

COMMUNITY CONVERSATION

Lower American River Erosion Protection Project

8 April 2024



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US Army Corps
of Engineers



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WELCOME & OPENING REMARKS



- Ami Bera, Representative, U.S. House of Representatives
- Beth Salyers, Sacramento District, Sr. Civilian
- Rich Desmond, Supervisor, Sacramento County
- Pat Hume, Supervisor, Sacramento County
- Rick Johnson, Executive Director SAFCA
- Jane Dolan, President, Central Valley Flood Protection Board



**US Army Corps
of Engineers®**
Sacramento District



SACRAMENTO
COUNTY



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LEVEE HISTORY



The flood of 1850 devastated Sacramento.

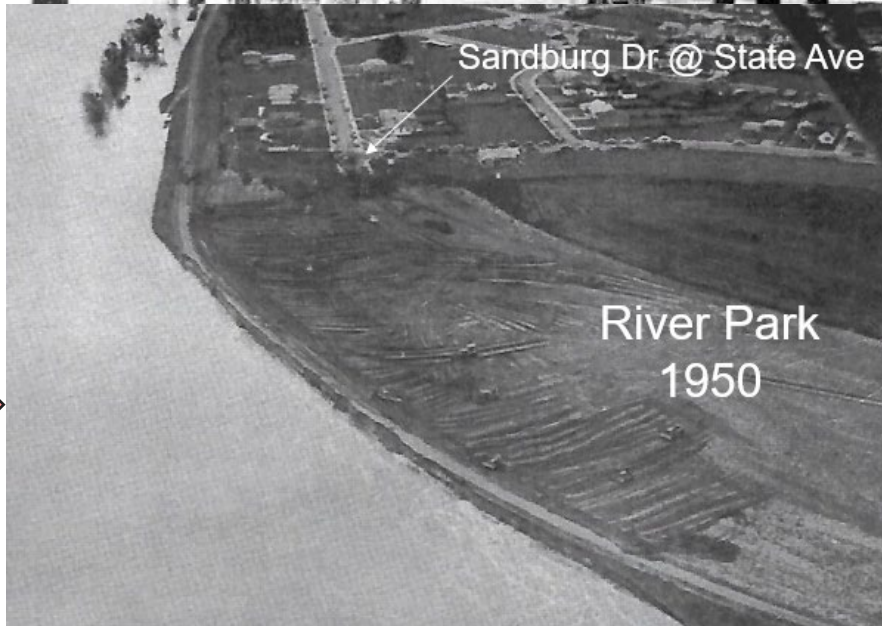
Construction of the city's first levee begins.



K. STREET, FROM THE LEVEE.

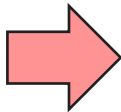
**INUNDATION OF THE STATE CAPITOL,
City of Sacramento, 1862.**

Published by A. ROSENFIELD, San Francisco



Flood of 1951 ~ 180,000 cfs

North levee did not exist



River Park was nearly lost



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EXISTING EROSION REPAIR SITES





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FLOOD CONTROL SYSTEM IMPROVEMENTS



Folsom Dam Improvements

- Flood Storage
- Release Capacity

Completed Levee Improvements

- Height fixes
- Seepage and stability

Remaining Effort

- ***Erosion Protection***





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PUBLIC SAFETY IS #1 PRIORITY



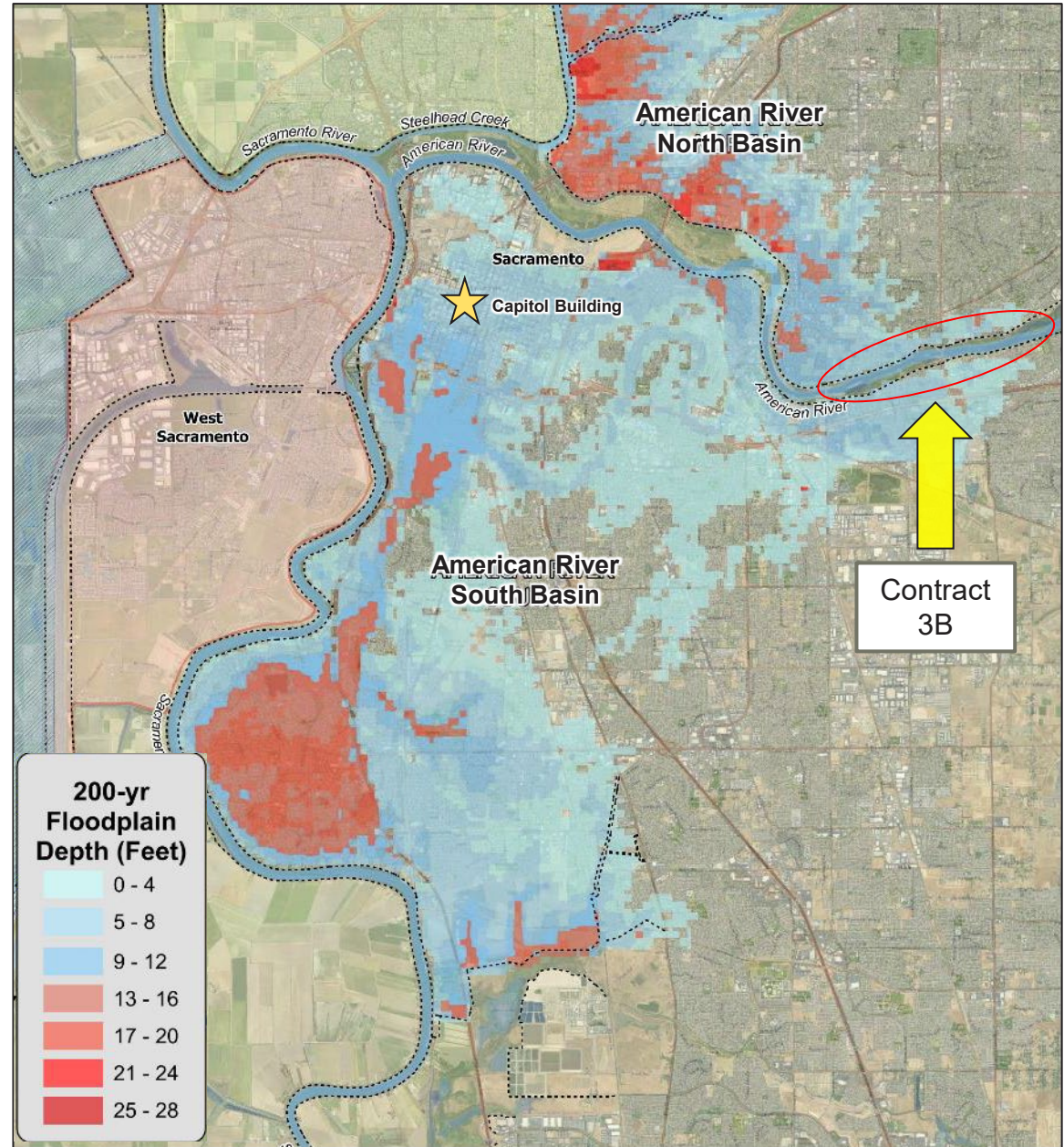
As of 2015	American River South	American River North
Population at risk (Day)	350,000	58,500
Population at risk (Night)	440,000	51,000
Loss of Life (Day)	500	170
Loss of Life (Night)	980	160
Damages*	\$46.7B	\$8.8B

