

**Meeting of the Central Valley Flood Protection Board
March 27, 2015**

Staff Report

**American River Mile 0.5 Aquatic and Riparian Habitat Creation Project,
Sacramento County**

1.0 – ITEM

Consider Central Valley Flood Protection Board (Board) approval for creation of an aquatic and riparian habitat along the Lower American River (Attachment A) at river mile 0.5 (RM 0.5) through draft Permit No. 19005 (Attachment B).

2.0 – APPLICANT

Sacramento Area Flood Control Agency (SAFCA)

3.0 – PROJECT LOCATION

The project is located at RM 0.5 on the right (north) bank of the American River, within Discovery Park east of Interstate 5, on the waterside of a wide berm that extends approximately 0.25 miles from the river channel across floodplain to the north levee protecting the Natomas Basin.

4.0 – PROJECT DESCRIPTION

SAFCA is proposing to create shaded riverine aquatic (SRA) habitat at the project location. The RM 0.5 mitigation site contained a large number of elderberry shrubs that were concealed beneath a thick layer of blackberry and grape vines that has rendered the site inaccessible to park users. The Board's Chief Engineer previously authorized SAFCA to transplant the elderberry shrubs (see detailed discussed provided in Section 7.1). SAFCA now proposes to excavate and flatten the berm to enhance its hydraulic connectivity to the river under a range of flow conditions. The grading footprint is approximately 1,000 feet by 300 feet, and covers approximately 4.3 acres including a 1.0-acre staging area.

The proposed SRA restoration area (approximately 3.3 acres of the total 4.3-acre grading area) would be planted with a variety of native plants at various elevations to enhance the site's SRA habitat values. The elderberry shrubs were transplanted to two

nearby areas totaling 5.0 acres that are directly adjacent to the grading footprint. The transplants will be interspersed with additional riparian trees and shrubs. Excavation, grading, and planting activities would be staged from the aforementioned 1.0-acre area, located between the two transplant areas adjacent to the grading footprint. Project Drawings are provided in Attachment C.

5.0 – AUTHORITY OF THE BOARD

California Water Code § 8534, 8590 – 8610.5, and 8700 – 8710

Title 23:

- § 6 - Need for a Permit
- § 13 - Evidentiary Hearings
- § 112 - Streams Regulated and Nonpermissible Work Periods
- § 116 - Borrow and Excavation Activities – Land and Channel
- § 120 - Levees
- § 131 - Vegetation

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with this project from all pertinent agencies are shown below:

- The U.S. Army Corps of Engineers (USACE) decision letter was received on February 6, 2015, and indicated that the USACE District Engineer has no objection to the project, subject to conditions. This letter has been incorporated into the permit as Exhibit A.
- Reclamation District 1000 (RD 1000) conditionally endorsed this project on November 26, 2014 (Attachment D). Board staff has incorporated the intent of all six of RD 1000's conditions into the draft permit.

7.0 – PROJECT ANALYSIS

7.1 – Project Construction Details

Initial construction (Phase 1) occurred between November 15, 2012 and February 1, 2013, and involved trimming and herbicide applications on the blackberry overgrowth.

After Board staff review and authorization from the Board's Chief Engineer, SAFCA cleared overgrowth at the project site and transplanted the existing elderberry shrubs (Phase 2) to identified transplant sites within Discovery Park during the elderberry plant's winter dormancy period of November 2014 through mid-February 2015 (Attachment E).

Construction Phase 3 is proposed to occur over approximately three months between April 15 and November 1, 2015. Included in this third construction phase, and to enhance the site's SRA habitat, approximately 60,000 cubic yards (cy) of earthen material would be excavated and transported to another SAFCA site outside of the RM 0.5 Mitigation Site.

To accomplish material transport while minimizing disturbance to Discovery Park visitors, a short north-south earthen road is proposed to be constructed to provide access from the Natomas Park Drive/Garden Highway intersection to the 1.0-acre staging area south of the American River Bike Trail (Attachment C). This temporary access roadway will minimize potential conflicts between construction vehicles and park visitors in the existing parking lots. The access road will be maintained continuously by SAFCA during construction to minimize erosion and vehicle dust. Materials stored at the staging area will include construction equipment, components of the instream woody material and brush mattresses, native cuttings and seedlings, soil amendments, and irrigation piping.

Once construction is completed all equipment and excess materials will be removed off-site, and the temporary staging area and access road will be reseeded with native grasses to promote revegetation.

After removal of the 60,000 cy of earthen material Phase Four of the project is anticipated to begin in the fall of 2015. The site would be finish graded and planted to improve wildlife habitat, and to provide additional habitat for juvenile Chinook salmon, juvenile steelhead, and Delta smelt.

The 60,000 cubic yards of earthen material removed from the project site would be transported by truck westward along Garden Highway to SAFCA's Sacramento River east levee Reach 19A (also known as a portion of USACE Reach A-1). Board approval for final placement of the material at Reach 19A will be considered in a separate Board action (Permit Application No. 19004) which is currently anticipated to be scheduled at the April 24, 2015 Board meeting.

7.2 – Hydraulic Summary

MBK Engineers conducted a hydraulic analysis (Attachment F) of the proposed project and determined that the project would result in minor predicted changes in river velocity in the immediate project vicinity between – 1.5 and + 1.5 feet per second (fps). The maximum velocity increase of 0.5 to 1.0 fps is predicted to occur along the river bank. Velocity impacts adjacent to the levee are insignificant.

With respect to water surface elevation (WSE) the hydraulic analysis predicted that the proposed project would result in no significant changes in WSE along or near the levees, and predicted a decrease in WSE of less than 0.1 feet just downstream of the project footprint.

MBK's findings presented in their 2007 Technical Memorandum (Attachment F) have been determined valid and applicable to the current project proposal by MBK and Board staff.

Based on its review of the hydraulic analysis Board staff, with concurrence from the USACE, has determined that the proposed project is anticipated to result in no significant adverse hydraulic impacts to the American River floodway or Sacramento River Flood Control Project (SRFCP) levees.

7.3 – Geotechnical Summary

The proposed project is located within the floodway adjacent to the river channel and away from the levee, and thus is anticipated to result in no significant adverse effects to the floodway or SRFCP levees.

7.4 –Real Estate Considerations

RD 1000 and Sacramento County own the lands on and adjacent to the project footprint, and therefore no additional lands are being acquired for this project.

8.0 – CEQA ANALYSIS

Board staff has prepared the following CEQA analysis:

An Initial Study/Mitigated Negative Declaration (IS/MND) was prepared pursuant to the California Environmental Quality Act (CEQA) by CVFPB acting as lead agency. The Board considered and adopted lead agency findings on May 16, 2008 through Board Resolution No. 08-10 (Attachment G).

The Board staff has determined that the Board's prior CEQA findings regarding the project are still valid and that this activity was covered in the original project description. The Board staff have also determined that the proposed aquatic and riparian habitat project is within the scope of the previously certified IS/MND, that no new environmental effects could occur, and that no new mitigation measures are required as a result of this habitat creation. Therefore no new environmental documents are required pursuant to CEQA Guidelines section 15162.

The documents and other materials which constitute the record of the Central Valley Flood Board's proceedings in this matter are in the custody of Leslie Gallagher, Acting Executive Officer, Central Valley Flood Protection Board, 3310 El Camino Ave., Rm. 151, Sacramento, California 95821.

9.0 – CALIFORNIA WATER CODE SECTION 8610.5 CONSIDERATIONS

- Evidence that the Board admits into its record from any party, federal, State or local public agency, or nongovernmental organization with expertise in flood or flood plain management:

The Board has considered all the evidence presented in this matter, including the application for Permit No. 19005, supporting technical documentation provided by SAFCA, as well as all evidence submitted up through the hearing on this matter.

- The best available science related to the scientific issues presented by the executive officer, legal counsel, the Department of Water Resources, or other parties that raise credible scientific issues:

In making its findings, the Board has used the best available science relating to the issues presented by all parties. On the important issue of hydraulic impacts SAFCA used the RMA-2 hydraulic model. This model is considered as the best available scientific tool for the purpose of evaluating effects to water surface elevation and velocity for the increased level of detail needed for the proposed project.

- Effects of the decision on the facilities of the State Plan of Flood Control (SPFC), and consistency of the proposed project with the Central Valley Flood Protection Plan (CVFPP) as adopted by Board Resolution 2012-25 on June 29, 2012:

The proposed project is expected to result in no adverse hydraulic or geotechnical impacts on the facilities of the SPFC and is consistent with the CVFPP and current Title 23 standards because the project is anticipated to produce no significant increases in water surface elevation, substantial increases in channel velocities, or adverse geotechnical impacts on SPFC facilities.

- Effects of reasonable projected future events, including, but not limited to, changes in hydrology, climate, and development within the applicable watershed:

The proposed project will not affect hydrology, climate, or development and the overall scope of the project has not changed since it was approved May 18, 2008.

10.0 – STAFF RECOMMENDATION

Staff recommends that the Board:

Approve:

- Draft Encroachment Permit No. 19005, in substantially the form provided; and

Direct:

- the Executive officer to take the necessary actions to execute the permit.

11.0 – LIST OF ATTACHMENTS

A – Project Maps

B – Draft Permit No. 19005

Exhibit A: USACE 408 Decision Letter

C – Project Drawings

D – RD1000 Endorsement

E – Chief Engineer's Authorization for Elderberry Transplants – Phase 2

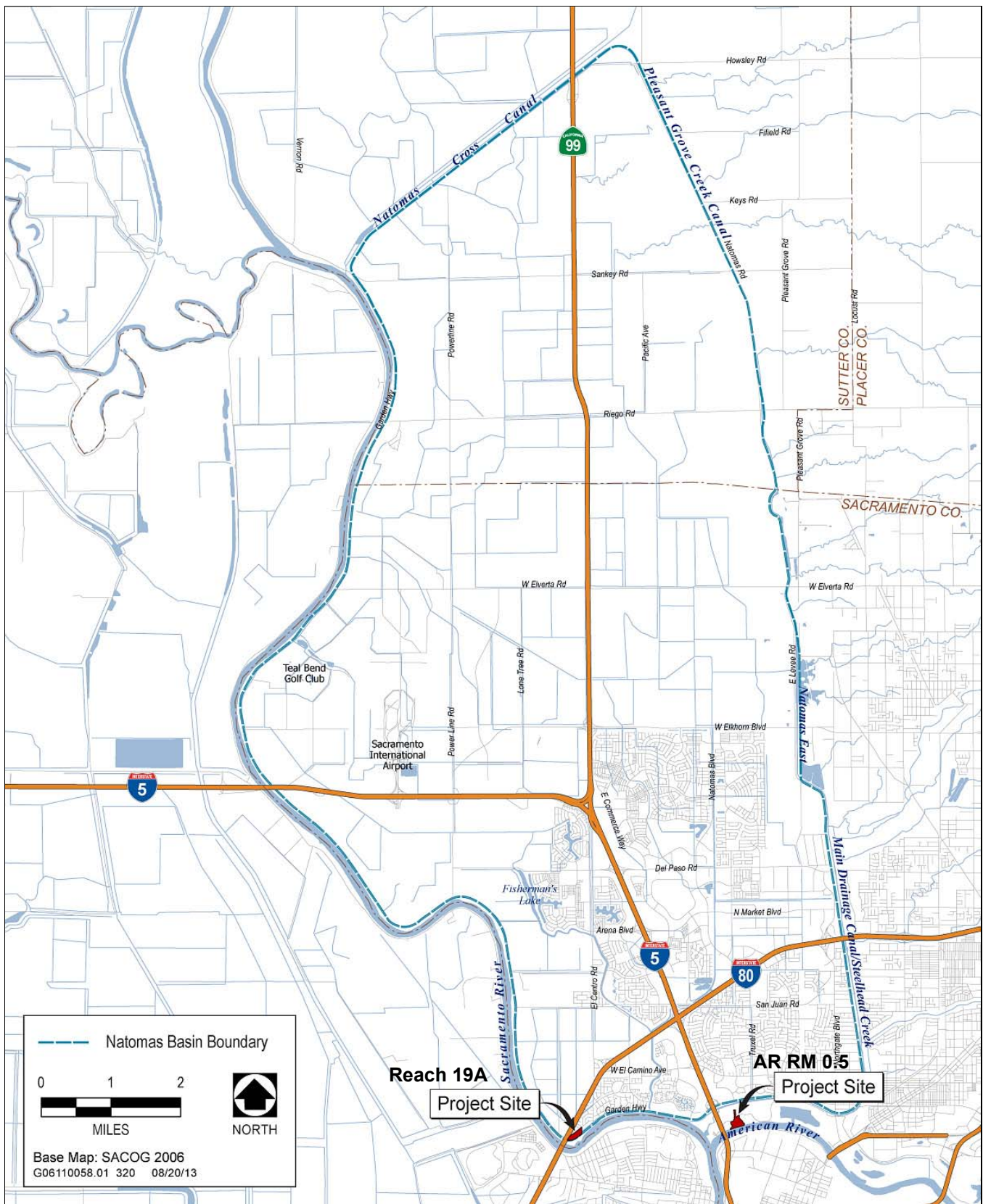
F – Hydraulic Technical Memorandums

G – Board Resolution No. 08-10, Approved May 16, 2008

Prepared By: Nancy Moricz, PE, Senior Engineer, Planning Branch

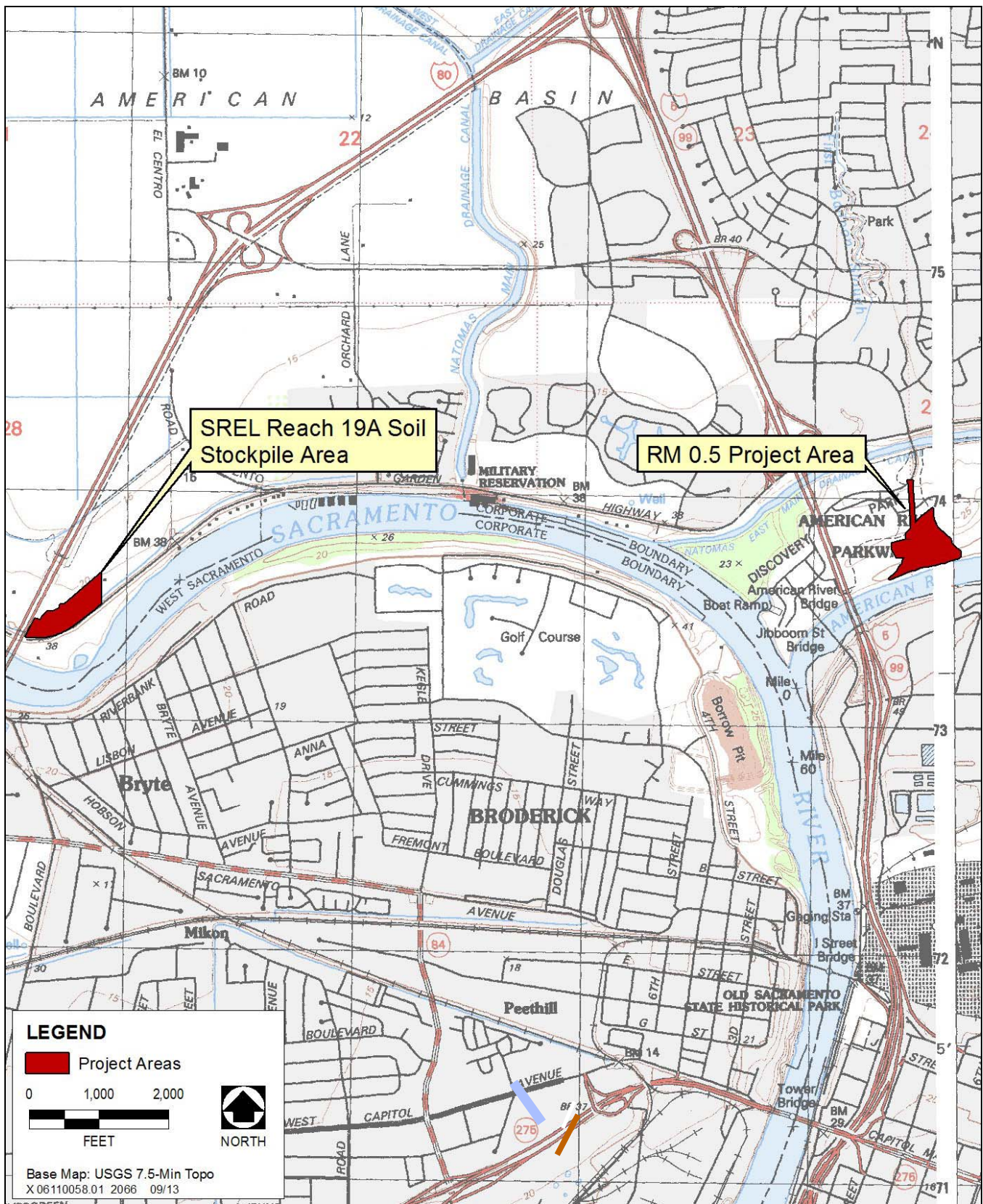
Environmental Review: Andrea Buckley, Senior Environmental Scientist

Staff Report Review: Eric Butler, PE, Supervising Engineer, Projects & Environmental Branch Chief



