

AMERICAN RIVER WATERSHED COMMON FEATURES, WATER RESOURCES DEVELOPMENT ACT OF 2016

American River Erosion Update

Contract 1 (Site 2-1)
Contract 2 (Site 2-3, 2-2)
Contract 3A (Site 1-1)

Presented by William Polk
Sr. Project Manager
LAR Erosion

16 MARCH 2023



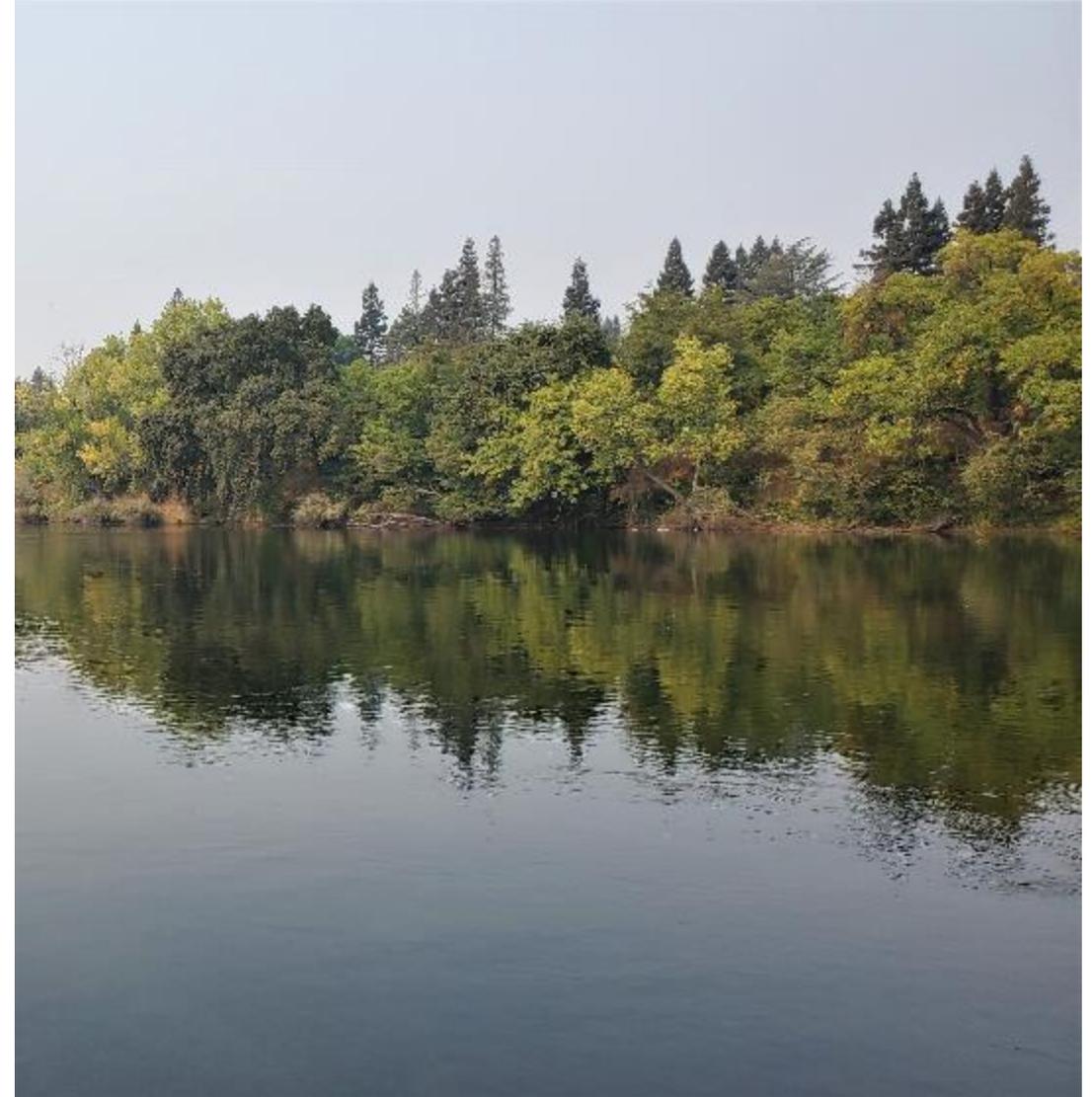
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AGENDA

- **Project Partners**
- **Need for Erosion Protection**
- **2022 Construction Season**
- **2023 Construction Season +**





PROJECT PARTNERS

Federal Government



**US Army Corps
of Engineers®**

State Government



Central Valley
Flood Protection
Board



Department of
Water
Resources

Local Government



NEED FOR EROSION PROTECTION



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CURRENT HEADLINES HIGHLIGHT NEED FOR FLOOD RISK REDUCTION



12 March 2023 – Pajaro, CA



SACRAMENTO BECAME “LEVEE CITY” IN 1850



The flood of 1849-50 resulted in efforts that led to Sacramento City’s notoriety as the “Levee City.”

<https://www.valcomnews.com/sacramento-became-%E2%80%9Clevee-city%E2%80%9D-in-1850/>

K, STREET, FROM THE LEVEE.

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

Published by AROSENFELD, San Francisco



SYSTEM IMPROVEMENTS - FOLSOM DAM



Improvements to

- Storage Capacity
- Release Capacity

Folsom Dam Raise

- Under Construction

Folsom Dam Auxiliary Spillway

- Completed 2017





SYSTEM IMPROVEMENTS – LEVEE



Levees fail in 3 basic ways

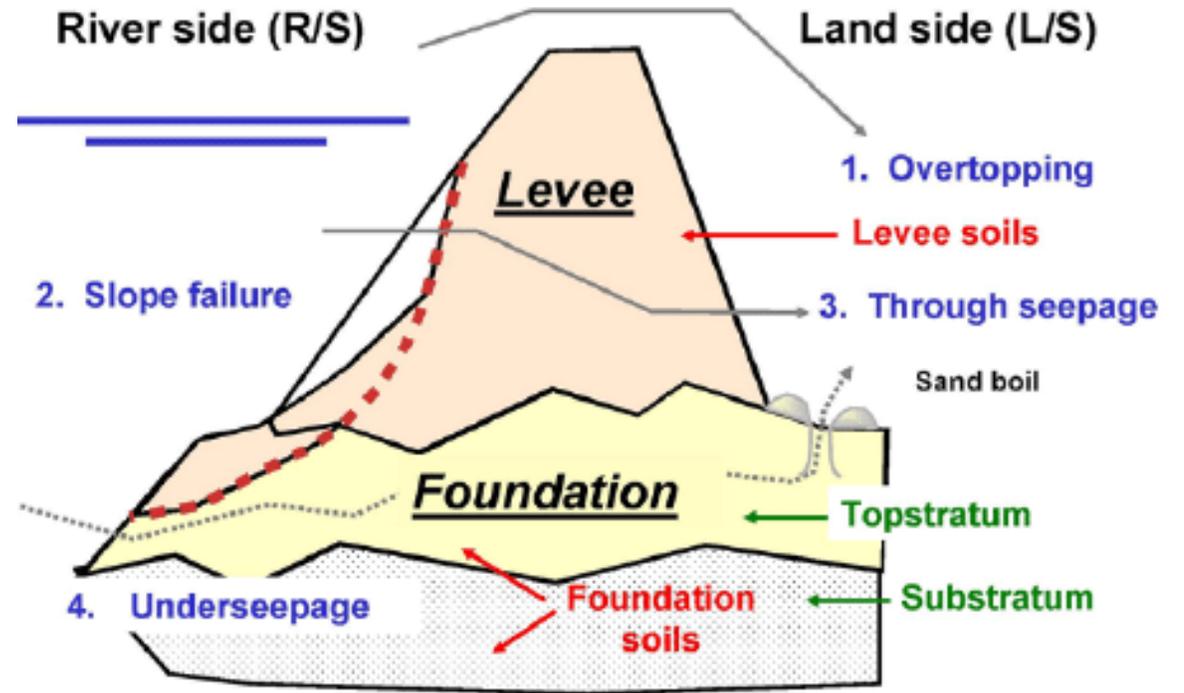
- Overtopping
- Seepage
- Erosion

Upgrades completed

- Overtopping
- Seepage

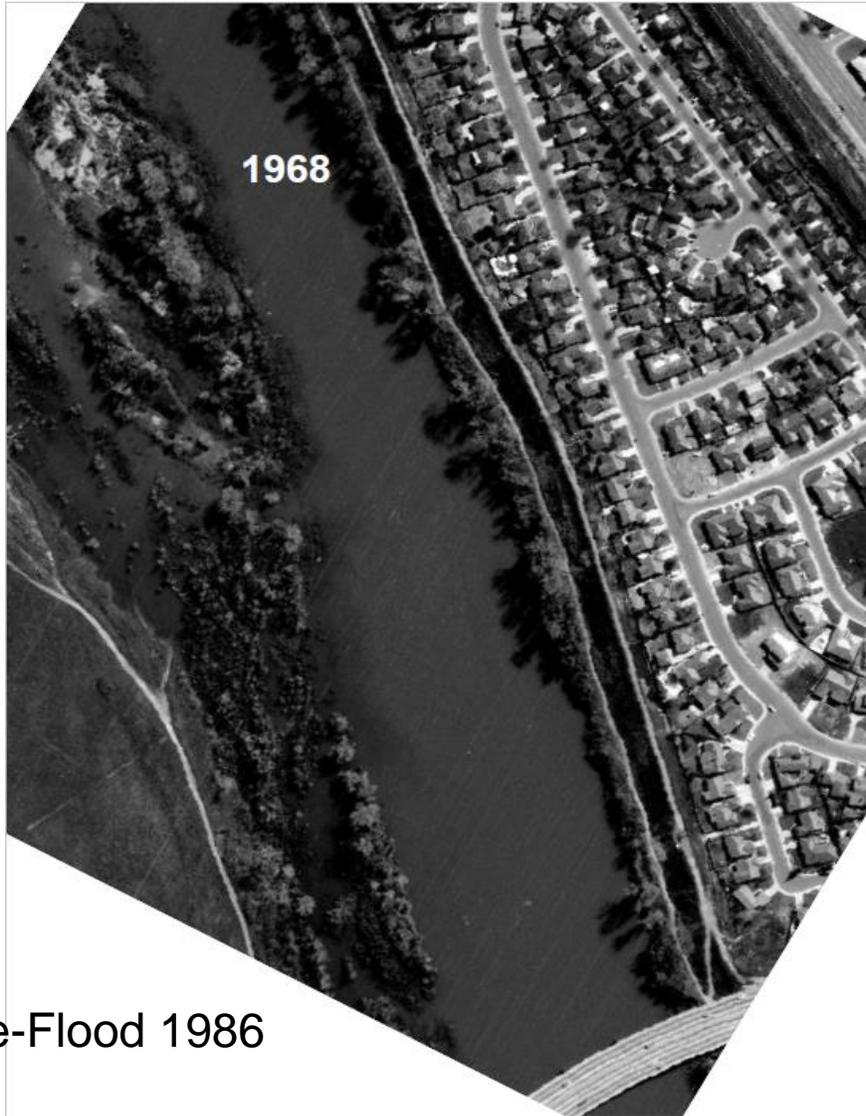
Upgrades to complete

- ***Erosion Protection***





EROSION PROTECTION - PROJECT NEED



Pre-Flood 1986



Post-Flood 1986

1986- River Park at I-80 bridge crossing
Flow of 134,000 cubic feet per second (cfs), levees rated at 115,000 cfs at that time



