

## 1.0 Introduction

This proposal is being presented by South Sutter Water District (SSWD), a local public agency formed under Division 13 of the Water Code of the State of California. SSWD is located in southern Sutter and western Placer counties, with the Bear River as the northern boundary and stretching southwest between Highway 65 and Highway 70 to Pleasant Grove and Curry creeks. The District was formed in 1954 to develop, store and distribute surface water supplies and to augment and replenish over-drafted groundwater supplies. Today SSWD encompasses a total gross area of nearly 64,000 acres, including 57,012 acres that are authorized to receive surface water.

A major facility owned by SSWD is the Camp Far West Reservoir. The enlarged Camp Far West Reservoir was completed in 1964 with a storage capacity of 104,400 AF. SSWD and Camp Far West Irrigation District, formed in 1924, hold water rights for operating the reservoir. The 7 MWs of power generated by the Camp Far West reservoir powerhouse is wholesaled to SMUD. The FERC license for the hydropower operation was issued on July 2, 1981. This project pertains to the spillway of the reservoir, as further explained under Section 2, Proposed Work.

The proposed project lies in the American River Basin (ARB) Integrated Regional Water Management (IRWM) planning region, approved by the California Department of Water Resources (DWR) during the 2009 Region Acceptance Process (RAP). The extents of this planning area, and the location of Camp Far West Reservoir (the subject of the proposed project) with reference to the area, is shown in Figure 3.1.

### 1.1 Goals and Objectives

The ARB IRWM Plan has identified the following objectives for the region:

1. Reliable drinking water supplies
2. Stormwater and flood management
3. Groundwater management
4. Consideration of environmental water supplies and ecosystem restoration
5. Recycled water development and implementation
6. Improvement and protection of water quality in both surface water and groundwater

The specific goals and objectives of this Proposal are in accordance with the region's goals. The goal of the Proposal is to reduce flood risk arising out of an extreme meteorological event and to improve water supply reliability. The specific objectives of the Proposal are as follow:

1. Improve spillway capacity to handle a PMF flow of 126,500 cfs
2. Increase water storage in reservoir by 9,830 acre-feet

### 1.2 Purpose and Need

[Please note that a more detailed description of the technical justification for the project, including graphics pertinent to project hydrology, is provided in Attachment 7]

The purpose of the proposed project is to reduce the risk of significant downstream flooding that may be caused in a high flow event. In 2006, the Probable Maximum Flood (PMF) flow for the reservoir was recalculated based on newly available hydrometeorological data. This study showed that the spillway capacity of 106,500 cfs was significantly less than the PMF outflow of 126,500 cfs. The lack of adequate spillway capacity means that in a high flow scenario like the PMF, water would back up behind the spillway and overtop the dam embankment. Such overtopping can lead to failure of the dam and sudden and significant flooding downstream. The California Department of Water Resources Division of Safety of Dams (DSOD) and Federal Energy Regulatory Agency (FERC) have recommended that the spillway capacity be increased in the interest of dam safety.

Other project benefits are the achievement of additional storage in the reservoir up to 9,830 acre-feet. The availability of additional surface water will allow SSWD to avoid cost of replacement sources and also reduce some groundwater extractions since the irrigators who SSWD is unable to supply because of surface water limitations ordinarily resort to groundwater pumping.

#### **1.2.1 How proposal addresses the adopted IRWM Plan's goals and objectives.**

Three objectives of the ARB IRWM Plan are addressed by this Proposal:

##### **A. Water Supply Objectives**

The ARM IRWM Plan strives to "Plan for and implement programs and projects that develop the highest level of reliability in public drinking water supplies and equitably distribute capital and operating costs."

The proposed project, when completed, will add 9,830 acre-feet of surface water capacity to the Camp Far West Reservoir. The additional storage will be used by SSWD to provide agricultural water supplies to its customers located in Sutter and western Placer counties. Presently, SSWD has approximately 57,000 acres that are authorized to receive surface water but in normal years SSWD is only able to supply water to approximately 43,000 acres. The irrigators who are not able to access surface water from SSWD ordinarily resort to groundwater pumping. By increasing the reliability and availability of surface water supplies, the proposed project will have the effect of reducing groundwater extraction, thus indirectly preserving groundwater supplies for drinking water uses.

##### **B. Stormwater and Floodplain Management**

The ARM IRWM Plan's overarching goal is to "Provide the highest practicable level of achieving flood control and stormwater quality in the region."

The proposed project, when completed, will reduce the probability of downstream flooding caused in extreme meteorological approach the PMF level. Without the project, the existing spillway capacity is projected to be overwhelmed, leading to dam failure and sudden inundation downstream. According to an Emergency Action Plan prepared by SSWD, such an event would inundate portions of Sutter, Yuba, Placer, and Sacramento counties. Thus, the project directly contributes to the achievement of a higher level of flood control in accordance with the ARB IRWM Plan.

### **C. Groundwater Management Objectives**

The ARM IRWM Plan's objective is to "Protect and enhance groundwater resources and groundwater quality in accordance with adopted GWMPs in the region."

As discussed under "A. Water Supply Objectives" above, the proposed project will have the effect of reducing groundwater extraction, thus indirectly preserving groundwater supplies for drinking water uses.