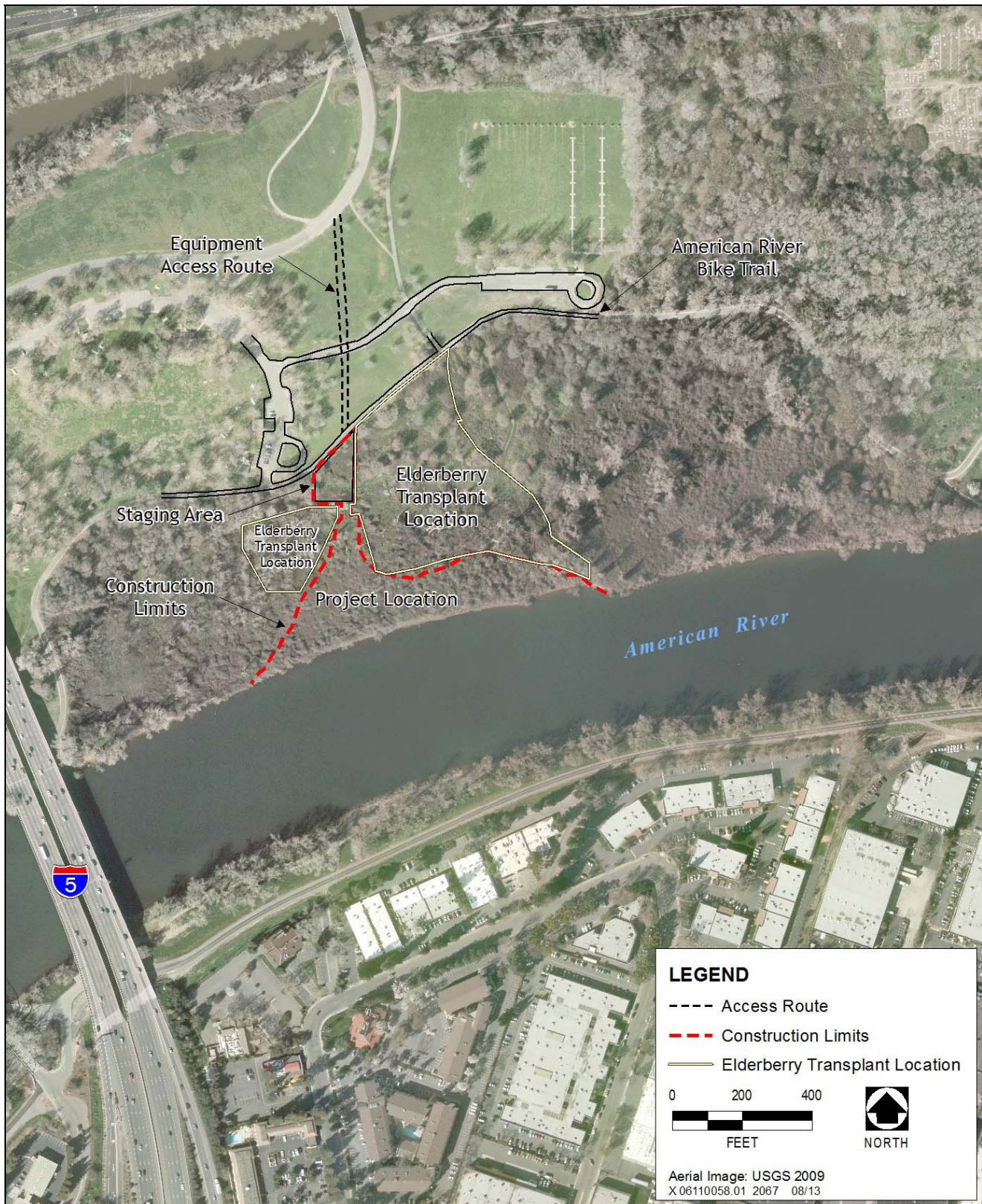
Source: AECOM 2013

Regional Location



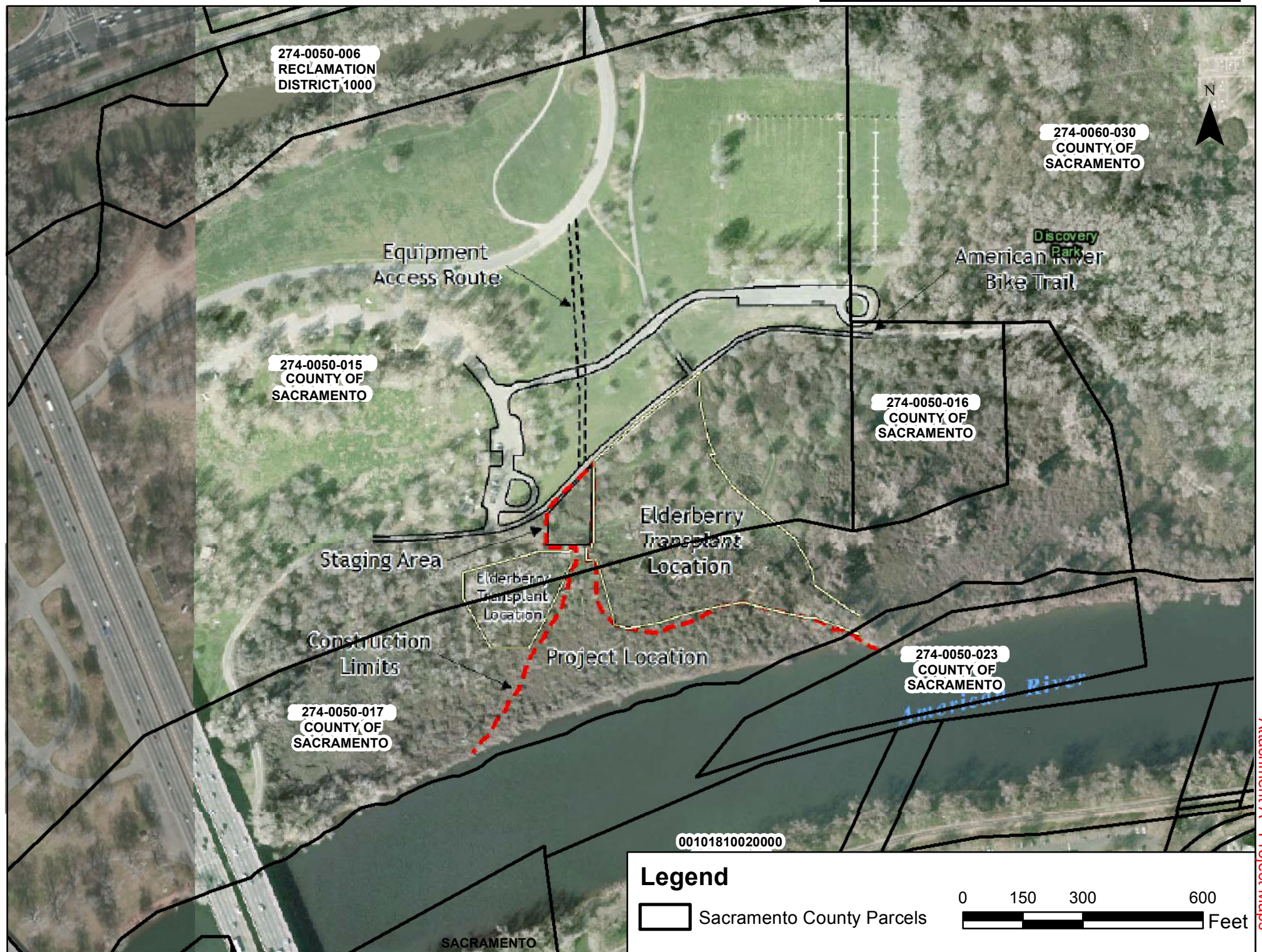
Source: NHC 2012

Project Location Map



Source: USACE 2009

Proposed Project Site Map



DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 19005 BD

This Permit is issued to:

Sacramento Area Flood Control Agency (SAFCA)
1007 7th Street, 7th Floor
Sacramento, California 95814

To create aquatic and riparian habitat at River Mile 0.5 of the American River. The project entails excavating, grading, lowering, and re-shaping of an approximately 4.3 acre portion of the American River floodplain east of Discovery Park and planting of the area with riparian vegetation.

The project is located on the right (north) bank of the American River, within Discovery Park east of Interstate 5, on the waterside of a wide berm between the river channel and north levee in Sacramento, CA. (Section 25, T9N, R4E, MDB&M, Reclamation District 1000, American River, Sacramento County).

NOTE: Special Conditions have been incorporated herein which may place limitations on and/or require modification of your proposed project as described above.

(SEAL)

Dated: _____

Executive Officer

GENERAL CONDITIONS:

ONE: This permit is issued under the provisions of Sections 8700 – 8723 of the Water Code.

TWO: Only work described in the subject application is authorized hereby.

THREE: This permit does not grant a right to use or construct works on land owned by the Sacramento and San Joaquin Drainage District or on any other land.

FOUR: The approved work shall be accomplished under the direction and supervision of the State Department of Water Resources, and the permittee shall conform to all requirements of the Department and The Central Valley Flood Protection Board.

FIVE: Unless the work herein contemplated shall have been commenced within one year after issuance of this permit, the Board reserves the right to change any conditions in this permit as may be consistent with current flood control standards and policies of The Central Valley Flood Protection Board.

SIX: This permit shall remain in effect until revoked. In the event any conditions in this permit are not complied with, it may be revoked on 15 days' notice.

SEVEN: It is understood and agreed to by the permittee that the start of any work under this permit shall constitute an acceptance of the conditions in this permit and an agreement to perform work in accordance therewith.

EIGHT: This permit does not establish any precedent with respect to any other application received by The Central Valley Flood Protection Board.

NINE: The permittee shall, when required by law, secure the written order or consent from all other public agencies having jurisdiction.

TEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the State of California, or any departments thereof, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, the permittee shall defend and shall hold each of them harmless from each claim.

ELEVEN: The permittee shall exercise reasonable care to operate and maintain any work authorized herein to preclude injury to or damage to any works necessary to any plan of flood control adopted by the Board or the Legislature, or interfere with the successful execution, functioning or operation of any plan of flood control adopted by the Board or the Legislature.

TWELVE: Should any of the work not conform to the conditions of this permit, the permittee, upon order of The Central Valley Flood Protection Board, shall in the manner prescribed by the Board be responsible for the cost and expense to remove, alter, relocate, or reconstruct all or any part of the work herein approved.

SPECIAL CONDITIONS FOR PERMIT NO. 19005 BD

THIRTEEN: All work completed under this permit, as directed by the general and special conditions herein, shall be accomplished to ensure that the work is not injurious to adopted plans of flood control, regulated streams, and designated floodways under Central Valley Flood Protection Board (Board) jurisdiction, as defined in California Code of Regulations, Title 23. This permit only applies to the completion of work in the project description located within, or adjacent to and having bearing on Board jurisdiction, and which directly or indirectly affects the Board's jurisdiction. This special condition shall apply to all subsequent conditions herein.

LIABILITY AND IMDEMNIFICATION

FOURTEEN: The permittee shall defend, indemnify, and hold the Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State") and Reclamation District No. 1000 (RD 1000), safe and harmless, of and from all claims and damages related to the Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

FIFTEEN: The permittee is responsible for all liability associated with construction, operation, and maintenance of the permitted facilities and shall defend, indemnify, and hold the Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State") and RD 1000, safe and harmless, of and from all claims and damages arising from the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take

over its defense, in its sole discretion.

SIXTEEN: The Board, Department of Water Resources (DWR), and RD 1000 shall not be held liable for damages to the permitted project resulting from releases of water from reservoirs, flood fight, operation, maintenance, inspection, or emergency repair.

SEVENTEEN: If the permittee does not comply with the conditions of the permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees. Permittee acknowledges that State law allows the imposition of fines in enforcement matters.

AGENCY CONDITIONS

EIGHTEEN: The permittee shall comply with all conditions set forth in the letter from the U.S. Army Corps of Engineers (USACE) District Engineer dated February 6, 2015, which is attached to this permit as Exhibit A and is incorporated by reference.

NINETEEN: The permittee agrees to incur all costs for compliance with local, State, and Federal permitting. If any conditions issued by other agencies conflict with any of the conditions of this permit, then the permittee shall resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations it administers and enforces.

TWENTY: In the event of an emergency, the permittee shall immediately restore the levee and access to the satisfaction of the Board, USACE, DWR, and RD 1000.

PRE-CONSTRUCTION

TWENTY-ONE: The permittee shall contact the Board by telephone at (916) 574-0609, and submit the enclosed postcard to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

TWENTY-TWO: Thirty (30) calendar days prior to start of any demolition and/or construction activities within the floodway, the permittee shall submit to the Chief Engineer two sets of plans, specifications and supporting geotechnical and/ or hydraulic impact analyses, for any and all temporary, in channel cofferdam(s), gravel work pad(s), work trestle(s), scaffolding, piles, and/or other appurtenances that are to remain in the floodway during the flood season from November 1 through April 15. The Board shall acknowledge receipt of this submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days.

TWENTY-THREE: Prior to commencement of work, the permittee shall create a photo record, including associated descriptions, of the existing bridge site conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or licensed civil engineer registered in the

State of California and submitted to the Board within 30 days of beginning the project.

TWENTY-FOUR: The permittee shall provide supervision and inspection services acceptable to the Board.

CONSTRUCTION

TWENTY-FIVE: All work approved by this permit shall be in accordance with the submitted drawings and specifications except as modified by special permit conditions herein. No further work, other than that approved by this permit (stated in the permit description), shall be done in the area without prior approval of the Board.

TWENTY-SIX: All addenda or other changes made to the submitted documents by the permittee after issuance of this permit shall be submitted to the Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include supplemental plans, specifications, and supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) calendar days. Upon approval of the submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

TWENTY-SEVEN: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior approval of the Board.

TWENTY-EIGHT: The stability of the American River north levee shall be maintained at all times during construction.

TWENTY-NINE: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval of the Board.

THIRTY: Cleared trees and brush shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1 to April 15.

THIRTY-ONE: Backfill material for excavations shall be placed in four (4) to six (6) inch layers and compacted to at least the density of the adjacent, firm, undisturbed material.

THIRTY-TWO: All fill materials shall be placed in four (4) to six (6) inch layers and compacted to a relative compaction of not less than 90 percent per ASTM D 1557-91 or 97 percent per ASTM D 698-91 above optimum moisture content. Fill material within two feet of the bridge shall be compacted by appropriate hand operated compaction equipment. Field density tests shall be taken by a certified soils laboratory to verify compaction of the fill placed.

THIRTY-THREE: Temporary access ramps and/or roads shall be removed from the floodway during

flood season from November 1 through April 15, and after completion of the project.

THIRTY-FOUR: All debris generated by this project shall be disposed of outside the floodway.

THIRTY-FIVE: The permittee shall be responsible for all damages due to settlement, consolidation, or heave from any construction-induced activities.

THIRTY-SIX: Any damage to the levee crown roadway or access ramps that will be utilized for access for this project shall be promptly repaired to the condition that existed prior to this project.

THIRTY-SEVEN: Except with respect to the activities expressly allowed under this permit, the work area shall be restored to the condition that existed prior to start of work.

VEGETATION / ENVIRONMENTAL MITIGATION

THIRTY-EIGHT: The permittee will be responsible for securing any necessary permits incidental to habitat manipulation and restoration work completed in the flood control project, and will provide any biological surveying, monitoring, and reporting needed to satisfy those permits.

THIRTY-NINE: Areas where plantings are lost to erosion may be replanted to the level of plantings in the approved project plans and specifications.

FORTY: Any temporary irrigation systems shall be removed from the floodway upon completion of the establishment period.

FORTY-ONE: Cleared trees and brush (or pruning therefrom) shall be completely burned or removed from the floodway, and downed trees or brush shall not remain in the floodway during the flood season from November 1st to April 15th.

FORTY-TWO: After each period of high water, debris that accumulates at the site shall be removed from the floodway when reasonably determined as necessary by the Board.

FORTY-THREE: If any feature of the project adversely impacts the successful execution, functioning, maintenance, or operation of the American River Floodway or facilities of the Sacramento River Flood Control Project, the permittee must either remove the feature, or mitigate for the adverse impact of the feature at the permittee's expense after approval of the proposed mitigations by the Board. If the permittee does not comply, the Board may modify or remove the feature at the permittee's expense.

FORTY-FOUR: Upon completion of the project, the permittee shall submit a final planting plan to the Board's Chief Engineer.

POST-CONSTRUCTION

FORTY-FIVE: Within 120 days of completion of the project, the permittee shall submit to the Board and RD 1000 a copy of as-built drawings and a certification report, stamped and signed by a licensed civil engineer registered in the State of California, certifying the work was performed and inspected in

accordance with the Board permit conditions and submitted drawings and specifications.

OPERATIONS AND MAINTENANCE

FORTY-SIX: The permittee shall be responsible for repair of any damages to the levee, channel, banks, floodway, or any other flood control facilities due to construction, operation, or maintenance of the proposed project.

FORTY-SEVEN: The permittee shall maintain the permitted project within the utilized area in the manner required and as requested by the authorized representative of the Board, DWR, RD 1000, or any other agency responsible for maintenance.

PROJECT ABANDONMENT, CHANGE IN PLAN OF FLOOD CONTROL

FORTY-EIGHT: If the project land is to be sold, the transfer of interest shall not occur without written notification to the Board, and the permit with all conditions shall be transferred to the new owner. The permittee is required to notify the prospective new owner of the need to apply for a name change permit from the Board.

FORTY-NINE: If the project, or any portion thereof, is to be abandoned in the future, the permittee shall abandon the project under direction of the Board, at the permittee's cost and expense.

FIFTY: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project) if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with any present or future flood control plan or project or if damaged by any cause. If the permittee does not comply, the Board may remove the permitted project at the permittee's expense.

END OF CONDITIONS



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922
FEB 06 2015

Flood Protection and Navigation Section (19005)

Ms. Leslie M. Gallagher, Acting Executive Officer
Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

Dear Ms. Gallagher:

We have reviewed a permit application by Sacramento Area Flood Control Agency (application number 19005). This project includes excavating, grading, lowering, and re-shaping of an approximately 4.3 acre portion of the American River floodplain in Discovery Park and planting of the area with riparian vegetation to create aquatic and riparian habitat at River Mile 0.5 of the American River. Work also includes transplanting of elderberry (*Sambucus mexicana*) from within the 4.3 acres to two adjacent areas totaling 5.0 acres. The project is located in Discovery Park, east of Interstate 5 in Sacramento, at 38.602390°N 121.502635°W NAD83, Sacramento County, California.

The Sacramento District has reviewed this application and determined that the alteration will not be injurious to the public interest and will not impair the usefulness of the project works. Pursuant to Section 14 of the Rivers and Harbors Act of 1899, 33 U.S.C. 408 (Section 408), the District Engineer approves the request to alter the Federal flood risk reduction project subject to the following conditions:

- a. That the proposed work shall not be performed during the flood season of November 1 to April 15, unless otherwise approved in writing by your Board.
- b. That excavated material shall not be stored in the floodway during the flood season.
- c. That an operation and maintenance plan shall be developed and provided to the Central Valley Flood Protection Board, prior to planting, for approval (with copy to USACE). The plan shall address how the proposed plantings will be maintained and will not impact the hydraulic conditions of the flood risk management project.
- d. That the applicant shall remove all buildup of debris or underbrush from the plantings, outside the limits of the project right-of-way, prior to the beginning of the flood season, November 1, and after each high water event.

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e. That in the event trees and brush are cleared, they shall be properly disposed of either by complete burning or complete removal outside the limits of the project right-of-way.

f. That the proposed work shall not interfere with the integrity or hydraulic capacity of the flood risk management project; easement access; or maintenance, inspection, and flood fighting procedures.

g. That the proposed work shall not begin until the Section 10/404 permit has been issued.

A Section 10 and/or Section 404 permit application (2013-00886) is in process for this work.

A copy of this letter is being furnished to Mr. Don Rasmussen, Chief, Flood Project Integrity and Inspection Branch, 3310 El Camino Avenue, Suite 200, Sacramento, CA 95821.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael J. Farrell".

Michael J. Farrell
Colonel, U.S. Army
District Commander

1. ACCESS TO THE AMERICAN RIVER RM 0.5R MITIGATION SITE IS FROM GARDEN HIGHWAY THROUGH THE NORTH ENTRANCE OF DISCOVERY PARK. ACCESS THROUGH DISCOVERY PARK TRAVERSES ABOUT 700 FT OF PAVE ROADWAY AND ABOUT 600 FT OF UNPAVED PARK LAND. THE ACCESS CROSSES A PAVED DRIVEWAY AND THE AMERICAN RIVER BIKE TRAIL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE DAMAGED AREAS TO PRE PROJECT CONDITIONS OR BETTER UPON PROJECT COMPLETION.
3. THE CONTRACTOR SHALL CLOSE THE AMERICAN RIVER BIKE TRAIL AND DETOUR THE TRAIL TRAFFIC USING EXISTING PARK SERVICE ROADS AND TRAILS AS SHOWN. THE CONTRACTOR WILL BE RESPONSIBLE FOR TEMPORARY PAVING TO CONNECT THE TRAIL PAVED ARCHERY PARKING LOT.
4. THE CONTRACTOR SHALL FULLY CLOSE THE AMERICAN RIVER BIKE TRAIL AT SHOWN LOCATIONS WITH ORANGE REFLECTIVE BARRIERS WHICH FULLY SPAN THE PAVED PATHWAY AND EXTEND 6 FEET EAST EITHER SIDE OF THE TRAIL. THE BARRIERS SHOULD INCLUDE TRAIL CLOSED SIGNS AND TRUCK CROSSING WARNINGS.
5. THE TRAIL DETOUR SHOULD BE CLEARLY MARKED WITH ORANGE REFLECTIVE SIGNS EVERY 300 FT ALONG THE DETOUR AND AT ALL SIGNIFICANT TURNS AND INTERSECTIONS.
6. THE CONTRACTOR WILL LOCATE TRAIL CLOSURE WARNING AND DETOUR SIGNS ON THE AMERICAN BIKE TRAIL 200 FT AND 100 FT UP THE TRAIL FROM THE CLOSURE.
7. THE AMERICAN RIVER BIKE TRAIL DETOUR ROUTE SHALL BE KEPT CLEAR OF DEBRIS AND OBSTRUCTIONS, AND THE INTEGRITY OF THE PAVEMENT SHALL BE MAINTAINED AS TO NOT INHIBIT THE SAFE PASSAGE OF PEDESTRIANS AND BIKE TRAFFIC.
8. TWO FLAGMEN SHALL BE PRESENT FOR TRAFFIC CONTROL AT EACH INTERSECTION IN THE ACCESS ROUTE TO CONTROL TRAFFIC WHEN EQUIPMENT IS PRESENT.
9. THE CONTRACTOR SHALL INSTALL TEMPORARY ORANGE SAFETY FENCING AROUND THE PROJECT LOCATION. TEMPORARY CHAIN-LINK SAFETY FENCING AT LEAST 6 FT TALL SHALL BE PLACED AROUND PROJECT STAGING AREAS AND ALONG THE ACCESS ROUTE.
10. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CONTRACTING OFFICER, PRIOR TO COMMENCEMENT OF WORK. REFER TO THE PROJECT SPECIFICATIONS FOR REQUIREMENTS.
11. CONSTRUCTION EQUIPMENT MAY ONLY BE PARKED WITHIN THE PROJECT LIMITS AND STAGING AREA.
12. AERIAL PHOTOGRAPH FROM UNITED STATES GEOLOGICAL SURVEY, DATED 2011.