EROSION PROTECTION - PROJECT NEED



Flooding from levee failure threatens the safety of over 500,000 people in the Sacramento Region

2022 CONSTRUCTION SEASON

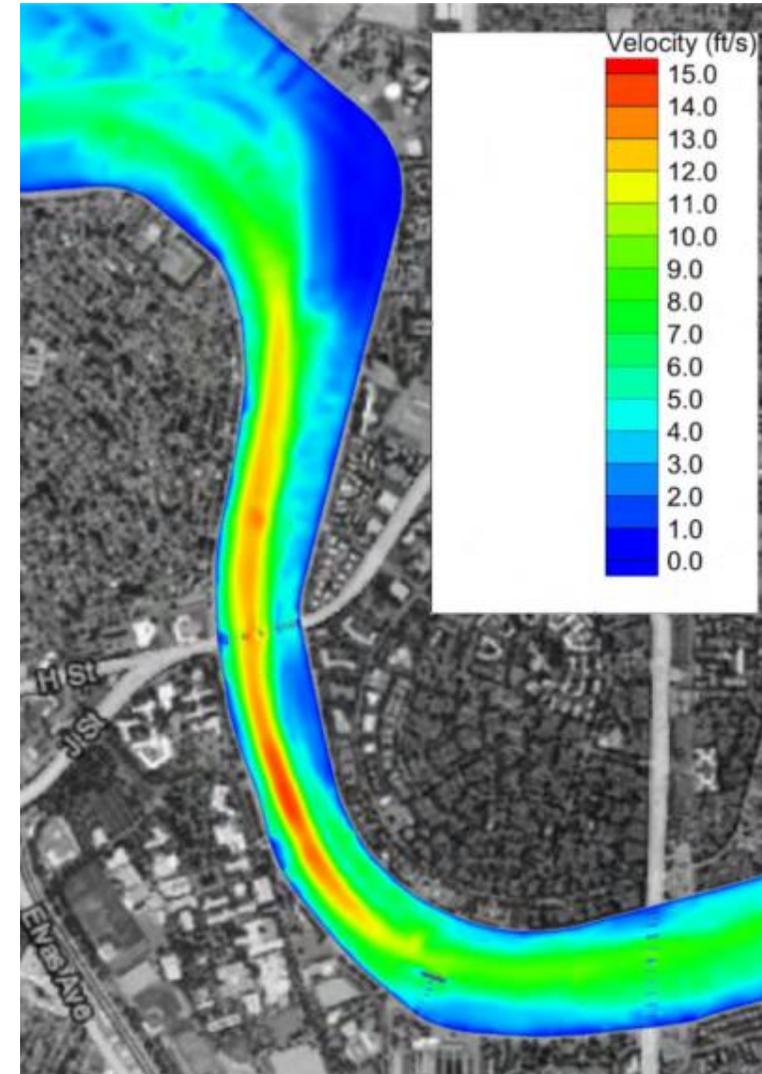


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AMERICAN RIVER - HIGH RISK AREAS



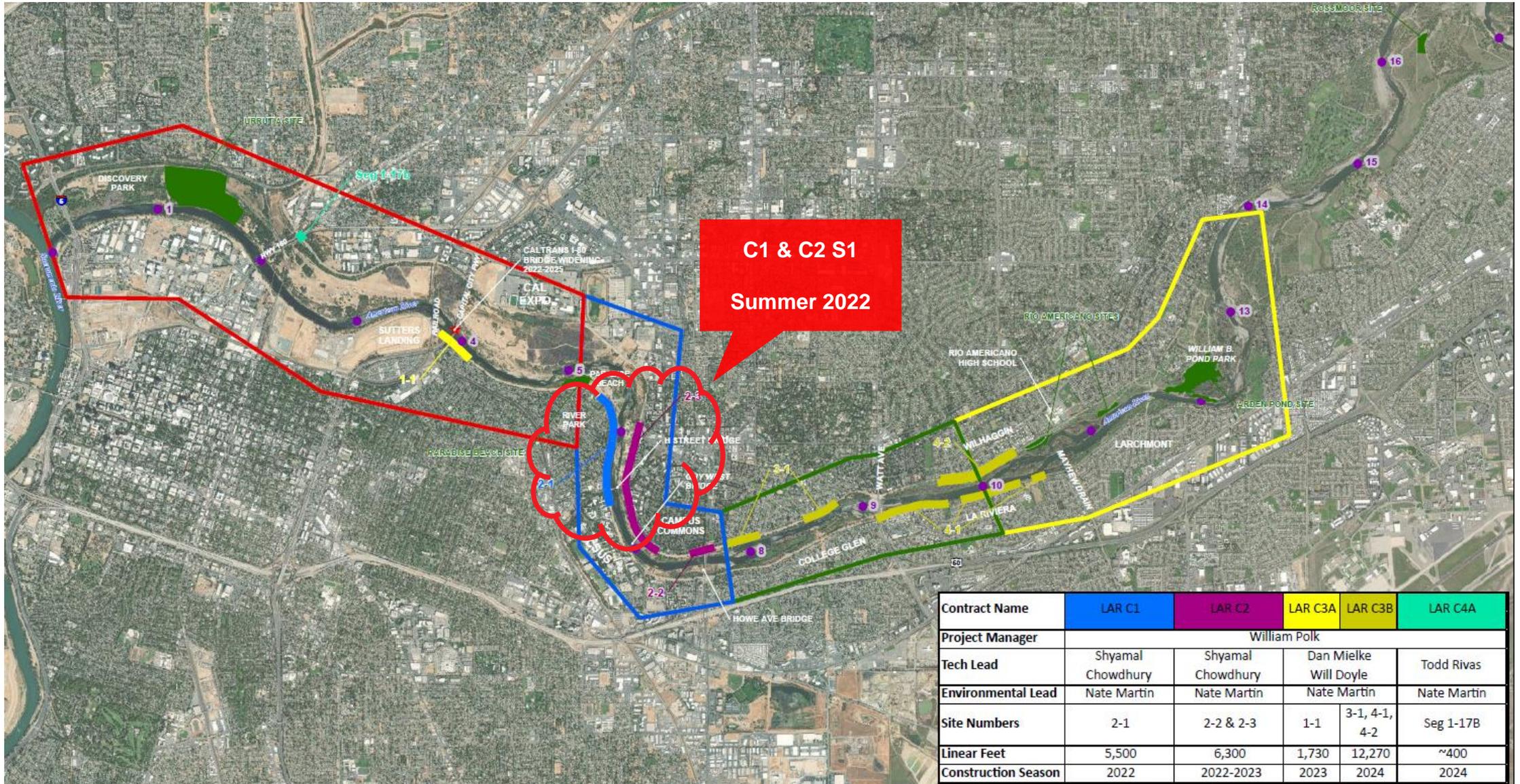
- Narrow levees lead to high flood flow velocities
- Critical high-risk area: Paradise Beach to Howe Ave (Site 2-1, Contract 1)
- **High velocity flood flows could lead to substantial levee erosion**
- System being upgraded to handle 160,000 cfs



