San Joaquin River Restoration Program

Mendota Pool Bypass and Reach 2B Improvements Project

Restoration Goals Technical Feedback Group Meeting

May 17, 2012 1:30 pm – 4:30 pm

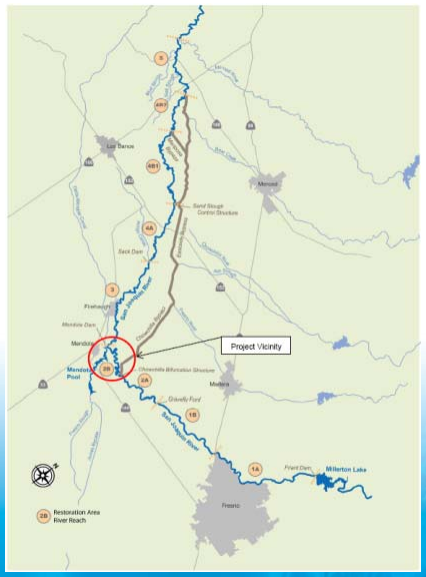
Los Banos Community Center
Los Banos, CA

Agenda

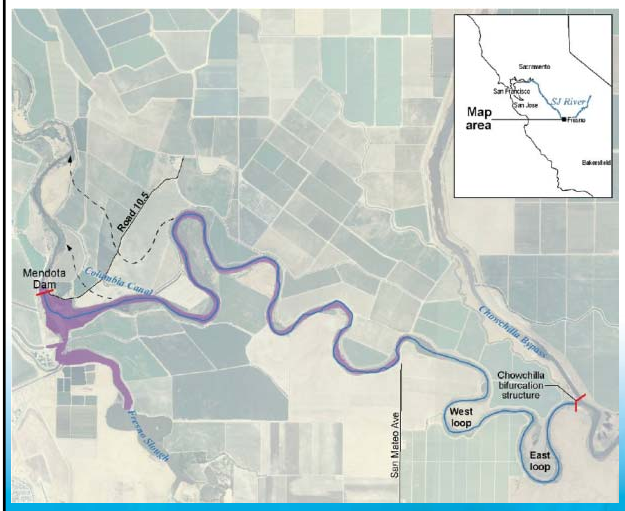
1. Reach 2B Project Background
2. Project Update
3. Technical Challenges