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LEGEND

- EXISTING TREES
- CONTROL POINT
- SPOT ELEVATION
- INSTREAM WOODY MATERIAL (IWM)
- BRUSH MATRESS

[illegible]

DESIGNED BY:	BGW
DRAWN BY:	TVS
CHECKED BY:	EEW
IN CHARGE:	EEW
DATE:	20 MAY 2014



nhc
northwest
hydraulic
consultants

BRIAN WARDMAN
SUBMITTED

3950 industrial boulevard, suite 100
west sacramento, california 95691
phone: (916) 371-7400
fax: (916) 371-7475
www.nhcweb.com

BRIAN WARDMAN
APPROVED



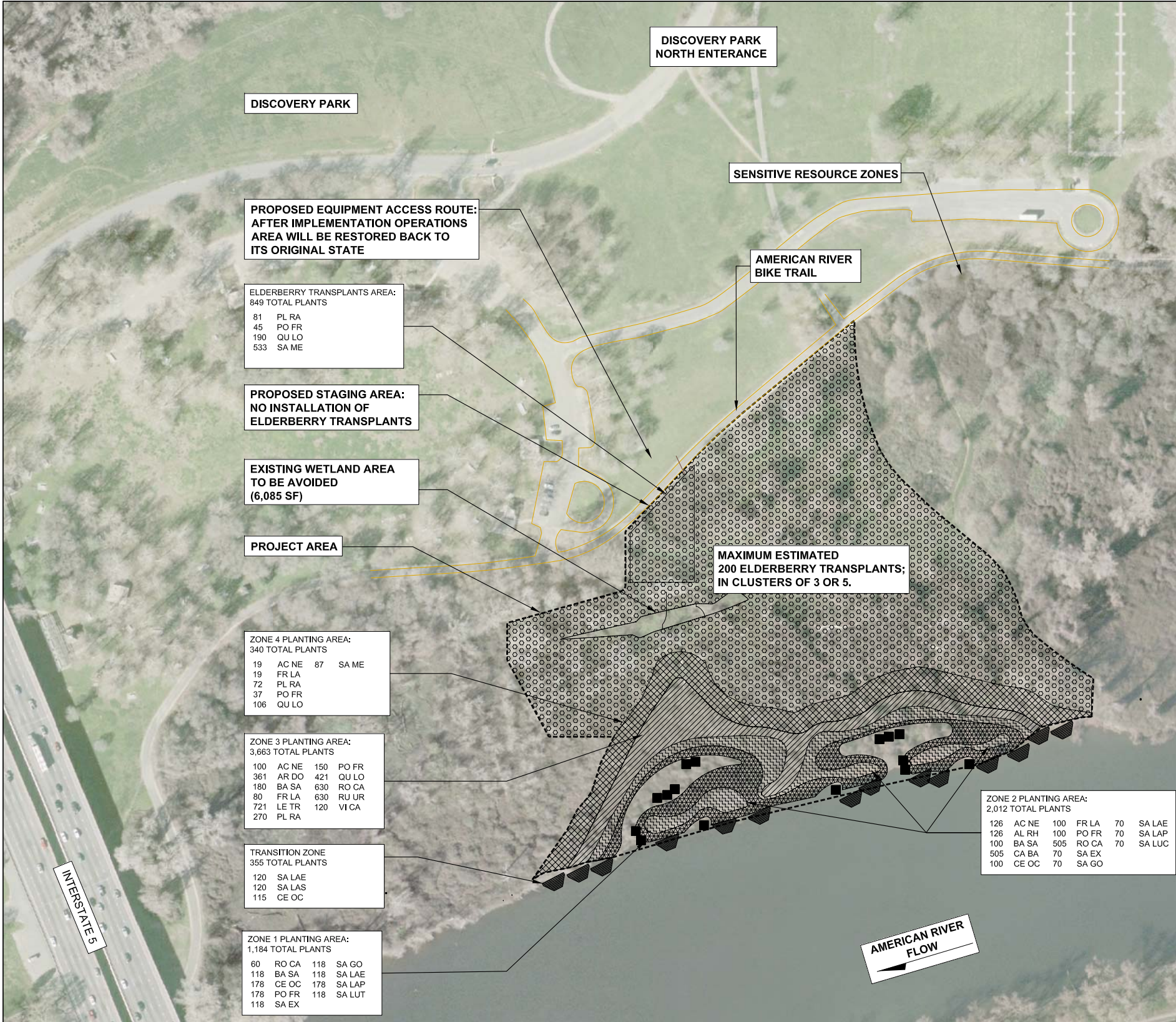
SAFCA

AMERICAN RIVER RM 0.5R MITIGATION SITE

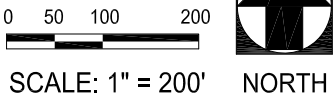
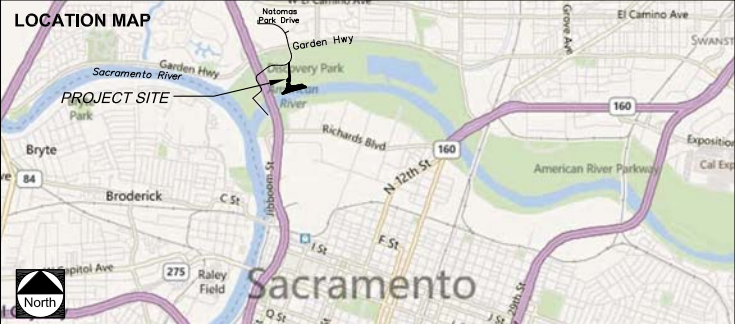
PLAN SHEET

VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS

DRAWING NO.	SHEET
C1	5
	OF 12



PLANTING ZONE (AREA)	PLANTING LOCATION; SPACING	KEY	PLANTS			
			BOTANICAL NAME	COMMON NAME	# TOTAL	SPACING
TRANSITION ZONE	ELEVATION 5' - 6'; WAKE ZONE, WOOD CHEVRON AND HABITAT STRUCTURE SUPPORT	SA LAE	SALIX LAEVIGATA	RED WILLOW	120	SEE DETAIL L-16
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	120	SEE DETAIL L-16
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	115	SEE DETAIL L-16
			TOTAL	355		
ZONE 1 (29,651 SF)	ELEVATION 6' - 8'; WAKE ZONE; FREQUENT, PROLONGED INUNDATION; 5' O.C.	RO CA	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	60	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	118	5' O.C. THROUGHOUT
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	178	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	178	5' O.C. THROUGHOUT
		SA EX	SALIX EXIGUA	NARROW-LEAVED WILLOW	118	5' O.C. THROUGHOUT
		SA GO	SALIX GOODDINGII	GOODING'S BLACK WILLOW	118	5' O.C. THROUGHOUT
		SA LAE	SALIX LAEVIGATA	RED WILLOW	118	5' O.C. THROUGHOUT
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	178	5' O.C. THROUGHOUT
		SA LUT	SALIX LUTEA	YELLOW WILLOW	118	5' O.C. THROUGHOUT
			TOTAL	1184		
ZONE 2 (25,371 SF)	ELEVATION 8' - 11'; WAKE ZONE; FREQUENT, PROLONGED INUNDATION; 5' O.C.	CA BA	CAREX BARBARAE	SANTA BARBARA SEDGE	505	5' O.C. THROUGHOUT
		RO CA	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	505	5' O.C. THROUGHOUT
		AC NE	ACER NEGUNDO	BOX ELDER	126	5' O.C. THROUGHOUT
		AL RH	ALNUS RHOMBIFOLIA	WHITE ALDER	126	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	100	5' O.C. THROUGHOUT
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	100	5' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	100	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	100	5' O.C. THROUGHOUT
		SA EX	SALIX EXIGUA	NARROWED-LEAVED WILLOW	70	5' O.C. THROUGHOUT
		SA GO	SALIX GOODDINGII	GOODING'S BLACK WILLOW	70	5' O.C. THROUGHOUT
		SA LAE	SALIX LAEVIGATA	RED WILLOW	70	5' O.C. THROUGHOUT
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	70	5' O.C. THROUGHOUT
		SA LUC	SALIX LUCIDA SPP. LASIANDRA	PACIFIC WILLOW	70	5' O.C. THROUGHOUT
			TOTAL	2,012		
ZONE 3 (29,978 SF)	ELEVATION 11' - 16'; LOWER BACK SLOPES & MID-SLOPE BENCHES; 5' O.C.	AR DO	ARTEMESIA DOUGLASIANA	MUGWORT	361	5' O.C. THROUGHOUT
		LE TR	LEYMUS TRITICOIDES	CREEPING WILDRYE	721	5' O.C. THROUGHOUT
		RO CA*	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	630	CLUSTERS OF 3 AROUND EACH SYCAMORE
		RU UR*	RUBUS URSINUS	CALIFORNIA BLACKBERRY	630	CLUSTERS OF 3 AROUND EACH COTTONWOOD
		VI CA	VITIS CALIFORNICA	WILD GRAPE	120	5' O.C. THROUGHOUT
		AC NE	ACER NEGUNDO	BOX ELDER	100	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	180	5' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	80	5' O.C. THROUGHOUT
		PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	270	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	150	5' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	421	5' O.C. THROUGHOUT
			TOTAL	3,663		
ZONE 4 (40,142 SF)	ELEVATION 16' - 24'; HIGHEST ZONE; LOW DURATION / INFREQUENT INUNDATION; 10' O.C.	AC NE	ACER NEGUNDO	BOX ELDER	19	10' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	19	10' O.C. THROUGHOUT
		PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	72	10' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	37	10' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	106	10' O.C. THROUGHOUT
		SA ME	SAMBUCUS MEXICANA	ELDERBERRY	87	10' O.C. IN DESIGNATED CLUSTERS
			TOTAL	340		
ELDERBERRY TRANSPLANTS AREA (293,058 SF)	SEE EXHIBIT 6B	PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	81	20' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	45	20' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	190	20' O.C. THROUGHOUT
		SA ME	SAMBUCUS MEXICANA	ELDERBERRY	533	20' O.C. IN DESIGNATED CLUSTERS
			TOTAL	849		
			GRAND TOTAL	8,403		



Type 1 Seed Mix - Perennial Native Grass Mix		
SPECIES NAME	COMMON NAME	PLS lbs/acre
<i>Elymus glaucus</i>	blue wildrye	3
<i>Elymus trachycaulus</i>	slender wheatgrass	3
<i>Hordeum brachyantherum</i> spp. <i>californicum</i>	California barley	3
<i>Leymus triticoides</i>	creeping wildrye	4
<i>Melica californica</i>	California melic	1
<i>Nassella pulchra</i>	purple needlegrass	7
<i>Poa secunda</i> ssp. <i>secunda</i>	Pine bluegrass	1
TOTAL for Mix		22
NOTES: PLS = 'Pure Live Seed' which is the percent of viable seed germ ination in a bulk pound of seed. Certified PLS ratings are provided by the seed supplier or seed grower.		

LEGEND

----- LIMIT OF WORK —○— CULTURAL BUFFER AREA

- NOTES
1. LAND ACCESS TO THE SITE IS FROM INTERSTATE 5 TO GARDEN HIGHWAY TO DISCOVERY PARK.
 2. AERIAL PHOTOGRAPH FROM USGS, 2009.
 3. PLANTING ZONES 1, 2, AND 3 ARE AT 5' O.C. SPACING.
 4. ZONE 2; BUTTON BUSH SHALL BE LOCATED IN THE LOWER AREA OF ZONE 2.
 5. * ZONE 3; ROSA CALIFORNICA AND RUBUS URSINUS ARE IN CLUSTERS OF 3 AROUND EACH SYCAMORE AND COTTONWOOD.
 6. ASSOCIATED PLANTINGS IN ELDERBERRY TRANSPLANT ZONE SHALL BE INSTALLED AT 20' O.C. EXCEPT LOCATIONS WHERE EXISTING PLANTS AND ELDERBERRY TRANSPLANT GROUPINGS ARE FOUND. ELDERBERRIES WILL BE INSTALLED IN CLUSTERS.
 7. PLANTING LOCATIONS WILL BE ADJUSTED IN THE FIELD WHEN INSTALLED AROUND ELDERBERRY TRANSPLANT OR TO AVOID EXISTING VEGETATION.
 8. ALL ALLEYS AND AREAS BETWEEN INSTALLED PLANTS SHALL BE SEEDED WITH NATIVE GRASS MIX.

AECOM

2020 L Street, Suite 400
Sacramento CA 95811
Tel: (916) 414-5800
Fax: (916) 414-5850

SAFCA

Sacramento
Area Flood
Control
Agency

SAFCA

AMERICAN RIVER MILE 0.5
ELDERBERRY SHRUB & VALLEY OAK TREE
RELOCATION / TRANSPLANTING

EXHIBIT 6A

Planting Plan

scale: AS SHOWN
job no.: 06110058.04
drawn by: SR
checked by: KC, VH, SC

sheet no.: 1

sheet 1 of 1
date: 10/2014



NLIP

AMERICAN RIVER RM0.5
AQUATIC AND RIPARIAN
HABITAT CREATION PROJECT

AECOM

2020 L Street, Suite 400
Sacramento CA 95811
Tel: (916) 414-5800
Fax: (916) 414-5850

CONTRACT 4236

DETAILS

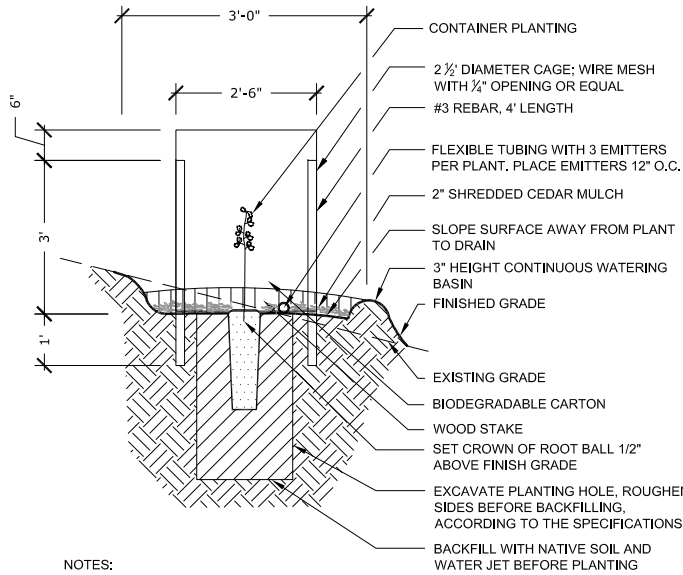
100% DRAFT

scale:	AS SHOWN
job no.:	06110058.04
drawn by:	SR, KC, VH
checked by:	SC, AF, DR

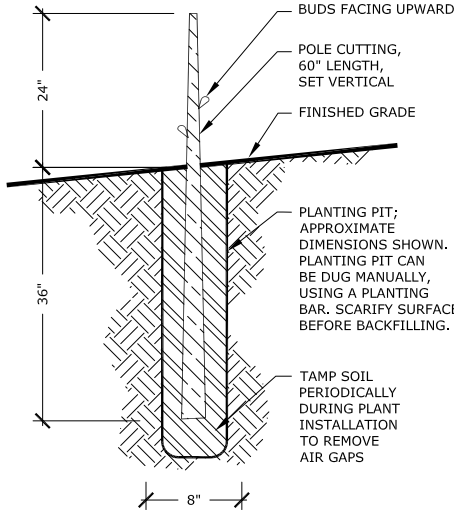
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sheet 16 of 16
date: 08/2014

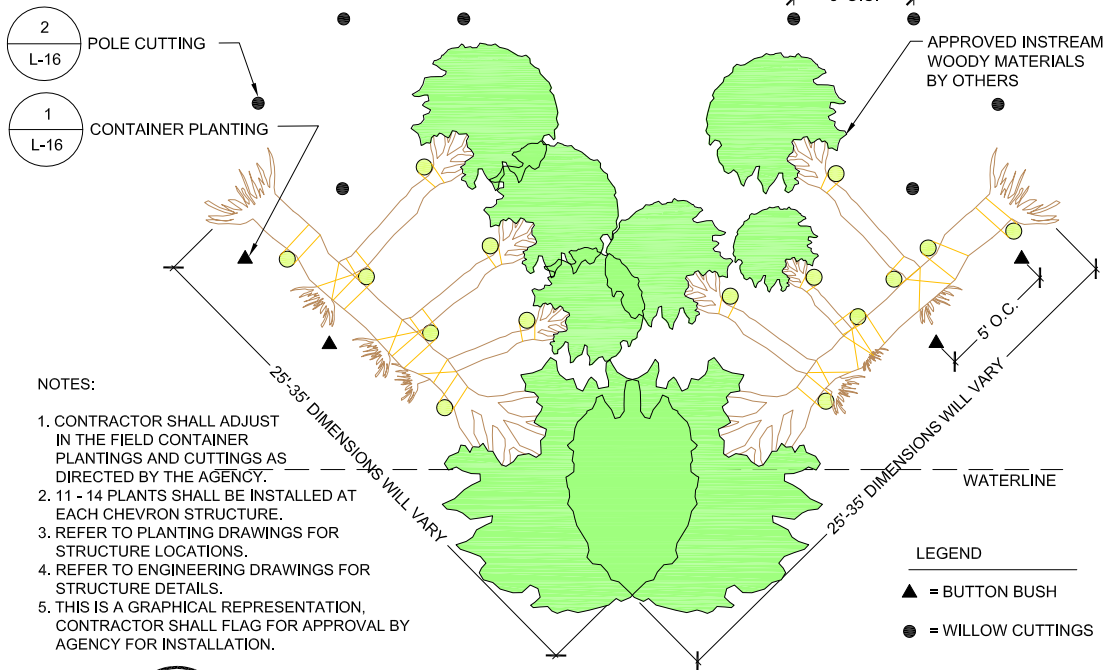
Attachment C - Project Drawings



- NOTES:
- LAYOUT CONTAINER PLANTS ON SLOPES AS SHOWN, SEE PLANS FOR PLANTING LAYOUT, AND SHEET L-9 FOR PLANT SPECIES AND ADDITIONAL INFORMATION.
 - REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



- NOTES:
- REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



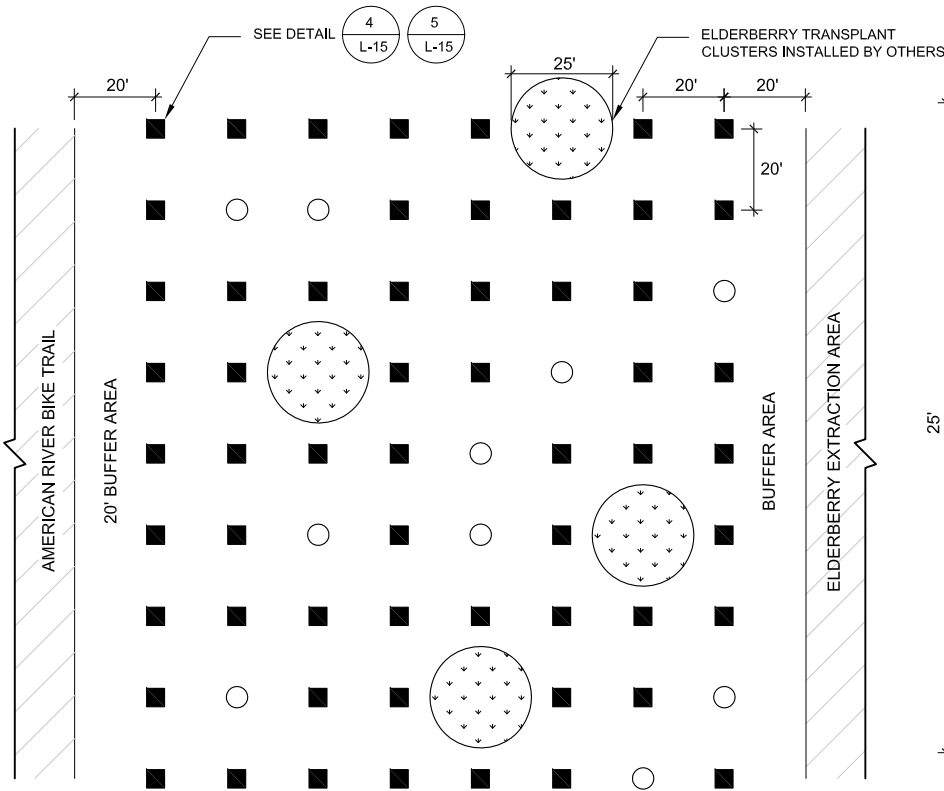
- NOTES:
- CONTRACTOR SHALL ADJUST IN THE FIELD CONTAINER PLANTINGS AND CUTTINGS AS DIRECTED BY THE AGENCY.
 - 11 - 14 PLANTS SHALL BE INSTALLED AT EACH CHEVRON STRUCTURE.
 - REFER TO PLANTING DRAWINGS FOR STRUCTURE LOCATIONS.
 - REFER TO ENGINEERING DRAWINGS FOR STRUCTURE DETAILS.
 - THIS IS A GRAPHICAL REPRESENTATION, CONTRACTOR SHALL FLAG FOR APPROVAL BY AGENCY FOR INSTALLATION.