## **1.3 Project List**

This Proposal consists of only one project, as described below.

### **1.3.1 Name of project**

The project is identified as the Camp Far West Spillway Improvement Project.

### **1.3.2 Project abstract**

This Camp Far West Spillway Improvement Project involves work on the spillway of Camp Far West Dam, which is owned and operated by South Sutter Water District to provide agricultural irrigation deliveries in Sutter and Placer Counties. The reservoir is located on the Bear River, about 6.5 miles east of Wheatland, California. The Yuba-Placer county line passes through the middle of the reservoir. The spillway of the dam ensures that high flows in the Bear River can pass through safely.

In 2006, the Probable Maximum Flood (PMF) flow for the reservoir was recalculated based on newly available hydro-meteorological data. This study showed that the spillway capacity of 106,500 cfs was significantly less than the PMF outflow of 126,500 cfs. The lack of adequate spillway capacity means that in a high flow scenario like the PMF, water would back up behind the spillway and overtop the dam embankment. Such overtopping can lead to failure of the dam and sudden and significant flooding downstream.

The California Department of Water Resources Division of Safety of Dams (DSOD) and Federal Energy Regulatory Agency (FERC) have recommended that the spillway capacity be increased in the interest of dam safety.

The proposed improvement consists of lowering the existing uncontrolled spillway from 300 ft to 296.5 ft and installing pneumatically operated spillway gates (Obermeyer Gates) which allow storing water up to the 305 ft level when there is no flood risk (i.e., "sunny day scenario"). This incremental storage does not inundate any additional areas but keeps the reservoir footprint under water on a more consistent basis; during a 100-year storm event, the project allows the reservoir to be maintained approximately 3 feet lower than compared with the existing condition.

The most significant benefit of the proposed improvement is reduction of downstream flooding in the event of high flows (PMF) in the Bear River. An Emergency Action Plan prepared by South Sutter Water District shows that a dam failure triggered by such an event would inundated the communities of Wheatland, Nicolaus, etc. and affect up to x people.

Other project benefits are the achievement of additional storage in the reservoir up to 9,830 acre-feet.

### 1.3.3 Current status of project

SSWD has completed 90% design for this project.

### 1.3.4 Implementing agency

South Sutter Water District will be implementing the project.

## 1.4 Integrated elements of projects

This section is not applicable to this Proposal since it involves only one project.

## 1.5 Regional map

Figure 3.1 through 3.4 show the proposed project in relation to the IRWM Plan region, hydrologic basin, local and regional drainage, and the State Plan of Flood Control facilities. Figure 3.5 shows estimated area of inundation in event of dam breach.

## 1.6 Completed work

Design of the project is at a 90% stage of completion. No construction permits have been obtained.

## 1.7 Existing data & studies

The following studies and reports are available that pertain directly with the issue of inadequate spillway capacity at Camp Far West Reservoir:

1. *Basis of Design for the Camp Far West Dam Spillway Modification Project*, prepared by Mead & Hunt, Inc., June 2012.
2. Inundation map for Camp Far West reservoir submitted to FERC in December 2006, downloaded from <http://elibrary.ferc.gov/idmws/search/advResults.asp>
3. *Spillway Adequacy Evaluation for Camp Far West Hydroelectric Project*, prepared by Mead & Hunt, Inc., August 2006.
4. *Probable Maximum Flood Study for Camp Far West Dam*, prepared by Northwest Hydraulic Consultants, March 2006.

## 1.8 Project map

The following figures provide information related to the project:

1. Figure 3.6 – Vicinity map of project
2. Figure 3.7 – Shows exact location of work with respect to immediate surroundings
3. Figure 3.8 – Proposed lowering of spillway through demolition
4. Figure 3.9 – Conceptual figure of proposed gate

## 1.9 Project specifics

As illustrated in Figure 3.4, the proposed project is located upstream of the State Plan of Flood Control levees. The operations of Camp Far West reservoir is completely independent of the State Plan of Flood Control operations.

## 1.10 Project timing and phasing

The proposed project is not dependent on the implementation of other projects. The project can operate on a stand-alone basis since it will be fully functional without any preceding or succeeding projects. The important phases of this project and associated timing is as shown in Table 3.1.

Activity	Start date	End date
Engineering design	September 2011	April 2013
CEQA and permitting	February 2013	February 2014
Construction	September 2014	December 2014

## 1.11 Proposed work

The following tasks will be performed as to complete the proposed project:

### ***Task 1 Administration***

Project administration will be conducted under the supervision of SSWD's Project Manager. The activities involved in this task include the following: scheduling and coordinating the planning, permitting and design efforts; coordinate with regulatory agencies; stakeholder outreach and feedback coordination; issuance of bid documents; bid evaluation; obtaining board approvals; awarding construction contract/s; coordinating with construction administrator; construction close-out; processing of routine bills from contractors; grant administration; grant reporting and evaluation; general project communications. Project Manager will also be responsible for implementing the labor compliance program.