Source: ARCF GRR

*2015 dollars

American River Common Feature Program (ARCF16)

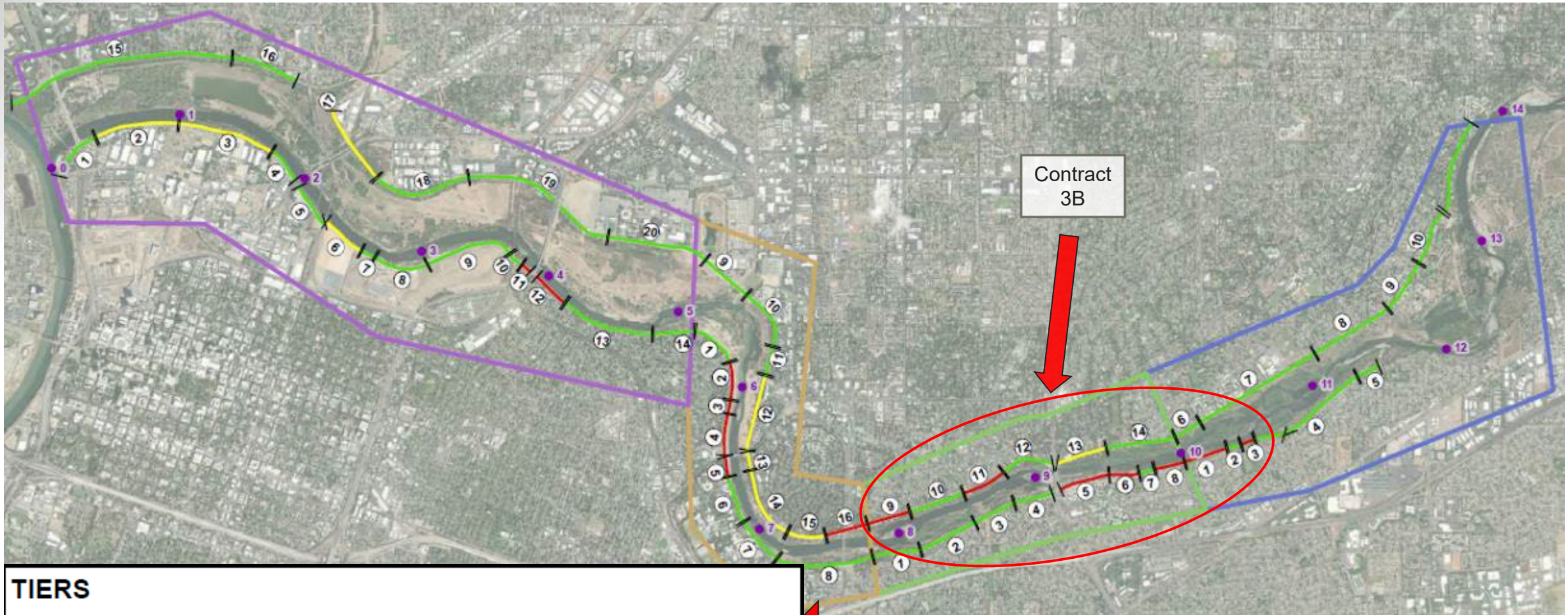
- \$1.8 billion appropriated toward flood control improvements along the American and Sacramento Rivers








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EVALUATION OF ACTIONABLE SITES