Velocities at 160,000 cfs



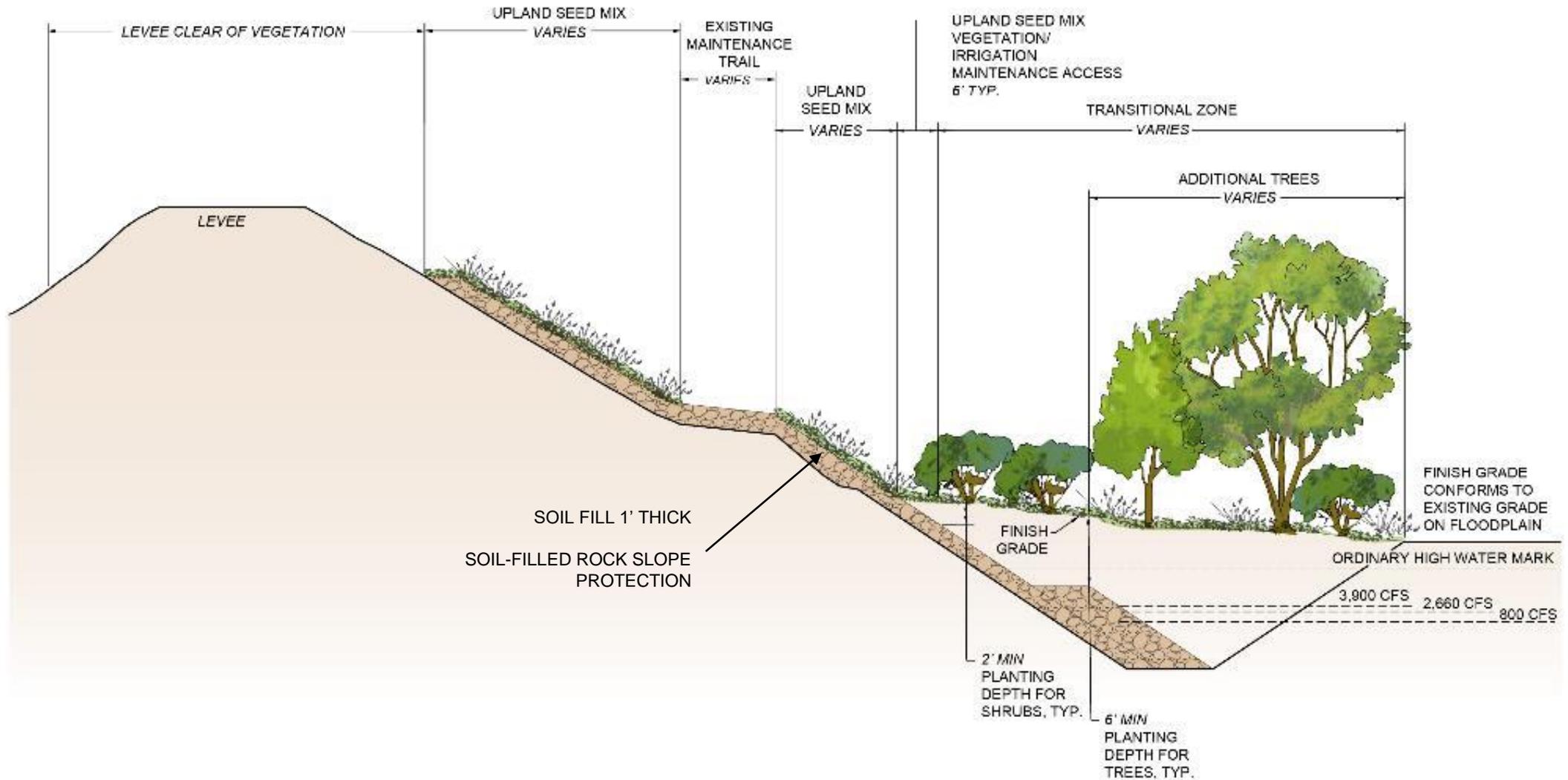
LAR EROSION - BANK PROTECTION SITES



C1 & C2 S1
Summer 2022

Contract Name	LAR C1	LAR C2	LAR C3A	LAR C3B	LAR C4A
Project Manager	William Polk				
Tech Lead	Shyamal Chowdhury	Shyamal Chowdhury	Dan Mielke Will Doyle		Todd Rivas
Environmental Lead	Nate Martin	Nate Martin	Nate Martin		Nate Martin
Site Numbers	2-1	2-2 & 2-3	1-1	3-1, 4-1, 4-2	Seg 1-17B
Linear Feet	5,500	6,300	1,730	12,270	~400
Construction Season	2022	2022-2023	2023	2024	2024

TYPICAL CROSS SECTION – PARADISE BEACH



Launchable Rock Trench and Soil-filled Rock Slope Protection



CONTRACT 1 (SITE 2-1) PRE-CONSTRUCTION ACTIVITIES



Vegetation Clearing

- Clearing: Feb 22
- One elderberry cluster removed to Beach Stone Lakes





CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



Mobilization & Site Prep: Apr – May 22

- Glenn Hall Park Access Point
 - Fencing & signage installed
 - Facilities & Parking remained open
 - Carlson Drive e-signage & school monitors
- Vibration monitoring baseline
- Pre-construction surveys complete for residences along Sandburg drive





CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



Paradise Beach



- Excavation, toe rock and slope protection



CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES





CONTRACT 1 (SITE 2-1)





CONTRACT 1 (SITE 2-1)





CONTRACT 1 (SITE 2-1) - JANUARY 2023





CONTRACT 1 (SITE 2-1) - JANUARY 2023





CONTRACT 1 (SITE 2-1) – NEARLY COMPLETE





CONTRACT 1 (SITE 2-1) – 14 MARCH 23





CONTRACT 1 (SITE 2-1) - REMAINING ACTIVITIES



March 2022

- Construction is complete
- Minor touch up is expected after the current event
- Finish demobilization

Spring/Summer 2023

- Greening (Re-Vegetation)





CONTRACT 1 (SITE 2-1) – PUBLIC AWARENESS



As the site reopens, What should the public expect?

- Paradise beach was restored to its original grade (contour)
- Erosion fabric and straw wattles are to protect the site and help restore natural vegetation as quickly as possible.
- Vegetation Plantings will need time to establish
 - Avoiding these areas will facilitate the rapid recovery of habitat.
 - Beware of trip hazards especially on planting benches
- Levee top and O&M road have been restored.
- Bike trail near H street has been reopened.

Enjoy the peace of mind that flood risk reduction brings.



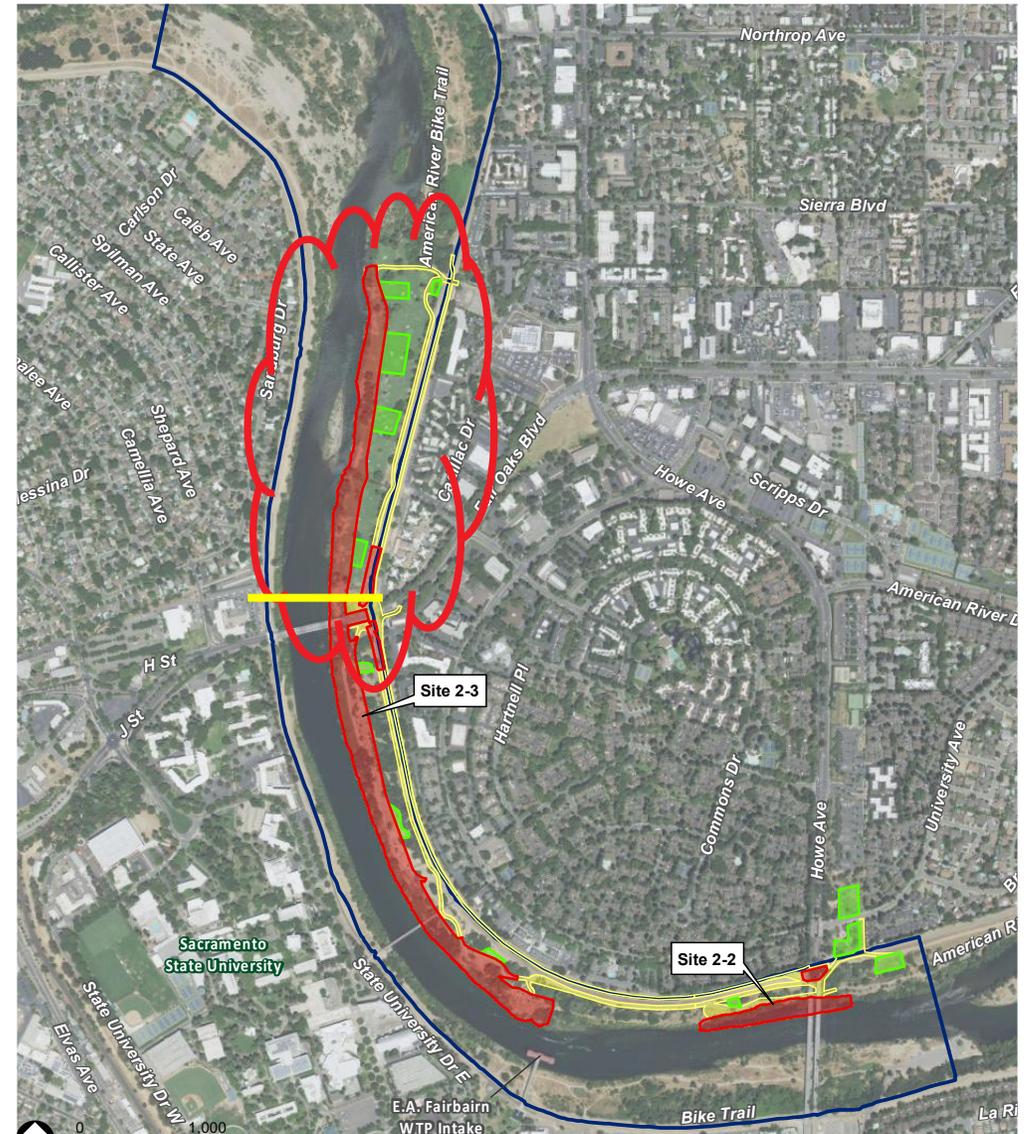
AMERICAN RIVER EROSION PROTECTION



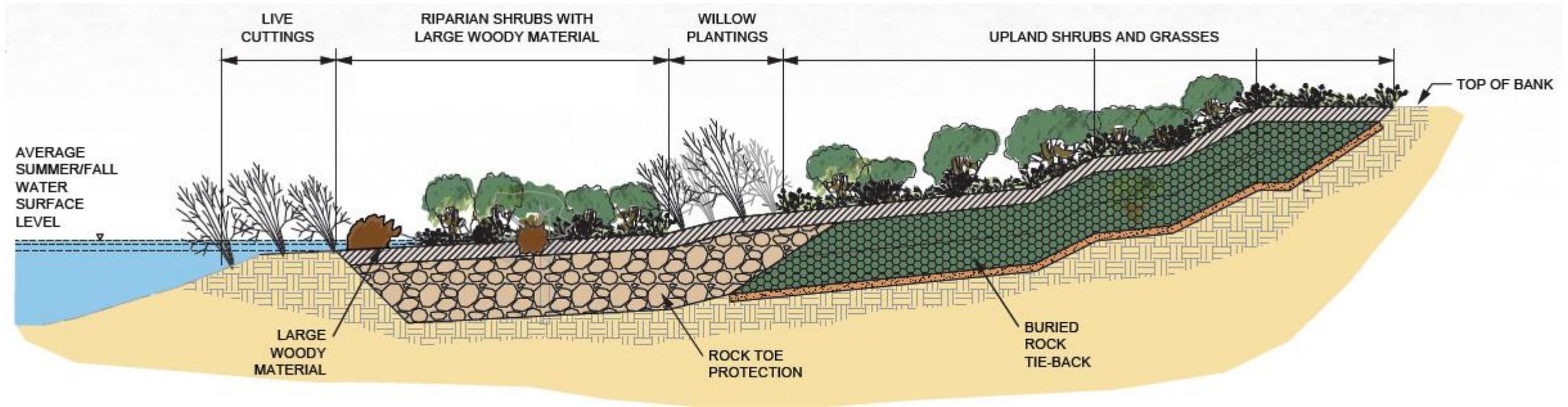
Contract 2 (Site 2-3, Season 1)