LEGEND
▲ = BUTTON BUSH
● = WILLOW CUTTINGS

1 CONTAINER PLANTING IN THE ELDERBERRY TRANSPLANT AREA
L-16 NOT TO SCALE SECTION ELEVATION

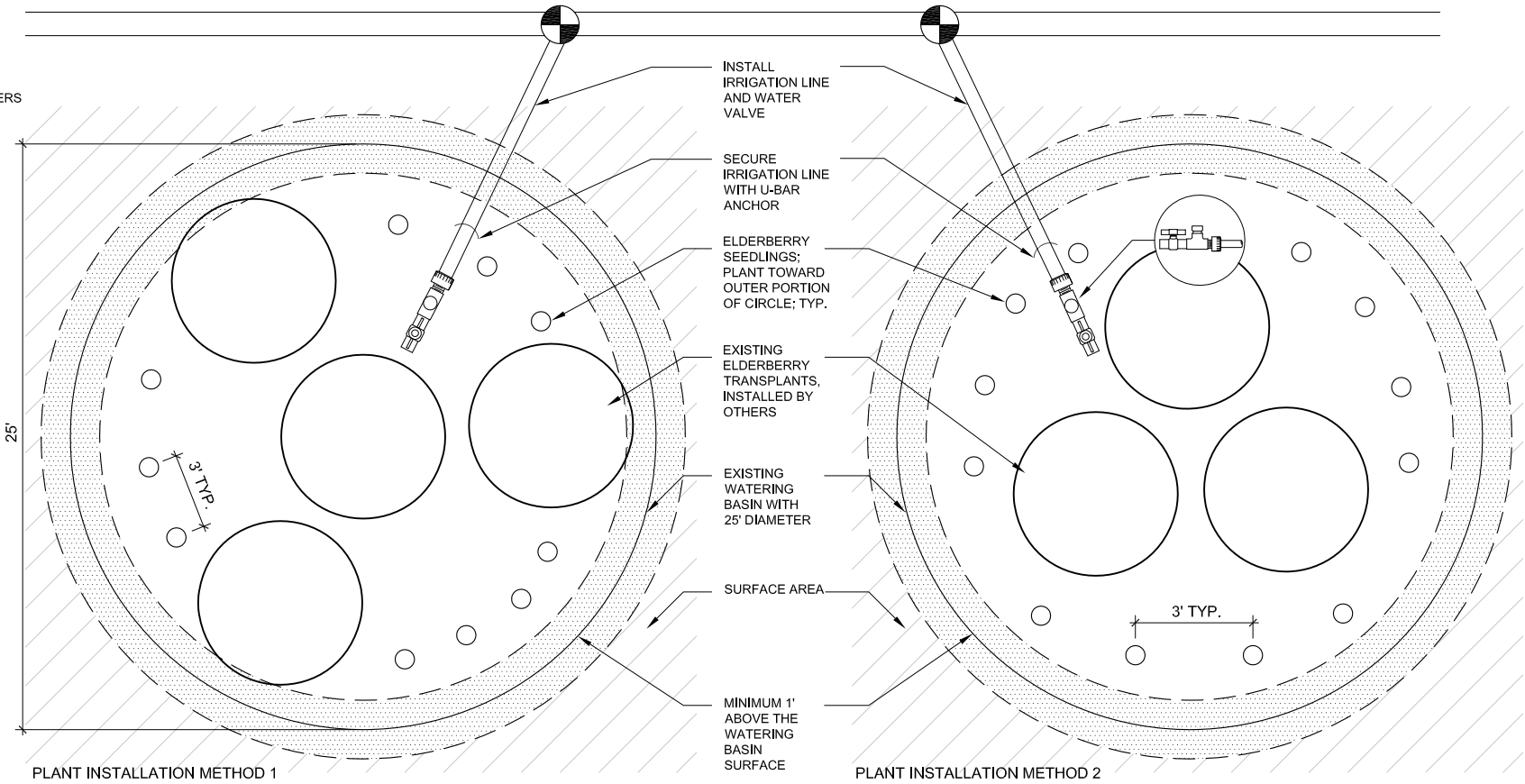
2 POLE CUTTING
L-16 NOT TO SCALE SECTION ELEVATION

3 WOOD CHEVRON /HABITAT STRUCTURE
L-16 NOT TO SCALE DIAGRAMMATIC PLAN VIEW



PLANT LEGEND

ELDERBERRY TRANSPLANTS AREA		
SYMBOLS	PLANT TYPE	DESCRIPTION
■	ASSOCIATED PLANTS	PROVIDE SPACE FOR NEW PLANTING TO BE INSTALLED AROUND EXISTING ELDERBERRIES
○	EXISTING VEGETATION	EXISTING SHRUBS OR TREES PRIOR TO PLANTING OPERATION
●	EXISTING ELDERBERRY TRANSPLANT CLUSTERS	INSTALL 10 TO 12 ELDERBERRY SEEDLINGS WITHIN A 25' DIAMETER AREA; EXISTING ELDERBERRY CLUSTERS.



- NOTES:
- SEE PLANTING SHEETS FOR ELDERBERRY TRANSPLANTS AREA.
 - BUFFER WIDTH OF 20' SHALL BE PROVIDED ALONG AMERICAN RIVER BIKE PATH.
 - A 20' FOOT WIDE BUFFER AREA SHALL BE PROVIDED BETWEEN THE ELDERBERRY TRANSPLANTS AREA AND CULTURAL AREA.
 - DIAGRAMMATIC LAYOUT WIDTHS OF ELDERBERRY TRANSPLANTS WILL VARY.
 - ELDERBERRY SEEDLINGS SHALL BE LOCATED TOWARD THE OUTER PORTION OF THE PLANTING CIRCLE.
 - THE NUMBER OF SEEDLINGS PER CLUSTER SHALL VARY DEPENDING ON THE SIZE OF THE ELDERBERRY TRANSPLANT.

4 ELDERBERRY TRANSPLANT AREA (ZONE 5) PLANTING LAYOUT
L-16 NOT TO SCALE DIAGRAMMATIC PLAN VIEW



RECLAMATION
DISTRICT 1000

Permit Conditions

Permit Application No. Unnumbered

Location: American River (North Levee RM 0.5R)

Applicant: Sacramento Area Flood Control Agency (SAFCA)

Description: Create Aquatic and Riparian Habitat

CONDITIONS:

1. Maintenance of all encroaching structures, facilities, vegetation or any other items or matters approved under this permit shall remain the responsibility of the Permittee unless otherwise agreed to by the District.
2. Permittee shall obtain all necessary permits and regulatory approvals for the proposed work.
3. Permittee hereby agree(s) to indemnify and hold and save the District and its employees harmless from any damage, costs or liability, including all costs of defense, which may arise as result of the exercise of this Permit
4. Work on the levee or within the floodway shall be done outside of the flood season (November 1 to April 15) unless otherwise approved by the Central Valley Flood Protection Board and the District.
5. Permittee shall repair any damages to District facilities to the reasonable satisfaction of the District upon completion of the work..
6. In event of an emergency, Permittee shall immediately restore the levee and access to the satisfaction of the District.

Resolution No. 2010-02

WHEREAS, Reclamation District No. 1000 (District) operates and maintains levees under the authority of the California Central Valley Flood Protection Board (CCVFPB) and the California Water Code; and

WHEREAS, the CCVFPB and Title 23 of the California Water Code require any encroachment on or adjacent to the levee or within the designated floodway have an encroachment permit be issued by the CCVFPB with appropriate conditions to insure they do not impede or impair the operations and maintenance of the flood control system; and

WHEREAS, such permit applications are reviewed and endorsed by the local maintaining agency responsible for the operations and maintenance of the levee system where the encroachment is proposed and allows for conditions to be included in the permits to address issues including, but not limited to, operations, maintenance, public safety and flood emergency response; and

WHEREAS, endorsement of the permit applications for levees surrounding the Natomas basin are the purview of the District and various actions through the years by past District Boards have granted authority to the General Manager to endorse permit applications; and

WHEREAS, the Board desires to enumerate a clear policy on how future permit applications are to be reviewed and endorsed by the District

NOW, THEREFORE BE IT RESOLVED:

The Reclamation District No. 1000 Board of Trustees desires to delegate their authority to endorse encroachment permit applications to the District General Manager for routine encroachments and those which do not involve District policy issues. A determination as to which permits will be endorsed by the General Manager shall be left to his or her judgment, provided however, that all such endorsements shall be presented to the Board of Trustees at the next scheduled Board meeting.

Those permit applications which are not routine in nature, present policy issues or are likely to be controversial shall be brought to the Board for consideration and action at which time the Board may delegate signature authority to the General Manager if approved. This will include all permit applications where the General Manager is recommending denial to the California Central Valley Flood Protection Board.

CERTIFICATION

I, Terrie Figueroa, Secretary of Reclamation District No, 1000, hereby certify that the foregoing Resolution 2010-02 was duly adopted by the Board of Trustees of Reclamation District No, 1000 at a regular meeting held January 8, 2010 and made a part of the minutes thereof.

A handwritten signature in cursive script, appearing to read "Terrie Figueroa", written over a horizontal line.

Terrie Figueroa
District Secretary



October 1, 2014

Nancy Moricz, Senior Engineer
Central Valley Flood Protection Board
3310 El Camino Ave., Room 151
Sacramento, CA 95821

Subject: American River Mile 0.5 Aquatic and Riparian Habitat Creation Project, Request for Time Variance and Authorization to Transplant Elderberry Bushes

Dear Mr. Marino:

SAFCA and the Central Valley Flood Protection Board are working together to implement the American River Mile 0.5 Aquatic and Riparian Habitat Creation Project (Project) in 2015. This project will create inundated floodplain and shaded riverine aquatic (SRA) habitat at River Mile (RM) 0.5 on the right (north) bank of the American River, within Discovery Park east of the Interstate 5 (I-5) crossing of the river. The intended purpose of the project is to mitigate for waterside shaded riverine impacts associated with construction of the Natomas Levee Improvement Program (NLIP) and for levee accreditation and ongoing infrastructure improvements to the greater Sacramento area levees.

In advance of CVFPB permitting for the Project, SAFCA is requesting authorization to clear overgrowth at the project site and transplant the elderberry shrubs during the plants' dormancy from November through early February. As this time period falls within the flood season, SAFCA is also requesting a time variance to perform the work. The elderberry shrubs will be transplanted from their location within the project site to an adjacent location, approximately 1,200 feet from the levee (Enclosure 1).

Enclosure 2 of this letter includes documentation supporting the Project, and therefore the clearing of overgrowth and transplanting of elderberry shrubs. Specifically, we'd like to highlight the following:

1. A hydraulic analysis completed for the Project, included as Enclosure 2, Attachment C, concluding that changes to velocity and water surface elevations are less than significant.

2007 (November 20). Technical Memorandum. Hydraulic Analysis of Mitigation Project -- LAR RM 0.5. Prepared by Don Trieu, MBK Engineers.

2. Disclosure pursuant to the California Environmental Quality Act (CEQA) has been accomplished through:

Office 916-874-7606
Fax 916-874-8289

1007 - 7th Street 7th Floor
Sacramento, CA 95814-3407

American RM 0.5 Variance Request

Page 2

2. Disclosure pursuant to the California Environmental Quality Act (CEQA) has been accomplished through:
2007 (November). Final Environmental Impact Report on the Natomas Levee Improvement Program Landside Improvements Project Responses to Comments and Revisions to the Draft EIR. State Clearinghouse No. 2007062016. Prepared by EDAW/AECOM, Sacramento, CA available at <http://www.safca.org/documents/NLIPFEIR11.19.07.pdf>

and

2012 (October) Final Supplemental Environmental Impact Report No. 2 for the Natomas Levee Improvement Program Landside Improvements. State Clearinghouse No. 2007062016. Prepared by AECOM, Sacramento, CA Available at: http://www.safca.org/documents/NLIP%20main%20page%20stuff/2012.10_FSEIRno2.pdf

The CEQA Notice of Determination (NOD) for the SEIR is included as Enclosure 2, Attachment D.

3. U.S. Fish and Wildlife Service (USFWS) Biological Opinion is included as Enclosure 2, Attachment F.

In addition to the efforts SAFCA has undertaken to implement the Project, the CVFPB, as the non-Federal sponsor to the Sacramento River Bank Protection Program, previously approved the Project, prepared an Environmental Assessment (EA)/Initial Study, and subsequently approved a Negative Declaration for this project on May 16, 2008 (CVFPB Resolution No. 08-10).

SAFCA hereby requests authorization for clearing of overgrowth and transplanting of elderberry shrubs as described above and committed to below:

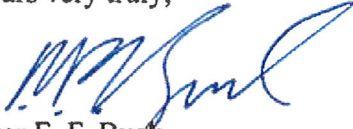
1. SAFCA has a property right to occupy the RM 0.5 project area via an encroachment permit from the County of Sacramento authorizing the activity.
2. SAFCA acknowledges that only the work described shall be performed.
3. Construction of the RM 0.5 project will not affect the American River north or south levee.
4. SAFCA will be responsible for any and all damages to the levees, floodway, and adjacent properties resulting from this variance.
5. The State of California may have inspectors on site to monitor working conditions.
6. The State of California, its officers, agents, and employees shall not be held liable for any damages to the project or properties that might be affected by this project resulting from the granting of this authorization in advance of a formal permit application; which will be submitted for the entire mitigation site, including the elderberry transplants. The application shall include as-built drawings showing the locations of the transplanted elderberry shrubs.

American RM 0.5 Variance Request
Page 3

☒ SAFCA understands that this authorization does not relieve it of the responsibility to obtain authorizations from all concerned Federal, State, and local agencies; or to satisfy the CEQA.

Please do not hesitate to contact me at buckp@saccounty.net or at 916-874-4581 if you require any clarification or additional information.

Yours very truly,



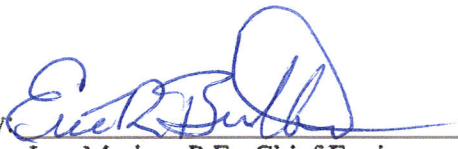
Peter E. F. Buck
Natural Resources Supervisor

Enclosures

cc:

Nancy Moricz
John Bassett
KC Sorgen
Eric Htain
Mick Klasson

The request for CVFPB authorization to carry out the proposed project, as described above, is hereby approved.

Approved by 
for Len Marino, P.E., Chief Engineer
Central Valley Flood Protection Board

Date: 10/2/2014

ENCLOSURE 1: Project Location



Source: USACE 2009

Project Site Map

ENCLOSURE 2 SUMMARY PROJECT DESCRIPTION**American River RM 0.5R Aquatic and Riparian Habitat Creation Project**

SAFCA is proposing to create shaded riverine aquatic (SRA) habitat at River Mile (RM) 0.5 on the right (north) bank of the American River, within Discovery Park east of I-5, as shown in Exhibit 2-9. The project site is located on the waterside of a very wide berm that extends for approximately 0.25 mile from the river channel to the American River north levee protecting the Natomas Basin. The berm is elevated above the channel and receives river flows infrequently during winter flood events. At other times, river flows in the project area are confined by the steep shoreline along the waterside edge of the berm.

The existing RM 0.5 Mitigation Site contains a large number of elderberry shrubs, concealed beneath a thick layer of overgrown blackberry and grape vines that has rendered the site inaccessible to park users. SAFCA proposes to clear the overgrowth, transplant the elderberry shrubs, and excavate and flatten the berm to enhance its connection to the river under a range of flow conditions. The grading footprint is approximately 1,000 feet long, 300 feet wide, and covers approximately 4.3 acres, including a 1.0-acre staging area. The proposed SRA restoration area (approximately 3.3 acres of the total 4.3-acre grading area) would be planted with a variety of native plants at various elevations to enhance the site's SRA habitat values.

As noted, the elderberry shrubs would be transplanted to two areas totaling 5.0 acres that are directly adjacent to the grading footprint. The transplants would be interspersed with additional riparian trees and shrubs that are well suited to the current elevation of the berm. Excavation, grading, and planting activities would be staged from the aforementioned 1.0-acre area, located between the two transplant areas adjacent to the grading footprint.

The enhanced habitat values created at the RM 0.5 Mitigation Site would serve in part to compensate for unavoidable impacts to waterside vegetation associated with drainage outfall improvements constructed along the Sacramento River east levee as part of the Natomas Levee Improvement Program (NLIP).

Initial construction activities took place between November 15, 2012 and February 1, 2013, and involved trimming and herbicide applications on the blackberry overgrowth. The next phase of the project, anticipated to occur between November 15, 2014 and February 1, 2015, would include transplanting the existing elderberry shrubs to the identified transplant locations within Discovery Park. Transplanting would be performed in accordance with U.S. Fish and Wildlife (USFWS) guidance and in consultation with USFWS. Three pieces of construction equipment (e.g., a backhoe and/or front loader and a tree spade) are expected to be used on-site. A qualified biologist would be present on-site during transplanting so that no unauthorized take of valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) would occur during transplanting of the shrubs.

