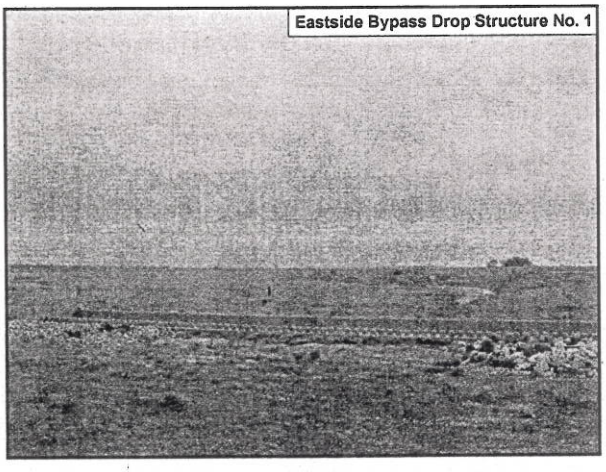
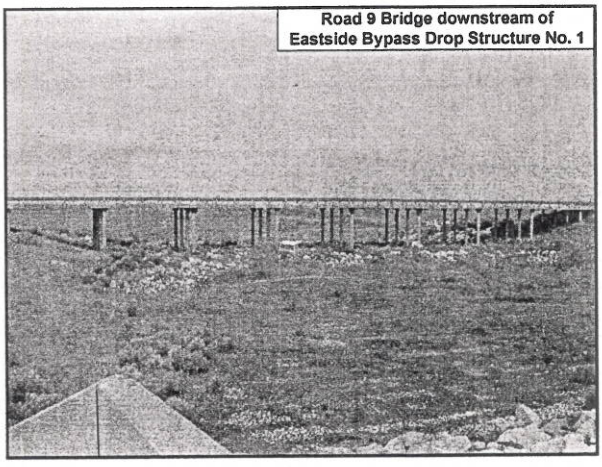


Photo 4



Attachment 3: Photos (cont.)

Photo 5

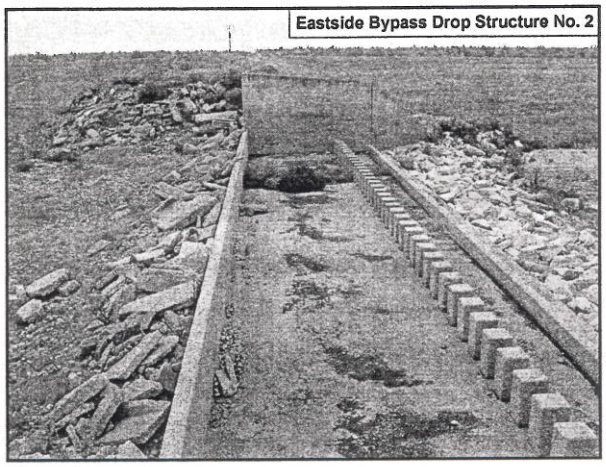


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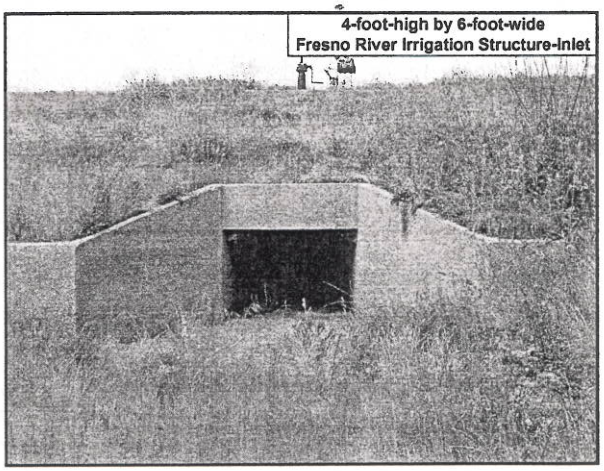


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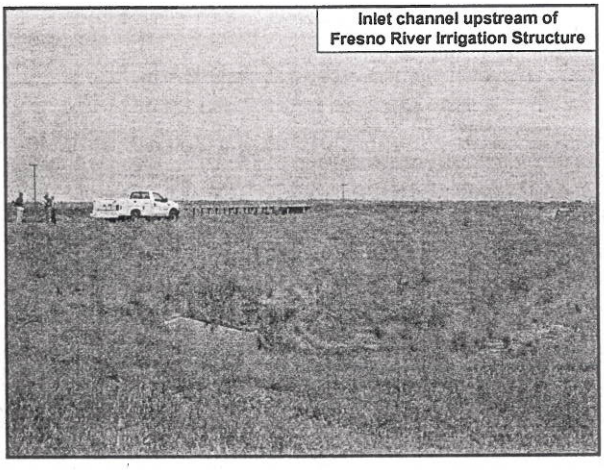
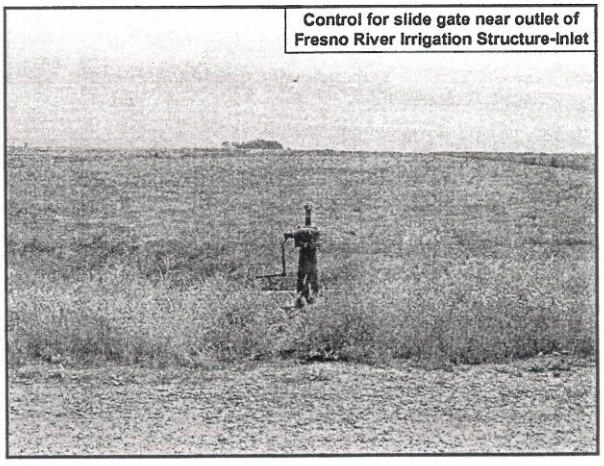


Photo 8



Attachment 3: Photos (cont.)

Photo 9

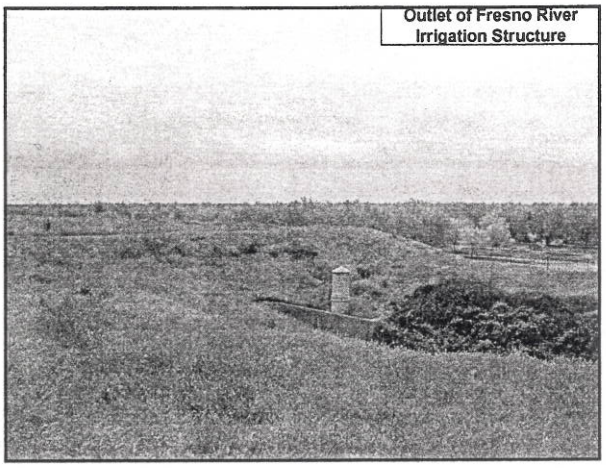


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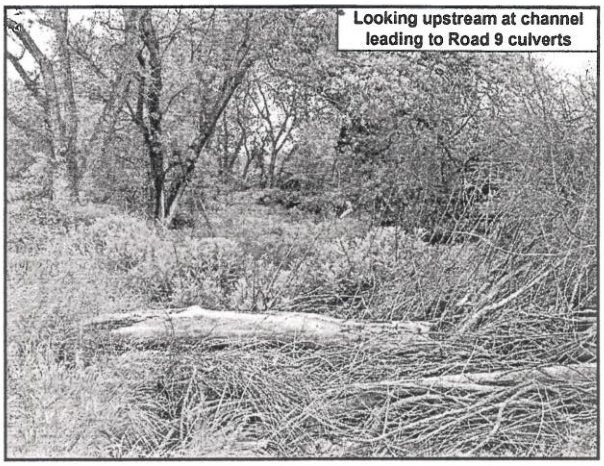