- Right bank of American River adjacent to the Campus Commons Golf Course
- Approximately 2,800 linear feet of bank protection measures constructed
- Site 2-3 Improvements include:
 - Launchable rock spurs
 - Buried rock tie-back
 - Plantings between spurs/tie-backs

On-site mitigation integrated into Project Design



SITE 2-3, TYPICAL CROSS SECTION





CONTRACT 2 (SITE 2-3, SEASON 1) CONSTRUCTION ACTIVITIES



Launch Rock Spurs with tie-backs



CONTRACT 2 (SITE 2-3, SEASON 1)





CONTRACT 2 (SITE 2-3, SEASON 1)



2023 CONSTRUCTION SEASON (AND BEYOND +)



U.S. ARMY



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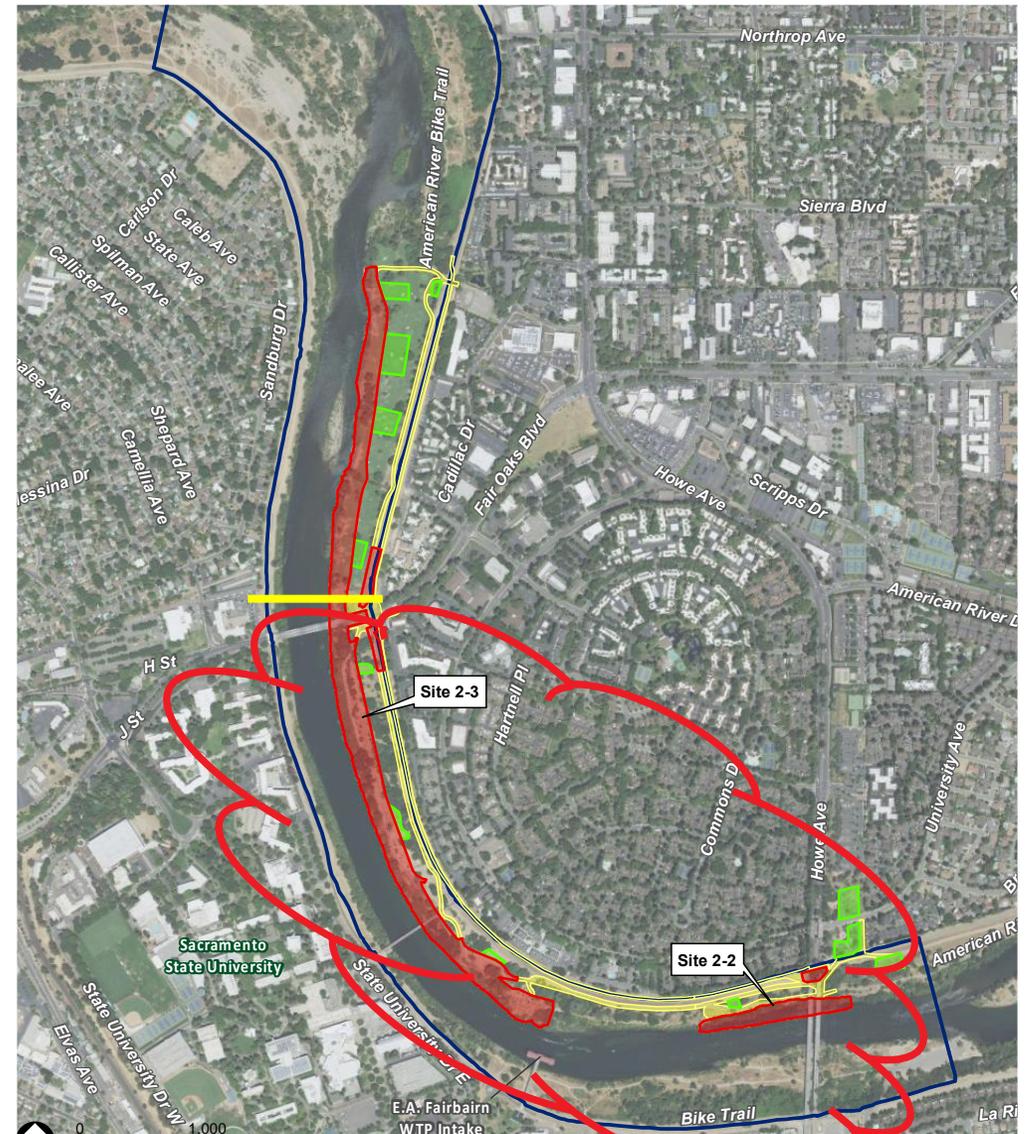
AMERICAN RIVER EROSION PROTECTION



Contract 2 (Site 2-3, Season 2)

- Right bank of American River H street bridge to just upstream of the Howe Ave bridge
- Approximately 5,000 linear feet of bank protection measures
- Site 2-3, 2-2 Improvements include:
 - Launchable rock spurs
 - Buried rock tie-back
 - Plantings between spurs/tie-backs
 - Planting bench

On-site mitigation integrated into Project Design





SCHEDULE CONTRACT 2 (SITES 2-2 & 2-3)

Season 1 (site 2-3 partial)

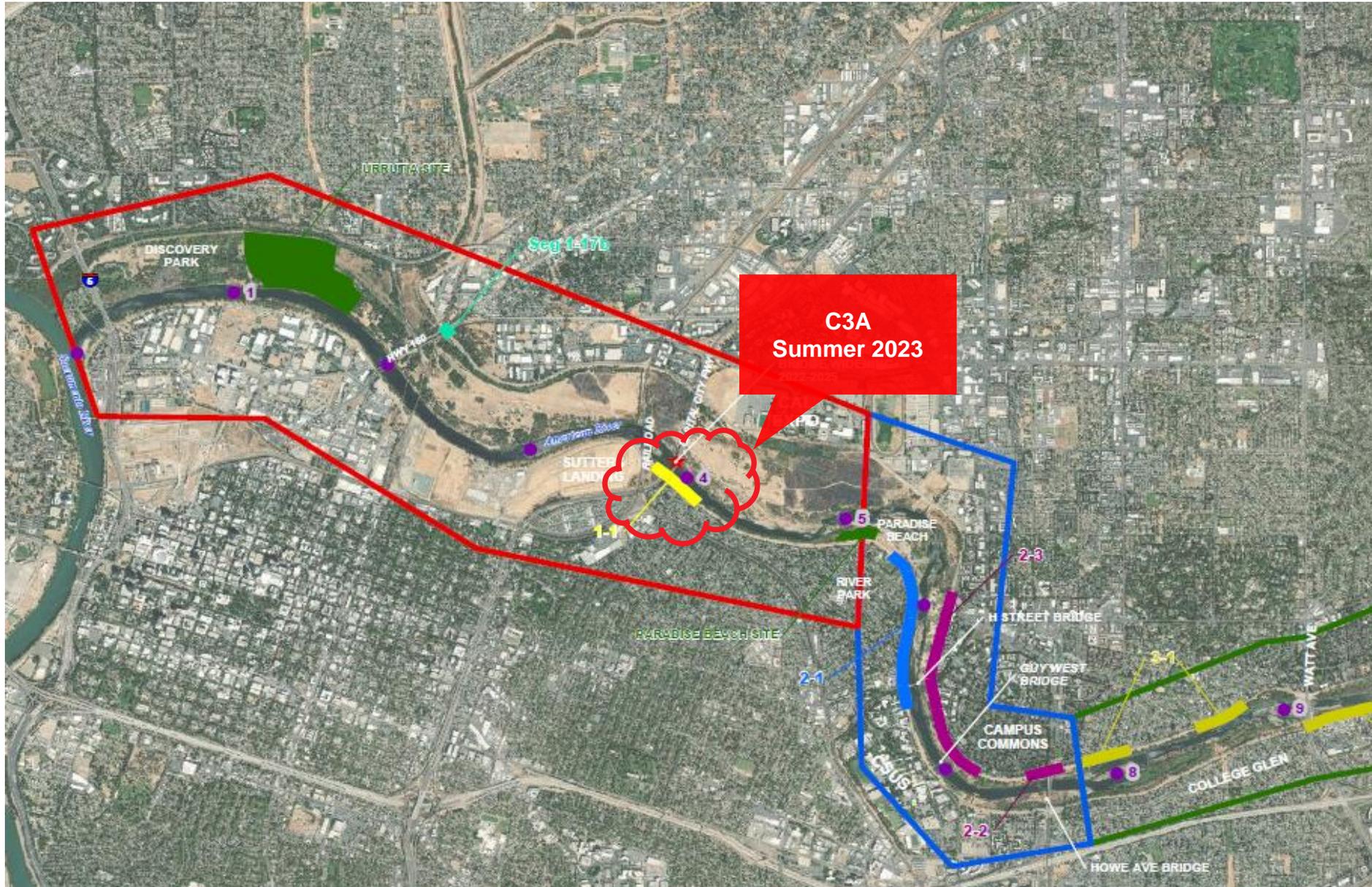
- ~~Veg clearing, Jan 22 – Mar 22~~
- ~~Construction, Summer 2022~~
- Greening, Spring 2023

Season 2 (site 2-2, 2-3 remainder)

- ~~Veg clearing, Dec 22 – Feb 23~~
- Construction, Summer 2023
- Golf Course restoration - September 2023
- Greening, Spring 2024



LAR EROSION - BANK PROTECTION SITES





C3-A (Site 1-1)

- Left Bank @ I-80 Bridge
- Approximately 2,400 linear feet of bank protection measures will be constructed
- Construction Scheduled for Summer 2024

On-site mitigation integrated into Project Design



C3A PRE-CONSTRUCTION ACTIVITIES



Vegetation Clearing

- Paradise Bend mitigation site (in work)
- Elderberry transplant (complete)
- Vegetation clearing at site 1-1 (Fall 2023)