The third phase of construction associated with the restoration of the RM 0.5 Mitigation Site would occur over an approximately 3 month period, between June 2015 and September 2015, assuming receipt of all environmental clearances, permits, and authorizations. As part of the third phase of construction and to restore the site as SRA habitat, approximately 60,000 cy of fill material would be excavated and transported away from the RM 0.5 Mitigation Site along the

north bank of the American River. To accomplish this and to minimize disturbance to Discovery Park visitors, a short north-south dirt road would be constructed to provide access from the Natomas Park Drive/Garden Highway intersection to the 1.0-acre staging area located south of the American River Bike Trail (see Exhibit 2-9). Construction and use of this temporary roadway would minimize potential conflicts between construction vehicles and park visitors in the existing Discovery Park parking lots. The proposed access road would be continually maintained by SAFCA during construction to prevent substantial erosion and/or dust from vehicles. Materials stored at the staging area would include construction equipment, components of the instream woody material and brush mattresses, native cuttings and seedlings, soil amendments, and irrigation piping. Once construction is complete, all equipment and excess materials would be transported off-site. After completion, the temporary staging area and access road would be reseeded with native grasses to promote revegetation. Three pieces of heavy construction equipment are expected to be used on-site to move and/or load fill material onto haul trucks and to regrade the site.

After removal of the fill material, the fourth phase of the project, anticipated to occur between November 15, 2015 and April 30, 2016, would begin. During this phase, the RM 0.5 Mitigation Site would be finish graded and planted to improve fish and wildlife habitat, including increasing floodplain depth during spring and winter to provide additional habitat for juvenile Chinook salmon, juvenile steelhead, and Delta smelt. Three pieces of heavy construction equipment are expected to be used on-site to move irrigation and planting materials into place and to finish grade the site.

The 60,000 cy of fill material removed from the RM 0.5 Mitigation Site would be transported by truck westward, along Garden Highway to Sacramento River east levee Reach 19A (also known as a portion of USACE Reach A-1). Assuming approximately 60 days of material hauling, approximately 1,000 cubic yards of material would be transported per day via haul trucks, with an assumed 12 cy capacity per truck, along Garden Highway to Sacramento River east levee Reach 19A. This would require up to 100 round-trip truck trips per day. To address potential seepage concerns along the section of the Sacramento River east levee, the material would be used to construct a seepage berm along the land side toe of the Reach 19A levee. Construction of the berm would take place at the same time as the third phase of construction at the RM 0.5 Mitigation Site, and would require two to three pieces of heavy construction equipment (e.g., dozer/motor grader/compactor) to be operating on-site on a given day. Construction of the seepage berm was previously evaluated as part of the Phase 4b EIS/EIR for NLIP.

It should be noted that USACE and the CVFPB as the non-federal sponsor previously prepared an Environmental Assessment (EA)/Initial Study and subsequently certified a Mitigated Negative Declaration for enhancement of the RM 0.5 Mitigation Site as SRA habitat in 2008. Based on the analysis of the EA, a Finding of No Significant Impact was issued by USACE in January 2009. The action that was evaluated in the EA is the same as the currently proposed NLIP project component.

This aerial map illustrates the project location and associated safety measures. Key features include:

- Project Location:** Indicated by a white callout box pointing to a specific area near the American River.
- Safety and Access:**
 - TRAFFIC CONTROL REQUIRED:** Two locations marked with red circles along the road leading to the project area.
 - TEMPORARY CHAIN LINK SECURITY FENCE TO BE INSTALLED BY CONTRACTOR:** A dashed line indicating the fence perimeter.
 - SECURITY FENCE GATE REQUIRED FOR AFTER HOURS AND WEEKENDS:** A red circle marking the gate location.
 - HIGH VISIBILITY POLYTHELENE PROTECTION FENCING:** A dashed line along the riverbank.
- Trail and Detour:**
 - AMERICAN RIVER BIKE TRAIL:** A dashed line showing the trail route.
 - AMERICAN RIVER BIKE TRAIL DETOUR:** A dashed line showing the detour path.
 - CLOSE AND DETOUR BIKE TRAIL:** Two locations marked with red circles along the trail.
- Geographic Features:**
 - DISCOVERY PARK:** The area to the north of the project.
 - AMERICAN RIVER:** The river flowing through the center of the map.
 - GARDEN HIGHWAY:** A road running horizontally across the top.
 - DISCOVERY PARK ENTRANCE:** A road running vertically through the center.
 - DISCOVERY PARK ARCHERY RANGE PARKING:** A parking area to the east of the project.
 - JIBBOOM STREET BRIDGE:** A bridge crossing the river.
 - BERCUT DR:** A road in the downtown area.
 - DOWNTOWN SACRAMENTO:** The urban area at the bottom of the map.
- Infrastructure:**
 - Highway 5:** A shield-shaped sign with the number 5.
 - California 99:** A shield-shaped sign with the number 99.
- Scale and Orientation:**
 - Scale:** A scale bar at the bottom right indicates distances of 200, 0, 200, and 400 feet.
 - North Arrow:** A north arrow pointing upwards.

PHOTO SOURCE: GOOGLE EARTH, 2011.

1. ACCESS TO THE AMERICAN RIVER 0.5R MITIGATION SITE IS FROM GARDEN HIGHWAY THROUGH THE NORTH ENTRANCE OF DISCOVERY PARK. ACCESS THROUGH DISCOVERY PARK TRAVERSES ABOUT 700 FT OF PAVE ROADWAY AND ABOUT 600 FT OF UNPAVED PARK LAND. THE ACCESS CROSSES A PAVED DRIVEWAY AND THE AMERICAN RIVER BIKE TRAIL.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO RESTORE DAMAGED AREAS TO PRE PROJECT CONDITIONS OR BETTER UPON PROJECT COMPLETION.
3. THE CONTRACTOR SHALL CLOSE THE AMERICAN RIVER BIKE TRAIL, AND DETOUR THE TRAIL TRAFFIC USING EXISTING EXISTING PARK SERVICE ROADS AND TRAILS AS SHOWN. THE CONTRACTOR WILL BE RESPONSIBLE FOR TEMPORARY PAVING TO CONNECT THE TRAIL PAVED ARCHERY PARKING LOT.
4. THE CONTRACTOR SHALL FULLY CLOSE THE AMERICAN RIVER BIKE TRAIL AT SHOWN LOCATIONS WITH ORANGE REFLECTIVE BARRIERS WHICH FULLY SPAN THE PAVED PATHWAY AND EXTEND 6 FEET PAST EITHER SIDE OF THE TRAIL. THE BARRIERS SHOULD INCLUDE TRAIL CLOSED SIGNS AND TRUCK CROSSING WARNINGS.
5. THE TRAIL DETOUR SHOULD BE CLEARLY MARKED WITH ORANGE REFLECTIVE SIGNS EVERY 300 FT ALONG THE DETOUR AND AT ALL SIGNIFICANT TURNS AND INTERSECTIONS.
6. THE CONTRACTOR WILL LOCATE TRAIL CLOSURE WARNING AND DETOUR SIGNS ON THE AMERICAN BIKE TRAIL 200 FT AND 100 FT UP THE TRAIL FROM THE CLOSURE.
7. THE AMERICAN RIVER BIKE TRAIL DETOUR ROUTE SHALL BE KEPT CLEAR OF DEBRIS AND OBSTRUCTIONS, AND THE INTEGRITY OF THE PAVEMENT SHALL BE MAINTAINED AS TO NOT INHIBIT THE SAFE PASSAGE OF PEDESTRIANS AND BIKE TRAFFIC.
8. TWO FLAGMEN SHALL BE PRESENT FOR TRAFFIC CONTROL AT EACH INTERSECTION IN THE ACCESS ROUTE TO CONTROL TRAFFIC WHEN EQUIPMENT IS PRESENT.
9. THE CONTRACTOR SHALL INSTALL TEMPORARY ORANGE SAFETY FENCING AROUND THE PROJECT LOCATION. TEMPORARY CHAIN-LINK SAFETY FENCING AT LEAST 6 FT TALL SHALL BE PLACED AROUND PROJECT STAGING AREAS AND ALONG THE ACCESS ROUTE.
10. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CONTRACTING OFFICER, PRIOR TO COMMENCEMENT OF WORK. REFER TO THE PROJECT SPECIFICATIONS FOR REQUIREMENTS.
11. CONSTRUCTION EQUIPMENT MAY ONLY BE PARKED WITHIN THE PROJECT LIMITS AND STAGING AREA.
12. AERIAL PHOTOGRAPH FROM UNITED STATES GEOLOGICAL SURVEY, DATED 2011.

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION						REV.	DATE	BY	CHK.	APPR.	DESCRIPTION					

DESIGNED BY:
BGW

DRAWN BY:
TVS

CHECKED BY:
EEW

IN CHARGE:
EEW

DATE:
20 MAY 2014



nhc
**northwest
 hydraulic
 consultants**

SAFCA

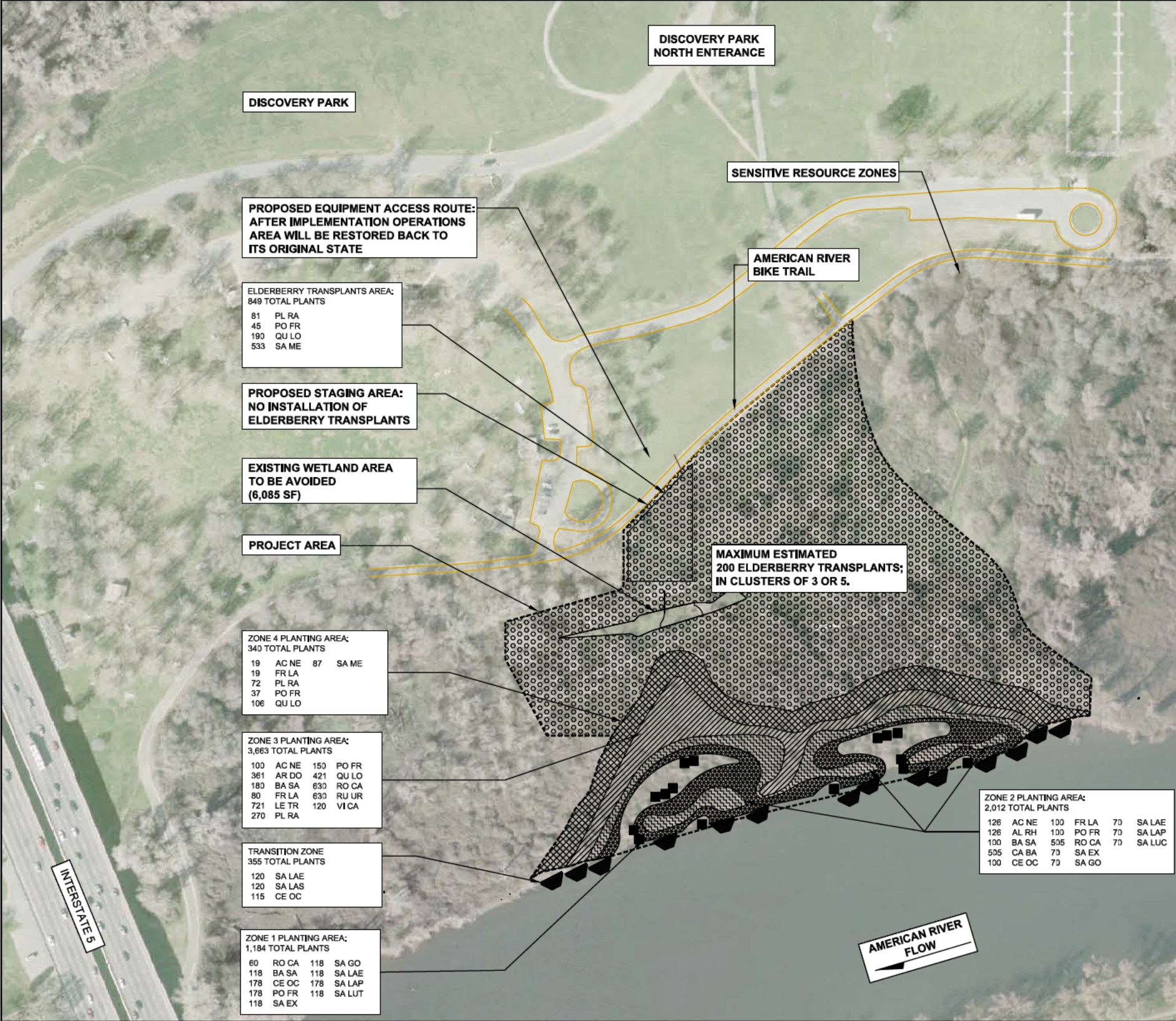
AMERICAN RIVER RM 0.5R MITIGATION SITE

ACCESS PLAN SHEET

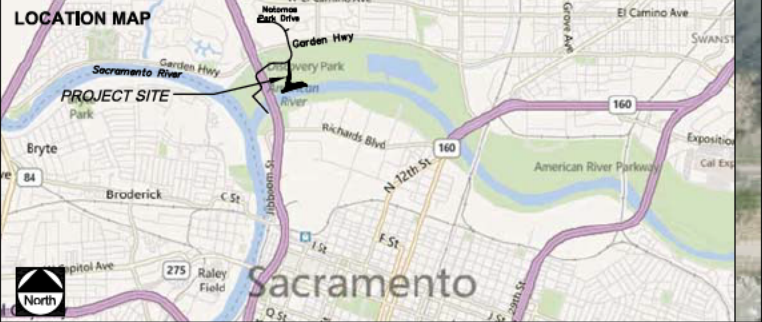
VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0  1"

DRAWING NO.	SHEET
G4	4
	OF 12

[illegible]



PLANTING ZONE (AREA)	PLANTING LOCATION; SPACING	KEY	ATTACHMENT C: PLANTING PLAN			
			BOTANICAL NAME	COMMON NAME	# TOTAL	SPACING
TRANSITION ZONE	ELEVATION 5' - 6'; WAKE ZONE; WOOD CHEVRON AND HABITAT STRUCTURE SUPPORT	SA LAE	SALIX LAEVIGATA	RED WILLOW	120	SEE DETAIL L-16
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	120	SEE DETAIL L-16
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	115	SEE DETAIL L-16
			TOTAL		355	
ZONE 1 (29,651 SF)	ELEVATION 6' - 8'; WAKE ZONE; FREQUENT, PROLONGED INUNDATION; 5' O.C.	RO CA	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	60	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	118	5' O.C. THROUGHOUT
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	178	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	178	5' O.C. THROUGHOUT
		SA EX	SALIX EXIGUA	NARROW-LEAVED WILLOW	118	5' O.C. THROUGHOUT
		SA GO	SALIX GOODINGII	GOODING'S BLACK WILLOW	118	5' O.C. THROUGHOUT
		SA LAE	SALIX LAEVIGATA	RED WILLOW	118	5' O.C. THROUGHOUT
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	178	5' O.C. THROUGHOUT
		SA LUT	SALIX LUTEA	YELLOW WILLOW	118	5' O.C. THROUGHOUT
			TOTAL		1184	
ZONE 2 (25,371 SF)	ELEVATION 8' - 11'; WAKE ZONE; FREQUENT, PROLONGED INUNDATION; 5' O.C.	CA BA	CAREX BARBARAE	SANTA BARBARA SEDGE	505	5' O.C. THROUGHOUT
		RO CA	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	505	5' O.C. THROUGHOUT
		AC NE	ACER NEGUNDO	BOX ELDER	126	5' O.C. THROUGHOUT
		AL RH	ALNUS RHOMBIFOLIA	WHITE ALDER	126	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	100	5' O.C. THROUGHOUT
		CE OC	CEPHALANTHUS OCCIDENTALIS	BUTTON BUSH	100	5' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	100	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	100	5' O.C. THROUGHOUT
		SA EX	SALIX EXIGUA	NARROWED-LEAVED WILLOW	70	5' O.C. THROUGHOUT
		SA GO	SALIX GOODINGII	GOODING'S BLACK WILLOW	70	5' O.C. THROUGHOUT
		SA LAE	SALIX LAEVIGATA	RED WILLOW	70	5' O.C. THROUGHOUT
		SA LAS	SALIX LASIOLEPIS	ARROYO WILLOW	70	5' O.C. THROUGHOUT
		SA LUC	SALIX LUCIDA SPP. LASIANDRA	PACIFIC WILLOW	70	5' O.C. THROUGHOUT
			TOTAL		2,012	
ZONE 3 (29,978 SF)	ELEVATION 11' - 16'; LOWER BACK SLOPES & MID-SLOPE BENCHES; 5' O.C.	AR DO	ARTEMESIA DOUGLASIANA	MUGWORT	361	5' O.C. THROUGHOUT
		LE TR	LEYMUS TRITICOIDES	CREEPING WILDRYE	721	5' O.C. THROUGHOUT
		RO CA*	ROSA CALIFORNICA	CALIFORNIA WILD ROSE	630	CLUSTERS OF 3 AROUND EACH SYCAMORE
		RU UR*	RUBUS URSINUS	CALIFORNIA BLACKBERRY	630	CLUSTERS OF 3 AROUND EACH COTTONWOOD
		VI CA	VITIS CALIFORNICA	WILD GRAPE	120	5' O.C. THROUGHOUT
		AC NE	ACER NEGUNDO	BOX ELDER	100	5' O.C. THROUGHOUT
		BA SA	BACCHARIS SALICIFOLIA	MULEFAT	180	5' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	80	5' O.C. THROUGHOUT
		PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	270	5' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	150	5' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	421	5' O.C. THROUGHOUT
			TOTAL		3,663	
ZONE 4 (40,142 SF)	ELEVATION 16' - 24'; HIGHEST ZONE; LOW DURATION / INFREQUENT INUNDATION; 16.5' O.C.	AC NE	ACER NEGUNDO	BOX ELDER	19	10' O.C. THROUGHOUT
		FR LA	FRAXINUS LATIFOLIA	OREGON ASH	19	10' O.C. THROUGHOUT
		PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	72	10' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	37	10' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	106	10' O.C. THROUGHOUT
		SA ME	SAMBUCUS MEXICANA	ELDERBERRY	87	10' O.C. IN DESIGNATED CLUSTERS
			TOTAL		340	
ELDERBERRY TRANSPLANTS AREA (293,058 SF)	SEE EXHIBIT 6B	PL RA	PLATANUS RACEMOSA	CALIFORNIA SYCAMORE	81	20' O.C. THROUGHOUT
		PO FR	POPULUS FREMONTII	FREMONT COTTONWOOD	45	20' O.C. THROUGHOUT
		QU LO	QUERCUS LOBATA	VALLEY OAK	190	20' O.C. THROUGHOUT
		SA ME	SAMBUCUS MEXICANA	ELDERBERRY	533	20' O.C. IN DESIGNATED CLUSTERS
			TOTAL		849	
GRAND TOTAL					8,403	



Type 1 Seed Mix - Perennial Native Grass Mix		
SPECIES NAME	COMMON NAME	PLS lbs/acre
<i>Elymus glaucus</i>	blue wildrye	3
<i>Elymus trachycaulus</i>	slender wheatgrass	3
<i>Hordeum brachyantherum</i> spp. <i>californicum</i>	California barley	3
<i>Leymus triticoides</i>	creeping wildrye	4
<i>Melica californica</i>	California melic	1
<i>Nassella pulchra</i>	purple needlegrass	7
<i>Poa secunda</i> ssp. <i>secunda</i>	Pine bluegrass	1
TOTAL for Mix		22
NOTES: PLS = "Pure Live Seed" which is the percent of viable seed germ in a bulk pound of seed. Certified PLS ratings are provided by the seed supplier or seed grower.		