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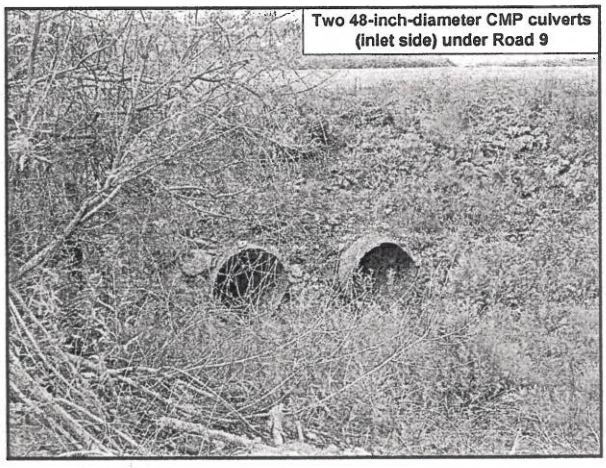
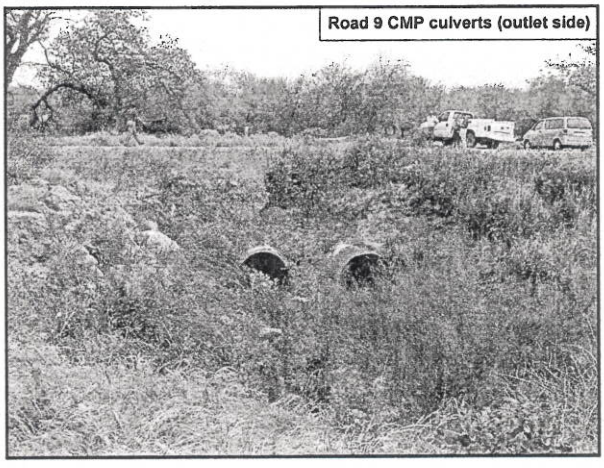
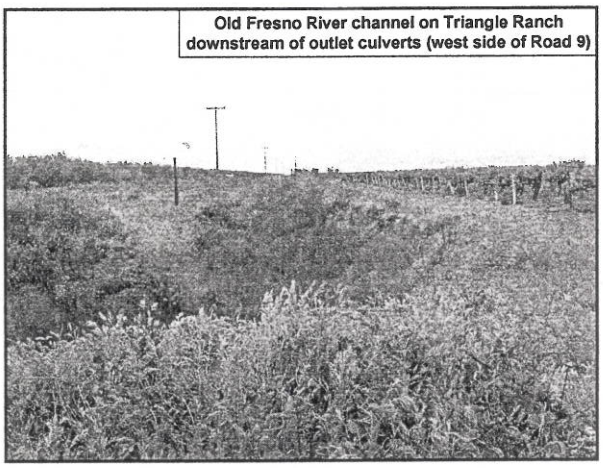


Photo 12



Attachment 3: Photos

Photo 13



4220

Maintenance Activity. (Continued)

It is of upmost importance that these structures always be kept in perfect working condition.

Care should be taken not to bury any of the side drainage inlets in the event that it becomes necessary to fill any of the low-lying pockets on the landside of the levee. Plans for the modification of side drainage facilities or the maintenance of side drainage facilities affected by filling of low lying pockets should be submitted to the Reclamation Board for approval before such work is started.

Maintenance of irrigation structures is the responsibility of the individual property owner unless the district has agreed to maintain the structure.

4230

Inspection. Periodic inspections shall be made to insure that all facilities are in good operating condition as follows:

(1) Since the outlets of pipes crossing under the levee are inundated at relatively low water stages, all pipes extending through the levee shall be inspected considerably in advance of the beginning of the flood season. The gates on these pipes should be checked at the same time.

(2) Inspection of all drainage structures shall also be made following each major high-water period.

(3) At other times not exceeding 90 days.

(4) If the inspection of an irrigation structure of a private owner discloses any condition requiring repair or maintenance, the Superintendent shall notify the private owner about the deficient condition. When the next scheduled inspection is

Checklists

A form suggested as a checklist for reporting inspections of drainage structures will be found in Appendix F. These should be used in each inspection to insure that structures are kept in working condition at all times. (See pages F-4 and F-5).

Operations

Irrigation and drainage structures shall be operated to prevent or reduce flooding during the flood season and periods of high water. Whenever high-water conditions impend, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic and hand-operated slide gates and valves shall be closed to prevent escape of floodwaters from the channel. All irrigation and drainage structures in levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps should be taken to correct any situation which appears to be developing into a condition that will endanger the safety of the levee.

Positive Closure Devices. It is essential that the protection afforded by the flood control project not be nullified in any extent by backflow through irrigation and drainage structures. It is the responsibility of the Superintendent to see that the gates are operated according to the best interest of the project.

DONALD B. MOONEY
Admitted in California
and Oregon

DE CUIR & SOMACH
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
400 CAPITOL MALL
SUITE 1900
SACRAMENTO, CA 95814-4407
TELEPHONE (916) 446-7979
FACSIMILE (916) 446-8199

June 22, 1998

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Raymond E. Barsch
General Manager
State of California Reclamation Board
1416 - 9th Street, Room 455-6
Sacramento, CA 95814

Reggie Hill
General Manager
Lower San Joaquin Levee District
11704 W. Henry Miller Avenue
Dos Palos, CA 93620

Re: Operation of the Lower San Joaquin Flood Control Project

Dear Mr. Barsch and Mr. Hill:

Our firm represents Dr. Jerry Menefee (owner of the Menefee River Ranch) and the Harman Brothers Ranch regarding their water rights on the Fresno River. Based upon a complaint filed by Dr. Menefee and the Harman Brothers, the State Water Resources Control Board ("SWRCB"), recently conducted an administrative hearing on the United States Bureau of Reclamation's water right permit 16584 (Application 18733) for the operation of the Hidden Dam Project on the Fresno River in Madera County.

The Menefee River Ranch consists of approximately 2,000 acres in Merced County, situated along the Fresno River and the San Joaquin River. The Menefee River Ranch adjoins both rivers. The Harman Brothers Ranch is located upstream of the Menefee River Ranch on the Fresno River and adjacent to the San Joaquin River. The Harman Brothers Ranch consists of approximately 2,195 acres. The Fresno River traverses the Menefee River Ranch

and the Harman Brothers Ranch. Water from the Fresno River has historically been used to irrigate all or portions of these ranches. The natural channel of the Fresno River is still intact the entire distance from Road 9 to its mouth at the confluence with the San Joaquin River.

Over the years several factors have impaired the water rights for the Menefee River Ranch and Harman Brothers Ranch. One of the primary factors impairing Menefee's and Harman's Fresno River water rights is the construction and current operation of the Road 9 structure at the Eastside Bypass. The Road 9 structure is located upstream of the Triangle T Ranch, which is upstream of the Menefee River Ranch and the Harman Brothers Ranch. At the SWRCB hearing regarding the water rights on the Fresno River, there was a significant amount of sworn testimony regarding Triangle T's control and operation of the Road 9 structure. The sworn testimony revealed that Triangle T controls and operates the gates on the Road 9 structure not for flood control, but instead to regulate the flow of water to Triangle T. It was also demonstrated that, to the extent Triangle T does not need the water that would flow through the Road 9 structure, Triangle T reduces the flow through the structure by closing the gates and diverting the water into the Eastside Bypass. This is water that would otherwise be available downstream of the Triangle T Ranch. Triangle T has also blocked the Fresno River channel in several locations on the Ranch. These actions impair the flow of water beyond the boundaries of the Triangle T and also allow Triangle T to regulate the flow of water on the ranch in conjunction with its unauthorized control of the Road 9 structure. Thus, Triangle T has turned a public flood control project into its own delivery and conveyance system that allows Triangle T to control and regulate not only the flood waters of the Fresno River, but also the water rights of the downstream landowners.

The testimony at the SWRCB hearing also revealed that Triangle T has never obtained authority from either the Reclamation Board or the Lower San Joaquin Levee District ("Levee District") to operate the Road 9 structure. The Road 9 structure is part of the Lower San Joaquin River Flood Control Project constructed with public funds for a public purpose. Based upon the current operation of the Road 9 structure by Triangle T, it is reasonable to conclude that the structure has been converted into a private project for the sole benefit of Triangle T. Thus, it appears that the Reclamation Board and the Levee District have abdicated their respective public responsibilities, in favor of Triangle T. The Reclamation Board and the Levee District must take prompt affirmative action to regain the control and operation of the Road 9 structure.