### ***Task 2 Technical studies and planning***

This task has been mostly completed by SSWD. SSWD will perform a hydraulic study of the existing spillway to determine alternatives to pass the PMF flow of 126,500 cfs. The modeling will be based on existing hydrologic data from 2006 PMF study and topographic data of existing spillway. SSWD will obtain data on various gate configurations to determine the optimal spillway control configuration to meet the dual purpose of (1) providing adequate spillway capacity and (2) increasing reservoir storage.

### ***Task 3 Conceptual design***

This task has been completed by SSWD. Conceptual design entails evaluating the alternatives developed in Task 2 and to decide on the most feasible alternative from the perspective of cost, constructability, access, environmental impacts, and operations. Once the most preferred alternative is decided, SSWD will request a conceptual design from its consultant. The conceptual design can be used to commence the regulatory process.

### ***Task 4 CEQA Documentation and permitting***

Based on the conceptual design of preferred alternative, SSWD will commence the process of obtaining CEQA approval of the project. The CEQA work including field inspections and documentation will be done by SSWD's consultant. In addition to CEQA, the following permits will be required by SSWD:

1. Lake and Streambed Alteration Agreement – California Dept. of Fish and Wildlife
2. Department of the Army Permit – Army Corps of Engineers
3. Water Quality Certification – Regional Water Quality Control Board

The process of consulting with agencies and submitting permit applications will be commenced at the appropriate design level required by particular agencies (e.g., 30%, 60%, etc.).

#### ***Task 5 Final design***

This task has been mostly completed by SSWD. Four design submittals are expected for this project – 30%, 60%, 90%, and 100%. This task will include data collection associated with design such as topographic surveys and geotechnical sampling.

#### ***Task 6 Bidding***

Upon approval of the final design by SSWD's board, the Project Manager will advertise the project for public construction bidding in accordance with applicable rules for public agencies. On completion of bidding period, SSWD will evaluate all responsive bids and, upon the board's approval, award the contractor to the most qualified construction contractor.

#### ***Task 7 Construction***

The lowest responsible bidder will commence construction upon receipt of notice to proceed from SSWD. In addition to construction of the project in accordance with specifications, contractor will be responsible for setting up temporary utilities, establishing construction site egress, safe management of equipment and vehicles, general site safety, and dust, noise and erosion mitigation. The construction will be divided into two distinct phases – (1) Demolition of concrete on current spillway and building back to new elevation, and (2) Installation of pneumatically operated gates and electric and control systems to enable operation.

#### ***Task 8 Construction administration***

SSWD will appoint a construction administration consultant to supervise the construction of the project. The construction manager appointed by SSWD will perform the following tasks during the construction phase: respond to Requests for Information (RFI); review product submittals; inspect construction quality; site safety; process change orders; prepare documentation of progress and prepare billings.

#### ***Task 9 Environmental compliance***

SSWD will hire an environmental consultant to advise on compliance with permit conditions during and immediately following construction. If required by permit conditions, SSWD will appoint biological monitors during construction. Any required mitigation or enhancement identified during environmental documentation/permitting will be implemented by SSWD through in-house staff, construction contractor, or specialized environmental contractor.