LEGEND

----- LIMIT OF WORK —○— CULTURAL BUFFER AREA

NOTES

1. LAND ACCESS TO THE SITE IS FROM INTERSTATE 5 TO GARDEN HIGHWAY TO DISCOVERY PARK.
2. AERIAL PHOTOGRAPH FROM USGS, 2008.
3. PLANTING ZONES 1, 2, AND 3 ARE AT 5' O.C. SPACING.
4. ZONE 2; BUTTON BUSH SHALL BE LOCATED IN THE LOWER AREA OF ZONE 2.
5. * ZONE 3; ROSA CALIFORNICA AND RUBUS URSINUS ARE IN CLUSTERS OF 3 AROUND EACH SYCAMORE AND COTTONWOOD.
6. ZONE 4 PLANTS SHALL BE INSTALLED AT 16.5' O.C. WITH PULLED BERM ROWS.
7. ASSOCIATED PLANTINGS IN ELDERBERRY TRANSPLANT ZONE SHALL BE INSTALLED AT 20' O.C. EXCEPT LOCATIONS WHERE EXISTING PLANTS AND ELDERBERRY TRANSPLANT GROUPINGS ARE FOUND. ELDERBERRIES WILL BE INSTALLED IN CLUSTERS.
8. PLANTING LOCATIONS WILL BE ADJUSTED IN THE FIELD WHEN INSTALLED AROUND ELDERBERRY TRANSPLANT OR TO AVOID EXISTING VEGETATION.
9. ALL ALLEYS AND AREAS BETWEEN INSTALLED PLANTS SHALL BE SEEDED WITH NATIVE GRASS MIX.

AECOM

2020 L Street, Suite 400
Sacramento CA 95811
Tel: (916) 414-5800
Fax: (916) 414-5850

SAFCA

Sacramento
Area Flood
Control
Agency

SAFCA

AMERICAN RIVER MILE 0.5
ELDERBERRY SHRUB & VALLEY OAK TREE
RELOCATION / TRANSPLANTING

EXHIBIT 6A

scale: AS SHOWN
job no.: 06110058.04
drawn by: SR
checked by: KC, VH, SC

sheet no.: 1

sheet 1 of 1
date: 09/2014



NLIP

AMERICAN RIVER RM0.5
AQUATIC AND RIPARIAN
HABITAT CREATION PROJECT

AECOM

2020 L Street, Suite 400
Sacramento CA 95811
Tel: (916) 414-5800
Fax: (916) 414-5850

CONTRACT 4236

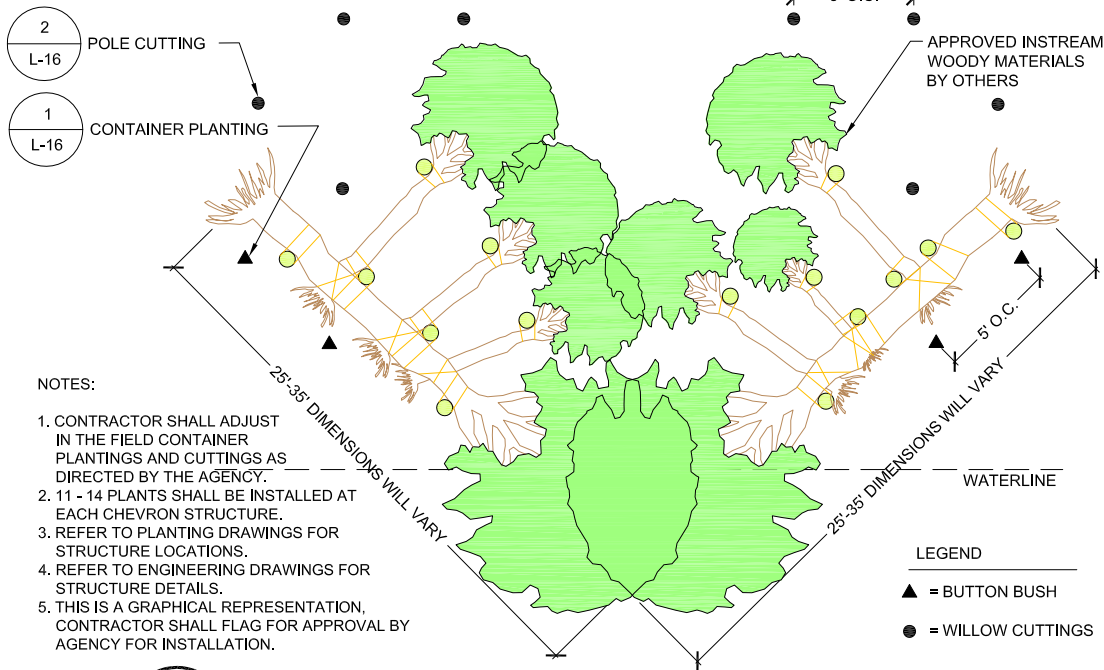
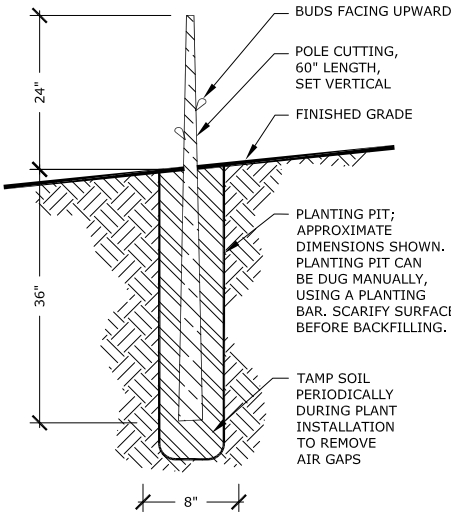
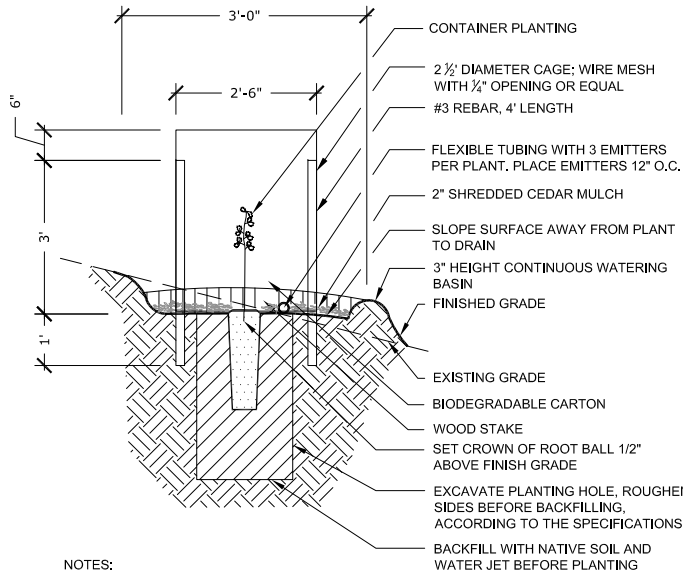
DETAILS

100% DRAFT

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drawn by:	SR, KC, VH
checked by:	SC, AF, DR

sheet no.: L-16

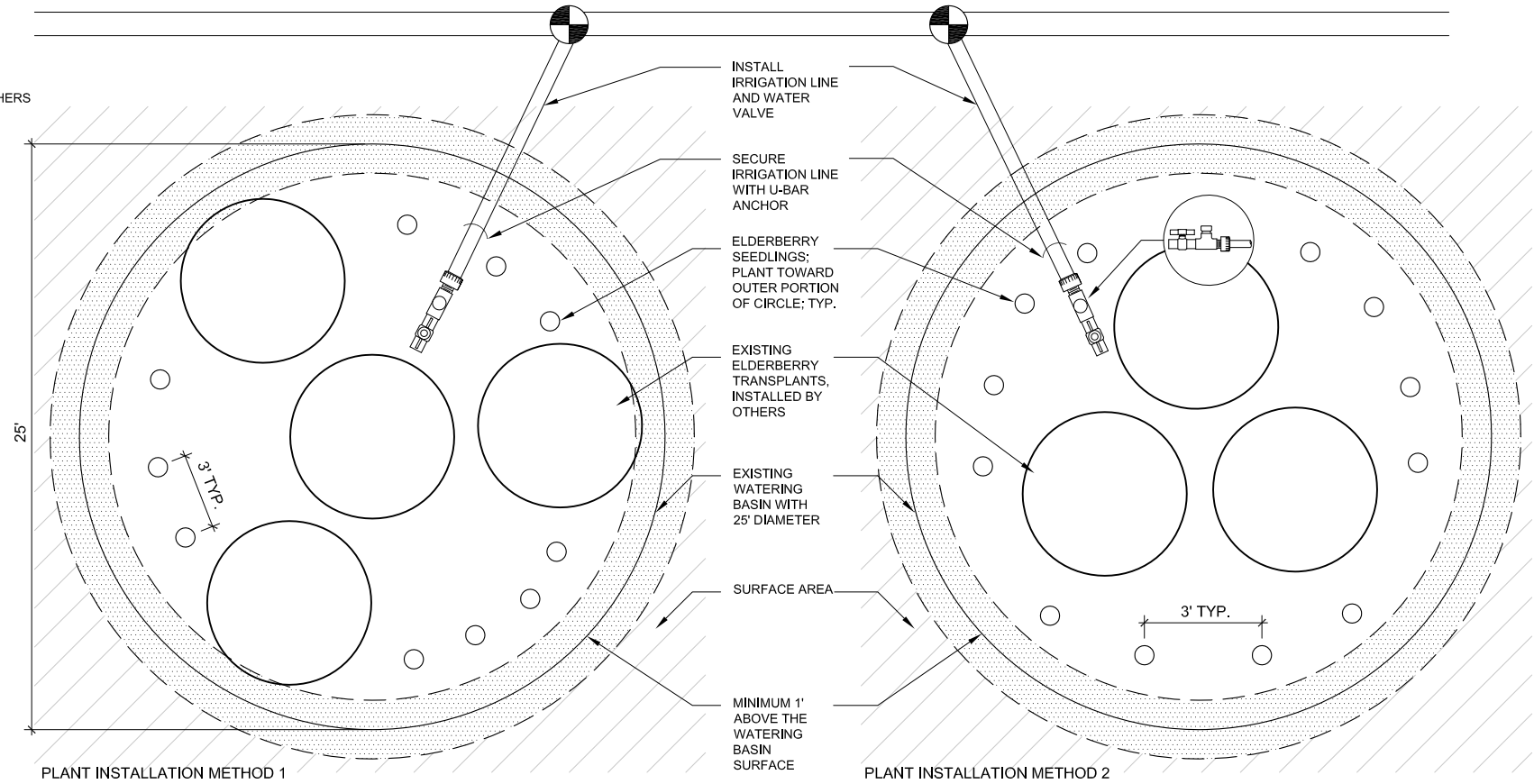
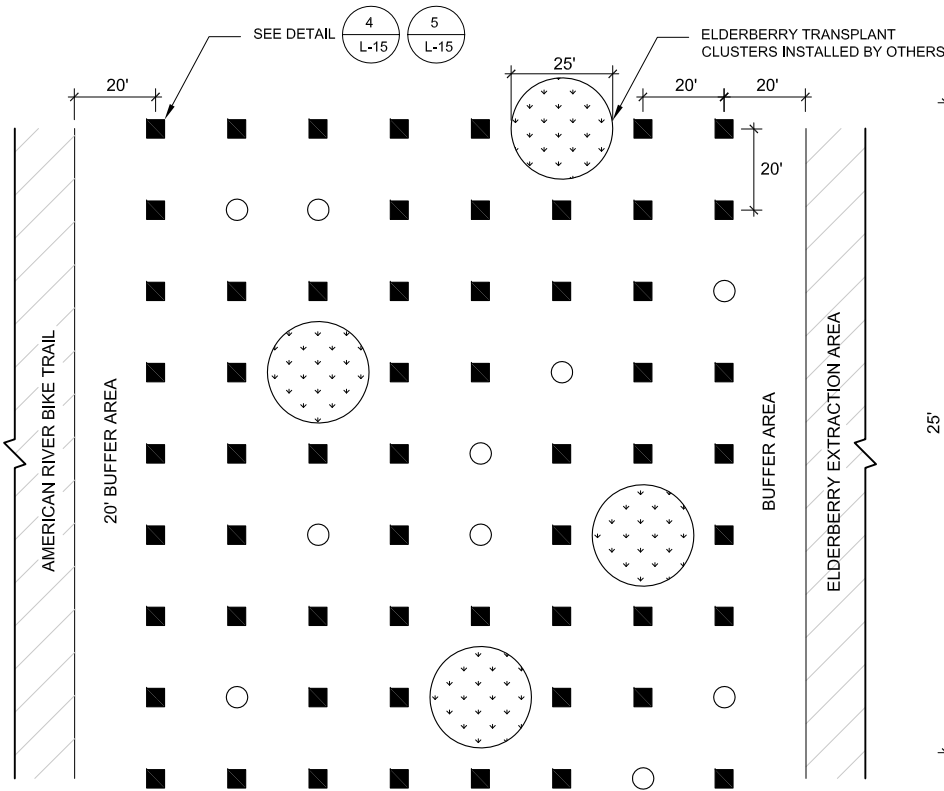
sheet 16 of 16
date: 08/2014



1 CONTAINER PLANTING IN THE ELDERBERRY TRANSPLANT AREA
L-16 NOT TO SCALE SECTION ELEVATION

2 POLE CUTTING
L-16 NOT TO SCALE SECTION ELEVATION

3 WOOD CHEVRON /HABITAT STRUCTURE
L-16 NOT TO SCALE DIAGRAMMATIC PLAN VIEW



PLANT LEGEND

ELDERBERRY TRANSPLANTS AREA		
SYMBOLS	PLANT TYPE	DESCRIPTION
■	ASSOCIATED PLANTS	PROVIDE SPACE FOR NEW PLANTING TO BE INSTALLED AROUND EXISTING ELDERBERRIES
○	EXISTING VEGETATION	EXISTING SHRUBS OR TREES PRIOR TO PLANTING OPERATION
●	EXISTING ELDERBERRY TRANSPLANT CLUSTERS	INSTALL 10 TO 12 ELDERBERRY SEEDLINGS WITHIN A 25' DIAMETER AREA; EXISTING ELDERBERRY CLUSTERS.

- NOTES:
- SEE PLANTING SHEETS FOR ELDERBERRY TRANSPLANTS AREA.
 - BUFFER WIDTH OF 20' SHALL BE PROVIDED ALONG AMERICAN RIVER BIKE PATH.
 - A 20' FOOT WIDE BUFFER AREA SHALL BE PROVIDED BETWEEN THE ELDERBERRY TRANSPLANTS AREA AND CULTURAL AREA.
 - DIAGRAMMATIC LAYOUT WIDTHS OF ELDERBERRY TRANSPLANTS WILL VARY.
 - ELDERBERRY SEEDLINGS SHALL BE LOCATED TOWARD THE OUTER PORTION OF THE PLANTING CIRCLE.
 - THE NUMBER OF SEEDLINGS PER CLUSTER SHALL VARY DEPENDING ON THE SIZE OF THE ELDERBERRY TRANSPLANT.

4 ELDERBERRY TRANSPLANT AREA (ZONE 5) PLANTING LAYOUT
L-16 NOT TO SCALE

DIAGRAMMATIC PLAN VIEW

ATTACHMENT C: HYDRAULIC ANALYSIS

Water Resources • Flood Control • Water Rights

TECHNICAL MEMORANDUM

DATE: November 20, 2007

TO: LAR Team Members

FROM: Don Trieu

SUBJECT: Hydraulic Analysis of Mitigation Project – LAR RM 0.5

This memorandum documents the hydraulic analysis of the proposed mitigation project at RM 0.5 on the lower American River. The Corps of Engineers and SAFCA are proposing to transplant elderberry shrubs, degrade the existing bank, installing erosion control structures, and planting native plant species. The purpose of the hydraulic analysis is to determine the effects to water surface elevation and velocity for one flood event.

The methodology for the hydraulic analysis will be to simulate the proposed project condition and then compare the results with a baseline condition to determine if there are any effects to water surface elevation and velocity. The baseline condition is the 2005 vegetation condition (Baseline 2) as documented in MBK Engineers memo dated October 13, 2005.

The hydraulic analysis was performed using the RMA-2 hydraulic model of the lower American River. The model was developed and calibrated by Ayers Associates (Ayers, 2003) and further refined by MBK Engineers to update it to 2005 vegetation conditions (MBK October 13, 2005).

The existing condition at the site consists of a heavy stand of non-native grasses & shrubs, mainly wild blackberry, and a few native trees. The project area under existing condition was calibrated and simulated using a Manning's roughness coefficient of 0.11. Figure 1 shows the model mesh and "n" values used under the baseline condition.

The project condition was modeled by changing the Manning's roughness coefficient in the hydraulic model in the project area. The planting plan consists of four planting zones: (1) elev. 6 to 8, button bush, cottonwood, willows, mulefat, and box elders are proposed at 2 feet o.c.; (2) elev. 8 to 11, same plant species as zone 1 but white alder, sedges, and California rose added; (3) elev. 11 to 16, elder, cottonwood, sycamore, valley oak at 6 feet o.c., with mulefat, wildrye and wild grape for ground cover; and (4) elev. 16 to 24, sycamore, cottonwood, valley oak, with wildrye, coyote brush, and elderberry ground cover. A roughness coefficient of 0.07 was assigned for planting zone 1 and 2; and 0.085 for planting zone 3 and 4. For the elderberry transplant area, a roughness coefficient of 0.045 was used. In addition to the plantings, the project consists of minor contouring at the site. The elevations in the hydraulic model were modified to reflect the major contours at the site. Figure 2 shows the model mesh and roughness coefficients used to simulate the project condition.

The project condition was simulated for 115,000 cfs. The boundary condition used for the simulation is as follows:

Table 1: Boundary Conditions

Flow Regime	Flow at LAR RM 14.0 (cfs)	NEMDC flow (cfs)	Flow at Sacramento Weir (cfs)	Stage at I-Street (ft-NGVD)
115,000 cfs	115,000	11,400	18,900	30.4

Results:

The results of the hydraulic modeling were plotted using differential contours between the Project Condition and Baseline 2. Positive values indicate a higher water surface or velocity under the project condition; a negative difference indicates a lower water surface or velocity.

- Figure 3: Base Condition Velocity Map - 115,000 cfs.
- Figure 4: Project Condition Velocity Map - 115,000 cfs.
- Figure 5: Velocity Difference Map - 115,000 cfs.
- Figure 6: Water Surface Difference Map - 115,000 cfs.