TIERS

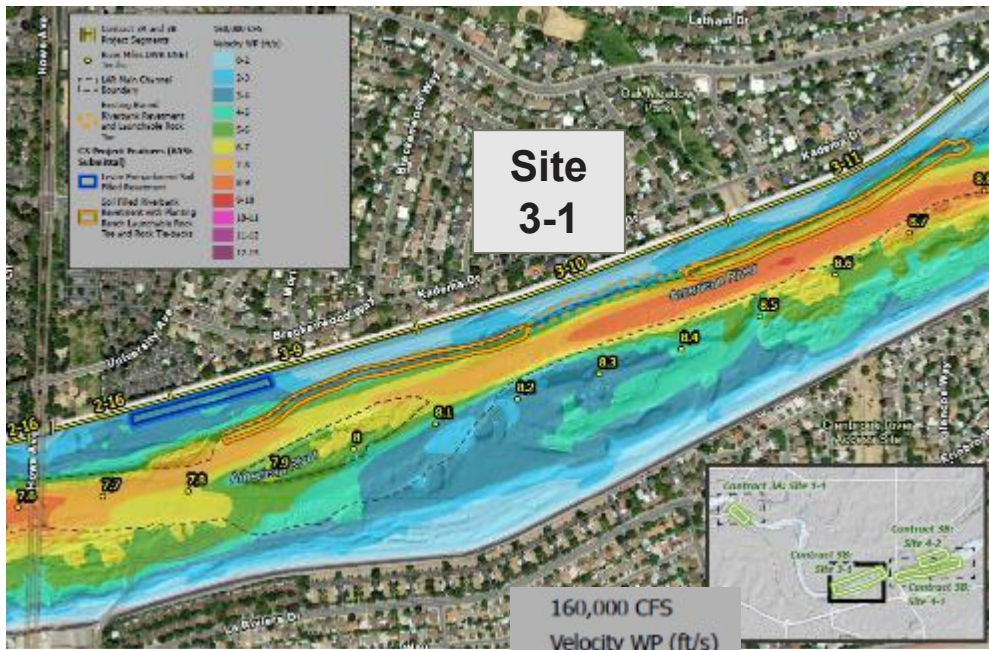
-  1 - Segments that have the highest risk of erosion and are subject to an immediate threat to the levees during high flows
-  2 - Segments that are not subject to an immediate threat to the levee but are anticipated to reach that condition after one or more high flow events (during the 50-year design life of the project)
-  3 - Remaining segments that are not considered subject to an erosion threat that could lead to levee breach (during the 50-year design life of the project)



C3B PROJECT HYDRAULIC CONDITIONS

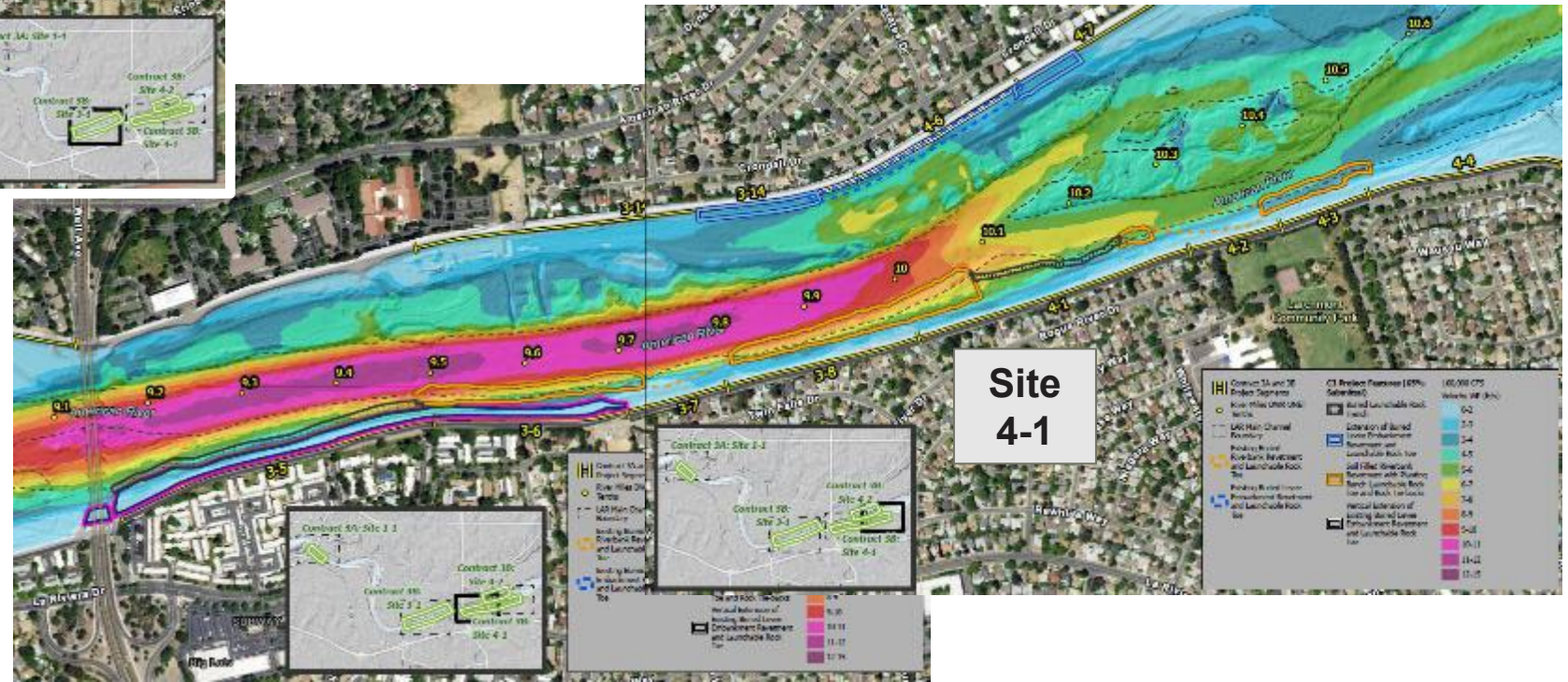


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Velocity Heat Maps

Design Flow: 160,000 CFS from Folsom Dam





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C3B DESIGN PHILOSOPHY AND COMPLIANCE



Engineering With Nature (EWN)



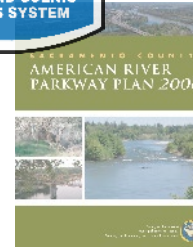
“Engineering With Nature is the intentional alignment of natural and engineering processes to efficiently and *sustainably* deliver *economic, environmental, and social benefits* through *collaboration*.”