To the extent that Triangle T has created blockages in the river channel that may increase the risk of flooding of Triangle T, such blockages and increased risk are the direct and exclusive result of Triangle T's actions and are within the ability of Triangle T to correct. Thus, the operation of the Road 9 structure should not take into consideration the fact that Triangle T has placed blockages in the river channel. Instead, the Road 9 structure should be operated in such a manner so as not to impair the downstream water rights of the Menefee River Ranch and the Harman Brothers Ranch.

I will call each of you next week after you have had the opportunity to review this matter. I would like to explore with each of you the actions that must be taken to ensure that the Road 9 structure is controlled and operated only by authorized personnel, as well as operated in such a manner so as not to impair the water rights of all the landowners situated downstream of the Road 9 structure.

In the meantime, please do not hesitate to contact me if you have any questions regarding this matter.

Very truly yours,

Donald B. Mooney
Attorney

DBM:sb

cc: Dr. Jerry Menefee
Richard Harman
Lawrence Harman
Richard L. Schafer
Kenneth A. Kuney

Letter No. 25

ATTACHMENT E
Attachment 6

August 5, 1998

Mr. Donald B. Mooney
DeCuir & Somach
400 Capitol Mall, Suite 1900
Sacramento, California 95814-4407

Dear Mr. Mooney:

This is in response to your letter of June 22, 1998 regarding operation of the Lower San Joaquin River Flood Control Project. I apologize for the delay in responding.

Your letter requests that action be taken to ensure that the Road 9 structure is controlled and operated only by authorized personnel and be operated in such a manner so as not to impair the water rights of all the landowners situated downstream of the Road 9 structure.

The Road 9 irrigation structure is being operated by Triangle T Ranch. Based upon our interpretation of the Operation and Maintenance Manual for the Lower San Joaquin River Flood Control Project, the Road 9 structure is being operated by the appropriate entity, which is the individual property owner. It is also being operated as required by the O&M manual "to prevent or reduce flooding during the flood season and periods of high water."

The Reclamation Board is not responsible for water rights activities. However, after the State Water Resources Control Board issues its water rights decision, Reclamation Board staff is willing to participate in a meeting to determine our role, if any, to insure that the water rights of landowners downstream of the Road 9 structure are not impaired.

This issue was last heard by the Board in November 1995 at which time no Board action was taken. I have arranged a meeting for staff to discuss this issue with

interested parties on August 19, 1998 at 10 AM. An agenda and meeting location are attached. The meeting results will be used to submit a recommended action for the Board's consideration at its September meeting.

If you have any questions, please contact me at (916) 653-5434.

Sincerely,

ORIGINAL SIGNED BY
PETER D. RABBON

Peter D. Rabbon
General Manager

Attachments

cc: Mr. Reggie Hill
General Manager
Lower San Joaquin Levee District
11704 West Henry Miller Avenue
Dos Palos, California 93620

Mr. Denslow Green
Green, Green & Rigby
Post Office Box 1019
Madera, California 93639

Mr. Richard Schafer
2904 West Main Street
Visalia, California 93278

Mr. Thomas J. Keene
Linneman, Burgess, Telles,
Van Atta & Vierra
Post Office Box 156
Dos Palos, California 93620

Mr. Kenneth A. Kuney
Dooby Herr & Williams
100 Willow Plaza, Suite 300
Visalia, California 93291

bcc: Ricardo Pineda
Claire LeFlore
Rod Mayer/Ken Finch

PRabbon:Pamela Bruner

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Spell check 8/4/98

Due to the limited data in the record, the SWRCB had to make a number of assumptions in making the computations described above. Perhaps the most significant deficiency in the record is the absence of current information concerning the demands of water users between Hidden Dam and the Road 9 Structure. MID Exhibit 6, which contains information regarding the computer model developed by MID in order to satisfy downstream prior right holders, does not specify the demands of the water users between the dam and the Road 9 Structure. Accordingly, the U-1 Routing was used to determine the "natural" flow at the Road 9 Structure.

In sum, using the data in the record, it is impossible to determine definitively how many violations took place and when. During at least one month, however, the discrepancy between the demands of the three parties, the estimated "natural flow," and the estimated actual flow is significant enough to justify the conclusion that permit violations occurred. It appears safe to conclude that violations occurred in February 1992. During that month, estimated natural flows of 1,560 acre-feet could have met the parties' demands for 990 acre-feet. The release from Hidden Dam, however, was only 47 acre-feet, and the actual flow at the Road 9 Structure was zero. During this month, storage in Hidden Reservoir increased by 8,326 acre-feet.

6.0 PROBABLE PERMIT VIOLATIONS BY DELIVERING STORED WATER OUTSIDE THE AUTHORIZED PLACE OF USE

During the course of this proceeding, the complainants brought to the SWRCB's attention the fact that the USBR also may have violated its permit by delivering stored water to Triangle T Ranch. Water cannot be seasonally stored under basis of riparian right (*People* v. *Shirokow*, *supra*, 26 Cal.3d at p. 307, fn. 7 [605 P.2d at p. 864, fn. 7, 162 Cal.Rptr. at p. 34, fn. 7]), and Triangle T Ranch does not have a storage right under its license. MID and Triangle T Ranch have entered into an agreement, however, which provides for the delivery of water, at MID's option, in a later year in satisfaction of Triangle T Ranch's riparian demand in a prior year where Triangle T Ranch's demand for the prior year was equal to or less than 250 acre-feet. (MID Exhibit 7, p. 15, Paragraph 5.4; R.T. pp. 298-302, 330, 336-337.) In other words, the agreement authorizes delivery of water that has been stored from one season to the next.

Triangle T Ranch has no right to stored water, and the USBR may not deliver water to Triangle T Ranch under its permit because Triangle T Ranch is outside the authorized place of use. The USBR should not deliver stored water to Triangle T Ranch in satisfaction of Triangle T Ranch's prior rights, unless the USBR files and the SWRCB approves a petition to expand the authorized place of use to incorporate Triangle T Ranch's property.

7.0 THE CAPACITY OF THE ROAD 9 STRUCTURE

One of the issues raised in this proceeding is whether the capacity of the Road 9 Structure is sufficient to accommodate the rights of Triangle T Ranch, the Harmans, and Menefee River Ranch. For the reasons set forth below, the SWRCB finds that the designed capacity of the Road 9 Structure is 100 cfs, which probably is sufficient to satisfy the collective demands of all three parties, but the capacity has been impaired by accumulated sediment. The current, impaired capacity is approximately 60 cfs, which may or may not be adequate, depending on the circumstances.

According to a report by Murray, Burns & Kienlen, Inc., an engineering firm, the designed capacity of the Road 9 Structure is 100 cfs with a head differential of 0.7 feet. (SWRCB Files for Permit 16584, Murray, Burns & Kienlen, Inc. (1980) Preliminary Report, Fresno River Water Rights, pp. 41-61.) At the time the report was written in 1980, the current capacity of the structure was 60 cfs with a head differential of 0.25 feet, but Murray, Burns & Kienlen concluded that a capacity of 100 cfs could be restored by removing sediment deposits between the outlet and the Road 9 culverts and downstream of the outlet. (*Id.* at pp. 41, 61.) The current capacity of the structure probably remains approximately 60 cfs.

The findings contained in the Murray, Burns & Kienlen report are consistent with the testimony of James E. Wickersham, President of Triangle T Ranch. Mr. Wickersham testified that at the point where

the weir in the bypass is about to spill, the Road 9 Structure can bypass 60 cfs, and when flows are greater and head is greater over the weir, the Road 9 Structure can bypass greater flows. (R.T. pp. 133, 262, 412-413; see Murray, Burns & Kienlen report, *supra*, at p. 41.)

The designed capacity of the structure is probably adequate to meet the parties' maximum total demand of 53.5 cfs. While in theory the impaired capacity could meet the parties' demand as well, in practice the impaired capacity may well be insufficient. As explained earlier, the average rate of flow of 53.5 cfs that would satisfy the parties' demands assumes a constant rate of flow for a 30-day period. In actuality, flows may not be constant, and parties may seek to meet their demands by diverting more water over a shorter period of time. In addition, at times when the total demand is very close to the capacity of the Road 9 Structure, diversions made by upstream parties would have to be made in a prudent manner such that sufficient flows are bypassed to meet downstream demands.