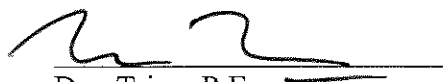
Conclusions:

Based on the hydraulic results:

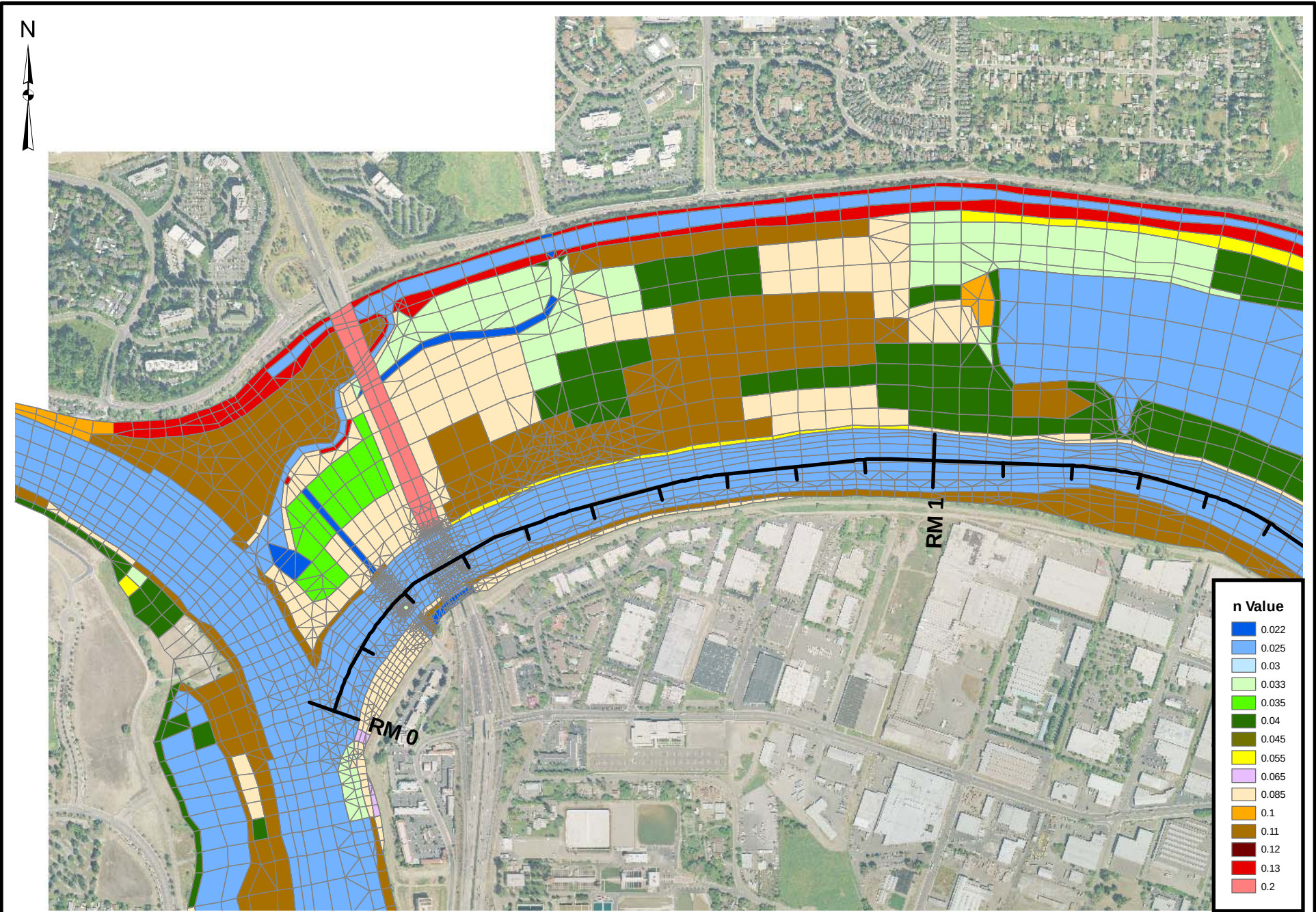
- The project condition increases and decreases velocity in the immediate vicinity of the project. The velocity decrease is on the order of less than 1.5 fps within the project footprint. The velocity increase is along the bank of the river and is between 0.5 to 1.0 fps. The velocity impacts adjacent to the levee are less than significant. See Figure 5.
- Under the project condition, there are no significant increases or decreases in water surface elevation along or near the levees. The project would decrease the water surface on the order of less than 0.1 feet just downstream of the project footprint. See Figure 6.

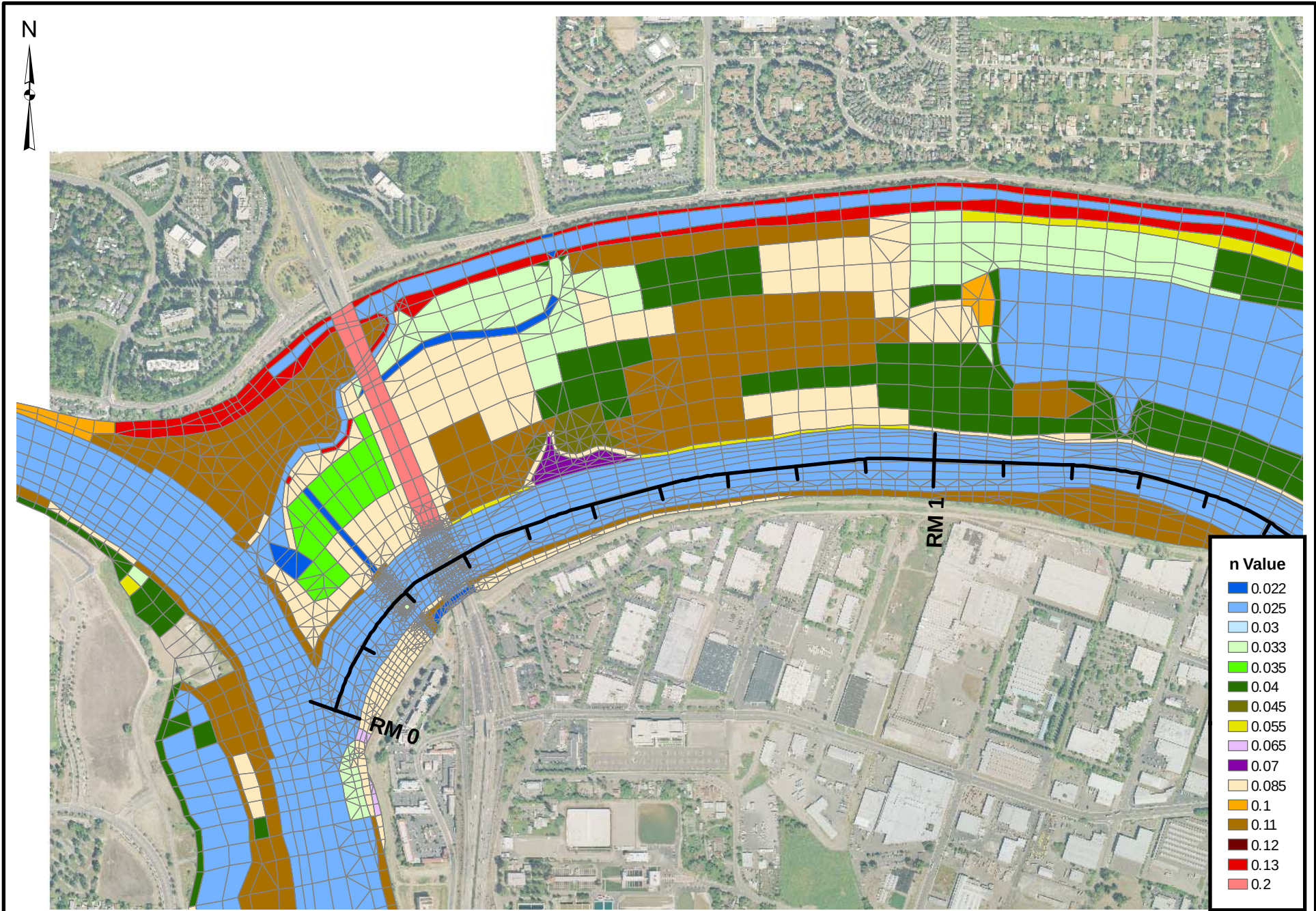
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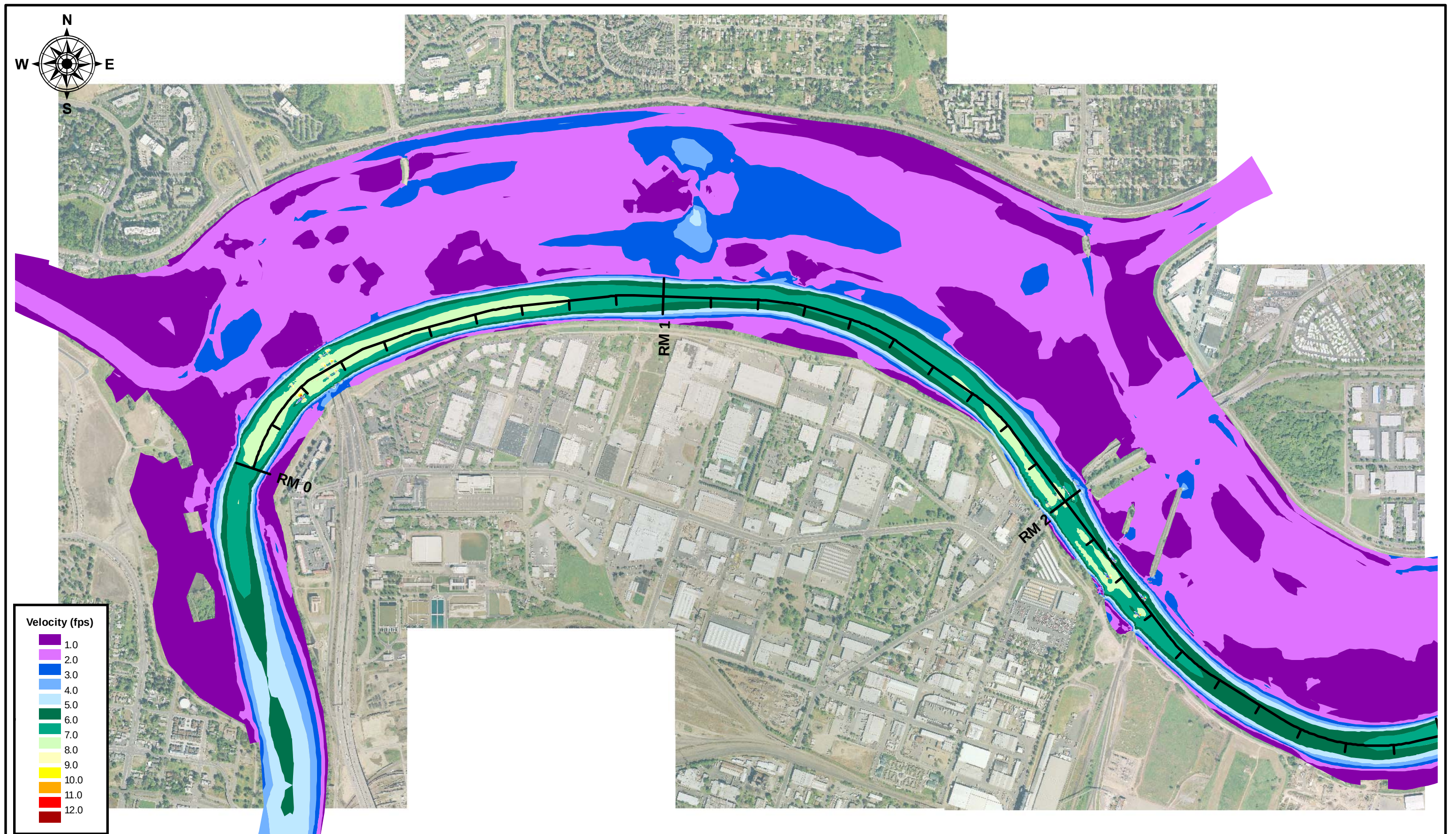
Ayers, 2003. Lower American River, FEMA Certification, Draft Report, July 2003.

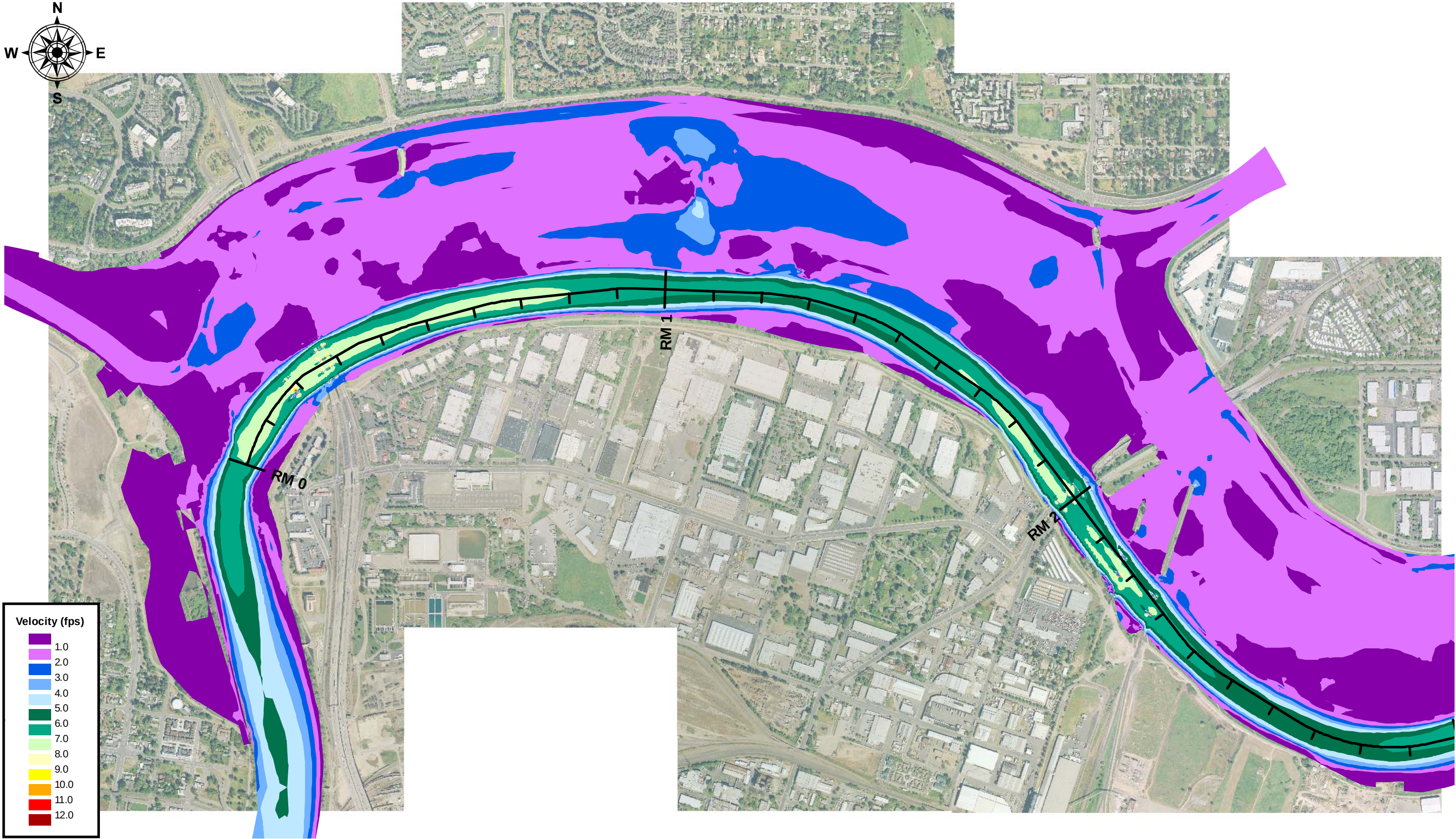


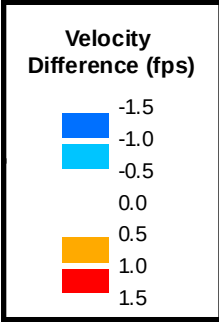
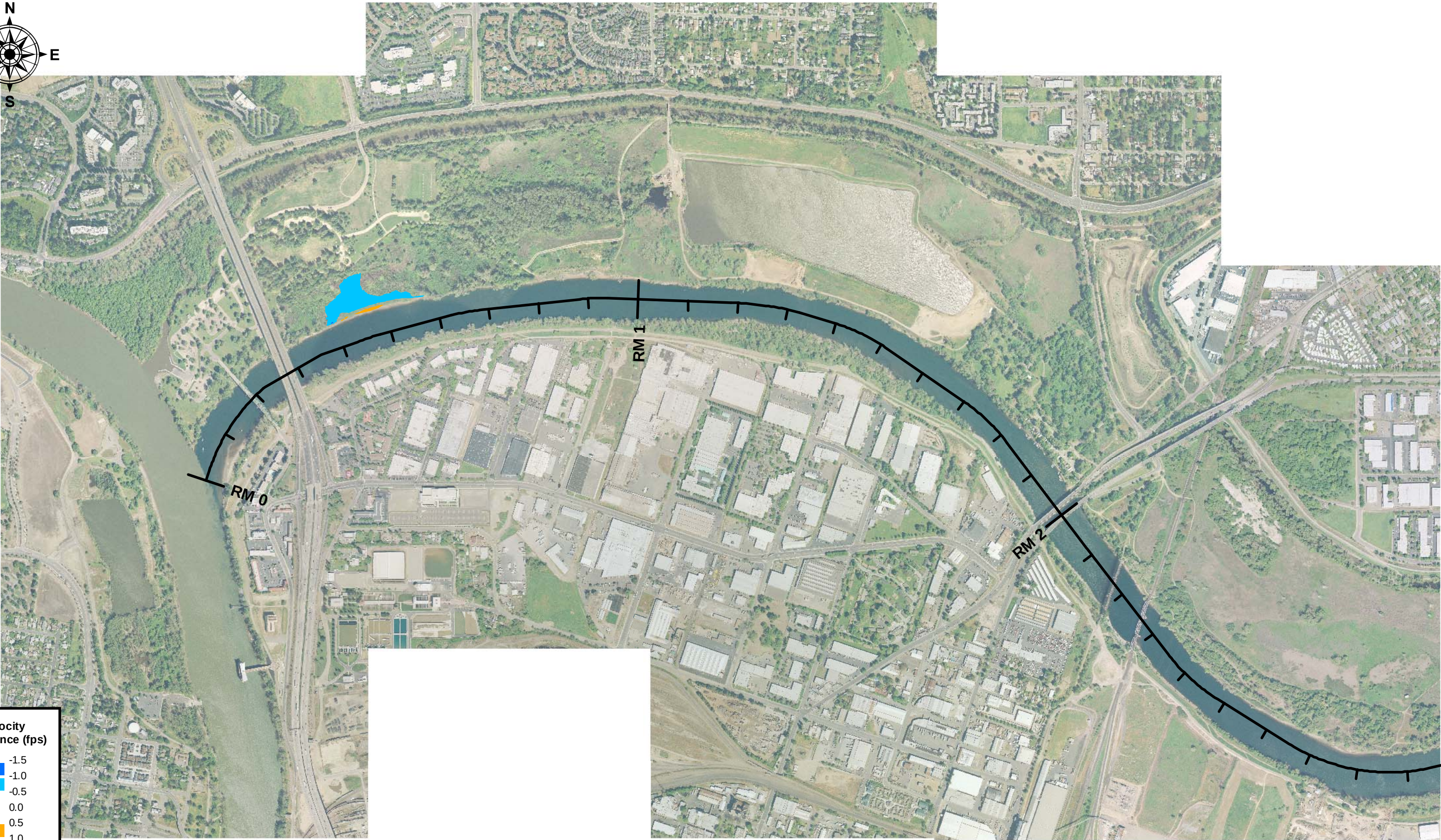
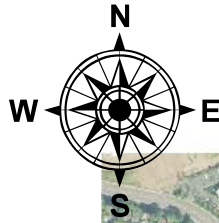
Don Trieu, P.E.











