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

American River Erosion Protection

Contract 2, Season 2
(Site 2-2, 2-3)

Sacramento District
US Army Corps of Engineers

4 May 2023

Source: U.S. Army Corps of Engineers, Sacramento District

U.S.ARMY

US Army Corps of Engineers®

AGENDA

- Project Overview – William Polk, Sr. Project Manager
- Integrated Design Approach – Brian Wardman, Principal Designer
- Environmental Considerations – Nate Martin, Environmental Manager
- Construction Impacts and Timeline - Aaron Johnson, Project Engineer
- Future Work - William Polk, Sr. Project Manager
- Q & A - Team

PROJECT PARTNERS

Federal Government

US Army Corps of Engineers®

Local Government

SAFCA
Sacramento Area Flood Control Agency

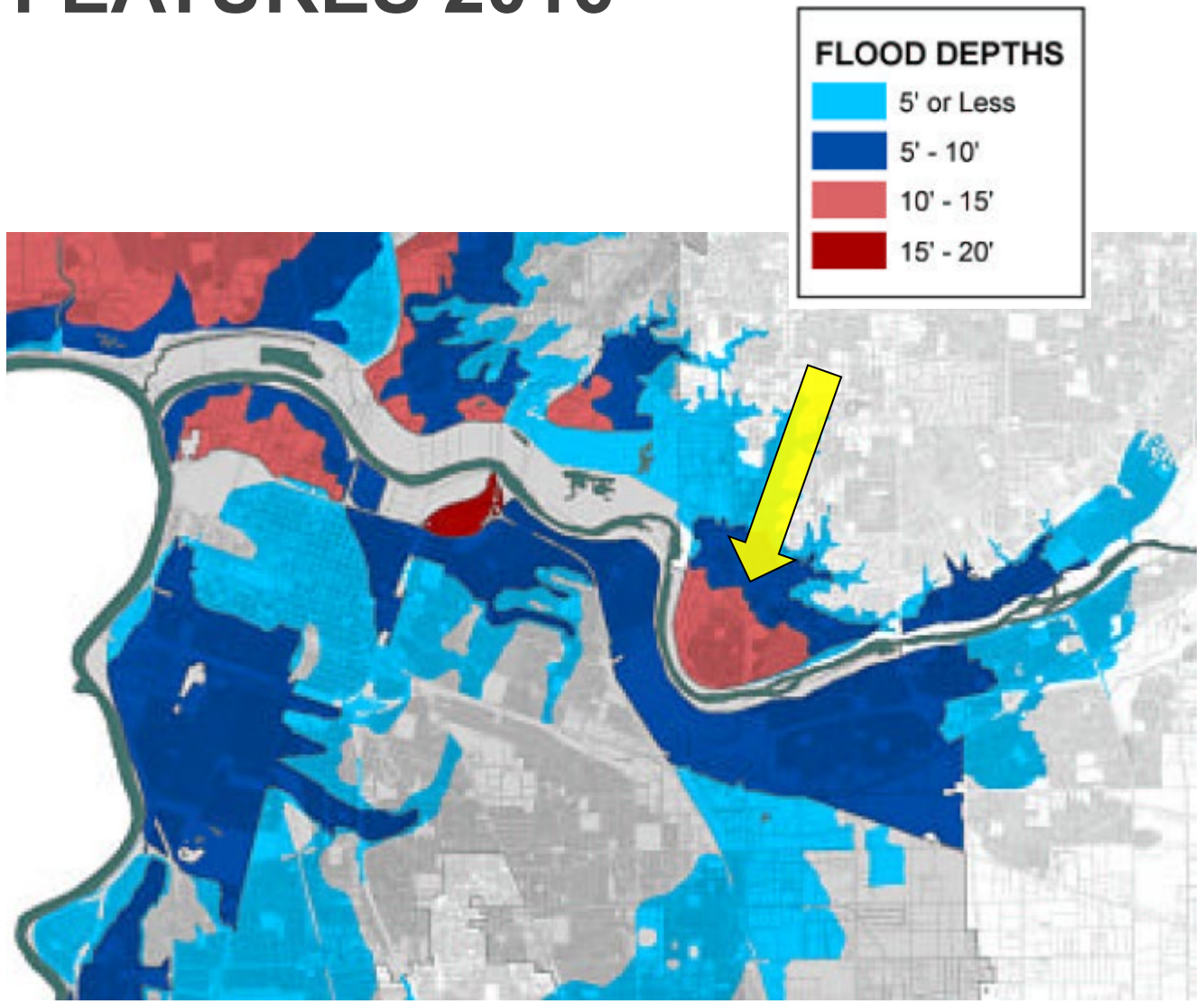
State Government

Central Valley Flood Protection Board

Department of Water Resources

AMERICAN RIVER WATERSHED COMMON FEATURES 2016

- Sacramento is located at the confluence of the Sacramento and American Rivers
- Sacramento is located within a natural floodplain
- Sacramento is one of the most at-risk cities in the Nation
- $1.8 billion appropriated toward flood control improvements along American and Sacramento Rivers