C3A PRE-CONSTRUCTION ACTIVITIES

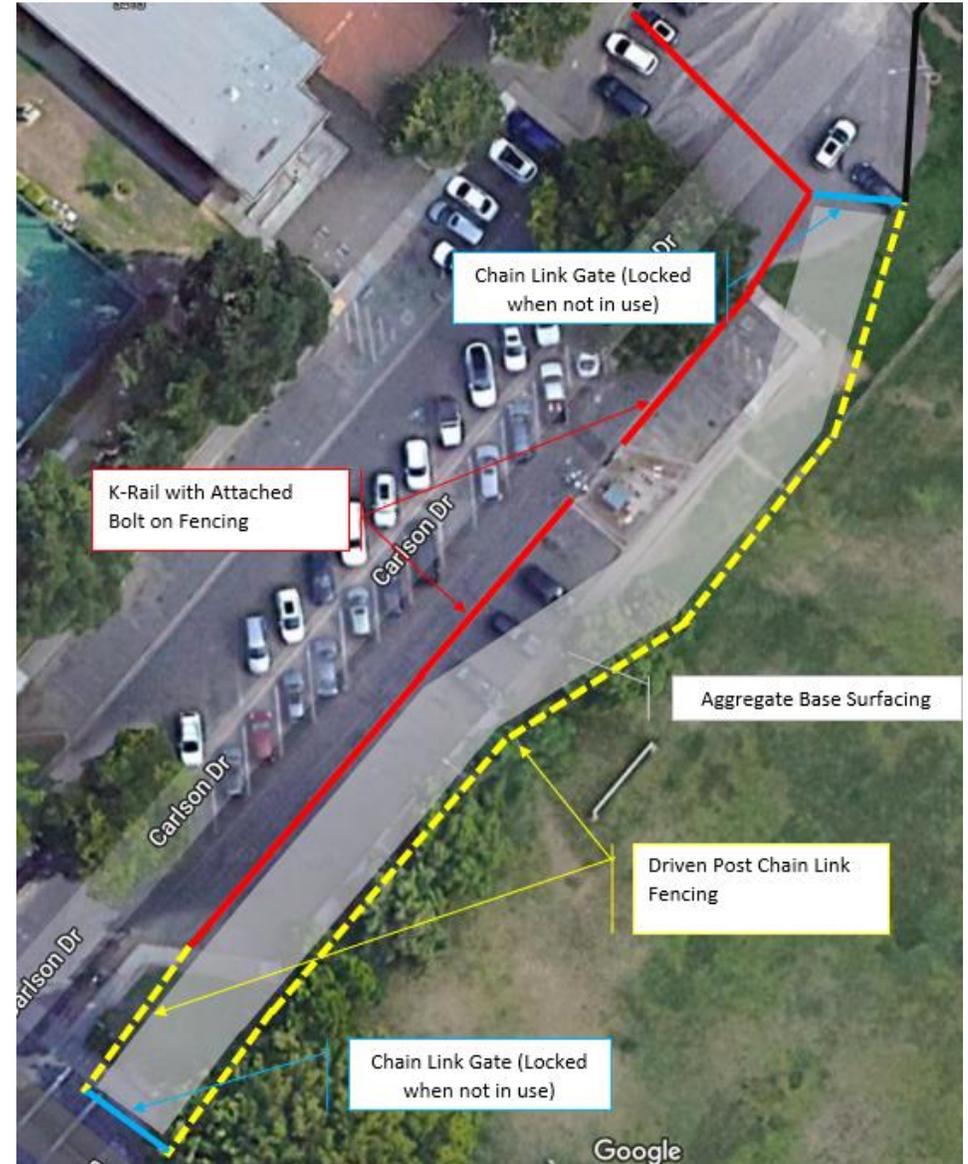


Glenn Hall Park

- Access point retained through 2024 Season
- Park facilities will remain open
- Paradise beach will remain open (except mitigation site)

Multi-Project Coordination

- Caltrans I-80 deck Rehabilitation (2023-2024)
- USACE Bank Protection (2024)
- City bike trail construction (2024)





HOW TO STAY INFORMED



Project Overview

American River Levees

Sacramento River Levees

Sacramento Weir

Subscribe for Construction
& Traffic email updates



Reducing flood risk in Sacramento

Greater Sacramento, California, is often considered to be the most at-risk region in America for catastrophic flooding, relying on an aging system of levees, weirs and bypasses and Folsom Dam to reduce its flood risk. But that system, just like a chain, is only as strong as its weakest link. Together, the U.S. Army Corps of Engineers, California's Central Valley Flood Protection Board, California Department of Water Resources, and the Sacramento Area Flood Control Agency have made tremendous progress in reducing the flood risk, but more work remains. Through the Bipartisan Budget Act, the Corps has received full upfront funding to modernize Sacramento's aging flood infrastructure. This allows us to more efficiently implement nearly \$1.8 billion in upgrades to Sacramento's flood risk management system. The authorized work includes up to: 13 miles of seepage cutoff walls, 21 miles of bank protection, 5 miles of levee stabilization, 5 miles of levee raises and widening the Sacramento Weir and bypass.

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Questions? Comments? Concerns?

Sacramento District Public Affairs Office

Phone: 916-557-5100

E-mail: spk-pao@usace.army.mil



THANK YOU RIVER PARK!





QUESTIONS





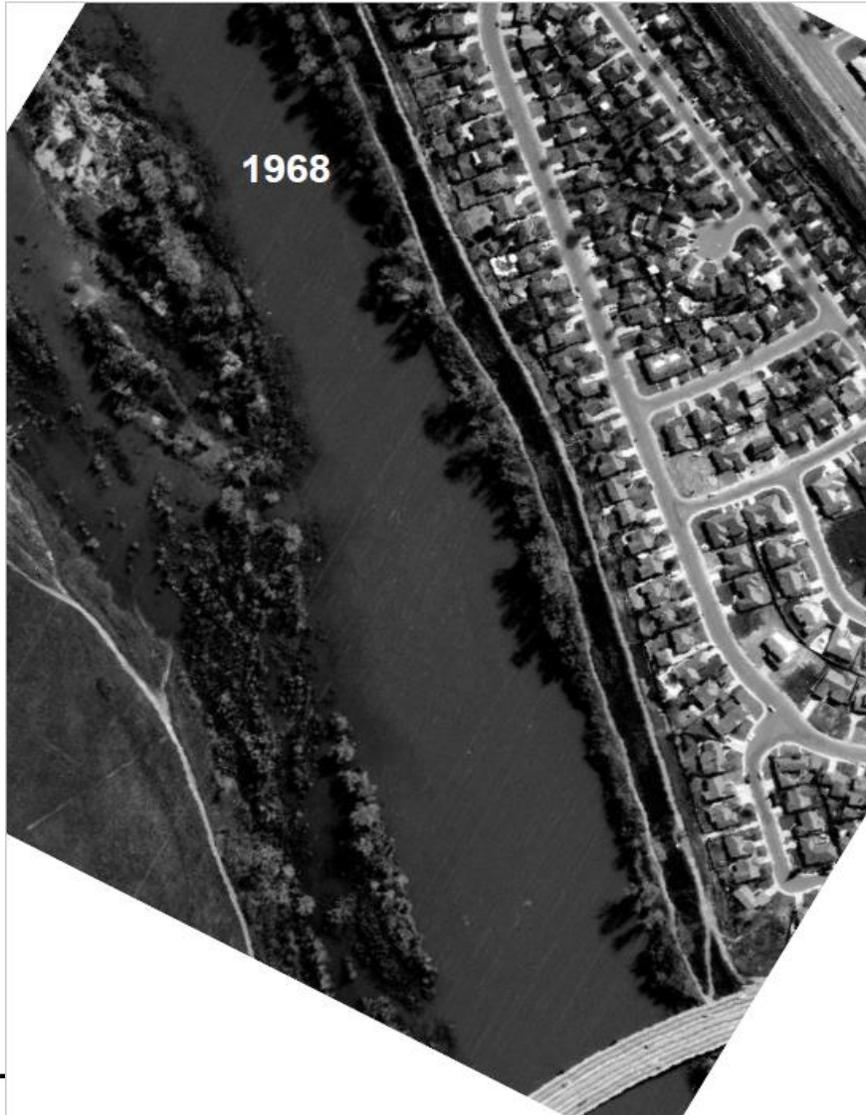
BACK UP SLIDES

Knowledge Expansion





EROSION PROTECTION - PROJECT NEED



1986

Sacramento District

1986

Flow of 134,000 cubic feet per second (cfs), levees rated at 115,000 cfs at that time