<https://ewn.erdc.dren.mil/>

Principles

- Optimize Engineering to essential minimum
- Integrate Social / Environmental / Economic considerations throughout project life cycle
- Science based collaboration w/ stakeholders

Wild and Scenic Rivers Act (WSRA)



“A major focus of flood management along the lower American River is the development and implementation of an *anticipatory erosion control program* based on identifying and treating eroding sites before they become a critical threat to the levee system and ideally before the riparian corridor is lost. This program emphasizes early interventions, relying on methods of protection that *minimize habitat impacts* and reduce future costs.”

American River Parkway Plan, Pg 88

Requirements

- Minimize use of Riprap
- Avoid / minimize impacts
- Re-Vegetation Plan

Optimized Design

- Minimal Riprap
- Habitat avoidance
- Re-Vegetation plan



Constraints

Tight Constraints
Urbanized, Leveed River

No Constraints
Open, Free River

Soft Features
Set back levees, Bio-Engineering

EWN Erosion
Protection Options

Hard Features
Extensive use of Riprap





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C3B DESIGN COLLABORATION & COORDINATION



Ongoing & Regular Collaboration & Coordination

- WSRA Working Group (USACE/CVFPB/SAFCA, NPS, County Parks, NMFS, USFWS, others as needed)
- Lower American River Task Force (LARTF, Quarterly, Public)
- ★ Bank Protection Working Group (BPWG, Periodic, Public)
- ▲ Technical Resources Advisory Committee (TRAC, Local experts and resource agencies, Periodic)
- USACE Eng. Research & Development Center (ERDC)
- Resource agency meetings (NMFS, USFWS, monthly)
- American River Parkway Association Committee (County Parks)
- Recreation and Park Commission (County Parks)



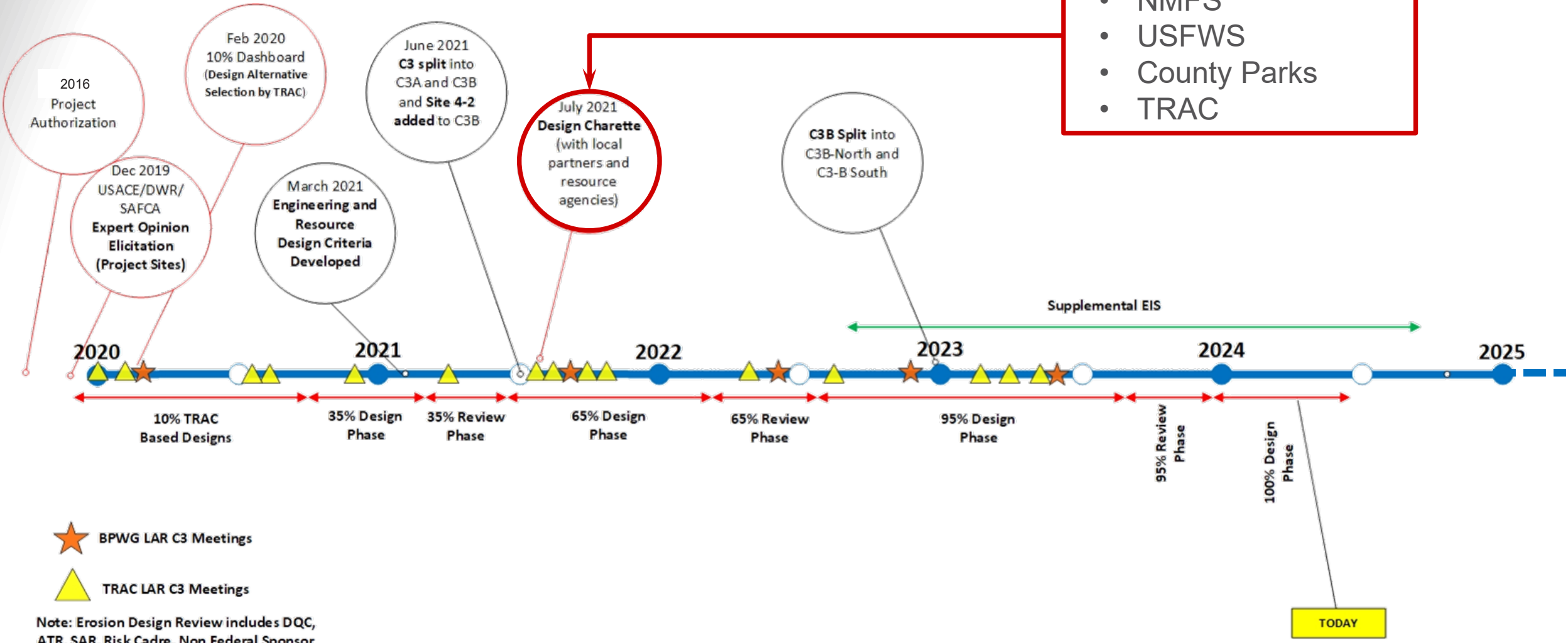
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C3B DESIGN COLLABORATION TIMELINE



Charette included:

- NMFS
- USFWS
- County Parks
- TRAC



TODAY

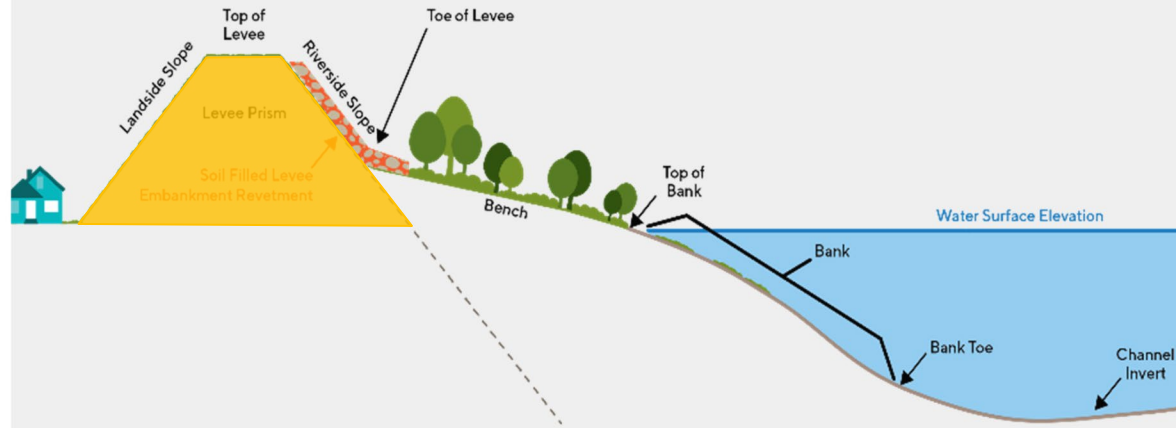


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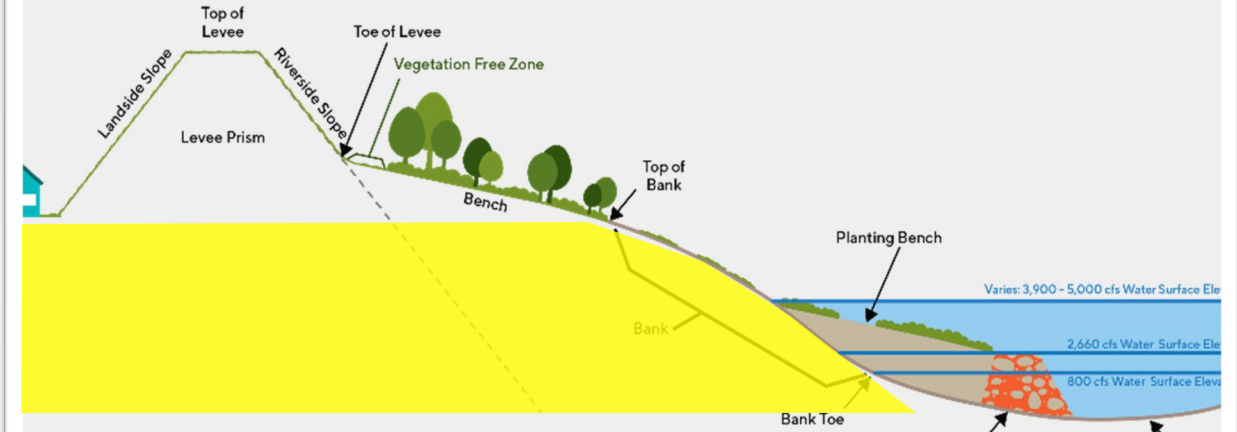
OVERVIEW OF EROSION PROTECTION METHODS