At present, the circumstances do not warrant the initiation by the SWRCB of additional proceedings involving the State Reclamation Board and the Lower San Joaquin Levee District concerning the Road 9 Structure, as requested by complainants. If the parties do not feel that the current capacity of the structure is adequate to accommodate their demands, they may wish to pursue the possibility of restoring the structure's designed capacity with the Reclamation Board and the levee district. The clarification of the parties' water rights in this order may facilitate resolution of this matter.

8.0 CONCLUSION

In conclusion, the SWRCB finds that the USBR has violated Permit 16584 by depriving complainants and Triangle T Ranch of water to which they were entitled. The complainants requested that the SWRCB modify the USBR's permit to require the USBR to negotiate, execute, and implement an agreement with complainants within six months, to require the USBR to appoint a watermaster, and to require the USBR to maintain a real-time accounting of inflows and outflows at Hidden Dam. The SWRCB declines to modify the USBR's permit at this time. The USBR's permit violations appear to have stemmed from the USBR's good faith but erroneous conclusion that complainants' water rights had been lost. By this order, the SWRCB affords the USBR with clear guidance concerning its obligations to complainants. Footnote11 In addition, the SWRCB concludes that the USBR shall be required to submit a report within six months of final SWRCB action in this matter that details how the USBR is meeting its obligations to complainants. Footnote12 If in the future the USBR still fails to fulfill its obligations, then the SWRCB will consider what modifications to make to the USBR's permit, and whether to take enforcement action pursuant to Water Code sections 1831-1836.

Complainants also requested that the SWRCB expand the authorized place of use under the USBR's permit to include complainants' property so that they can benefit from the USBR's storage capabilities. The complainants suggested that they would also be willing to accept Central Valley Project water delivered through the San Joaquin River in exchange for Fresno River flows. The SWRCB defers to the USBR to determine whether to satisfy complainants rights with natural Fresno River flows or with some substitute supply that is acceptable to complainants. The SWRCB will consider whether to approve an expansion in the USBR's permitted place of use if and when the USBR files a change petition pursuant to California Code of Regulations, title 23, sections 791-799.

Finally, complainants requested that the SWRCB direct the USBR to invalidate the agreement between Triangle T Ranch and MID. The complainants asserted that the agreement is inconsistent with the USBR's permit obligations because it authorizes delivery of water to nonriparian land, and water delivery is based on a computer model designed by MID to quantify the demands of prior right holders which does not recognize complainants' rights. Complainants also pointed out that insufficient evidence has been introduced in this proceeding to determine whether the computer model is flawed.

The SWRCB concurs that the agreement authorizes the delivery of water in violation of the USBR's permit. As noted in section 3.0 above, the number of acres identified as riparian in Exhibit 4 to the agreement is inconsistent with the SWRCB's finding in this order. In addition, the agreement authorizes the delivery of stored water outside the permitted place of use, as discussed in section 6.0. Either the agreement must be revised, or the USBR must make other arrangements to ensure that water is not

Letter No. 32

RA K. DUNN

DE CUIR & SOMACH
A PROFESSIONAL CORPORATION
ATTORNEYS AT LAW
400 CAPITOL MALL
SUITE 1900
SACRAMENTO, CA 95814-4407
TELEPHONE (916) 446-7979
FACSIMILE (916) 446-8199

April 7, 1999

Peter D. Rabbon
General Manager
California State Reclamation Board
1416 Ninth Street, Room 1601
Sacramento, CA 95814

Dear Peter:

I want to thank you for meeting with Dick Schafer, Mike Tharp and me to discuss the issues surrounding the Road Nine structure. As I mentioned to you, it is important that we focus on developing a cooperative solution. It need not be an adversarial situation.

As I see it, there are really three issues. The most immediate problem is determining how and who should operate the structure to ensure that all parties' interests are being protected. It is unacceptable to my clients, Dr. Menefee and the Harmans, that Triangle –T has sole control over the facility.

Another issue pertains to the maintenance of the structure to ensure that it functions at full capacity. The structure currently is full of sediment and debris. The State Water Resources Control Board determined that as a result of this sedimentation the structure is operating at a 60 cfs capacity rather than its design capacity of 100 cfs.

The final issue is whether or not the Road Nine structure was designed properly in the first instance to meet the property interests of the downstream landowners. The proposed operation study that is being discussed with the Bureau of Reclamation will assist in answering that question.

We look forward to meeting with you and the other affected parties on April 20. I again request, however, that we be provided copies of relevant documents relied upon by the Levee District to review beforehand. We are also happy to provide the other parties the relevant information we have pulled together. Just let Dick Schafer or me know if someone wants the documents.

Sincerely,

Sandra K. Dunn
Attorney

SKD/jlp

cc: Jerry Menefee
Lawrence Harman
Richard Harman
R.L. Schafer

Letter No. 33

PORTERVILLE OFFICE
P.O. Box 1388
681 West Morton St.
Porterville, California 93258
Ph. (209) 781-0102/688-6649

R. L. SCHAFER & ASSOCIATES
CIVIL ENGINEERS - PLANNERS

VISALIA OFFICE
P.O. Box 3239
2904 West Main St.
Visalia, California 93278
Ph. (209) 734-1348

March 13, 2000

The Reclamation Board
1416 Ninth Street
Room 1601
Sacramento, CA 95814

Attn: Mr. Pete Rabbon, General Manager

Re: Fresno River, Road 9 Gate Structure

Dear Mr. Rabbon:

In follow-up of our recent telephone conversation regarding the subject structure, we obtained a detailed survey of the drop structure, gate structure and Fresno River channel to the Triangle "T" Ranch.

The relative elevations indicate that the State Department of Water Resources did not construct adequate height in the drop structure crest or sufficient drop in the gate structure to provide adequate head through the gated box discharge structure.

The drop structure has a 240-feet crest with an average elevation of 147.24 feet. The 6'w x 4'h gated box structure has a floor elevation at the gate of 143.77 feet and a soffit elevation of 147.77 feet. Thus, the top of the box culvert is higher than the crest of the drop structure.

Instead of the 6'x4' gated discharge structure acting as a tube under head, water at the crest elevation of the drop structure would pass through the box culvert as open channel flow. Obviously the reason a flow of 100 cfs would not pass through the structure without the water surface elevation being above the crest of the drop structure.

Using the orifice formula of $Q=CA(2gh)^{1/2}$ and a C=0.76 for a box culvert of 80' in length, an increase of one foot (1') in height of the crest of the drop structure would create 120 to 130 cfs. through the gate structure and would be manageable in the downstream Fresno River channel. The velocity through the gate would only be 5.4 fps, certainly reasonable and far from creating erosion.

We suggest the placement of two rows of sand bags (approximately one foot) over the crest of the drop structure to check the hydraulics of the gate structure and the effect upstream in the Eastside Bypass. Once the experiment proves to be acceptable on both counts, then the State could construct a concrete lip on the crest of the drop structure to fulfill the 1965 commitment.

Certainly, The Reclamation Board needs to become actively involved in this issue, not only to correct the Fresno River diversion structure but also to resolve the responsibility for the Operation and Maintenance of the structure.

Very truly yours,

R. L. Schafer

RLS/mep

cc: Sandra Dunn
Harman Brothers Ranch
Menefee River Ranch
Triangle "T" Ranch
Michael Nordstrom
Don Roberts

Letter No. 34

APR 1 8 2000

Mr. R. L. Schafer
R. L. Schafer and Associates
Post Office Box 1388
Porterville, California 93258

Dear Mr. Schafer:

This is in reply to your letter of March 13, 2000 regarding the hydraulic analysis of the Fresno River, Road 9 gate structure.

You recommend placing two rows of sandbags along the crest of the Road 9 structure to increase the hydraulic head and resultant discharge through the gate and culvert and to check the hydraulic impacts on the gate structure and the Eastside Bypass. You state that if this is successful, the State of California could move ahead with construction of a concrete lip along the crest of the Road 9 structure in order to meet its 1965 commitment.

I have the following comments on these recommendations:

1. We encourage you, on behalf of your clients, to seek a Reclamation Board encroachment permit for the placement of the sandbags along the crest of the drop structure. An application for a permit is attached.