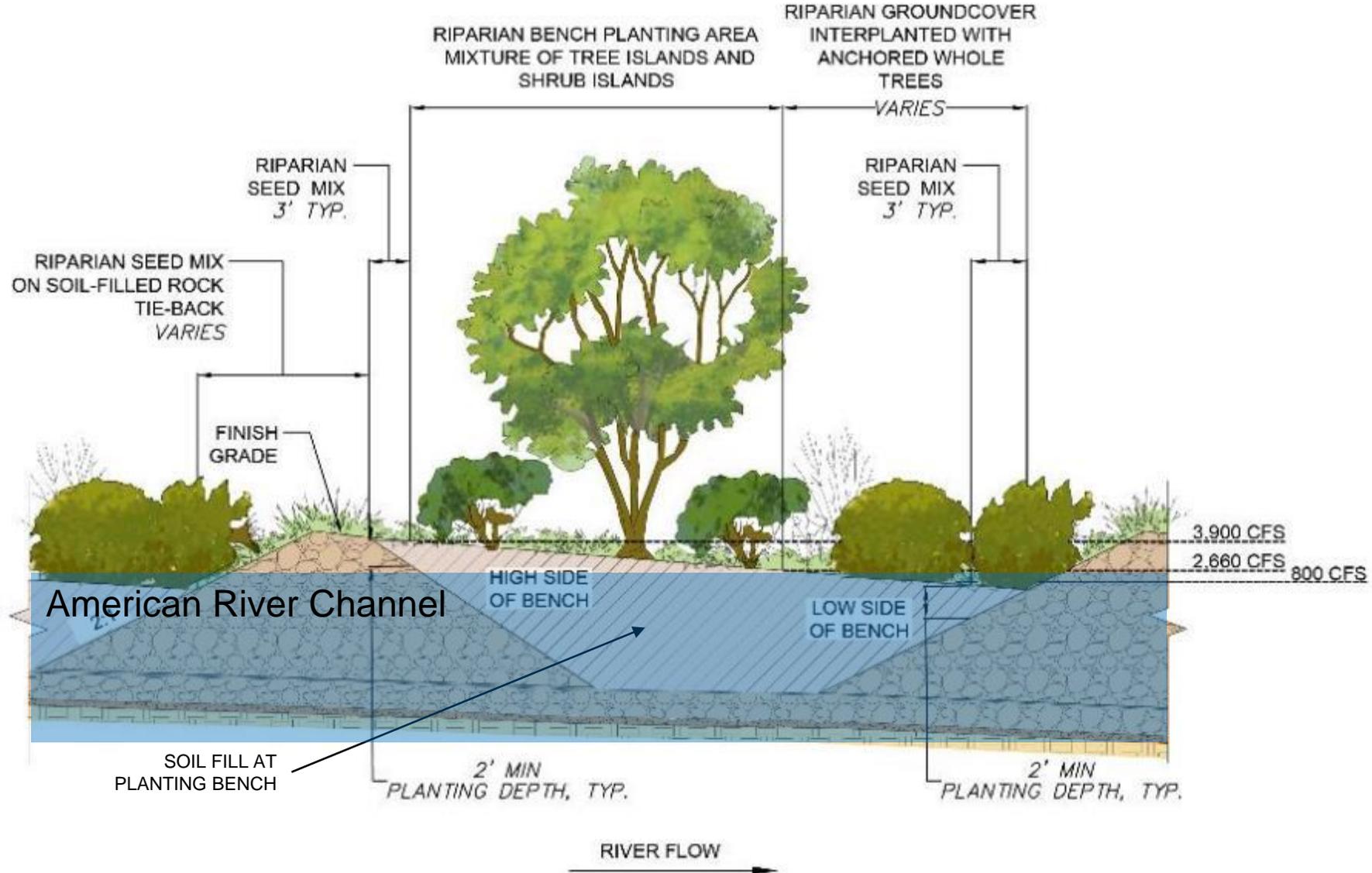


AMERICAN RIVER EROSION PROTECTION

ON-SITE MITIGATION INTEGRAL TO DESIGN

- Placement of erosion protection measures necessitates the removal of existing vegetation prior to the start of construction
- Erosion protection measures require the placement of revetment (rock) along the waterside slope and toe of the levee
- On-site mitigation has been integrated into the design of the bank protection features and includes placement of soil over the erosion protection, establishment of planting benches, and the restoration of disturbed areas through comprehensive revegetation efforts

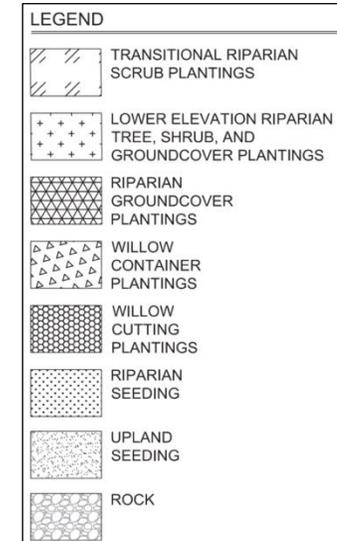
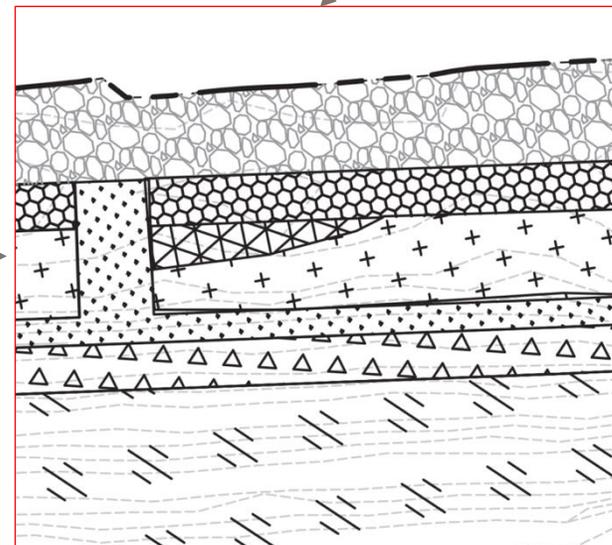
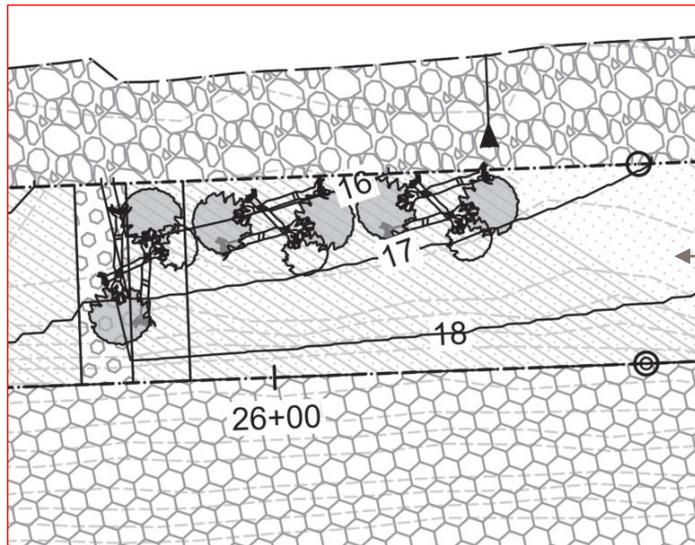
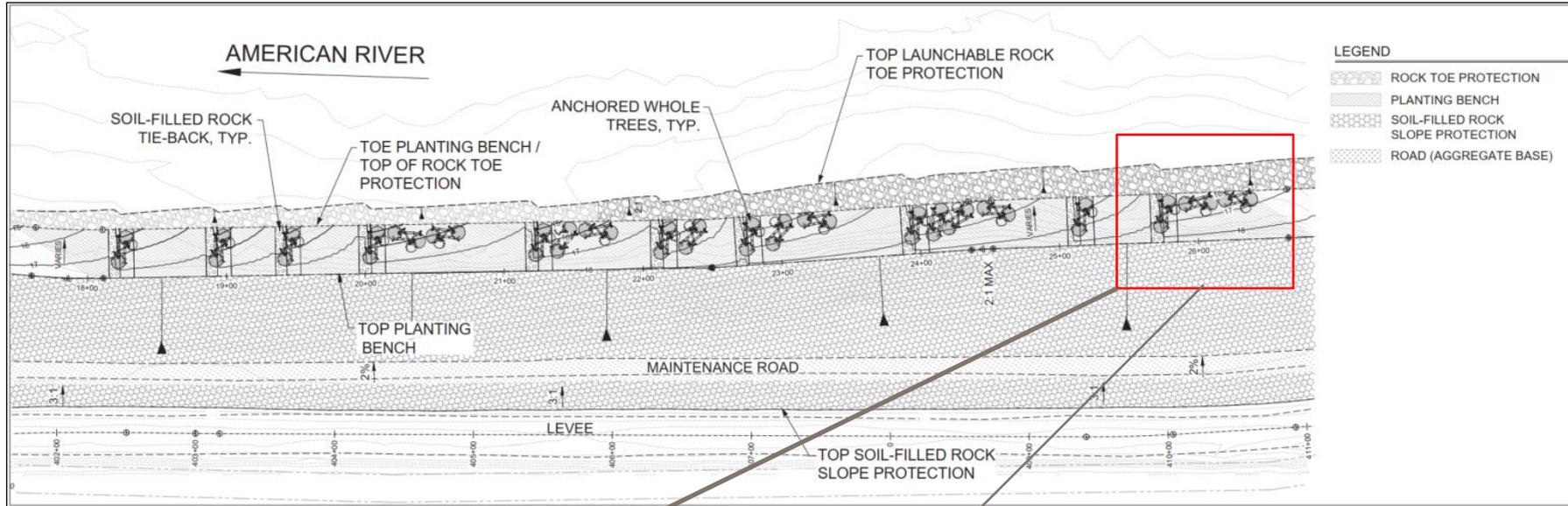
PLANTING BENCH – PADDLER’S VIEW



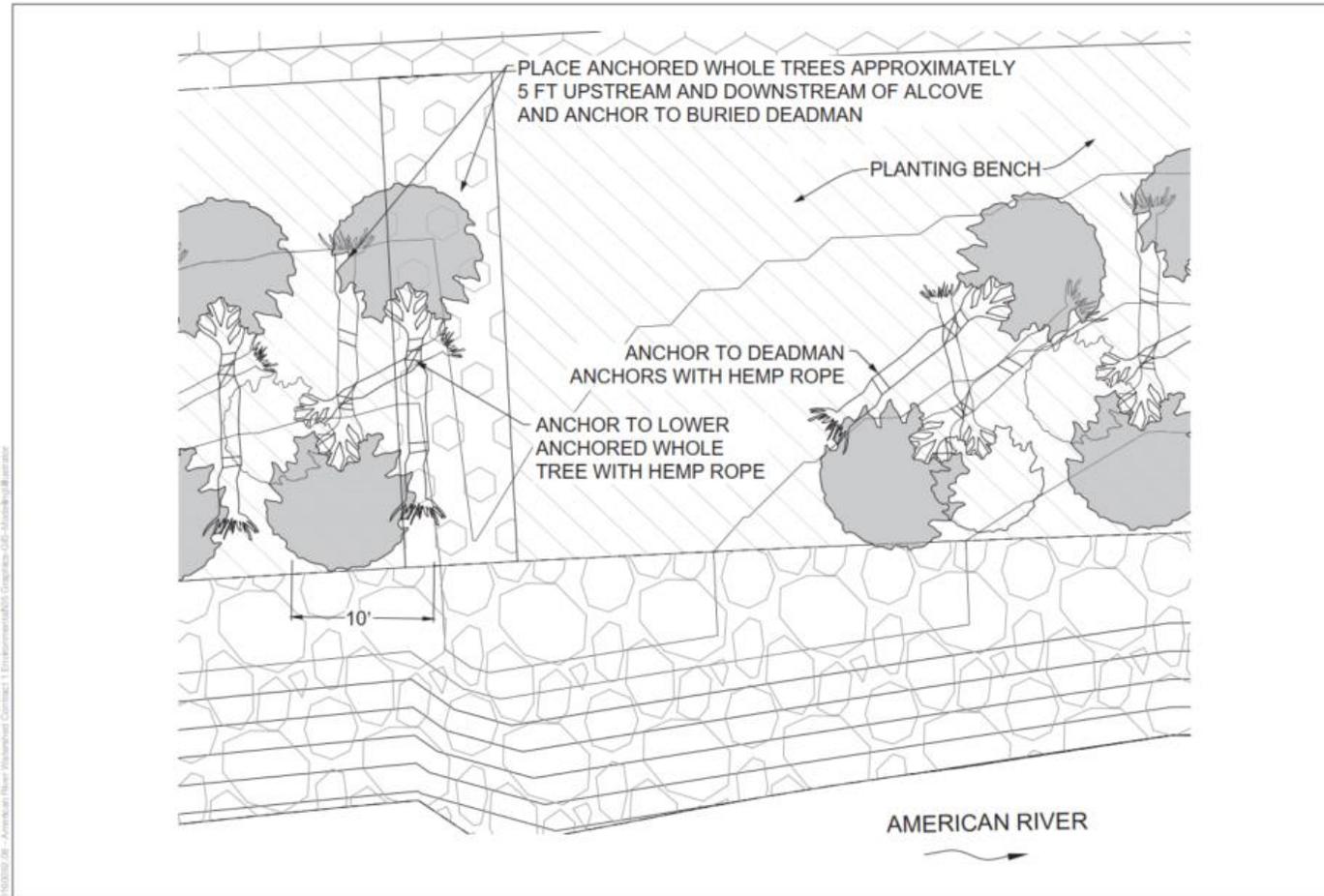
Planting Bench and Tie-Backs (typical longitudinal section parallel to levee)