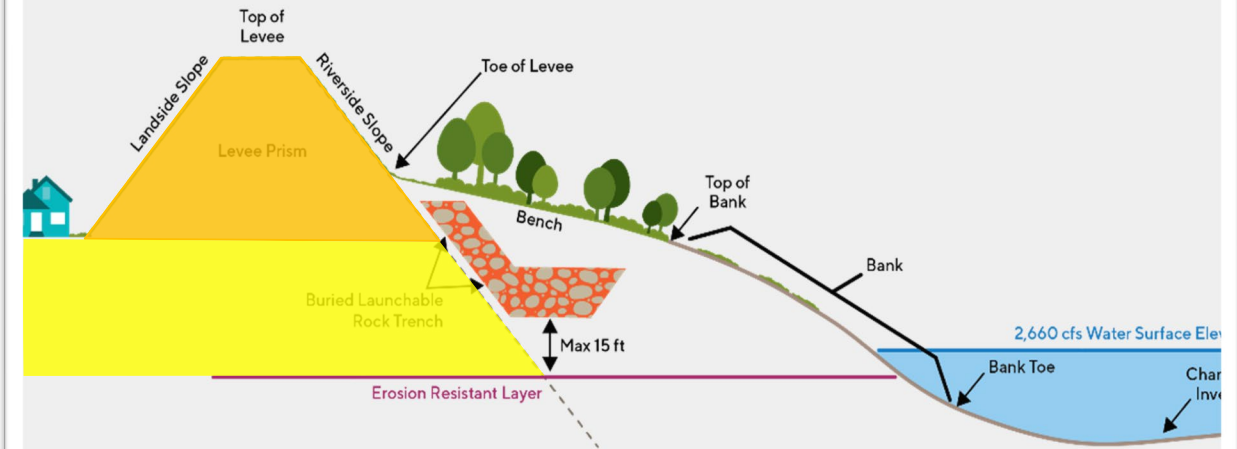
LEVEE EMBANKMENT PROTECTION



PLANTING BENCH WITH LAUNCHABLE ROCK TOE



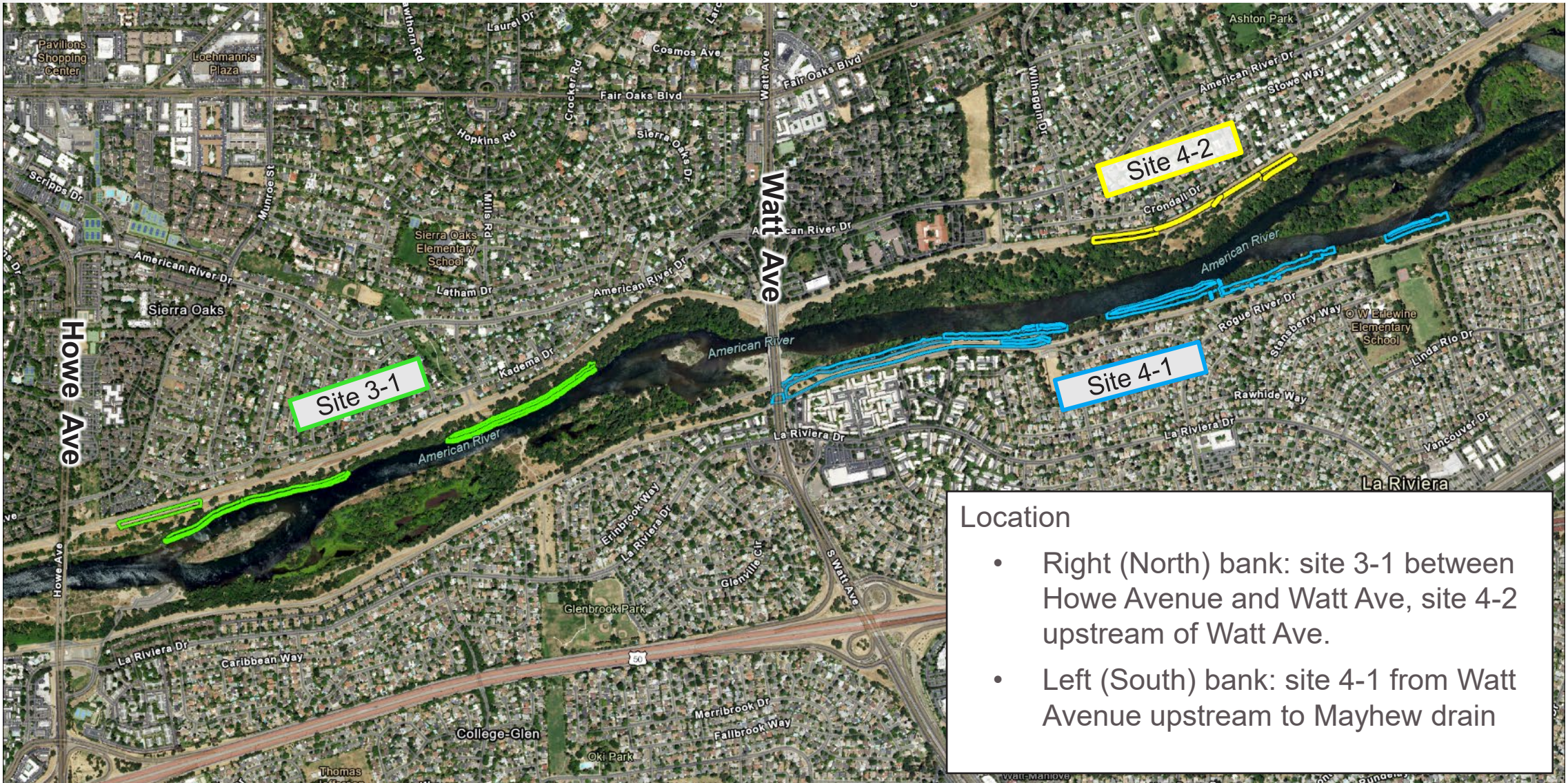
BURIED LAUNCHABLE ROCK TRENCH





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C3B DESIGN OVERVIEW



- Location
- Right (North) bank: site 3-1 between Howe Avenue and Watt Ave, site 4-2 upstream of Watt Ave.
 - Left (South) bank: site 4-1 from Watt Avenue upstream to Mayhew drain



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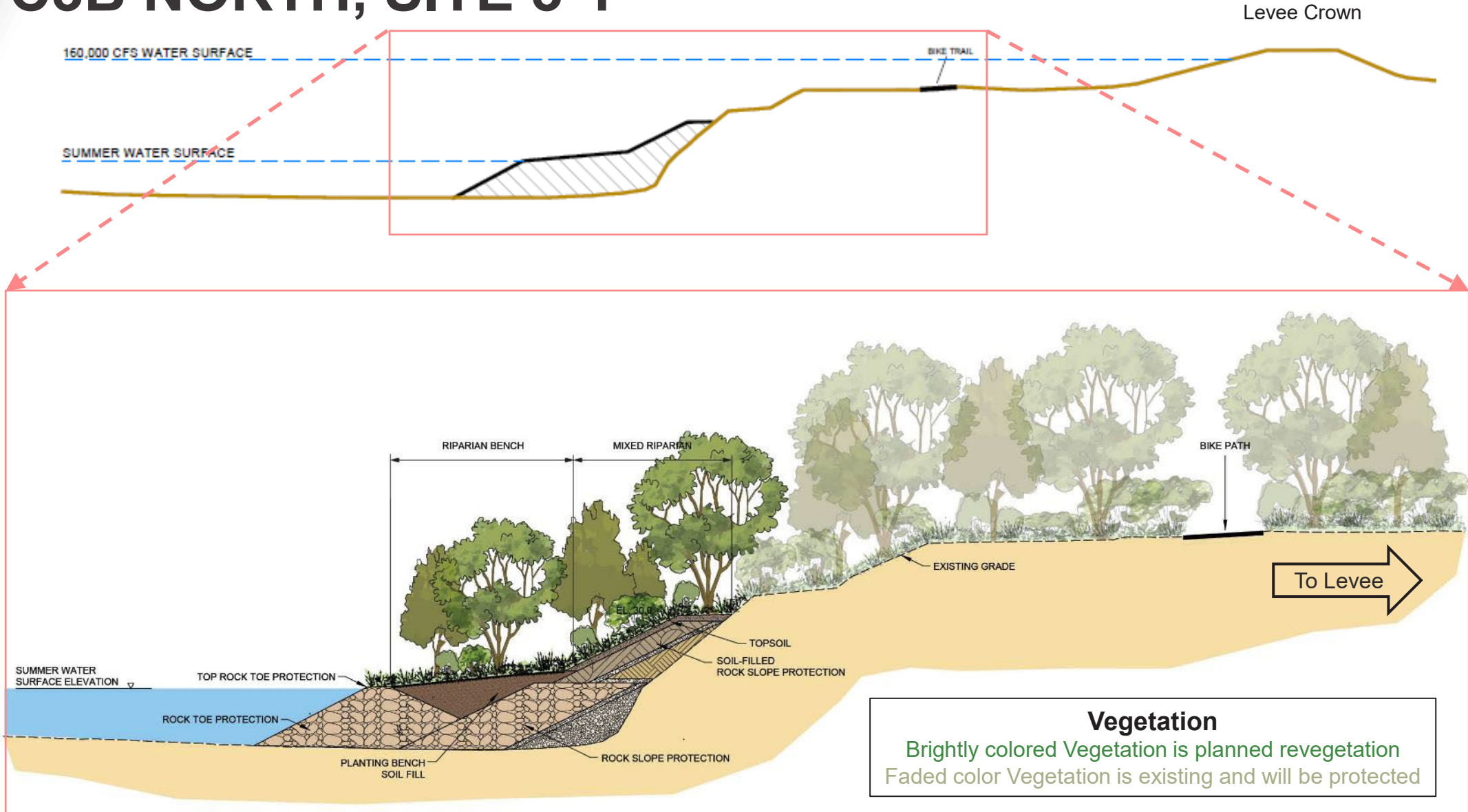
CONTRACT 3B NORTH, SITE 3-1