2. Currently, The Reclamation Board has no plans to modify the Fresno River Road 9 structure.

During the month of May, I plan to be in the Fresno area and would like to coordinate a field visit with you to the Road 9 structure. If you have any questions, please call me at (916) 653-5440.

Sincerely,

Original signed by
Ricardo S. Pineda

Ricardo S. Pineda
Chief Engineer

Attachment

cc: Mr. Reggie N. Hill, General Manager
Lower San Joaquin Levee District
11704 West Henry Miller Avenue
Dos Palos, California 93620

(RB #980)

bcc: Jon Anderson

RSPineda:Jane Hereth J:\MSWord\jhereth\Schaferltr Spell check April 17, 2000

State Water Resources Control Board

Division of Water Rights
901 P Street • Sacramento, California 95814 • (916) 657-1359
Mailing Address: P.O. Box 2000 • Sacramento, California • 95812-2000
FAX (916) 657-1485 • Web Site Address: http://www.waterrights.ca.gov

Winston H. Hickox
Secretary for
Environmental
Protection

Gray Davis
Governor

In Reply Refer
to:363:CAR:262.0(20-02-04)

JUN 2 3 2000

Mr. Peter D. Rabbon
General Manager
The Reclamation Board
1416 Ninth Street, Room 1601
Sacramento, CA 95814

Dear Mr. Rabbon:

WATER RIGHTS COMPLAINT REGARDING THE ROAD 9 STRUCTURE ON THE FRESNO RIVER IN MADERA COUNTY

The State Water Resources Control Board's (SWRCB) Division of Water Rights has received a complaint from the Menefee River Ranch and the Harmon Brothers Ranch. The complaint alleges that your organization has failed to provide adequate capacity in the Road 9 Structure to pass flows to which downstream water right holders are entitled.

I understand that a copy of the complaint has already been sent to you. If you did not receive a copy, please let me know and I will provide one for you. Enclosed for your review is an "Answer to Complaint" form and an information pamphlet regarding the complaint process. Please respond to the allegations in the complaint within 15 days from the date of this letter. Upon receipt of your response, all items submitted by each party will be evaluated to determine whether further action is required by the SWRCB.

If you have any questions regarding this matter, please contact me at (916) 657-1945.

Sincerely,

Charles A. Rich

Charles A. Rich, Chief
Complaint Unit

Enclosures

cc: See next page.

Acting for Chuck
Corey Condon
657-2045

Dave LaCrie (staffer)
657-1963

Letter No. 37

ATTACHMENT E

Attachment 12

State of California

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF WATER RIGHTS

901 - P Street, Sacramento, CA 95814
MAIL: P.O.Box 2000, Sacramento, CA 95812-2000
TEL: (916) 657-1361 FAX: (916) 657-1485

ANSWER TO COMPLAINT

of

Menefee River Ranch & Harmon Brothers Ranch

Note: For information on processing complaints, see pamphlet titled "Investigating Water Right Complaints".

CID# _____

File: ___-___-___

(For staff use only)

Comments on Complaint

The allegations made in the Complaint are correct except as follows:

-- The outlet capacity of the Fresno River bypass gated structure is greater than 100 cfs at design flow of the Eastside Bypass and thus exceeds the contract requirements as stated in the July 20, 1966 right-of-way contract.

-- The 60-cfs outlet capacity is unconfirmed by the State when water levels in the Eastside Bypass are at the crest of the downstream Eastside Bypass drop structure.

☐ Continued on attached sheet(s)

11/6 xc: L Dunn
R.L. Schafer
J. Lorenzen

FOR0048

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November 27, 2000

Mr. Peter D. Rabbon, General Manager
The Reclamation Board
1416 Ninth Street, Room 1601
Sacramento, CA 95814

Re: Fresno River, Road 9 Bypass Structure

Dear Mr. Rabbon:

This letter is being written in follow-up of the Water Right Complaint filed 2 June 2000 on behalf of the Harman Brothers Ranch and the Menefee River Ranch regarding the inadequate design and construction of the Road 9 Fresno River Bypass structure by the State Department of Water Resources (DWR).

The DWR design specifications No. 66-30 and 68-16, the right-of-way contract of 28 July 1966 between the Sacramento and San Joaquin Drainage District and Grover D. Turnbow, a letter dated 10 April 1970 from DWR to the Lower San Joaquin Levee District and a letter dated 24 April 1970 from DWR to Mr. Stacy Dohrzensky (attorney for Triangle "T" Ranch) all clearly identified a flow capacity of 100 cfs. for the Fresno River Bypass structure.

Mr. George H. Spencer, Chief, Planning and Operations Branch, Reclamation Board Activities stated in his letter of 24 April 1970:

> "With respect to the outlet structure, it was designed so as to not interfere with the water rights of the owners below the outlet. We point out that our agreement with the Triangle T Ranch provides a structure to release up to 100 second feet of water. The construction of the low flow channel across the bypass upstream of the weir, shows that low flows in the Fresno River enter the outlet."....
>
> "The intent was that it would be for those owners along the Fresno River from downstream of the outlet to where the Fresno River returns to the San Joaquin."

You stated in the Answer to Complaint:

> "The outlet capacity of the Fresno River bypass gated structure is greater than 100 cfs. at design flow of the Eastside Bypass and thus exceeds the contract requirements as stated in the July 28, 1966 right-of-way contract."

Such statement is absurd and a faulty interpretation of the design consideration and construction intent of the Fresno River Bypass structure by the DWR.

Why would the DWR construct a 100 cfs. low flow channel above the weir to the gated Bypass structure for a continuation of 100 cfs. flow in the Fresno River for all the water rights owners along the Fresno River downstream of the outlet structure, if such 100 cfs. capacity was to occur only during times that the Eastside Bypass had a flood flow of 10,000 cfs., such low flow channel would thereby be unnecessary.

In a letter dated 4 April 1967 to Colonel H. H. McCollam, General Manager, The Reclamation Board from George W. Nickel, Jr., a member of The Reclamation Board at the time.

> "....I hope that you will bring the problem to the attention of your staff and others concerned with it (referring to the Road 9 structure). Incidentally, I might also add that Bill Sweet (engineer for the Lower San Joaquin Levee District) told me that, in his opinion, the State had designed an inadequate diversion structure in the Eastside Bypass to divert water into this aforementioned turnout. If this is true, it gives me a certain hollow satisfaction in recalling that I made every possible effort to persuade the Department of Water Resources engineers that they were not designing properly to handle the diversion of Fresno River and Ash and Berenda Slough waters."

It similarly gives me a hollow feeling that you, the current General Manager of The Reclamation Board, would offer such reasoning for the faulty designed and constructed Road 9 structure by the DWR. The record documents do not support that the Bypass structure was designed for a flow of 100 cfs. in the Fresno River below Road 9 only when the Eastside Bypass had a flood flow of 10,000 cfs., such concept is unreasonable and not in keeping with the 1966 right-of-way agreement with Grover T. Turnbow and the correspondence referenced herein.

We find it unconscionable that for more than 10-years The Reclamation Board has evaded responsibility for the faulty designed and constructed Road 9 Fresno River Bypass structure.

We again hereby request that The Reclamation Board budget, design and construct a Road 9 Fresno River Bypass structure that will allow the continuation of 100 cfs. flow in the Fresno River below Road 9, without flow in the Eastside Bypass flood channel, as originally committed under the Lower San Joaquin River Flood Control Project.

Very truly yours,

R. L. Schafer

RLS/mep

cc: Barbara LeVake, President
Charles Rich
Dr. Jerry Menefee
Harman Brothers
Sandra Dunn
Michael Nordstrom
James Sorensen

Letter No. 40

December 13, 2000

Mr. R. L. Schafer
R. L. Schafer & Associates
Post Office Box 3239
Visalia, California 93278

Dear Mr. Schafer:

This is in reply to your letter of November 27, 2000 regarding the Road 9 Fresno River bypass structure.

Your request for a revised Road 9 Fresno River bypass structure will be taken under consideration after the water right complaint has been settled. In the interim, we are willing to assist you or others in processing a Reclamation Board application for modifying the bypass structure or adjacent facilities or to provide technical advice to pursue your concerns through other avenues.