PLANTING BENCH DESIGN



ANCHORED TREES AND TIE-BACKS



SOURCE: USACE, 2020

ARCF 2016 American River Contract 1

Anchored trees provide juvenile salmon and steelhead habitat



CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



Mobilization & Site Prep: Apr – May 22

- Glenn Hall Park Access Point
 - Fencing & signage installed
 - Facilities & Parking remained open
 - Carlson Drive e-signage & school monitors
- Vibration monitoring baseline
- Pre-construction surveys complete for residences along Sandburg drive





CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



Paradise Beach



- Excavation, toe rock and slope protection



CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



- Soil Filled Rock Demonstration Section





CONTRACT 1 (SITE 2-1) CONSTRUCTION ACTIVITIES



In-Water Work

- Excavation and Placement



Planting Bench Construction



ENVIRONMENTAL CONSISTENCY AND COMMITMENTS

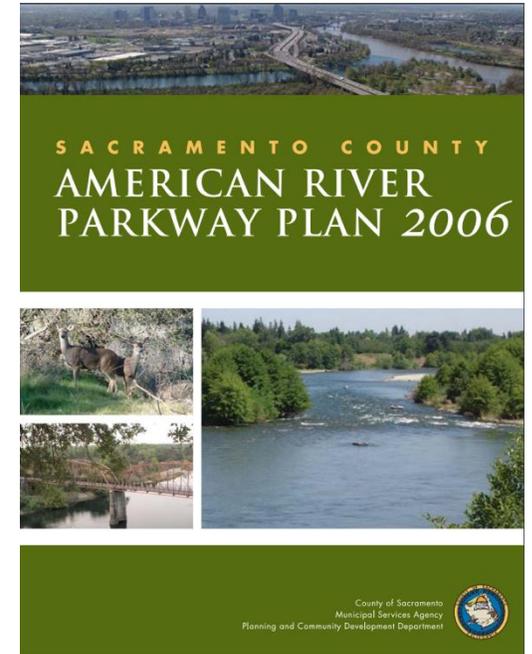


Consistency

- County American River Parkway Plan
- County Natural Resources Management Plan
- Federal/State ***Wild and Scenic Rivers Act***

Environmental Commitments

- Final EIS/EIR
- Biological Opinions (NMFS, USFWS)
- Water Quality Certification (Water Board)





ON-SITE MITIGATION

Previously Constructed Erosion Protection Site Between Guy West Bridge and H Street



May 2001



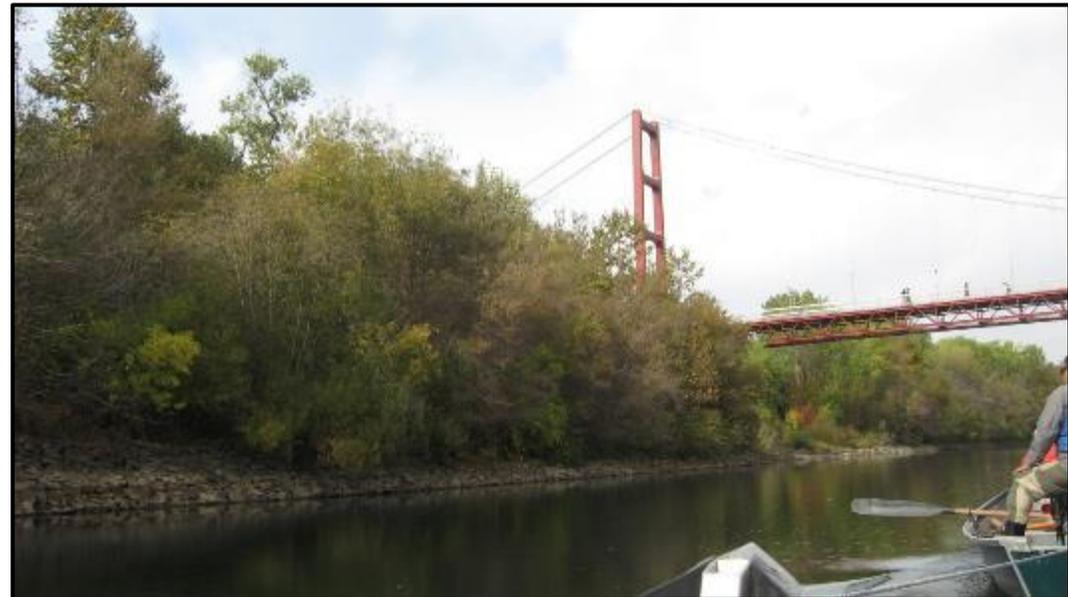
June 2005



July 2010



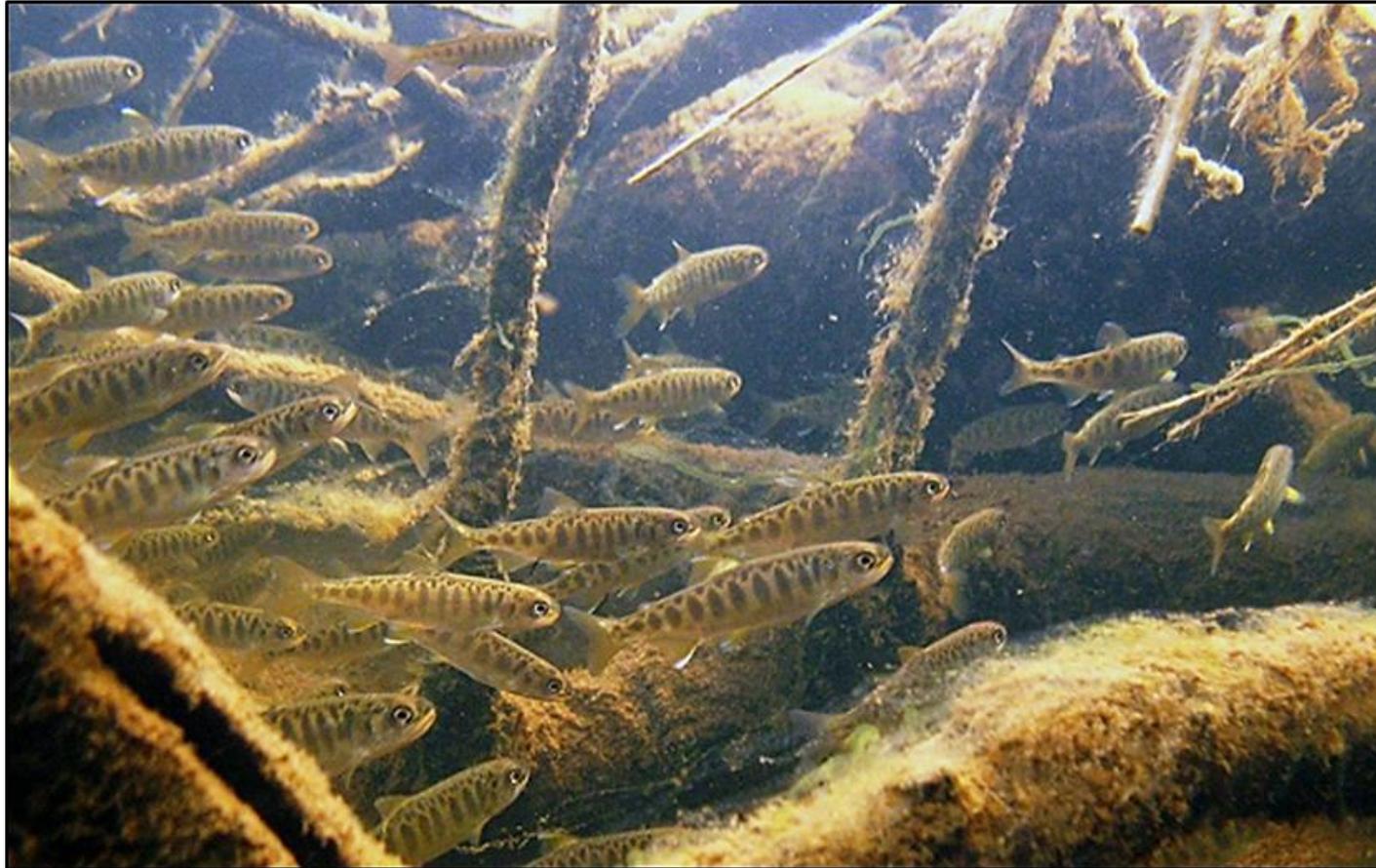
June 2014



October 2015



HABITAT FOR JUVENILE SALMON AND STEELHEAD



. Photo: USFWS/Togiak National Wildlife Refuge (CC BY-NC-ND 2.0)
https://www.flickr.com/photos/usfws_alaska/6479109041/

VIDEO

2022 CONSTRUCTION SEASON LAR C1 & C2S1



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TEMPORARY CONSTRUCTION IMPACTS

Primary Haul Route

- Ingress - Carlson Drive to Glenn Hall Park
- Egress – Camelia, Sandburg to Carlson Drive