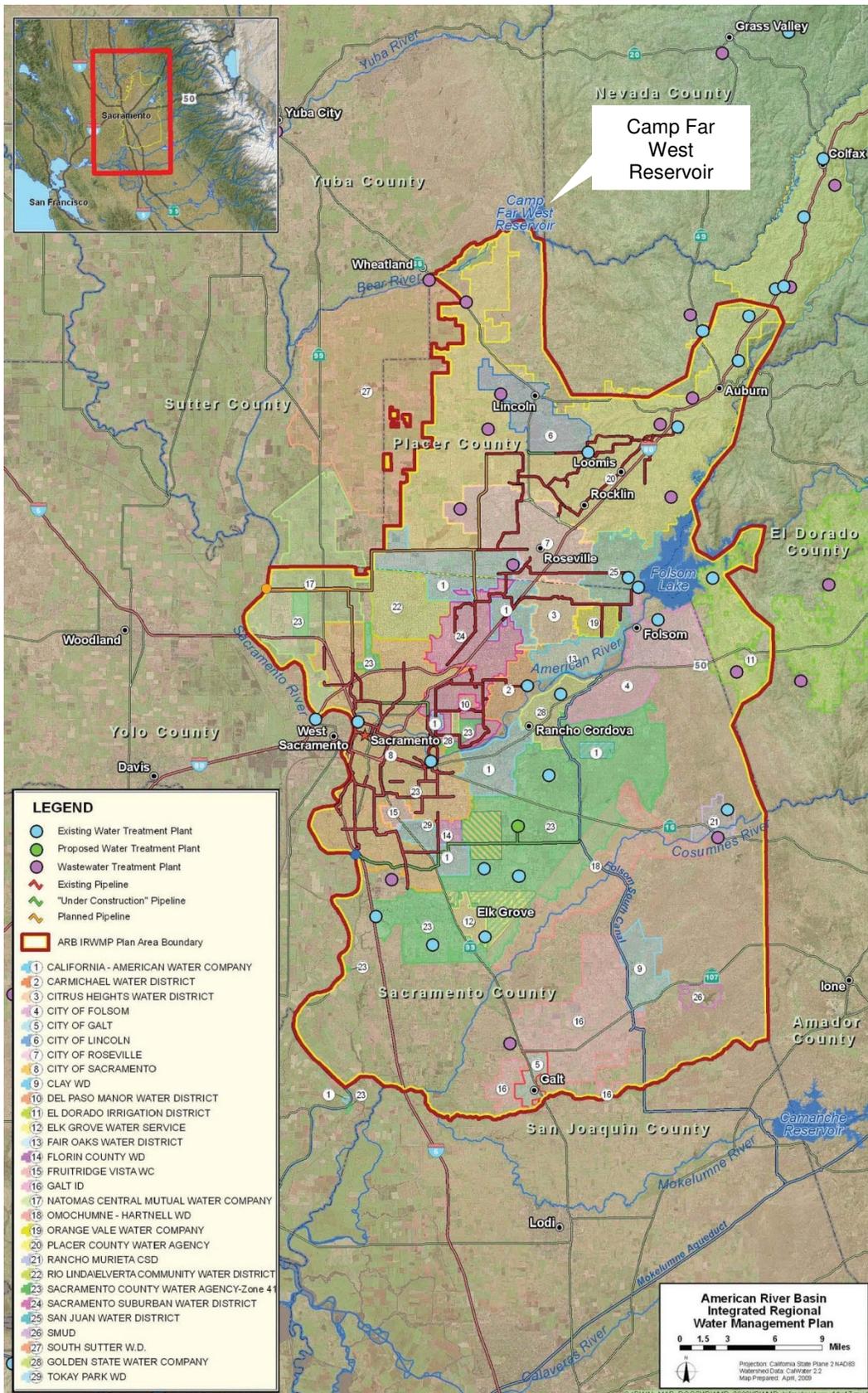


Figure 3.1 Project location with reference to IRWM Plan Area  
 Source: American River Basin IRWM RAP Application, April 29, 2009