EROSION PROTECTION - PROJECT NEED

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

EROSION PROTECTION - PROJECT NEED

Source: U.S. Army Corps of Engineers, Sacramento District

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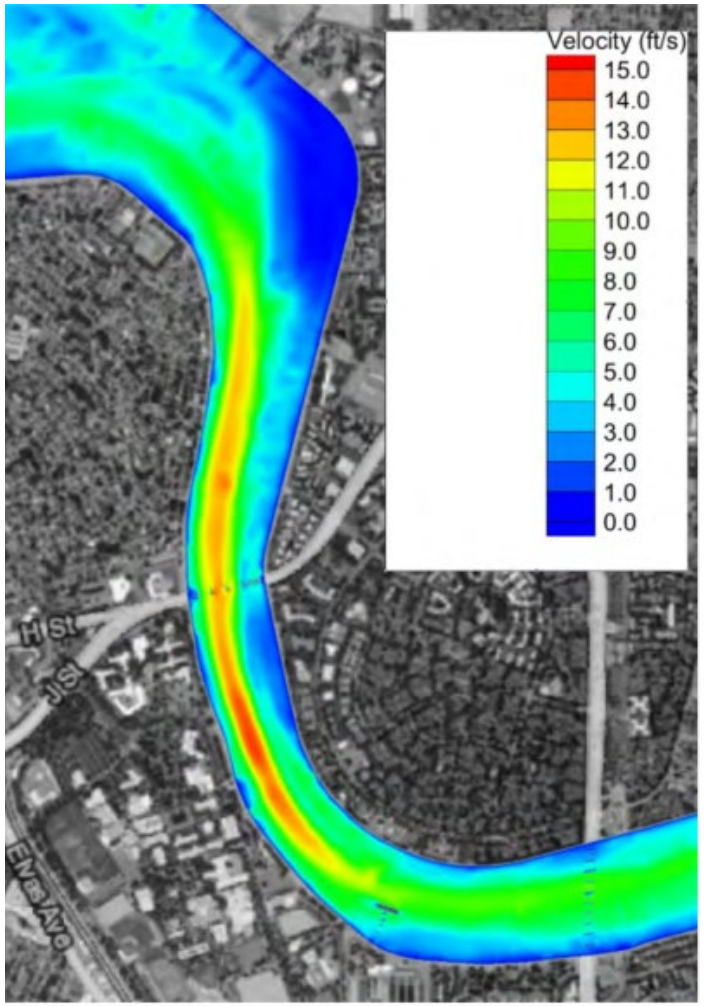
1986- River Park at I-80 bridge crossing

Post-Flood 1986

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

EROSION PROTECTION - PROJECT NEED

- 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
- Authorized up to 11 miles of erosion protection measures to be constructed along Lower American River



Velocities at 160,000 cfs

CAMPUS COMMONS – PROJECT NEED

1950 Flood Event

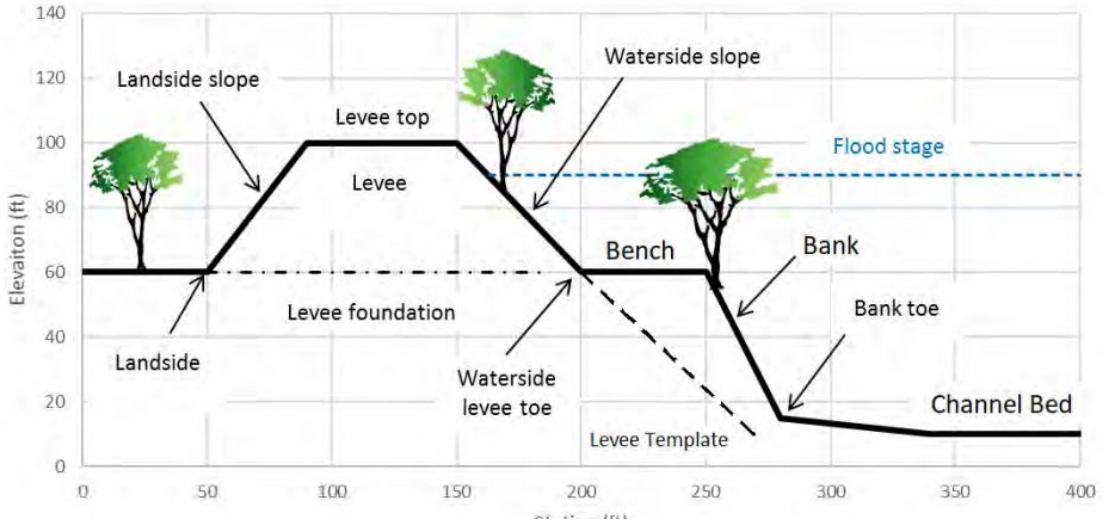
- Before Folsom Dam
- Existing North Levee (Pink Line) not constructed until 1955.
- Flooding extended beyond American River Drive.
- Existing levee constricts historic floodplain by ~ 1 mile.