Reach 2B Project Background

Project Background

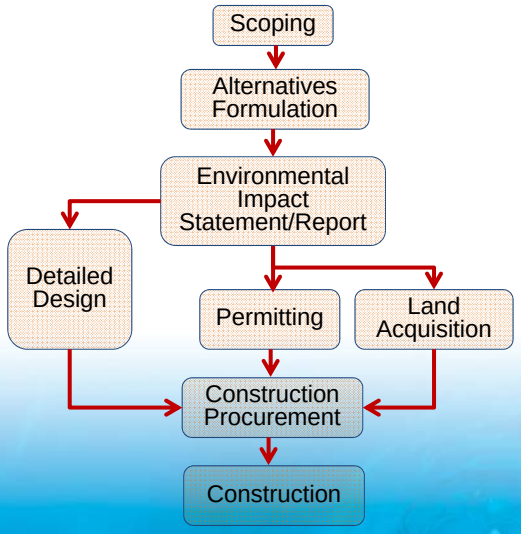


Project Background
Existing Conditions

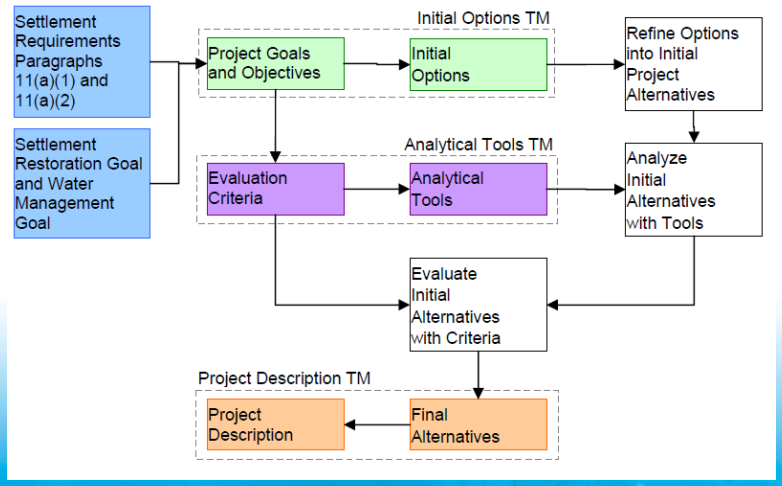


1. Project Extents (Phase 1)
   - Upstream Chowchilla Bifurcation Structure
   - D'stream Bypass Connection
2. Ex. Structures
   - Chowchilla Bifurcation
   - San Mateo Crossing
   - Mendota Dam
   - Water Supply Infrastructure
3. Ex. Conditions
   - Limited capacity (1,300 cfs – 2,500 cfs)
   - Primarily dry upstream
   - Pool backup to San Mateo Ave.
   - Shallow Groundwater
4. Settlement Requirements
   - Channel/Floodplain capacity of at least 4,500 cfs
   - Pool Bypass
   - Floodplain & related riparian habitat

Project Background
Project Overview/Process



Project Background
Alternatives Formulation

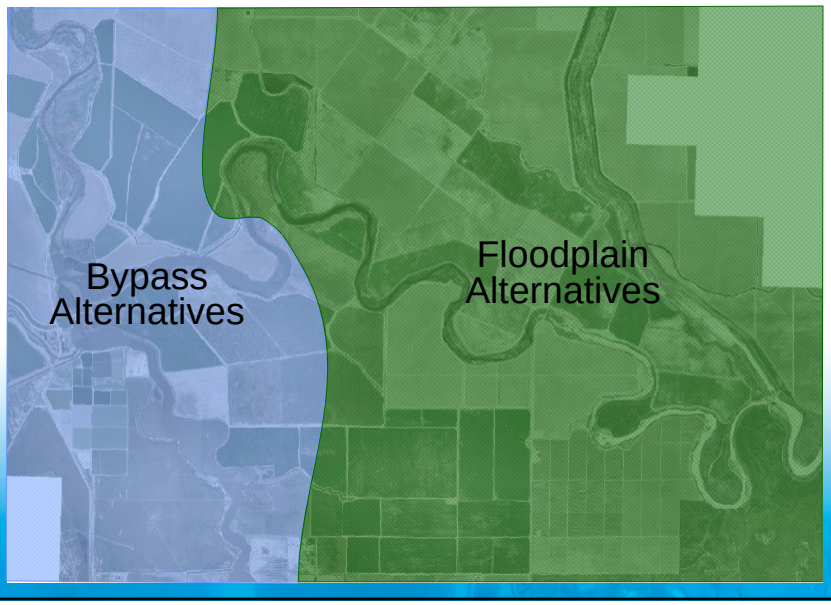


Project Background
Available Technical Reports

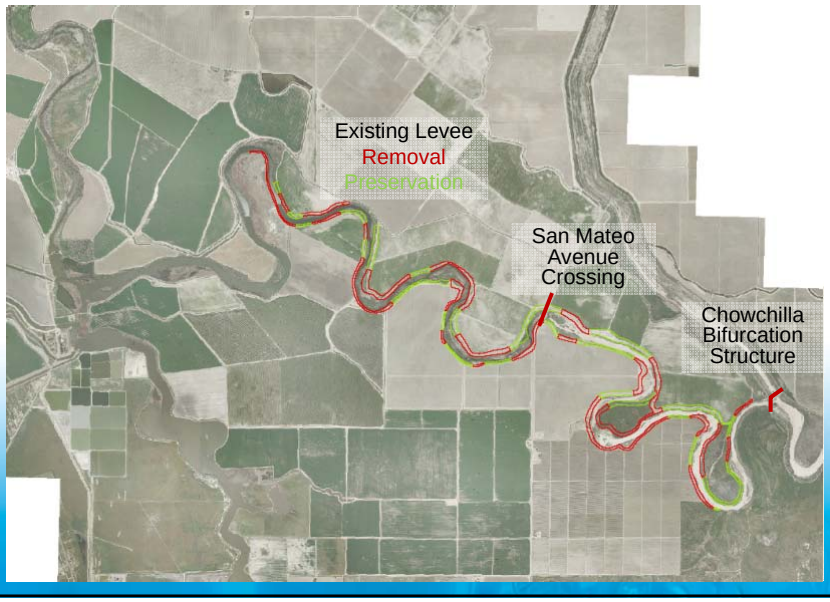
1.	Final Scoping Report	2/28/10
2.	Exist. Env. Conditions: Data Needs and Survey Approach TM	3/17/10
3.	Initial Options TM	4/2/10
4.	Analytical Tools TM	10/15/10
5.	2010 Field Survey – Landowner Summaries	1/6/11
6.	Final Field Survey Report	11/30/11
7.	Project Description TM	ongoing