If you have any questions, please call me at (916) 653-5434.

Sincerely,

ORIGINAL SIGNED BY
PETER D. RABBON
Peter D. Rabbon
General Manager

bcc: Barbara LeVake
David Sandino

PBruner

J:\pam\road9-schafer ltr.doc

Spell check 12/13/00

OFFICES OF
LINNEMAN, BURGESS, TELLES, VAN ATTA & VIERRA
ATTORNEYS AT LAW

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312 WEST 18TH STREET
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(209) 723-2137
FAX (209) 723-0899

L. M. LINNEMAN (1902-1983)
JOSEPH B. BURGESS (1902-1990)
JAY H. WARD (1942-1995)

JESS P. TELLES, JR., OF COUNSEL
THOMAS J. KEENE, OF COUNSEL

PLEASE REPLY TO

DOS PALOS OFFICE

RECD JUL 1 9 1998

July 8, 1998

Donald B. Mooney, Attorney
De Cuir & Somach
400 Capital Mall, Suite 1900
Sacramento, CA 95814

Re: Your letter of June 22, 1998 to Reggie Hill, General Manager of the Lower San Joaquin Levee District

Dear Mr. Mooney:

This office is general counsel to the Lower San Joaquin Levee District. As you may know, the Levee District is not a water delivery district nor does it own the bypass or the levees which it maintains. The levees and bypass are owned by the State of California. The District has an agreement with the State of California by which the District maintains a portion of the bypass. The Road 9 structure to which your letter refers is not within the description of the levees in that agreement. The District has been informed by the State that the District has no jurisdiction over this structure. The old Fresno River bed which you describe in your letter running from the Triangle T Ranch through the Menefee River Ranch and Harman Brothers Ranch is, similarly, not within the description of the improvements which the District maintains for the State of California or anyone else.

Therefore, the District has not "abdicated" its public responsibilities in favor of anyone. The District does not have any legal responsibility for or authority over the Road 9 structure nor the river bed which is the subject of your clients' dispute.

Very truly yours,

LINNEMAN, BURGESS, TELLES,
VAN ATTA & VIERRA

By Thomas J. Keene
Thomas J. Keene

cc. Peter D. Rabbon, State Reclamation Board
Reggie Hill, Lower San Joaquin Levee District
Denslow Green, Green, Green & Rigby re Madera Irrigation District

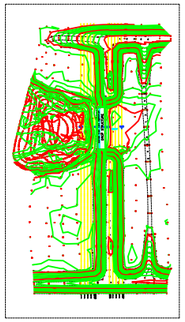


TOPOGRAPHIC SURVEY

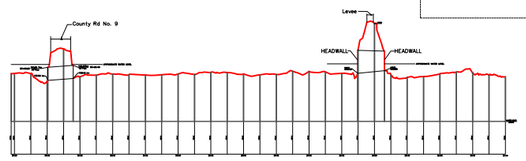
FRESNO RIVER – ROAD 9 STRUCTURE
MADERA COUNTY

E A S T S I D E B Y P A S S

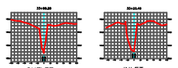
Water Flow

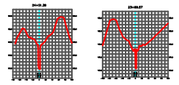


SR10-13
Crew: GS, TJ, RJ, DB, RB, SR
Cost Object: XGB10SSJD666
Date: Aug. 4, 2010
Quad Map: Firebaugh NE, Pobo Farm

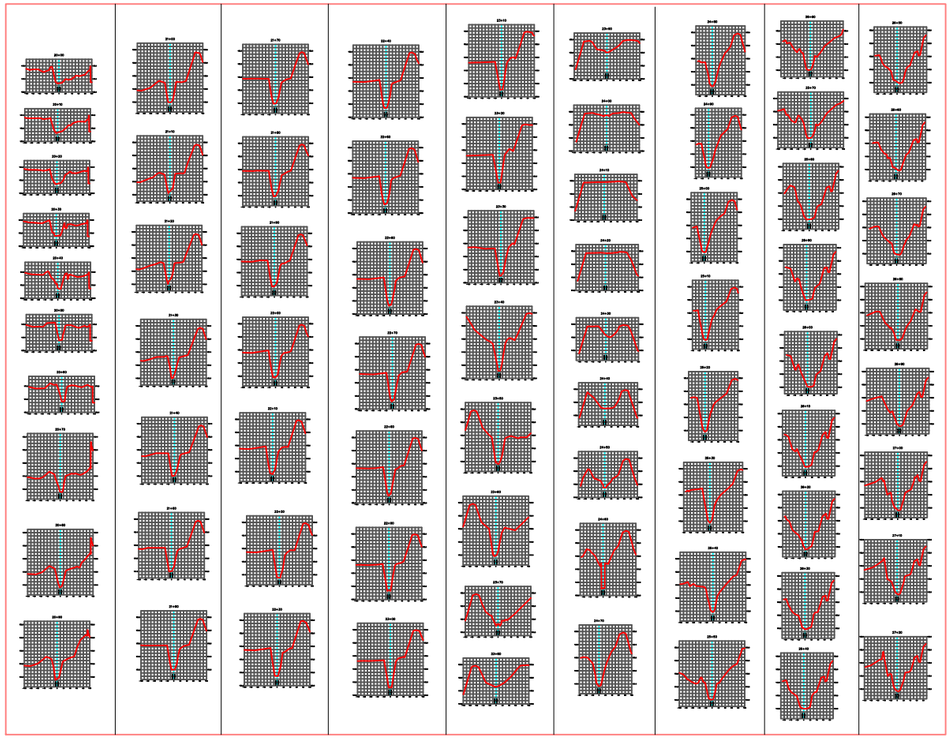


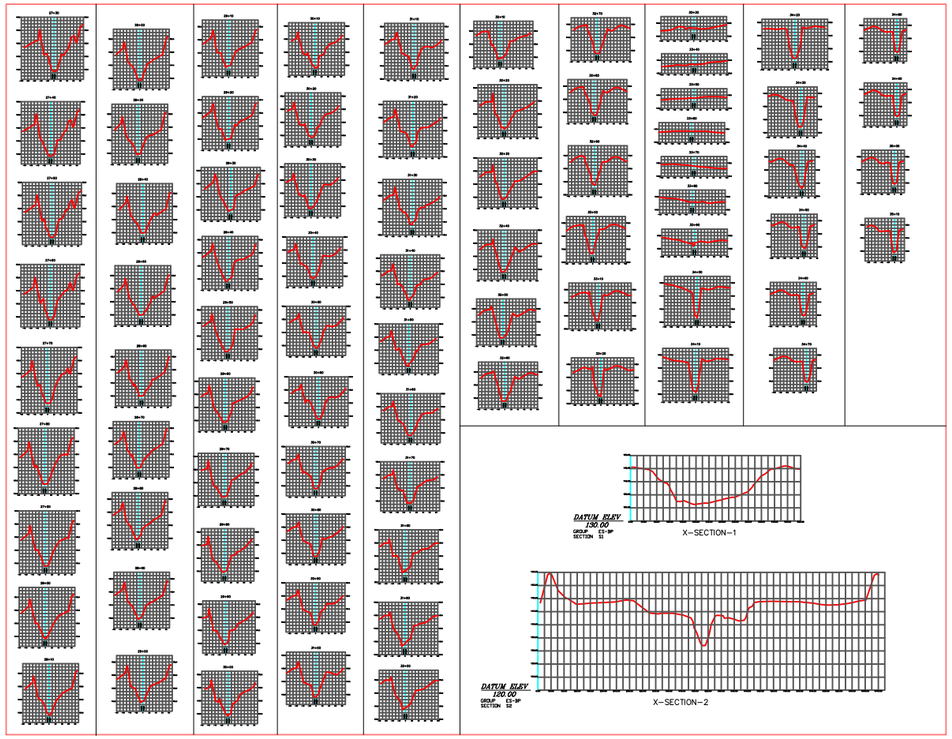
Fresno River, Levee, County Road No. 9 Profile