CURRENT PROJECT AREA

- Extends between Paradise Bend and Howe Ave Bridge.
- Contains three erosion protection sites
  - Site 2-1 - Complete
  - Site 2-3, S1 - Complete
  - Site 2-3, S2 - 2023
  - Site 2-2 - 2023
- Banks generally consist of sandy deposits from late 1800's upstream gold mining.
- Velocities >10 ft/s through most of subreach during design event

EROSION CONCERNS AT SITES 2-2 AND 2-3

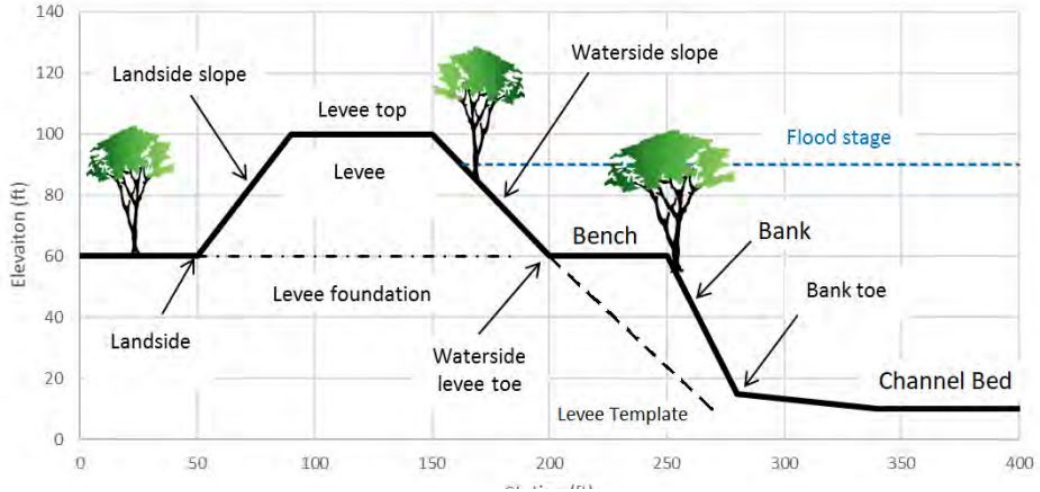
- Levee Erosion under H-Street and Howe Avenue
- River bank retreat undercutting the levee foundation
  - High velocities against an erodible bank
  - Steep banks prone to sloughing and failure
  - Vegetation on bench/top of bank provides limited erosion protection relative to at bank toe
  - 1986 lost ~100 feet of bank across from Fairbairn
  - 2017 had observable bank loss at only 80 kcfs



DESIGN SELECTION

- Collaborative effort to develop and select designs
  - Technical and Resource Advisory Committee (County Parks, USFWS, NMFS, USACE, DWR, SAFCA)
  - Considered Hydraulic Impacts, Environmental/Resource Impacts, Flood Risk, Public Safety, O&M, Costs/Funding in both short and long-term
  - Briefings to Lower American River Task Force throughout process