Project Update

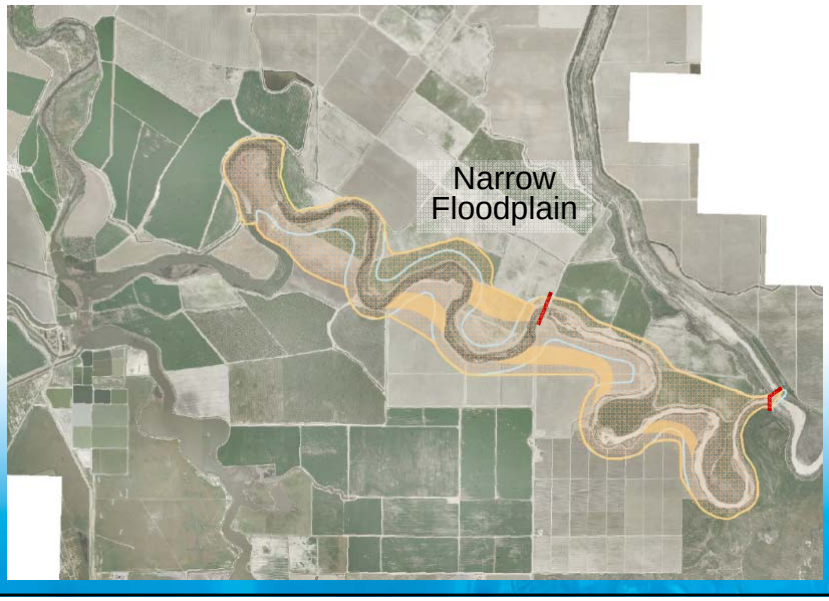
Project Update
Summary of Alternatives



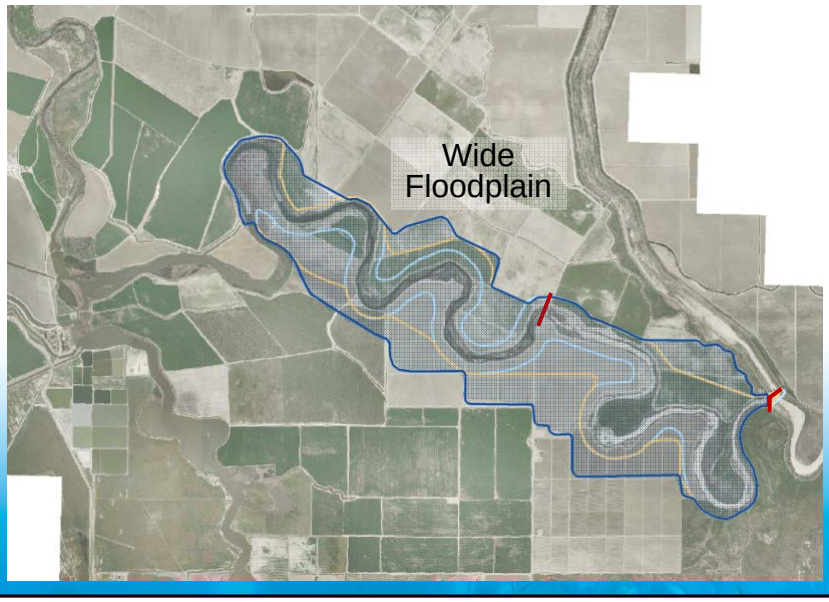
Project Update
Summary of Floodplain Alternatives