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TYPICAL CROSS SECTION C3B NORTH, SITE 3-1





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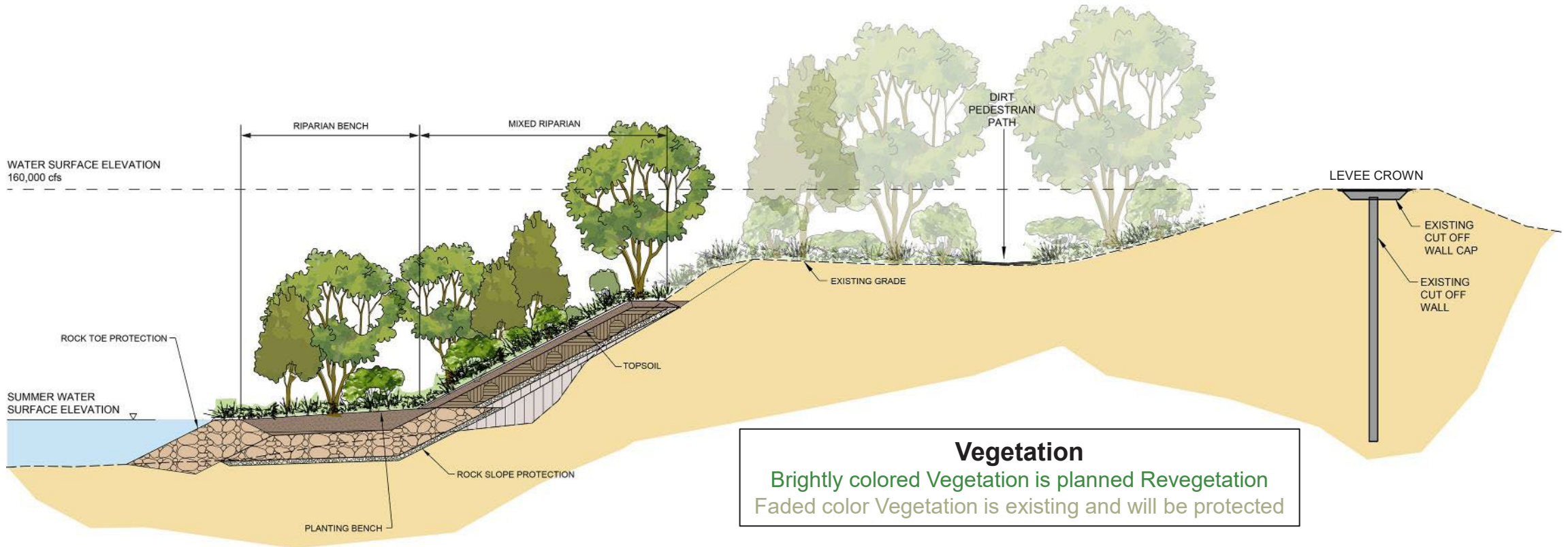
CONTRACT 3B SOUTH, SITE 4-1, SEG 3-8, 4-1





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TYPICAL CROSS SECTION C3B SOUTH, SITE 4-1, SEG 3-8





LAR C3B HABITAT IMPACTS



LAR C3B - Habitat Impact Reductions Due To Design Refinements

Species	VELB	YBCU (Riparian)	NMFS (Salmonid)
	Impact (acres)	Impact (acres)	Impact (acres)
35% Designs	31.57	28.66	36.74
65% Designs	10.26	9.67	19.05
95%* Designs	7.63	7.15	19.01

*Impacts from 95% designs; subject to change



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DESIGN FEATURES TO ADDRESS CONCERNS