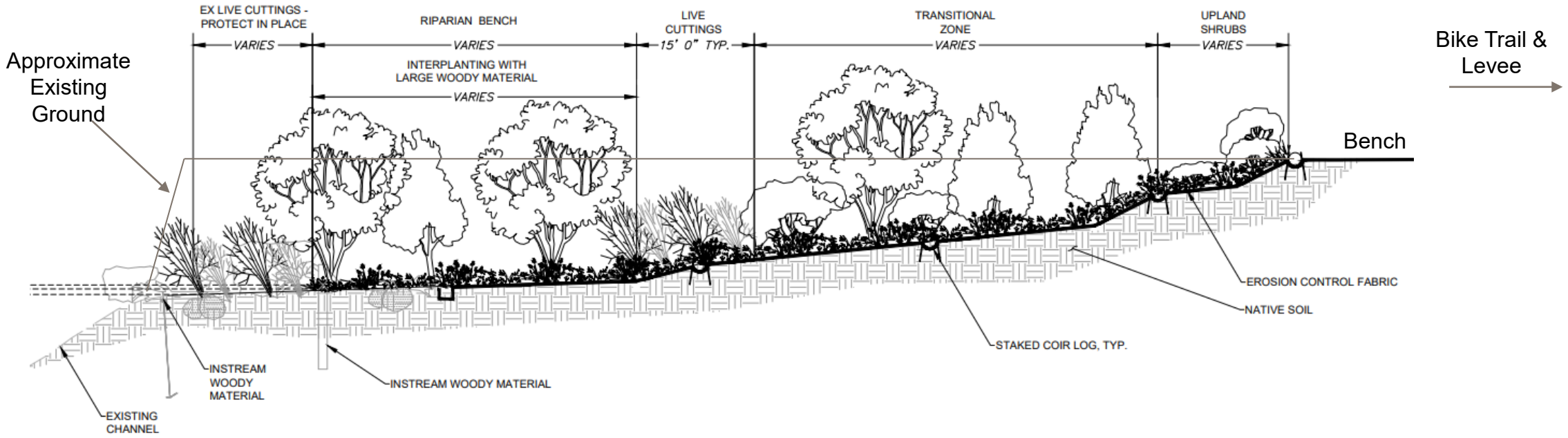
- Alternatives Considered
  1. Do-nothing and deal with it later
  2. Bury rock at the levee toe and allow riverbank to erode away bench.
  3. Protect the riverbank with Rock
  4. Protect riverbank with vegetation (and some rock) while allowing for some natural erosion.



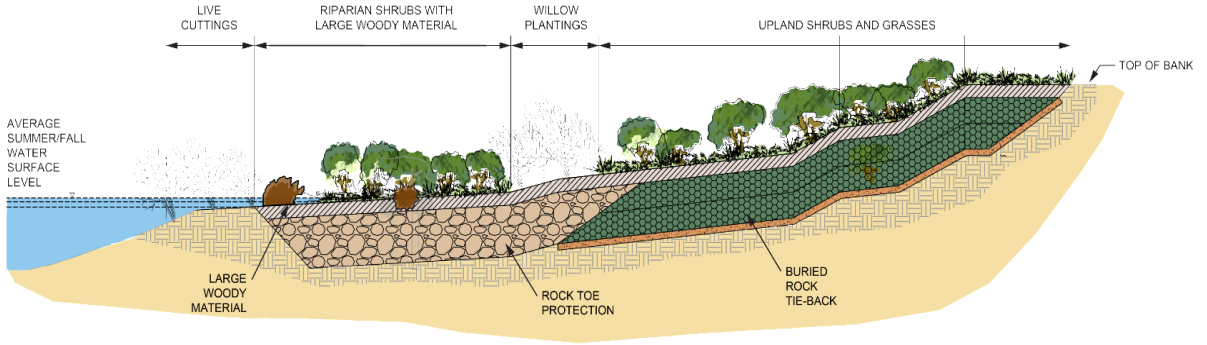
SITE 2-3 DESIGN

- Protect the riverbank with vegetation (and some rock). (purple fill)
- Relocate bike trail (green line) onto Sac Sans easement where vegetation is prohibited
- Extend rock protection under H-Street bridge

SITE 2-3 DESIGN



- Deformable Vegetated Bank Design (Site 2-3)
  - Strong preference of resource agencies
  - Prioritized long-term habitat over short-term impacts
  - Offset hydraulic impacts of planting at other projects
  - Buried Rock tie-backs included to limit potential erosion