Project Update
Summary of Floodplain Alternatives



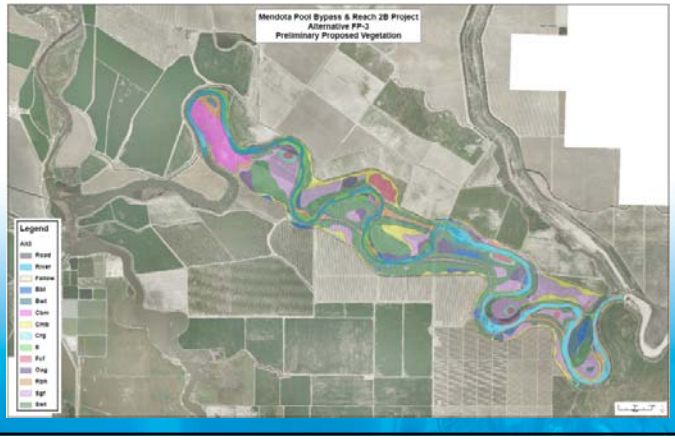
Project Update
Summary of Floodplain Alternatives



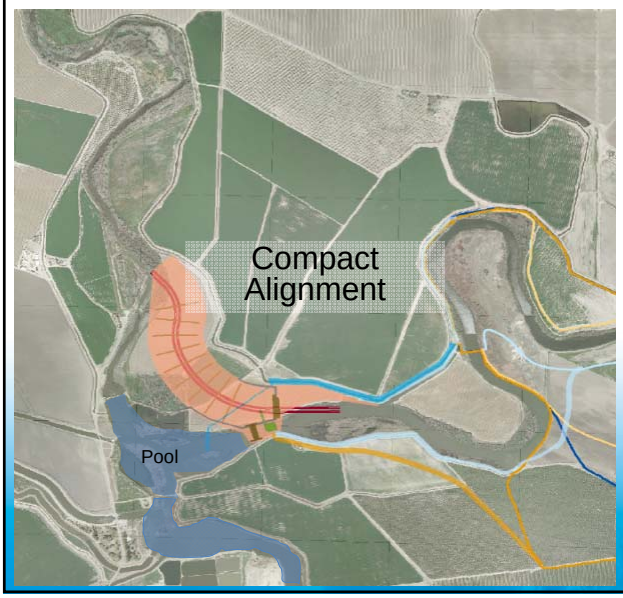
Project Update
Summary of Floodplain Alternatives

Revegetation Approach:

1. Low End Option: Remove invasives
2. High End Option: Full revegetation & irrigation



Project Update
Summary of Bypass Alternatives



1. Bypass Channel
   - Low flow channel
   - Bankfull channel
   - Drop structures
2. Extension Levees
   - FP-1
   - FP-5
   - Levee removal
3. Bifurcation Structure
   - Bypass control structure with fish ladder
   - Pool control structure with fish screen
4. Major Infrastructure Relocations
   - Columbia Canal extension and siphon
   - Road 10 1/2

Project Update
Summary of Bypass Alternatives

1. Fresno Slough Dam
2. Bypass Canal (Short)
   - Pool control structure with fish screen
3. Extension Levees
   - FP-1
   - FP-5
   - Levee removal
4. Mendota Dam Fish Passage
   - Fish ladder
   - Drop structures
5. Major Infrastructure Relocations
   - Columbia Canal extension and siphon
   - Main Canal & Helm Ditch

Project Update
Upcoming Milestones

- Working on the Project Description for the Project EIS/R (Final Alternatives)
  - Revisions based on agency comments, TAC feedback, and recent technical analyses
  - Technical Memorandum available late Summer 2012
- Initiated Project EIS/R
  - Environmental settings written
  - Impacts analyses start Summer 2012
  - Draft Public document available Spring 2013
  - Final EIS/R available early 2014
  - ROD summer 2014
- Preliminary design underway
- Anticipated Future Milestones:
  - Property Acquisition Process beginning summer 2014
  - Construction beginning early 2016