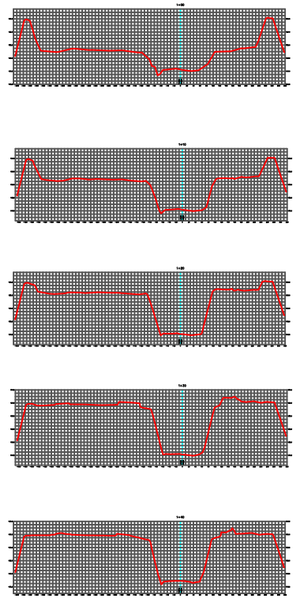
Datum: NAD83, NAVD88, Zone 3, US Feet , EPOCH 2007.00 per RBF Consulting Record of Survey in UPPER SAN JOAQUIN RIVER BASIN GEODETIC CONTROL SURVEY COUNTIES OF FRESNO, KING, MADERA, MERCED, STANISLAUS AND TULARE, CALIFORNIA
Survey Date: March 2008, Thru January 2009





FROM UPSTREAM TO INLET DROP STRUCTURE

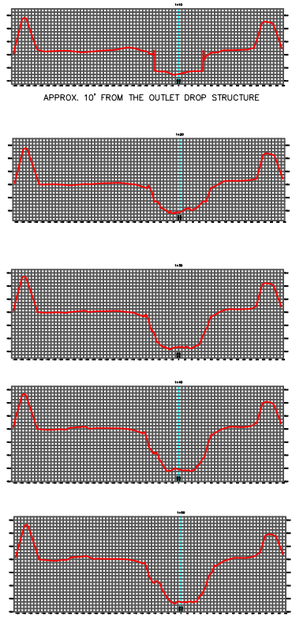
ALIGNMENT: UPS-DS



APPROX. 10' TO THE INLET DROP STRUCTURE

FROM OUTLET DROP STRUCTURE TO DOWNSTREAM

ALIGNMENT: DOWNS-DS



APPROX. 10' FROM THE OUTLET DROP STRUCTURE

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WR 99-001

In the Matter of Water Right Permit 16584
UNITED STATES BUREAU OF RECLAMATION,
Permittee.

SOURCES: Fresno River Tributary to the San Joaquin River

COUNTIES: Madera and Merced

ORDER DIRECTING PERMITTEE TO COMPLY WITH THE TERMS AND CONDITIONS OF ITS PERMIT

1.0 INTRODUCTION

On May 19 and 20, 1998, the State Water Resources Control Board (SWRCB) held a hearing to determine whether the USBR violated Permit 16584 by diverting water to which water users on the Fresno River downstream from Hidden Dam have senior rights. Based on the record, the SWRCB finds that the USBR has violated its permit by depriving prior right holders of water. The USBR's permit violations appear to have stemmed from a good faith but erroneous understanding of the USBR's obligations to complainants Menefee River Ranch Company, Inc. (Menefee River Ranch) and Lawrence and Richard Harman (the Hat-mans). This order provides the USBR with guidance concerning its obligations to complainants, and directs the USBR to release sufficient flows from Hidden Dam to satisfy their rights.

2.0 FACTUAL AND PROCEDURAL BACKGROUND

The Fresno River flows from the Sierra Nevada west through the City of Madera until it reaches the San Joaquin River. The San Joaquin River originates in the Sierra Nevada south of the Fresno River. flows roughly parallel to the Fresno River until it reaches Mendota Dam, then

the demands of the three parties, *the* estimated "natural flow," and the estimated actual flow is significant enough to justify the conclusion that permit violations occurred.. It appears safe to conclude that violations occurred in February 1992. During that month, estimated natural flows of 1,560 acre-feet could have met the parties' demands for 990 acre-feet. The release from Hidden Dam, however, was only 47 acre-feet, and the actual flow at the Road 9 Structure was zero. During this month, storage in Hidden Reservoir increased by 8,326 acre-feet.

6.0 PROBABLE PERMIT VIOLATIONS BY DELIVERING STORED WATER OUTSIDE THE AUTHORIZED PLACE OF USE

During the course of this proceeding, the complainants brought to the SWRCB's attention the fact that the USBR also may have violated its permit by delivering stored water to Triangle T Ranch. Water cannot be seasonally stored under basis of riparian right (*People v. Shirokow, supra, 26* Cal.3d at p. 307, fn. 7 [605 P.2d at p. 864, fn. 7, 162 Cal.Rptr. at p. 34, fn. 7]), and Triangle T Ranch does not have a storage right under its license. MID and Triangle T Ranch have entered into an agreement, however, which provides for the delivery of water, at MID's option, in a later year in satisfaction of Triangle T Ranch's riparian demand in a prior year where Triangle T Ranch's demand for the prior year was equal to or less than 250 acre-feet. (MID Exhibit 7, p. 15, Paragraph 5.4; R.T. pp. 298-302, 330, 336-337.) In other words, the agreement authorizes delivery of water that has been stored from one season to the next.

Triangle T Ranch has no right to stored water, and the USBR may not deliver water to Triangle T Ranch under its permit because Triangle T Ranch is outside the authorized place of use. The USBR should not deliver stored water to Triangle T Ranch in satisfaction of Triangle T Ranch's prior rights, unless the USBR files and the SWRCB approves a petition to expand the authorized place of use to incorporate Triangle T Ranch's property.

7.0 THE CAPACITY OF THE ROAD 9 STRUCTURE

One of the issues raised in this proceeding is whether the capacity of the Road 9 Structure is sufficient to accommodate the rights of Triangle T Ranch. the Harmans, and Menefee River Ranch. For the reasons set forth below, the SWRCB finds that the designed capacity of the

Road 9 Structure is 100 cfs, which probably is sufficient to satisfy the collective demands of all three parties, but the capacity has been impaired by accumulated sediment. The current, impaired capacity is approximately 60 cfs, which may or may not be adequate, depending on the **circumstances.**

According to a report by Murray, Burns & Kienlen, Inc., an engineering firm, the designed capacity of the Road 9 Structure is 100 cfs with a head differential of 0.7 feet. (SWRCB Files for Permit 16584, Murray, Burns & Kienlen, Inc. (1980) Preliminary Report, Fresno River Water Rights, pp. 4 l-6 1.) At the time the report was written in 1980, the current capacity of the structure was 60 cfs with a head differential of 0.25 feet, but Murray, Burns & Kienlen concluded that a capacity of 100 cfs could be restored by removing sediment deposits between the outlet and the Road 9 culverts and downstream of the outlet. (Id at pp. 41, 61.) The current capacity of the structure probably remains approximately 60 cfs.

The findings contained in the Murray, Bums & Kienlen report are consistent with the testimony of James E. Wickersham, President of Triangle T Ranch. Mr. Wickersham testified that at the point where the weir in the bypass is about to spill, the Road 9 Structure can bypass 60 cfs, and when flows are greater and head is greater over the weir, the Road 9 Structure can bypass greater flows. (R.T. pp. 133, 262, 412-413; see Murray, Burns & Kienlen report, ***supru,*** at p. 41.)

The designed capacity of the structure is probably adequate to meet the parties' maximum total demand of 53.5 cfs. While in theory the impaired capacity could meet the parties' demand as well, in practice the impaired capacity may well be insufficient. As explained earlier, the average rate of flow of 53.5 cfs that would satisfy the parties' demands assumes a constant rate of flow for a 30-day period. In actuality, flows may not be constant, and parties may seek to meet their demands by diverting more water over a shorter period of time. In addition, at times when the total demand is very close to the capacity of the Road 9 Structure, diversions made by upstream parties would have to be made in a prudent manner such that sufficient flows are bypassed to meet downstream demands.

At present, the circumstances do not warrant the initiation by the SWRCB of additional proceedings involving the State Reclamation Board and the Lower San Joaquin Levee District concerning the Road 9 Structure, as requested by complainants. If the parties do not feel that the current capacity of the structure is adequate to accommodate their demands, they may wish to pursue the possibility of restoring the structure's designed capacity with the Reclamation Board and the levee district. The clarification of the parties' water rights in this order may facilitate resolution of this matter.