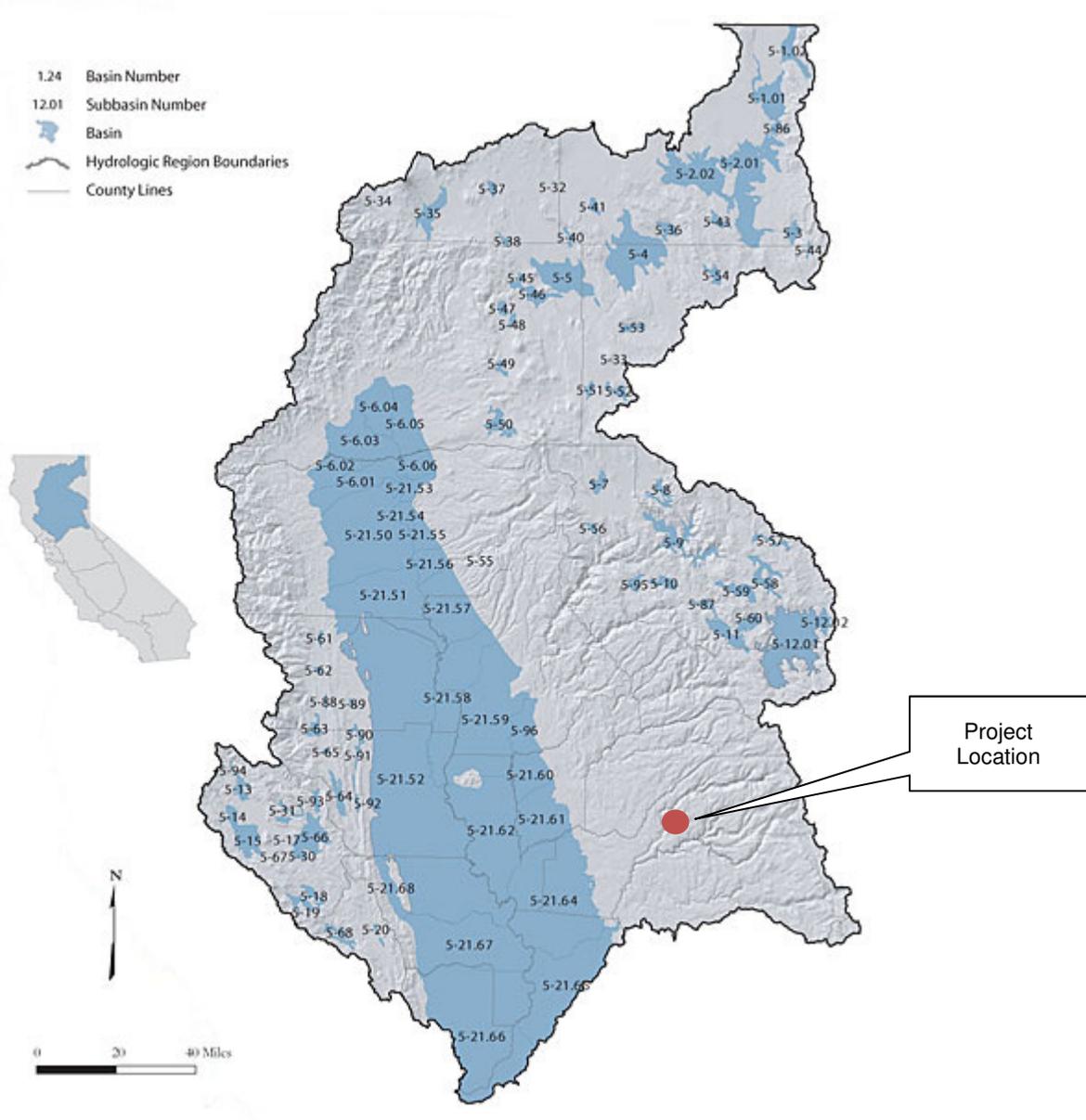
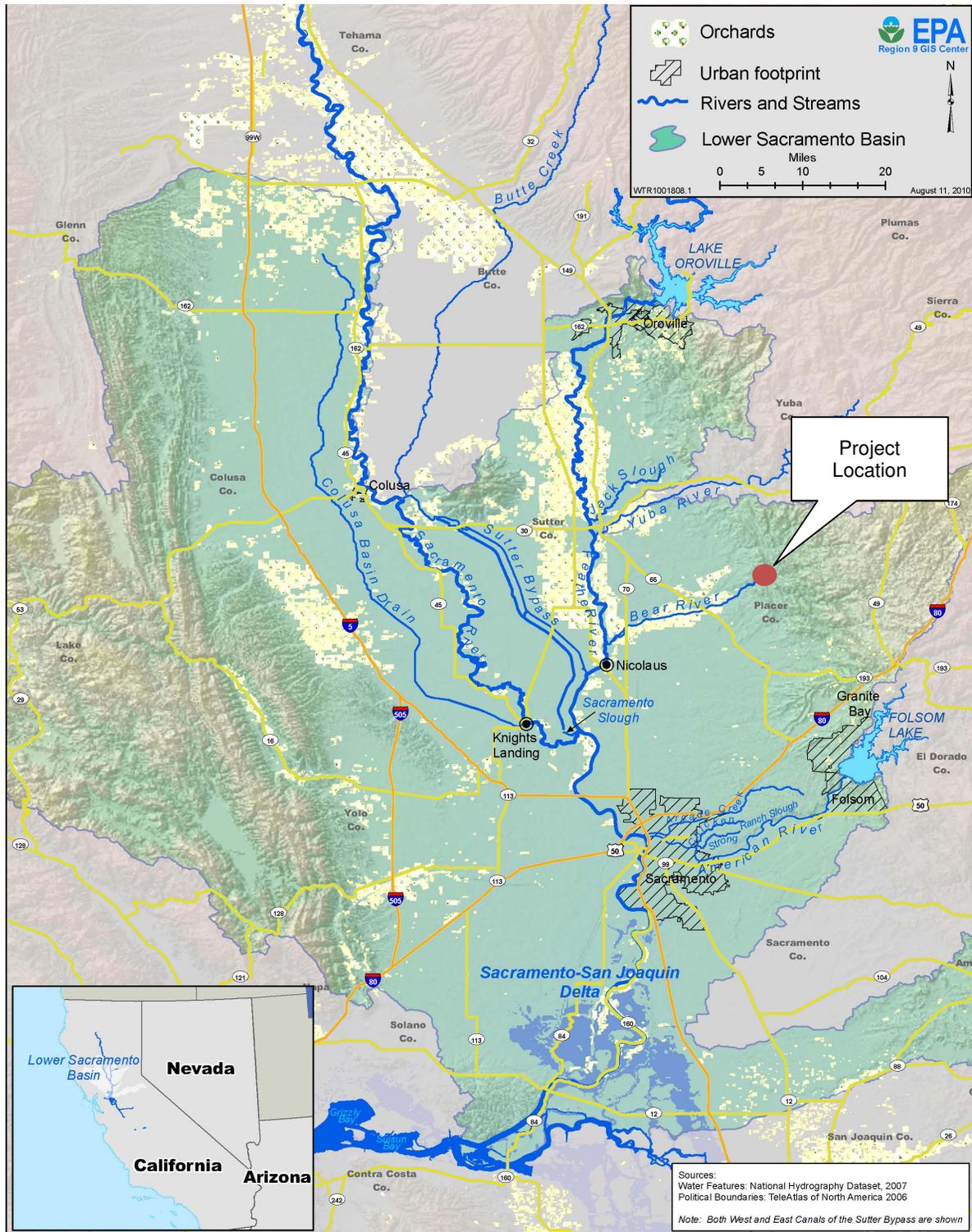


Figure 3.2 Project location with Sacramento River hydrologic region  
Source: <http://www.water.ca.gov/groundwater/>



**Figure 3.3 Regional and local drainage systems**  
 Source: <http://www.epa.gov/region9/water/watershed/measurew/feather-sac/index.html>