Recreational impacts

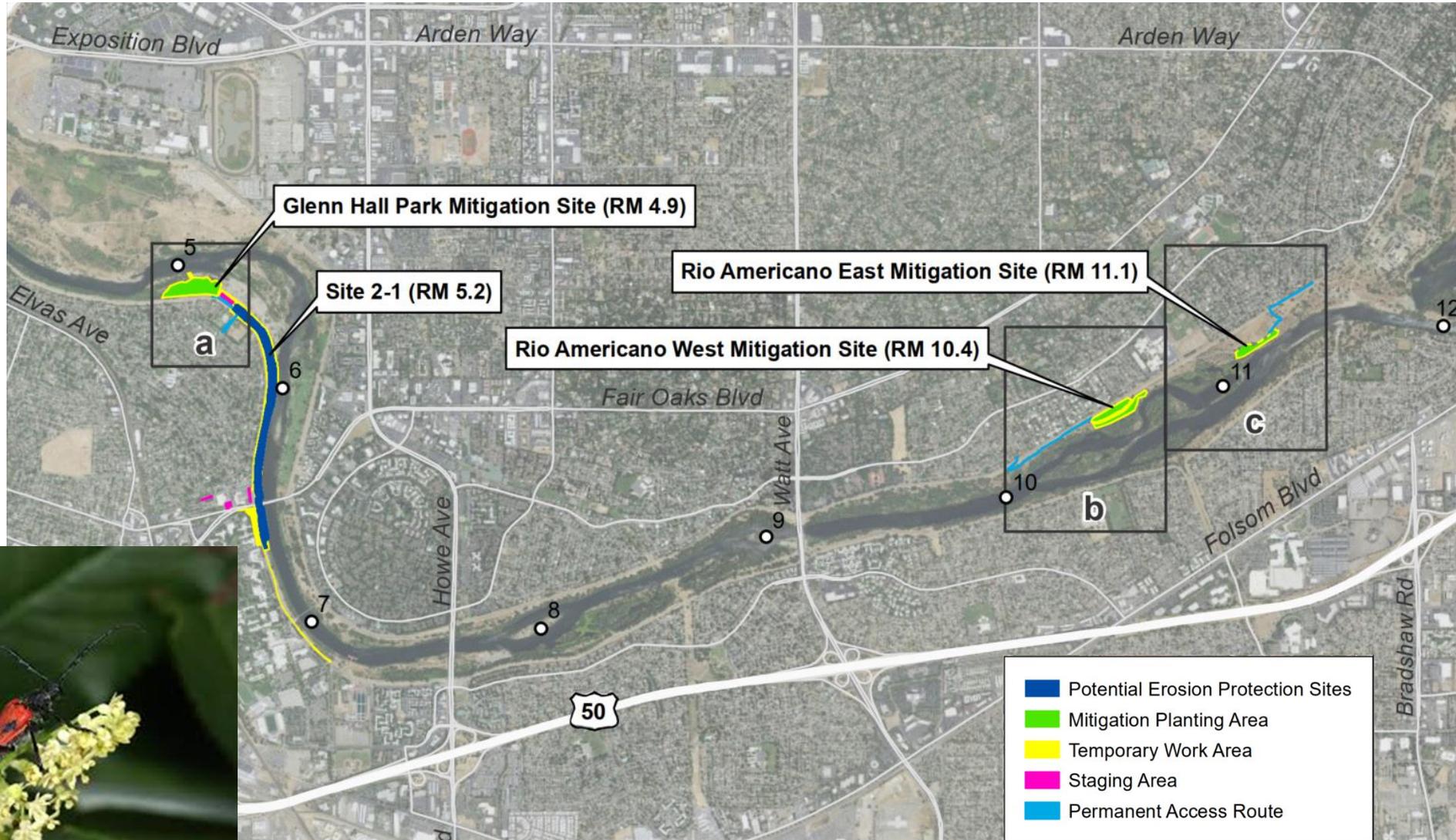
- Levee between CSUS and Glenn Hall Park will be closed during Veg Clearing and Construction
 - Glenn Hall Park will be accessible
 - Paradise Beach will be accessible

Additional Impacts

- Noise complies with city ordinance
 - Work hours: Mon-Sat 7-6, Sun 9-6
- Dust Suppression will be provided
- Vibration levels will be monitored



ADDITIONAL OFF-SITE MITIGATION SITES



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



CONTRACT 2 (SITE 2-3, SEASON 1) PRE-CONSTRUCTION ACTIVITIES



Vegetation Clearing

- Clearing: Mar 22
- Elderberry removed to Rio Americana mitigation site





CONTRACT 2 (SITE 2-3, SEASON 1) CONSTRUCTION ACTIVITIES



Excavation of benches



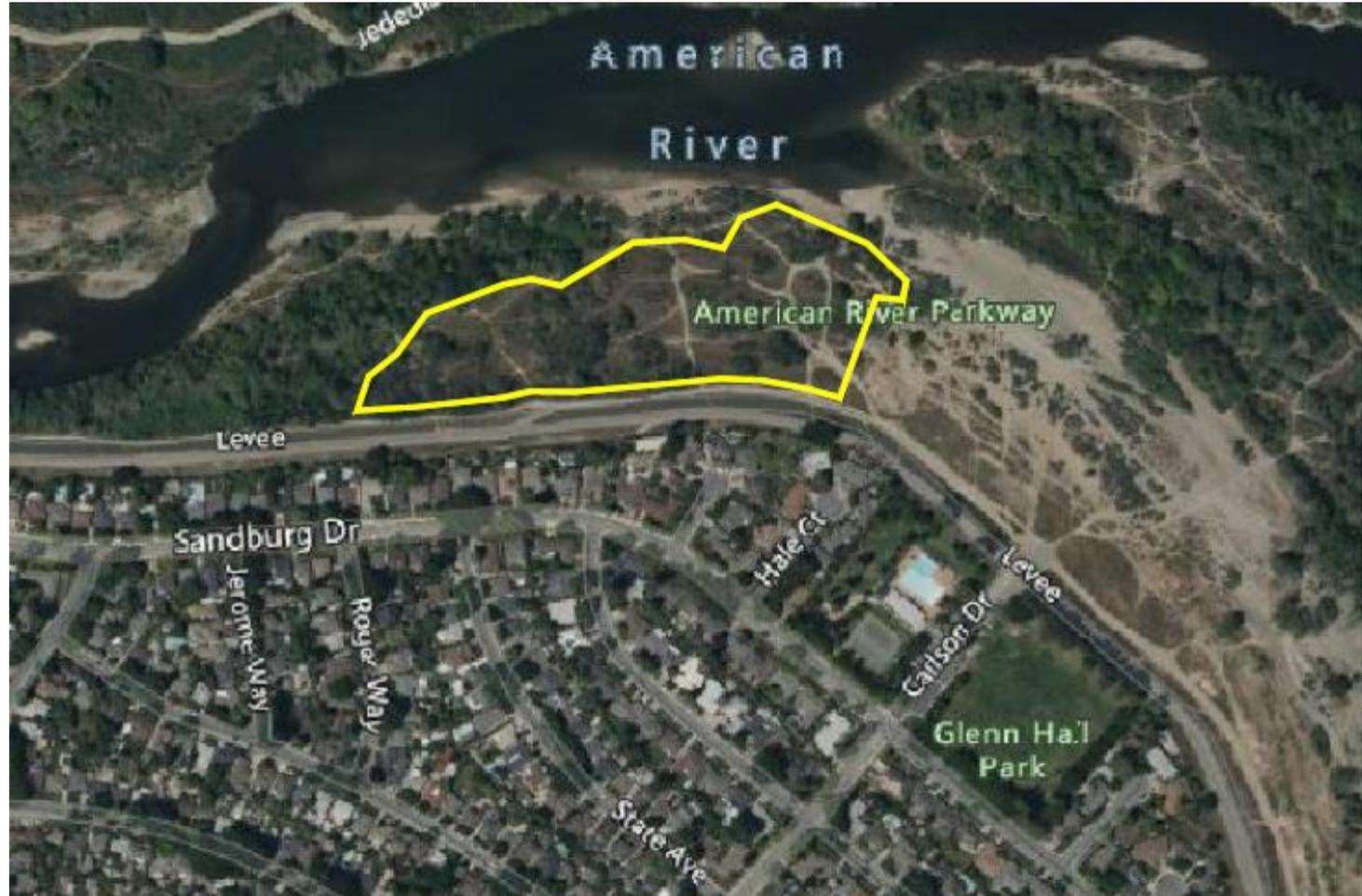


MITIGATION CONTRACT E1A – PARADISE BEACH



Invasive trees removed

Elderberry transplant complete





PARADISE BEND MITIGATION SITE





CONTRACT 1 PUBLIC NOTIFICATION

RIVER PARK NEIGHBORHOOD



- May 26, 2020 USACE postcard mailer (~3,400): announcement of Contract 1 Draft SEA/SEIR available for public review
 - Project website went live
- June 15, 2020 USACE NEPA/CEQA virtual public meeting
- July 16, 2020 USACE presentation to River Park Neighborhood Association
- Stakeholder meetings 2020-2021, including Lower American River Task Force, County Recreation & Parks Commission, and American River Parkway Advisory Committee
- January 3, 2022 USACE bi-fold mailer (~3,700): pre-construction notice
- February 17, 2022 USACE presentation to River Park Neighborhood Association
- Late Spring/Early Summer 2022 USACE mailer to residents: construction notice

- April 2, 2021 Public Meeting (ARPAC Presentation) – Postcard notice invite for the public meeting
 - June 29, 2021 Public Meeting (SEIS) – Postcard invite sent for public meeting and announcing availability of document
 - January 3, 2022 Direct Mailer- Informational bifold mailer sent to residents near C1 and C2



NOISE AND VIBRATION LIMITS IN EA



TABLE 3.11-3 NOISE LEVELS DURING CONSTRUCTION OF EROSION PROTECTION

Distance Between Source and Receiver (feet)	Calculated 1-Hour Leq Sound Level (dBA)
50	88
100	80
200	72
300	68
400	65
500	62
1,000	54
1,500	50
2,000	46
3,000	42

TABLE 3.11-1 GROUND-BORNE VIBRATION IMPACT CRITERIA FOR GENERAL ASSESSMENT

Ground-borne Impact Levels (VdB re 1 micro-inch/second)			
Land Use Category	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
<i>Category 1:</i> Buildings where vibration would interfere with interior operations.	65 d	65 d	65 d
<i>Category 2:</i> Residences and buildings where people normally sleep.	72	75	80
<i>Category 3:</i> Institutional land uses with primarily daytime uses.	75	78	83