8.0 CONCLUSION

In conclusion, the SWRCB finds that the USBR has violated Permit 16584 by depriving complainants and Triangle T Ranch of water to which they were entitled. The complainants requested that the SWRCB modify the USBR's permit to require the USBR to negotiate, execute, and implement an agreement with complainants within six months, to require the USBR to appoint a watermaster, and to require the USBR to maintain a real-time accounting of inflows and outflows at Hidden Dam. The SWRCB declines to modify the USBR's permit at this time. The USBR's permit violations appear to have stemmed from the USBR's good faith but erroneous conclusion that complainants' water rights had been lost. By this order, the SWRCB affords the USBR with clear guidance concerning its obligations to complainants." In addition,

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11 In comments to the proposed order, complainants also requested the SWRCB to afford the USBR with guidance concerning a dispute between the complainants and MID over the extent of MID's water rights as determined under a 19 16 Superior Court decree. We need not resolve the dispute at this time, because resolution of the dispute would-not affect the USBR's obligations to complainants. The amount of MID's entitlement will not affect the amount to which complainants are entitled except when the natural flow is insufficient to satisfy the claimed entitlements of both MID and the complainants. As stated earlier, however, the USBR is not required to release flows in excess of the natural flow. If the USBR releases flows equivalent to the natural flow and MID diverts an amount that the complainants claim is excessive, the complainants' dispute lies with MID, not the USBR

At other times, when natural flows are sufficient to do so, the USBR must release enough water to satisfy the undiminished water rights of both the complainants as set fonh in this order and the prior rights of MID. If the USBR releases enough water to satisfy what it determines to be the combined rights of the parties, the complainants would be harmed only if the USBR releases less water in satisfaction of MID's rights under the 1916 decree than MID in fact diverts based on MID's interpretation of the decree. Such a discrepancy is unlikely, however, because MID operates Hidden Dam on behalf of the USBR. Presumably MID's interpretation of the decree for purposes Of deciding how much to release to satisfy its prior rights and its interpretation for purposes of deciding how much to divert under those prior rights will be consistent. In the unlikely event that a discrepancy were to occur, the SWRCB could consider a complaint against MID and the USBR at that time.

The SWRCB also notes that, unlike Triangle T Ranch, which placed its water rights at issue by advancing a claim Of prescription and introducing evidence of its actual water use, MID did not place its water rights directly at issue in this proceeding. Accordingly, the record contains no evidence of MID's recent, actual water use, other than evidence of MID's interpretation of the decree. In view of the fact that it does not appear to be necessary to afford

(footnote continues next page)

the SWRCB concludes that the USBR shall be required to submit a report within six months of final SWRCB action in this matter that details how the USBR is meeting its obligations to complainants.[12] If in the future the USBR still fails to fulfill its obligations, then the SWRCB will consider what modifications to make to the USBR's permit, and whether to take enforcement action pursuant to Water Code sections 183 l-l 836.

Complainants also requested that the SWRCB expand the authorized place of use under the USBR's permit to include complainants' property so that they can benefit from the USBR's storage capabilities. The complainants suggested that they would also be willing to accept Central Valley Project water delivered through the San Joaquin River in exchange for Fresno River flows. The SWRCB defers to the USBR to determine whether to satisfy complainants rights with natural Fresno River flows or with some substitute supply that is acceptable to complainants. The SWRCB will consider whether to approve an expansion in the USBR's permitted place of use if and when the USBR files a change petition pursuant to California Code of Regulations, title 23, sections 79 l-799.

Finally, complainants requested that the SWRCB direct the USBR to invalidate the agreement between Triangle T Ranch and MID. The complainants asserted that the agreement is inconsistent with the USBR's permit obligations because it authorizes delivery of water to nonriparian land, and water delivery is based on a computer model designed by MID to quantify the demands of prior right holders which does not recognize complainants' rights. Complainants also pointed out that insufficient evidence has been introduced in this proceeding to determine whether the computer model is flawed.

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the USBR with guidance on the proper interpretation of the 19 16 decree, and the fact that the administrative record was not thoroughly developed on these issues, the SWRCB concludes it would be best not to interpret the decree unless and until a more concrete dispute makes such an interpretation necessary.

[12] Within this period, the parties may submit to the SWRCB new evidence concerning the calculations of riparian acreage contained in this order, and the SWRCB wiii consider whether further proceedings should be initiated to revise those figures.

The SWRCB concurs that the agreement authorizes the delivery of water in violation of the USBR's permit. As noted in section 3.0 above, the number of acres identified as riparian in Exhibit 4 to the agreement is inconsistent with the SWRCB's finding in this order. In addition, the agreement authorizes the delivery of stored water outside the permitted place of use, as discussed in section 6.0. Either the agreement must be revised, or the USBR must make other arrangements to ensure that water is not delivered in violation of its permit. Accordingly, the SWRCB concludes that the USBR shall be required to submit to the SWRCB, in conjunction with the report concerning releases discussed above, a revised agreement, or an explanation how it intends to ensure that water is not delivered to Triangle T Ranch in violation of the USBR's permit. Otherwise, the agreement is not on its face inconsistent with the USBR's permit obligations.

Presumably, the computer model will be revised in light of this order to recognize complainants' rights. At this time, consideration whether releases made in accordance with a revised version of the model would satisfy complainants' rights would be premature.

ORDER

IT IS HEREBY ORDERED THAT:

1. The USBR shall release sufficient water to satisfy the rights of Triangle T Ranch the Harmans, and Menefee River Ranch, as defined herein, provided that the parties' rights, singly or in combination, cannot exceed the natural flow of the Fresno River, and provided that the USBR is not required to release flows that exceed the capacity of the Road 9 Structure.

2. The USBR shall submit to the SWRCB within six months of final SWRCB action in this proceeding a report that details how the USBR is calculating the releases required to satisfy the Harmans' and Menefee River Ranch's rights.

3. The USBR shall submit to the SWRCB within six months of final SWRCB action in this proceeding either a revised agreement for the supply of water to Triangle T Ranch in satisfaction of its prior rights, or an explanation how the USBR intends to ensure that water is not delivered to Triangle T Ranch in violation of the USBR's permit.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of an order duly and regularly adopted at a meeting of the State Water Resources Control Board held on March 3, 1999.

AYE: James M. Stubchaer
Mary Jane Forster
Marc Del Piero
John W. Brown

NO: None

ABSENT: None

ABSTAIN: None

Maureen Marché
Administrative Assistant to the Beard

ATTACHMENT I

PORTERVILLE OFFICE

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R.L. SCHAFER & ASSOCIATES
CIVIL ENGINEERS - PLANNERS

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January 19, 2011

Central Valley Flood Protection Board
3310 El Camino Ave., Suite 151
Sacramento, CA 95821-6308

Attn: Mr. Len Marino, Chief Engineer

Dear Mr. Marino:

Representing the Fresno River riparians downstream of Road 9, Madera County, we are most appreciative for the involvement of the Flood Protection Board in the capacity issue of the Fresno River Road 9 Bypass Structure as designed and constructed by the State of California.

With respect to the "Fresno River Diversion Structure Hydraulic Analysis", based upon my prior evaluation thereof, I would be concerned that the State may expend considerable money to replace the box culvert and there would still be insufficient head (hydraulic grade line) at the drop structure, without flow downstream in the Eastside Bypass, for the 100 cfs. diversion. I have always believed that raising the invert of the drop structure (permanent concrete lip) would be the least costly and provide sufficient head to pass the 100 cfs. through the existing 6'x4' gate and box culvert.

I recently noticed that with a flow in excess of 5,000 cfs. through the Road 9 drop structure there was no differential in water surface elevation upstream and downstream of the drop structure. It is my opinion raising the drop structure invert elevation would have no effect on the flood flow in the Chowchilla Canal Bypass, as there is another drop structure in the Chowchilla Canal Bypass a short distance upstream, above the confluence of the Fresno River.

I would also encourage the replacement at the Road 9 CMP culverts with larger sized pipes for an increase in the flow capacity, a prior commitment of the State but never fulfilled.

Len, thanks for the opportunity of commenting on the Hydraulic Analysis Report. Sorry I cannot be in attendance at the 28 January 2011 meeting due to a prior commitment. Please advise how I may further assist in this important issue.

Very truly yours,

R. L. Schafer

RLS/mep

cc: Triangle T - Michael Nordstrom
Harman Brothers Ranch
Menefee River Ranch