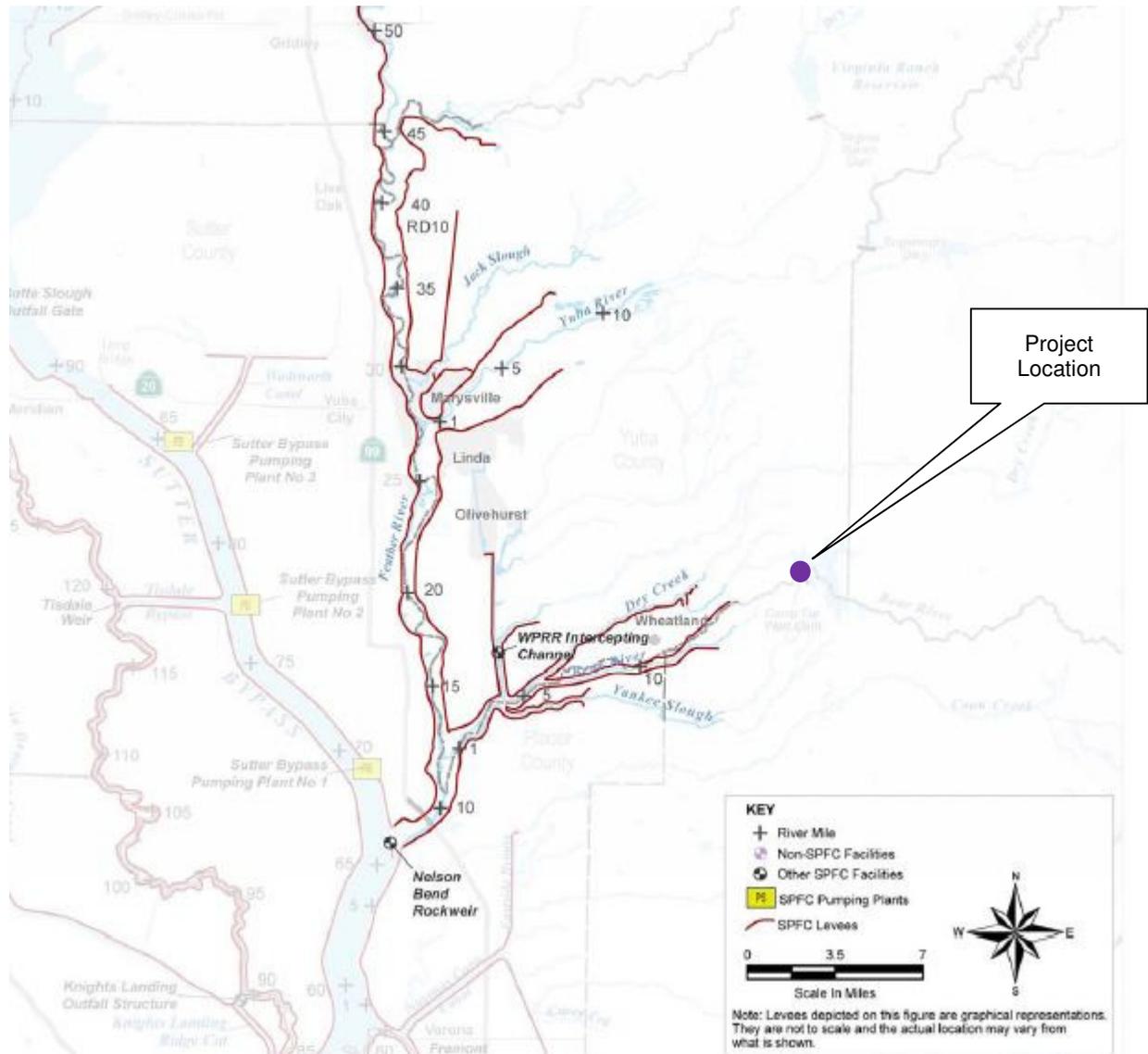


Figure 3.4 Project location with respect to State Plan of Flood Control facilities  
 Source: State Plan of Flood Control Descriptive Document