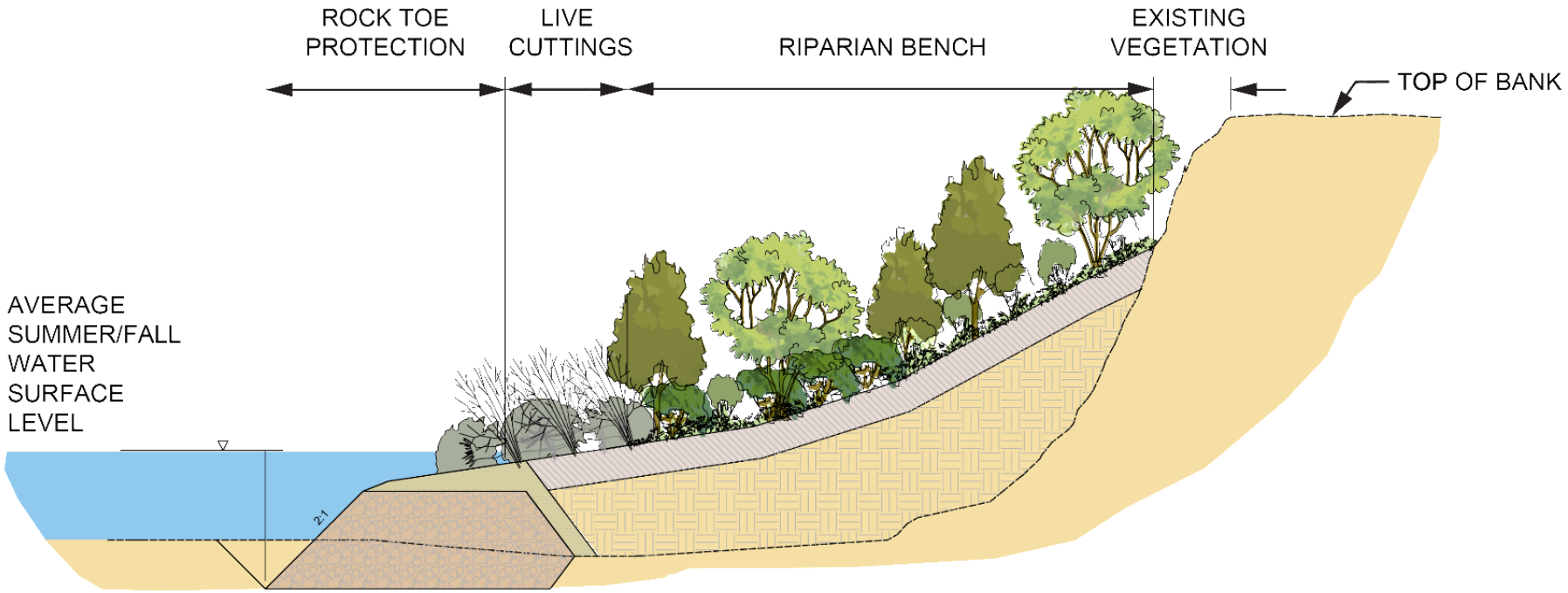
SITE 2-3 DESIGN

- Buried Rock Tie-Backs
  - Limits extents of erosion
  - Setback from water's edge
  - Buried under 2'+ of material

- Completed Year 1 Earthwork
  - Site to be vegetated in fall 2023

SITE 2-2 DESIGN

- Rock Toe and Planting Bench (Site 2-2)
  - Builds out into channel
  - Rock toe below summer water level
  - Buttress existing bank with fill
  - Vegetation on upper slope protected in place