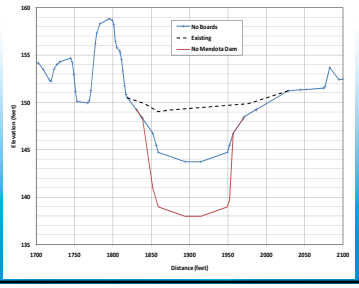
Technical Challenges

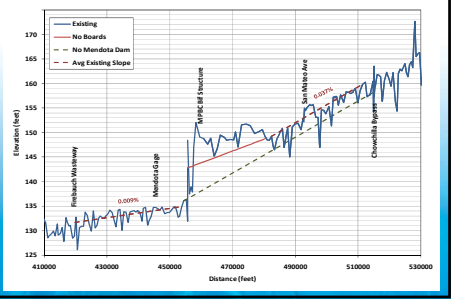
Technical Challenges

- Grade control and sediment continuity
  - Removal of Mendota Dam
  - Grade control in the bypass
- Fish passage
  - Frequency and duration
  - Fish rock ramp concept design
- Borrow area assessment and testing
- Other Misc. Challenges (not covered today)
  - Fresno Slough Dam backwater condition
  - Alternate water delivery canals
  - Infrastructure relocation

Technical Challenges
Grade Control - Removal of Mendota Dam

- Objective:
  - To remove existing structure and need for fish passage improvements at the structure
  - To allow channel adjustment and provide sediment to R3
- Concept Features:
  - Remove Mendota Dam
  - Potentially excavate Pool sediments
  - New fish ladder at San Mateo





Technical Challenges
Grade Control - Removal of Mendota Dam

- Benefits
  - Would eliminate need for a fish passage structure at former dam location
  - Potential seepage projects due to lowered water surface elevation
  - Proposed levees between Mendota Dam and San Mateo Ave could be lower
- Impacts:
  - Would require new fish ladder at San Mateo crossing
  - Would eliminate all floodplain (vegetation and fish habitat) downstream of San Mateo crossing
  - Would require significant excavation and associated cost
  - Potential WQ and channel stability issues, which may result in the need for extensive channel erosion protection (vegetated riprap)

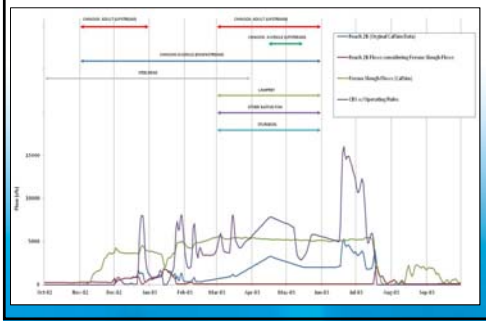
** Similar benefits and impacts at Compact Bypass **

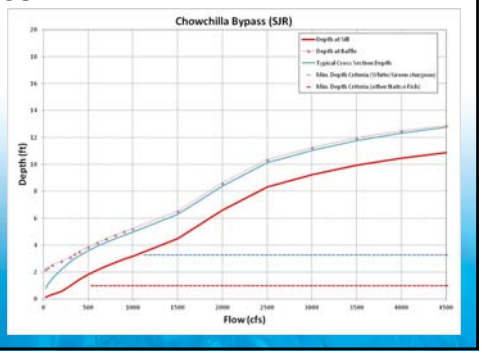
Technical Challenges
Fish Passage – Frequency and Duration

- Objective:
  - To understand the timing and duration of passage windows at the various proposed structures
  - To understand which species would be able to pass the proposed structures
- Proposed Structures:
  - Chowchilla Bifurcation Structure
  - Bypass Canal Bifurcation Structure
  - San Mateo Avenue crossing
  - Compact Bypass Bifurcation Structure
  - Mendota Dam

Technical Challenges
Fish Passage – Frequency and Duration

- Analyses incorporated:
  - Historic flow records for example wet, normal wet, normal dry, and dry years
  - Flow restrictions in R2B due to Kings River floods
  - Fish swimming abilities versus hydraulic depth and velocities at structures





Technical Challenges
Fish Ladder Modifications

- Objective
  - To understand the limitations of a vertical slot ladder to pass fish under all hydraulic conditions
- Concept:
  - Modify existing ladder design to pass adult and juvenile salmonids and, when possible, other native fish.