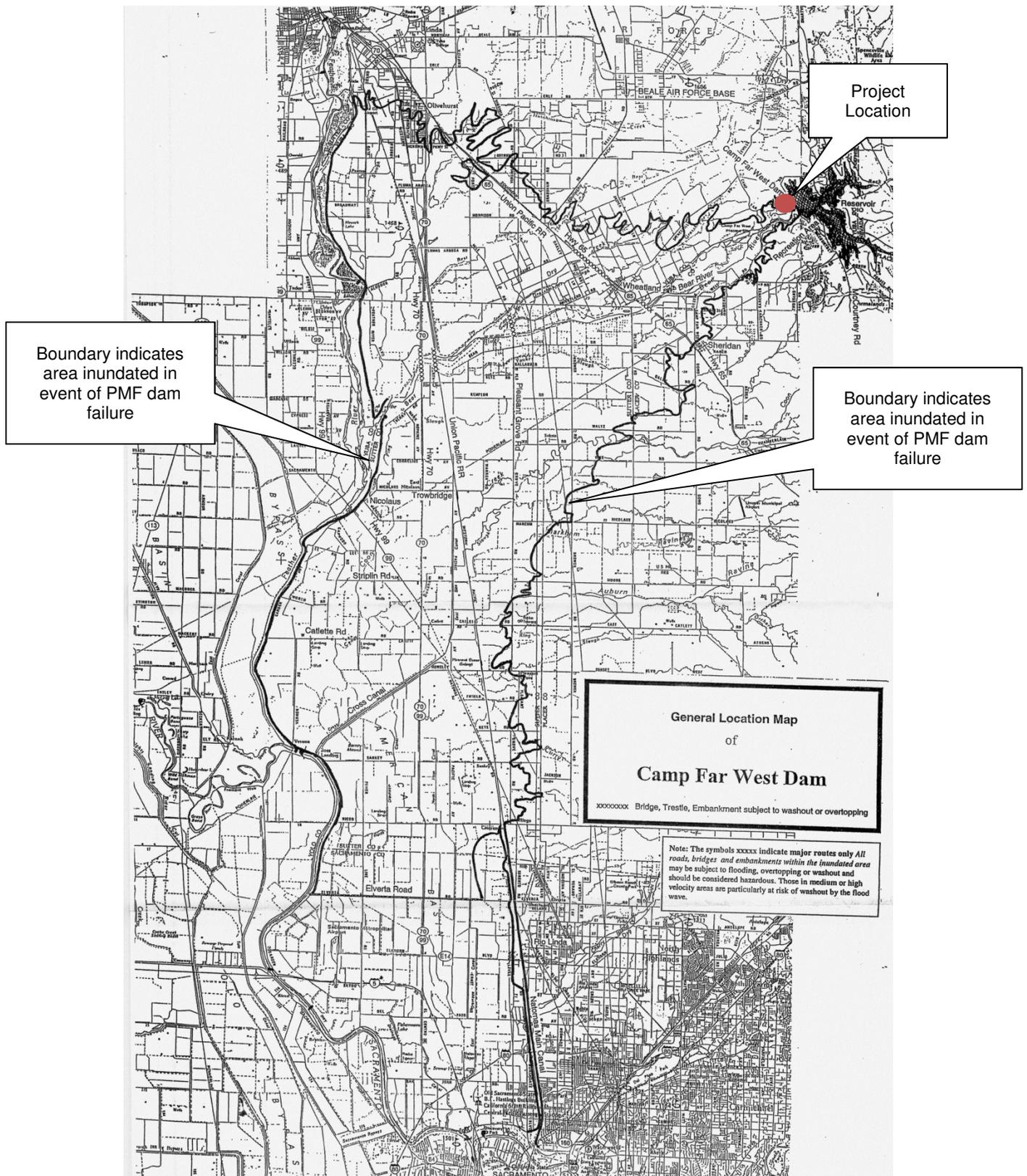


Figure 3.5 Estimated area affected by dam failure in PMF event  
Source: Emergency Action Plan prepared by SSWD

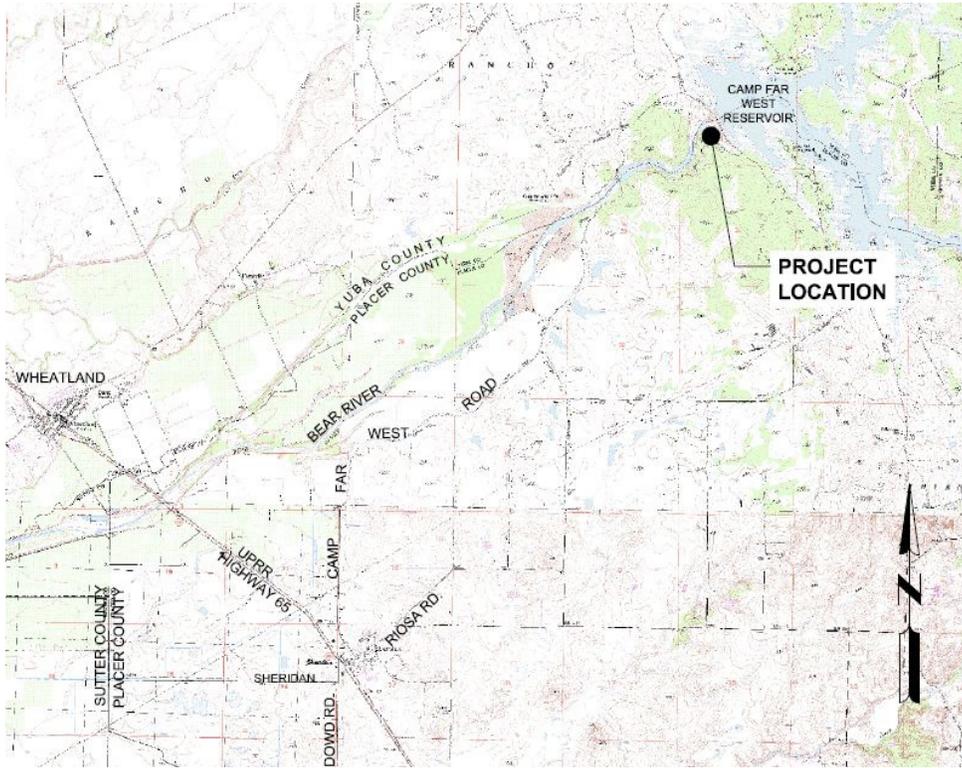


Figure 3.6 Project vicinity map



Figure 3.7 Location of improvement with respect to immediate surroundings  
Source: Bing Maps