ON-SITE MITIGATION

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

May 2001

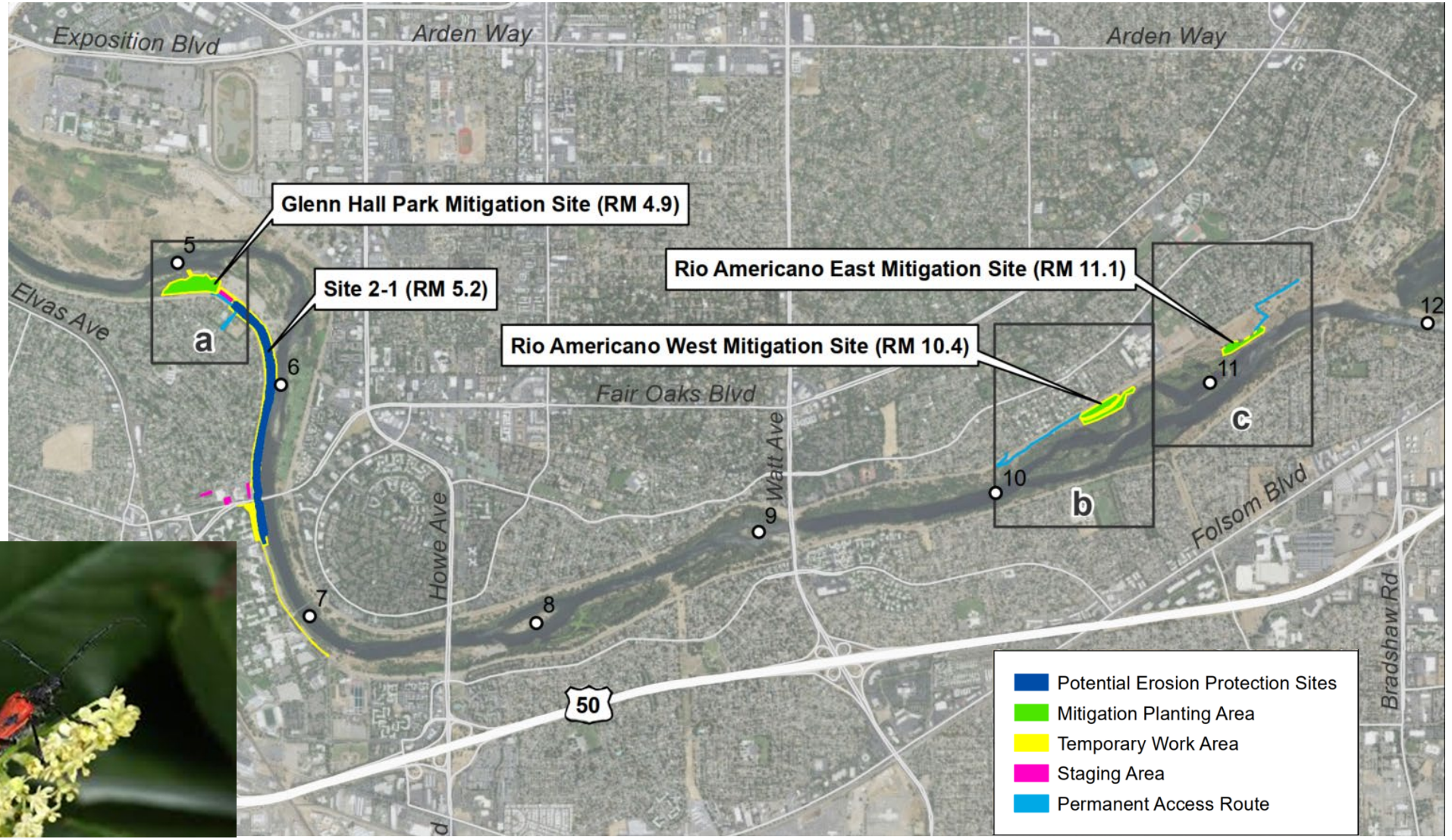
June 2005

July 2010

June 2014

October 2015

OFF-SITE MITIGATION SITES



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

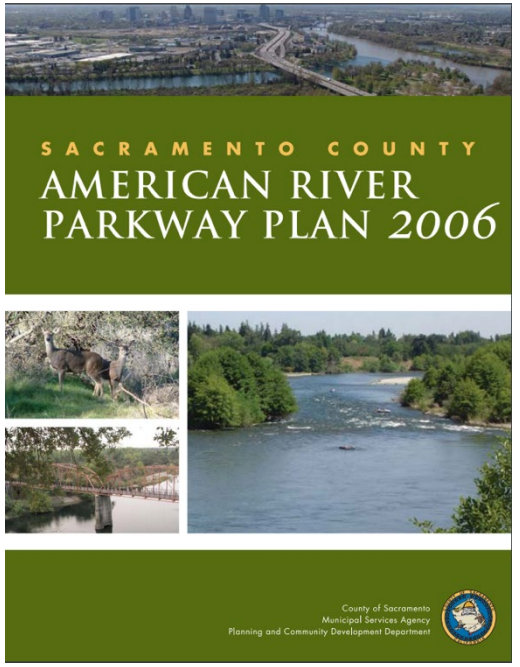
ENVIRONMENTAL CONSISTENCY AND COMMITMENTS

Consistency

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

Environmental Commitments

- Final SEIS/SEIR
- Biological Opinions (NMFS, USFWS)
- Water Quality Certification (Water Board)



SUPPLEMENTAL EIS/EIR COMPLETED
TOPIC AREAS ANALYZED

- Visual Resources
- Hydrology and Water Quality
- Vegetation and Wildlife
- Fisheries
- Special Status Species
- Cultural Resources
- Transportation and Circulation
- Air Quality
- Greenhouse Gas Emissions and Energy Consumption
- Noise
- Recreation
- Public Utilities and Service Systems
- Hazards and Hazardous Materials