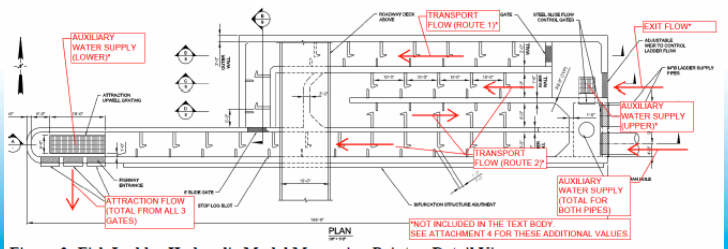
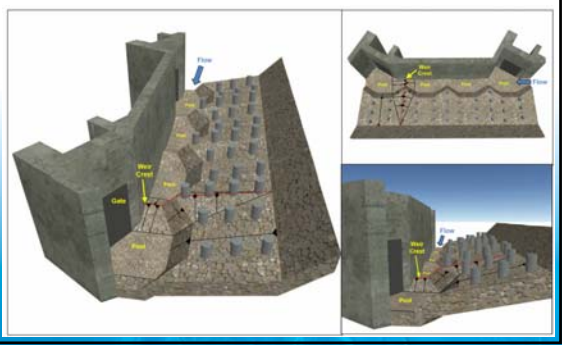


Figure 3: Fish Ladder Hydraulic Model Measuring Points – Detail View

Technical Challenges
Fish Passage – Rock Ramp Concept

- Objective:
  - To develop a structure capable of passing sturgeon and other native fish as well as salmonids
- Concept features:
  - 2-stage channel to provide adequate depth for sturgeon and low velocities for juvenile salmon
  - Multiple gates to accommodate variable hydraulic head



Technical Challenges
Fish Passage – Rock Ramp Concept

- Benefits:
  - Provides passage for adult and juvenile salmonids, sturgeon, and other native fish
  - Capable of operating under a wide range of hydraulic headwater and tailwater conditions
  - No need for supplemental flow
  - Can operate during gate operations (also applies to vertical slot ladder)
- Impacts:
  - Extremely long passage structure (1,000+ feet)
  - Higher cost

Technical Challenges
Soil Borrow Material

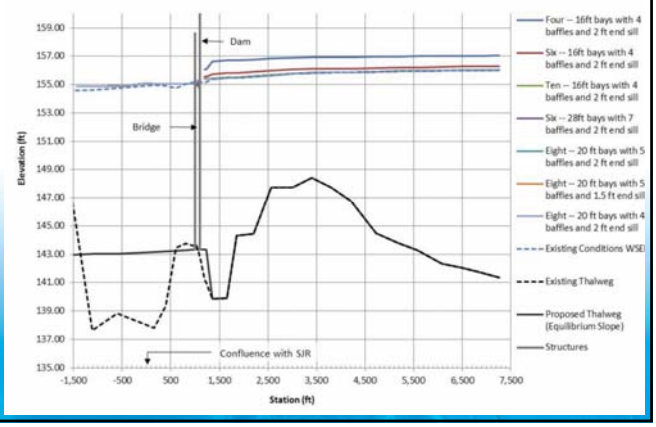
- Objective
  - Identify opportunities for borrow within and outside the project area.
- Concept
  - The overall project will need about 1.7M CY of fill
  - The following opportunities were investigated:
    - Excavation from within the project (~1.6M CY)
    - Removal of portions of existing levees (<1M CY)
    - Grading of high ground within the floodplain to further enhance floodplain connectivity (~1.5M CY)
    - Deep borrow pits areas within the project area that could be backfilled with spoil (~2.4M CY)
    - Mendota Pool excavation (<0.5M CY if an option)
    - Borrow from outside sources (~1M+ CY)

Questions?

Pocket Slides

Technical Challenges
Mendota Pool – Fresno Sl. Dam Backwater

- Objective:
  - Hydraulic analyses of Fresno Slough Dam and effects on water surface elevations
- Concept:
  - Modify dam design so upstream effects are negligible



Technical Challenges

Mendota Pool – Water Delivery Canals

- Objective:
  - To include sufficient reasonable routes for canals in the environmental documentation
- Concept:
  - Include alternate routes suggested by landowners and others
  - Conduct prelim. feasibility assessment