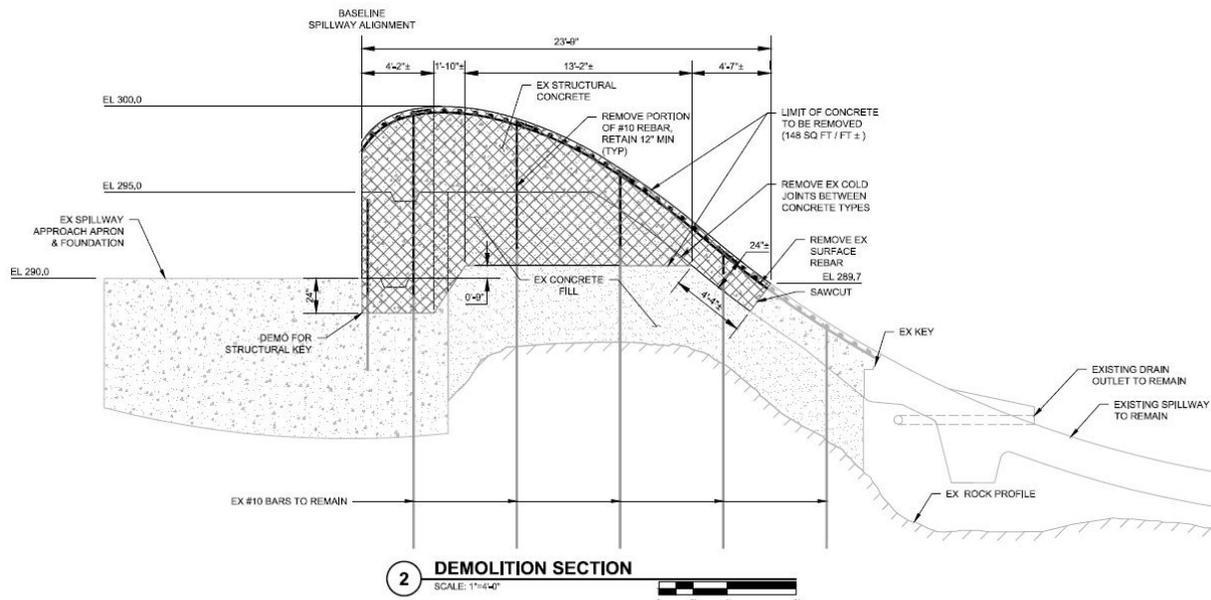


Figure 3.8 Figure showing proposed lowering of spillway by demolition

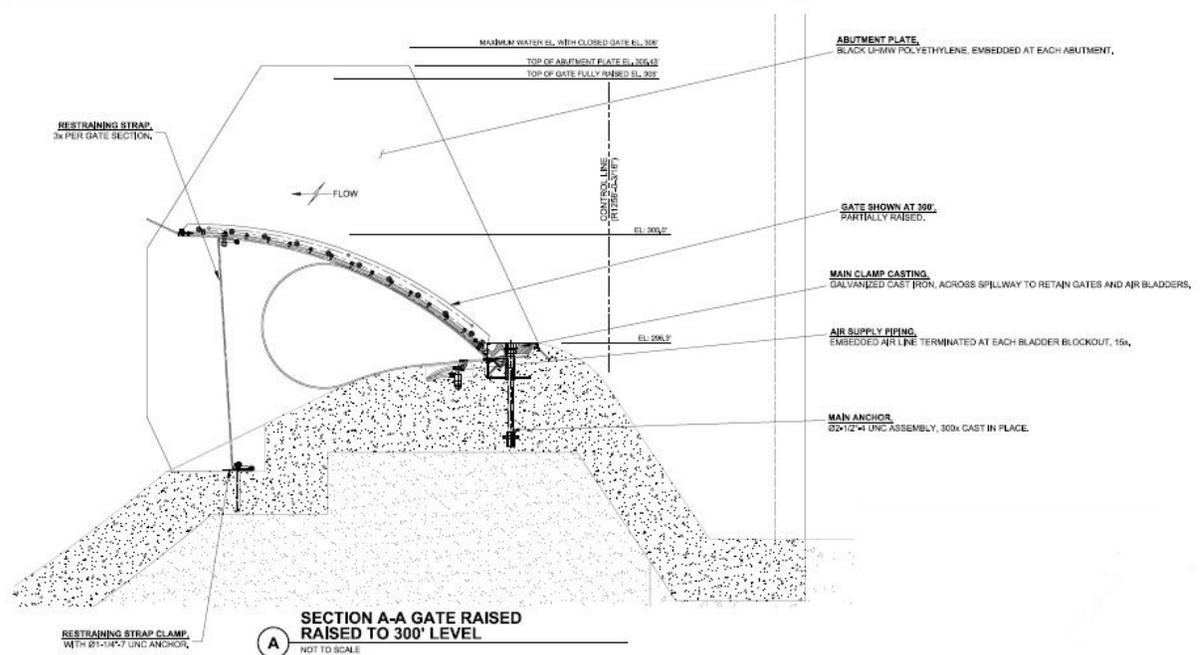


Figure 3.9 Figure showing conceptual design of proposed gate