TEMPORARY CONSTRUCTION IMPACTS

Primary Haul Route

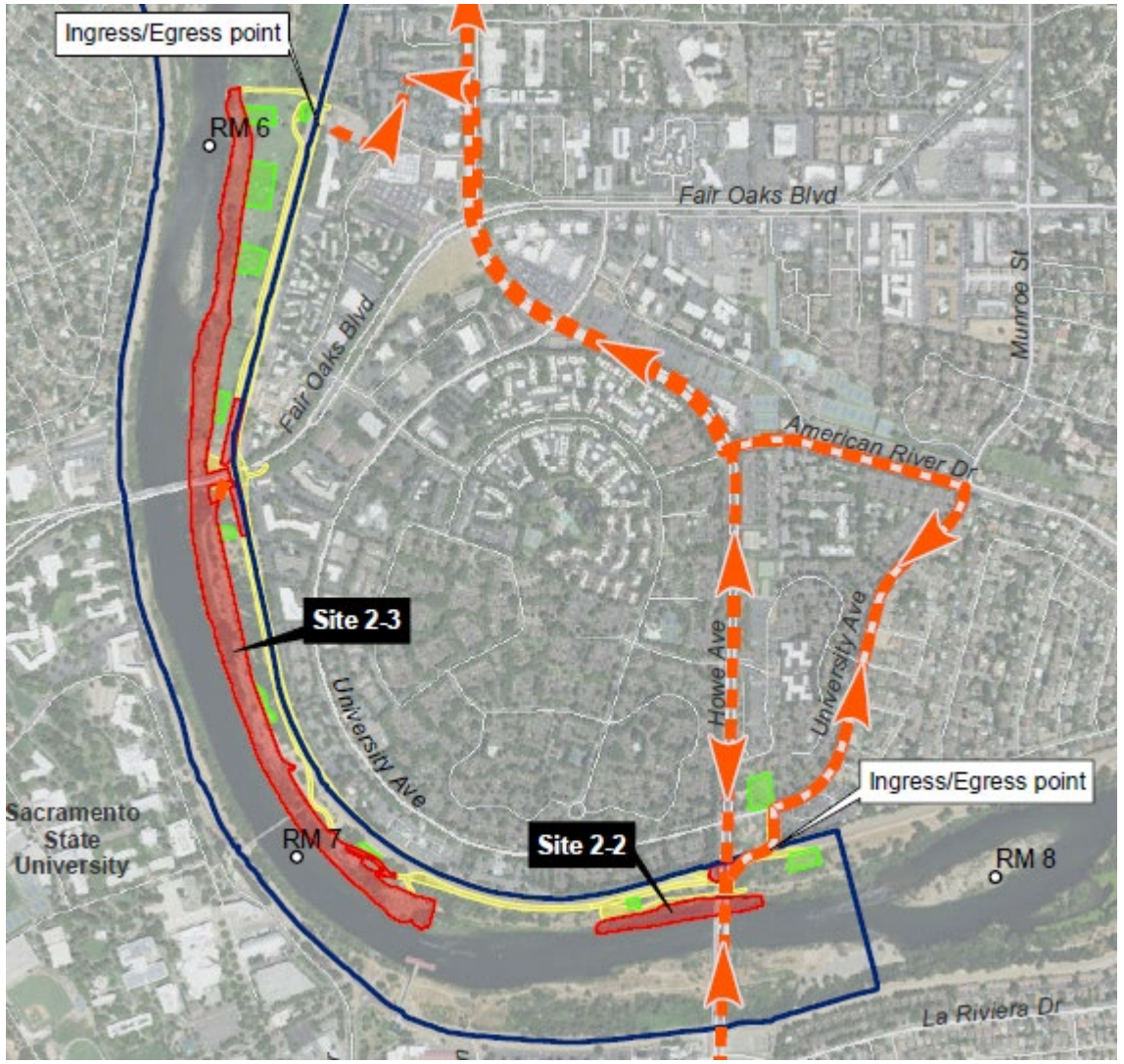
- Ingress/Egress at Campus Commons Golf Course and at University Park

Recreational impacts

- Construction footprint will extend from water's edge to levee and from Campus Commons golf course to Howe Ave.
- Pedestrian and Bike traffic will be detoured to top of levee from downstream of campus commons golf course to Howe Ave.

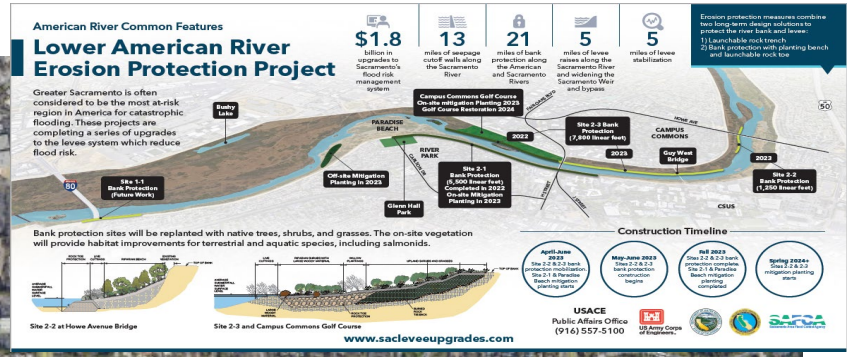
Additional Impacts

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



INFORMATIONAL SIGNAGE

- Project Signs
  - Formal information about the project and contractor
- Safety Signs
  - For everyone's safety
- Directional Signs
  - Clarifying how to navigate around our work site
- Interpretive Signs
  - Understanding the project, purpose and timeline (see map)



C2 CONSTRUCTION SCHEDULE

Pre-construction (January 2023 - May 2023)