Concern	Strategy
Habitat loss	<ul style="list-style-type: none">• Reduced and relocated the footprint to Minimize and balance types of impact• Expand and Replant habitat onsite• NMFS collaboration to ensure design meets requirements for anadromous fish and fishery• Establish planting benches with variable elevation (expand water access)• Instream Woody Material for aquatic habitat• Native plant selection to restore habitat and aesthetics (consistent with American River Parkway Plan)• Create new habitat offsite (mitigation)
Recreation short term impacts	<ul style="list-style-type: none">• Designed user friendly pedestrian and bike detours.• Consistent with American River Parkway Plan for recreation (County Park Collaboration)
Aesthetic impacts	<ul style="list-style-type: none">• Design buried erosion control features to minimize exposed rock• Covered rock with topsoil and revegetate with native species
Tree removal	<ul style="list-style-type: none">• Selective, minimal tree removal• Preservation of most heritage oaks by footprint adjustments• Replant trees with native species
Noise/Vibration Dust & Traffic impacts	<ul style="list-style-type: none">• Temporary construction impacts mitigated through various contractor controls and protocols



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SITE RESTORATION EXAMPLE



Restored Erosion Protection Site Between Guy West Bridge and H Street – site 4 (rm 6.8l)



May 2001



June 2005



July 2010



June 2014



October 2015

Handout 10



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RESTORED SITE ADJACENT TO HOWE AVE



Post 1986 Erosion Repair

Site 2-2

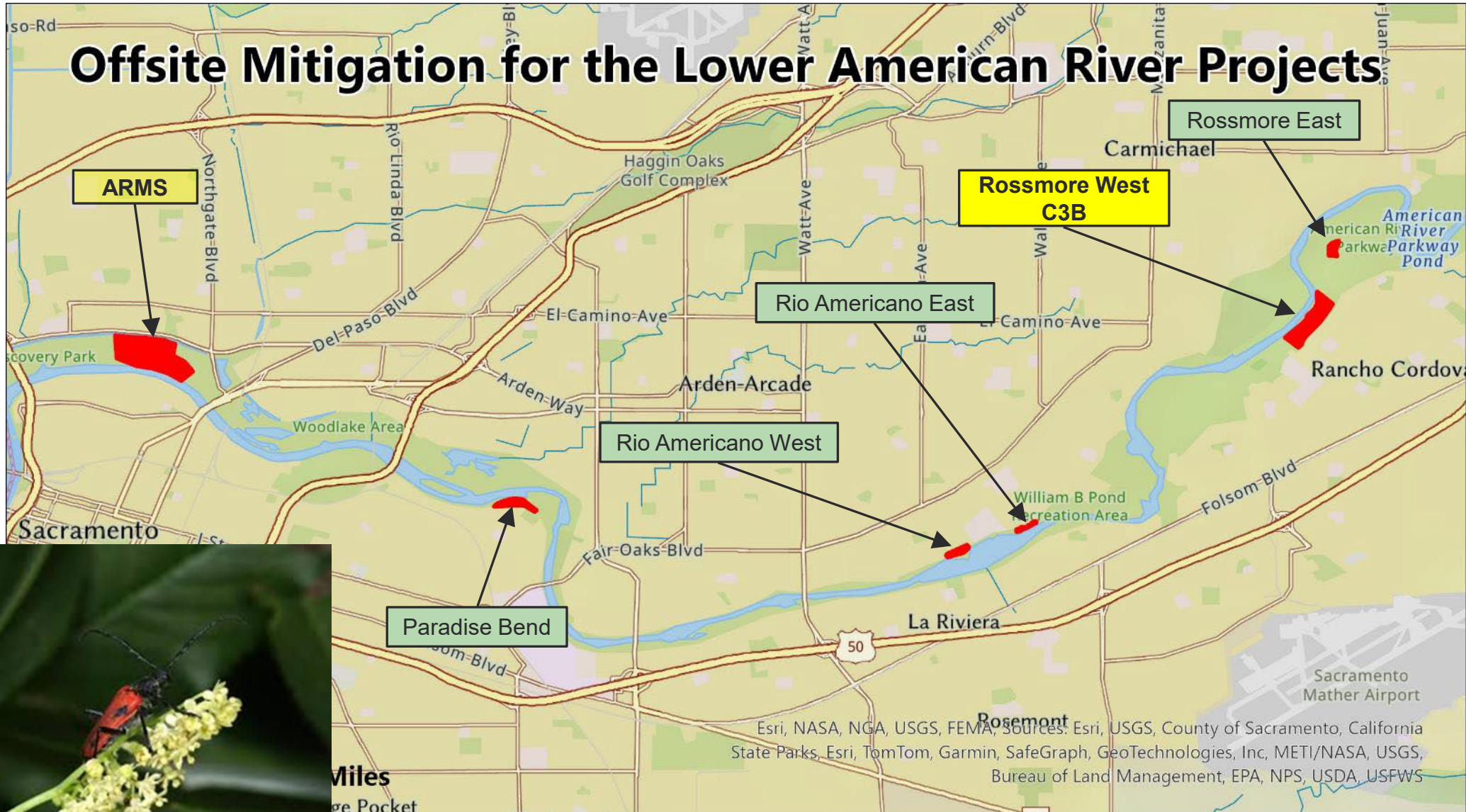


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OFF-SITE MITIGATION SITES



Offsite Mitigation for the Lower American River Projects



A male valley elderberry longhorned beetle on elderberry.
Photo courtesy of Jon Katz and Joe Silveira, USFWS

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, USGS, County of Sacramento, California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS



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KEY TAKE AWAYS



1. Erosion control is the remaining component of Flood Control System Improvements on the American River.
2. The river segments within Contract 3B (C3B) are at a High Risk of erosion and pose an immediate threat to the levees during high flow events.
3. Current designs have incorporated Engineering with Nature principles while reaching an optimal solution to safely pass the 160k cfs emergency release from Folsom dam.
4. The design team continues to reduce impacts through collaboration while meeting Flood Risk Reduction Objectives.



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QUESTIONS