– Site prep, elderberry shrub transplant, cut and trim trees

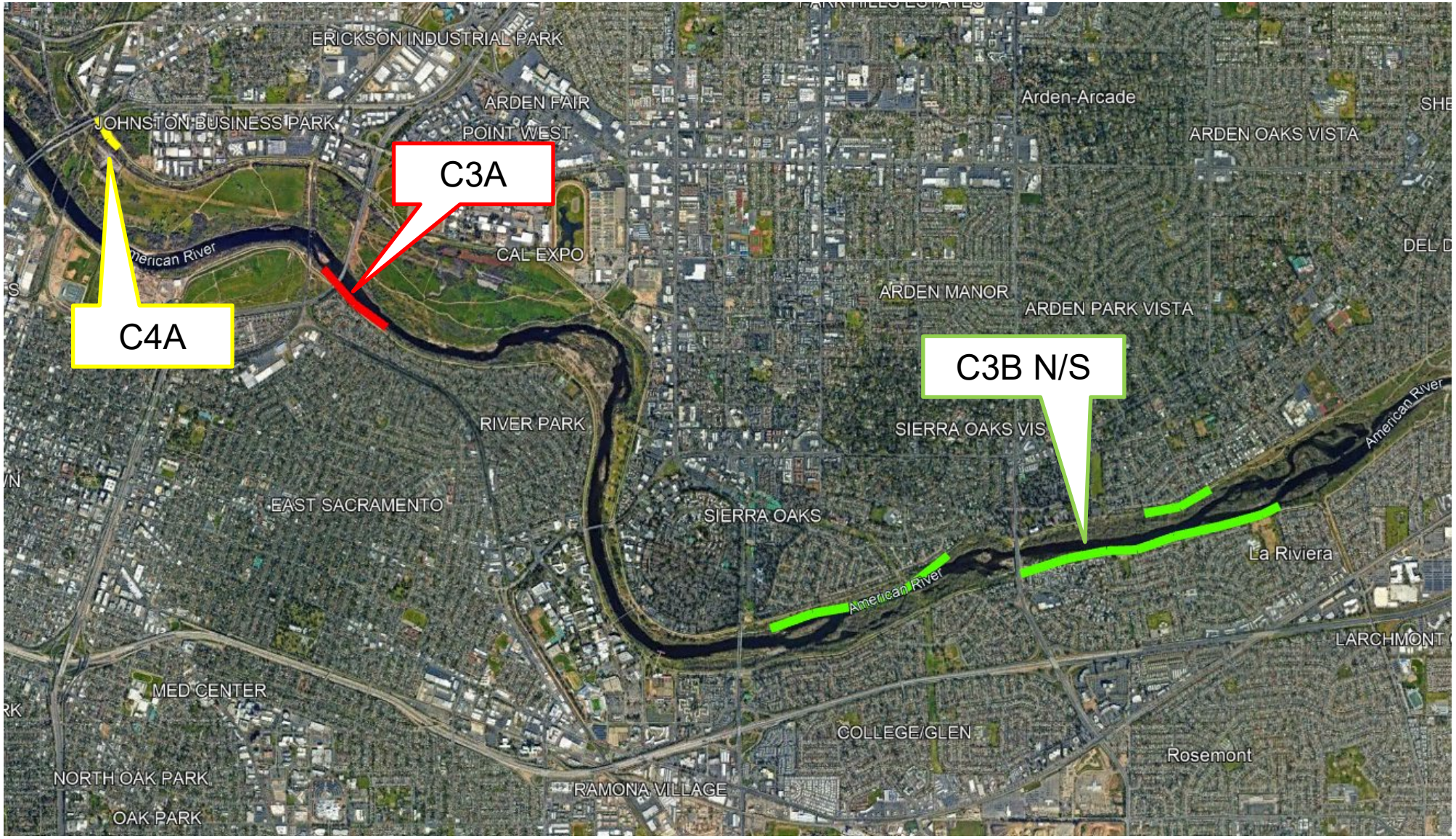
Site Construction (May 2023 - Fall 2023)

– Excavate excess material, Install erosion protection, backfill and preliminary revegetation

Post-Construction Planting (Spring+ 2024)

– Install mixture of native vegetation (grasses, shrubs, trees) on-site and within mitigation sites

FUTURE WORK


C3A
C4A
C3B N/S
ERICKSON INDUSTRIAL PARK
ARDEN FAIR
POINT WEST
JOHNSTON BUSINESS PARK
Arden-Arcade
ARDEN OAKS VISTA
CAL EXPO
ARDEN MANOR
ARDEN PARK VISTA
RIVER PARK
SIERRA OAKS VIS
EAST SACRAMENTO
SIERRA OAKS
La Riviera
American River
MED CENTER
COLLEGE/GLEN
Rosemont
NORTH OAK PARK
RAMONA VILLAGE
OAK PARK
LARCHMONT

HOW TO STAY INFORMED

Project Overview

American River Levees

Sacramento River Levees

Sacramento Weir

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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?

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QUESTIONS