2450 Alhambra Boulevard, 2nd Floor
Sacramento, California 95817-1125
(916) 456-4400

Lower American River - RM 0.5 Mitigation Project
Velocity Difference

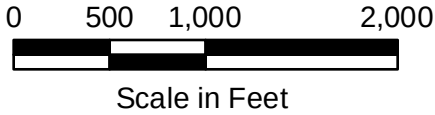
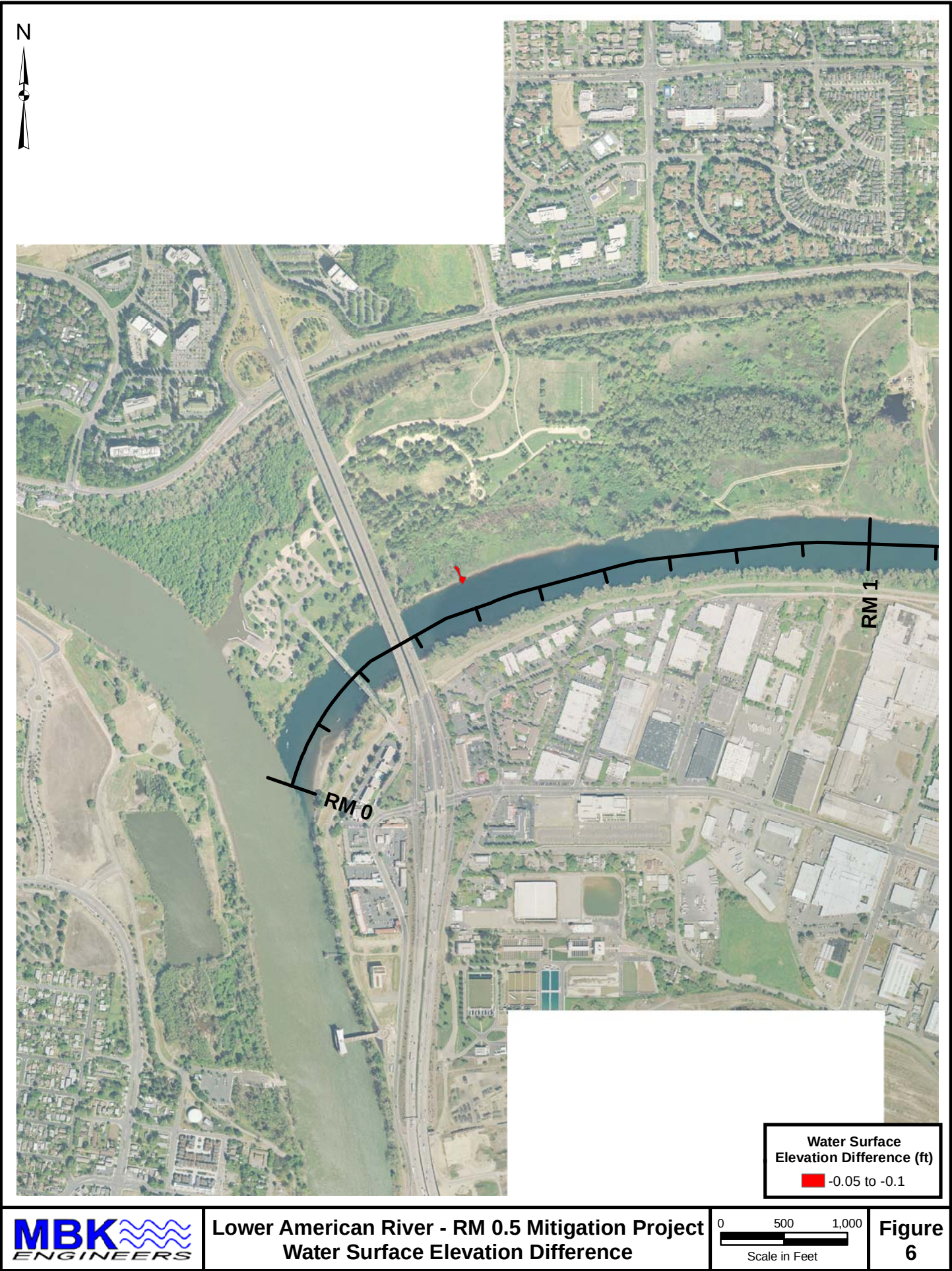


Figure
5



Appendix D

Revised 2011

COUNTY of SUTTER
STATE OF CALIFORNIA

No 284859

OFFICIAL RECEIPT

Clerk of the Board 4/30/13
 Issuing Office or Department DATE
 RECEIVED FROM Aecom Technology Corp (for SHTCA)
 THE SUM OF Fifty dollars & no/100 \$ 50.00
 FOR Co. Admin Fee for NOD (Natoma Levee Imple. Proj)
 PAID BY CASH ☐ RECEIVED BY Lisa Bush
☒ CK./M.O. ☒ BK. NO. 56-382 TITLE Deputy

State of California—Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE

2013 ENVIRONMENTAL FILING FEE CASH RECEIPT

 RECEIPT# 438212
 STATE CLEARING HOUSE # (if applicable)
2007062116

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY

 LEAD AGENCY Sacramento Area Flood Control Agency DATE 4-30-13
 COUNTY/STATE AGENCY OF FILING Sutter County CA DOCUMENT NUMBER
 PROJECT TITLE Natoma Levee Improvement Program's Landside Imple. Proj
 PROJECT APPLICANT NAME (Same as lead) PHONE NUMBER 916-814-7606
 PROJECT APPLICANT ADDRESS 1007 7th St 5th floor - Sacramento CITY CA STATE CA ZIP CODE 95814
 PROJECT APPLICANT (Check appropriate box):
☐ Local Public Agency ☐ School District ☒ Other Special District ☐ State Agency ☐ Private Entity
 CHECK APPLICABLE FEES:
☒ Environmental Impact Report (EIR) \$2,995.25 pd. to SAC CO 4-30-13 \$2,995.25 \$ 50.00
☒ Mitigated/Negative Declaration (ND)(MND) REQ. 0007763355 \$2,156.25 \$
☐ Application Fee Water Diversion (State Water Resources Control Board Only) \$850.00 \$
☐ Projects Subject to Certified Regulatory Programs (CRP) \$1,018.50 \$
☒ County Administrative Fee \$50.00 \$
☐ Project that is exempt from fees
☐ Notice of Exemption
☐ DFW No Effect Determination (Form Attached)
☐ Other \$

PAYMENT METHOD:

☐ Cash ☐ Credit ☒ Check ☐ Other
 SIGNATURE Lisa Bush TITLE Deputy
 TOTAL RECEIVED \$ 50.00

WHITE - PROJECT APPLICANT

YELLOW - DFW/ASB

PINK - LEAD AGENCY

GOLDEN ROD - COUNTY CLERK

DFG 753.5a (Rev. 11/12)

REC'T # 0007763355
April 30, 2013 10:46:32 AMSacramento County Recorder
Craig A. Kramer, Clerk/Recorder
 Check Number 7599
 RECD BY State Fees \$2,995.25
 CLERKS \$26.00
 Total fee \$3,021.25
 Amount Tendered... \$3,021.25
 Change \$0.00
 NND-09/1/0



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In Reply Refer To:
08ESMF00-2014-F-0037

JAN 24 2014

Dr. Kathleen A. Dadey
Chief, California South Branch
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814-2922

Subject: Formal Consultation on the American River Mile 0.5 Aquatic and Riparian Habitat Creation Project, Sacramento County, California (Corps File Number SPK-2013-00886)

Dear Dr. Dadey:

The letter is in response to the U.S. Army Corps of Engineers' (Corps), October 9, 2013, request for initiation of informal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed American River Mile 0.5 Aquatic and Riparian Habitat Creation Project (proposed project), in Sacramento County, California. Your request was received by the Service on October 18, 2013. You requested our concurrence that the proposed project may affect, but is not likely to adversely affect the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle). The Service did not concur with your determination, and emailed you on November 5, 2013, to inform you that the proposed project is likely to adversely affect the beetle since elderberry shrubs, the sole host plant for the beetle, will be transplanted. Therefore, formal consultation commenced on November 5, 2013, and this biological opinion addresses the effects of the proposed project on the beetle. Critical habitat has been designated for the beetle; however the proposed project is not located within any designated or proposed critical habitat. This response is in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The Federal action we are consulting on is the creation of aquatic and riparian habitat along a segment of the lower American River. The habitat creation includes: (1) a 4.28 acre area where aquatic and riparian habitat will be created and enhanced by grading, re-contouring, and planting riparian vegetation; (2) a 6.35 acre elderberry transplantation area adjacent to the habitat creation area; (3) a 1.18 acre staging and access area; and (4) a 8.65 acre off-site disposal area on the landside of the Sacramento River east levee (SREL) Reach 19A.

This response is based on the Service's review of: (1) your October 9, 2013, initiation letter for the proposed project; (2) the October 8, 2013, memorandum from AECOM (consultant) to the Corps regarding an assessment completed at the SREL Reach 19A soil disposal site, received by

Dr. Kathleen A. Dadey

2

the Service on October 18, 2013; (3) the October 7, 2013, memorandum from the consultant to the Corps regarding the increase in functions and services at the habitat creation site, received by the Service on October 18, 2013; (4) the September 2013, *Biological Assessment: American River Mile 0.5 Aquatic and Riparian Habitat Creation Project* (biological assessment), prepared by the consultant for the Sacramento Area Flood Control Agency (SAFCA) (applicant), received by the Service on October 18, 2013; (5) emails and phone conversations between the Service, the Corps, the applicant, and the consultant; and (6) other information available to the Service.

CONSULTATION HISTORY

<i>October 18, 2013</i>	The Service received the September 2013, biological assessment, the October 9, 2013, request to initiate consultation, and the October 7 and October 8, 2013, memorandums from the consultant to the Corps.
<i>November 5, 2013</i>	The Service sent an email to the Corps explaining that the Service did not agree with their not likely to adversely affect determination and that the proposed compensation was insufficient.
<i>November 13, 2013</i>	Telephone conference between the Service and AECOM (consultant) regarding increasing the number of proposed elderberry seedlings planted for compensation and achieving a success rate greater than 60% for the elderberry transplants and elderberry seedlings.
<i>December 6, 2013</i>	Telephone conference between the Corps and the consultant regarding the number of elderberry shrubs being planted for compensation.
<i>December 10, 2013</i>	The Service received an email from the Corps revising the acreages for the various project components.
<i>January 16, 2014</i>	The Service received an email from the applicant regarding increasing the amount of elderberry seedlings planted for compensation and achieving a 70% or higher success rate for the elderberry transplants and seedlings.

BIOLOGICAL OPINION

Description of the Proposed Action

The applicant is proposing to create aquatic and riparian habitat along a segment of the lower American River, which will entail grading, lowering and re-shaping a 4.28 acre portion of the river's floodplain and then planting the area with riparian vegetation. The proposed project is being undertaken by SAFCA, in part, to satisfy compensation requirements of the National Marine Fisheries Service (NMFS) for loss of shaded and riverine aquatic (SRA) habitat associated with Phase 3 of SAFCA's Natomas Levee Improvements Program (NLIP) Landside Improvements Project.

The proposed project consists of four areas where project construction will take place: the aquatic and riparian habitat creation area, the elderberry shrub transplant area, the access and staging area, and the off-site soil disposal area.

Aquatic and Riparian Habitat Creation Area

The proposed project will include planting riparian trees, shrubs and herbaceous species within the 4.28 acre habitat creation project site, and the placement of in-stream woody material (IWM) and brush mattresses within the river channel to enhance fish and wildlife habitat. The existing terrain at the project site consists of a relatively flat floodplain bench with a sharp, steep cliff at the bank of the river. The proposed project will grade the site to varying elevations between 3.5 and 12 feet to allow for more frequent inundation of the site from the river. The proposed project will construct two shallow water channels/inlets that will be connected to the American River. These channels will provide shallow water habitat for federally-listed anadromous fish during the normal low water period in the summer and fall. The channels will also act as outlets for high water inundation to drain from the project site to reduce the potential for fish stranding during river transition periods. Separating the two channels will be a bench at an elevation of 10 feet that will be planted with riparian vegetation.

The habitat creation area will be planted with four distinct planting zones. Zone 1 will be at the lowest elevation, which will be inundated for the majority of the year and will be comprised of species that can accommodate saturated soil conditions, such as willows (*Salix* sp.), cottonwoods (*Populus fremontii*) and box elders (*Acer negundo*). Zone 2 will be at or just below the average winter water surface elevation, which will be inundated only during the winter high flow months. The zone will be planted with the same types of species as Zone 1, but will also include shrub species such as California wild rose (*Rosa californica*), mulefat (*Baccharis salicifolia*), button brush (*Cephalanthus occidentalis*), and Santa Barbara sedge (*Carex barbarae*). Zones 3 and 4 will be above the average high water surface elevation and will be planted with native herbaceous, shrub and tree species, including elderberry shrubs.

The placement of IWM will provide fish habitat during average annual flow conditions and will be constructed by securing trees in place with wire rope and large stone anchors. Each IWM structure will be about 225 ft² and will be composed of five large trees. These structures will be placed in three alcoves along the river edge to provide habitat during the fall and summer, and in the shallow water channels to provide habitat during the winter and spring.

Brush mattresses will also be incorporated to reduce erosion and provide fish habitat during the summer and fall. They will be installed along most of the project site and will be anchored by 12-foot-long, 4 inch diameter wood posts spaced 4 feet apart. The mattresses will be triangular and will be bounded by IWM on two sides and the shoreline on the third. Brush with diameters ranging from 0.5 inch to 6 inches will be placed 3 feet thick over the mattress and anchored with manila rope to the posts. The typical life span of a brush mattress is 7-12 years, after which the brush, posts and ropes will be replaced as necessary.

Elderberry Shrub Transplant Area

About 200 elderberry shrubs, concealed beneath a thick layer of overgrown exotic Himalayan blackberry and wild grape vines, are currently growing within the grading footprint of the habitat creation area. SAFCA proposes to transplant the elderberry shrubs to a designated 6.35 acre transplant area adjacent to the grading footprint. The elderberry transplants will be interspersed with additional planted riparian trees and shrubs that are well suited to that elevation.

Staging and Access Area

The proposed project will include a 1.18 acre staging and access area. A short dirt road will be constructed in a north-south direction to provide access from the Natomas Park Drive/Garden Highway intersection to the staging area located south of the American River Bike Trail. Construction and use of this temporary roadway will prevent potential conflicts between construction vehicles and park visitors in the existing Discovery Park parking lots. The access road will be continually maintained by SAFCA during project construction to prevent erosion and dust from vehicles. Materials stored at the staging area will include construction equipment, components of the IWM and brush mattresses, native cuttings and seedlings, soil amendments, and irrigation piping. Once construction is complete, all equipment and excess materials will be transported off-site, and the temporary staging area and access road will be re-vegetated with native grasses.

Off-site Soil Disposal Area

Grading and re-contouring the project site will result in 60,000 cubic yards (CY) of fill material that will need to be disposed of off-site. The fill material will be hauled along Garden Highway to the 8.65 acre SREL Reach 19A and will be used as a stockpile for future construction of a seepage berm during a later phase of the NLIP. Two ramps, one 12 foot and the other 20 foot, will be constructed on the seepage berm for access. All trees and minor facilities (e.g., concrete, water tanks, fencing) will be removed from the footprint of the proposed seepage berm.

Construction Overview

Construction of the project will be conducted in two phases over two construction seasons. The initial phase will involve vegetation trimming and relocation of the existing elderberry shrubs to the elderberry shrub transplant area. Three pieces of construction equipment are expected to be used to relocate the elderberry shrubs: a backhoe, Vermeer tree spade and/or a front loader. A Service-approved biologist will be present on-site during the transplanting of the shrubs.

The second phase of construction will occur approximately 3-5 months later. Soil will be excavated and transported to the off-site soil disposal area at SREL Reach 19A. The project site will then be graded and re-vegetated to improve fish and wildlife habitat, including increasing the floodplain depth and frequency of inundation. Heavy equipment will be used on-site to move and/or load the fill material into haul trucks and to re-grade the site.

It will take about 60 days of hauling to transport the excavated fill material off-site, assuming that 1,000 CY of material will be transported per day at an estimated 12 CY capacity per truck to the SREL Reach 19A. This will require up to 100 round trip truck loads per day. Construction of the seepage berm at the off-site disposal area will take place concurrently with the second phase of construction at the project site, and will require two to three pieces of heavy construction equipment (e.g., bulldozer, motor grader, excavator, compactor) to be operating on any given day. The number of truck loads is expected to be highest at the beginning and end of each work day, as well as the intermittent movement of equipment onto and off-site. Temporary construction facilities, including signage, security fencing, and traffic controls, will be erected during construction mobilization.

Initial construction activities are expected to take place between November 1, 2014, and February 1, 2015. Construction of the second phase is expected to take place between July 2015 and November 2016, assuming receipt of all environmental clearances, permits and

authorizations. The in-water construction work will end no later than November 1 due to restrictions for listed salmonids. For any in-water construction to occur beyond these dates, SAFCA will request authorization from the respective permitting agencies for deadline waivers before continuing with construction. Installation of vegetation is scheduled between November 2015 and March 2016. The tentative construction schedule is shown in Table 1.

Table 1: Proposed construction schedule

Activity	Start Date	Completion Date	Total Duration
Transplant elderberry shrubs	November 1, 2014	February 1, 2015	106 days
Excavate and grade habitat creation area	July 1, 2015	November 1, 2015	123 days
Install IWM and brush mattresses	July 1, 2015	November 1, 2015	123 days
Install vegetation	November 1, 2015	March 31, 2016	152 days

Maintenance

SAFCA will maintain the elderberry transplant area. Specific maintenance activities during the proposed project's vegetation establishment period include:

- **Weed control.** Efforts will be made to remove weeds and nonnative plants from the habitat creation and elderberry transplant areas. Mechanical means will be the primary method of weed control used. Herbicides will be prohibited within 100 feet of the elderberry shrubs.
- **Litter Control.** Trash or other foreign material will be regularly removed from the habitat creation and elderberry transplant areas.
- **Irrigation.** Transplanted shrubs and newly planted seedlings will be irrigated up to 3 to 5 years to ensure successful establishment. Irrigation infrastructure will be regularly maintained and only removed after the success criterion has been attained. The success criterion is described below.

Monitoring

The establishment period for the elderberry seedlings and associated native plantings will be 3 years. The presence of the beetle, the general condition of the habitat creation and transplant areas, and the condition of the elderberry transplants, seedlings, and native plantings will be monitored. Following transplantation, SAFCA will conduct monitoring, with surveys and reports every even-numbered year, over a period of 10 consecutive years.

Surveys

In any survey year, site visits will be conducted between February 14 and August 31. Surveys will be conducted by a Service-approved biologist and will include:

- A population census of the adult beetles, including the number observed, the precise location, the beetle's condition, and the beetle's behavior.
- A census of beetle exit holes in elderberry stems, noting the locations and estimated ages.

Dr. Kathleen A. Dadey

- An evaluation of the elderberry transplants, seedlings, and associated native plants within the habitat creation and elderberry transplant areas. This will also include the number of plants, the percent survival, their size, and their condition.
- An evaluation of the adequacy of the site security and weed control efforts in the habitat creation and elderberry transplant areas.
- A general assessment of the habitat, including any real or potential threats to the beetle and its host plant, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

Reports

A written report documenting the monitoring effort will be prepared by a qualified biologist during each year in which a survey is conducted. Copies of the report must be submitted by December 31 of the same year to the Service. The report must address the status and progress of the elderberry transplants, seedlings, and associated native plantings. It will also address any adaptive management efforts. Any observations of beetles or fresh exit holes must be noted. A vicinity map of the site and maps showing where the individual adult beetles were observed must be included. The survival rate, condition, and size of the elderberry transplants, elderberry seedlings, and associated native plants will be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures.

Success Criterion

A minimum survival rate of 70% for the elderberry transplants and elderberry seedlings, and 60% for the associated natives must be maintained throughout the monitoring period. Within one year of the discovery that survival has dropped below the minimum survival rate, SAFCA will replace failed plantings to bring survival above the minimum level.

Conservation Measures

The following is a summary of conservation measures, as outlined in the biological assessment, to minimize effects to the beetle. The conservation measures proposed below are considered part of the proposed action evaluated by the Service in this biological opinion.

1. A total of 612 elderberry seedlings will be planted within the habitat creation and elderberry transplant areas.
2. Worker awareness training for construction personnel will be conducted by a Service-approved biologist before the commencement of construction activities and as needed when new personnel are brought on to the project. The program will inform all construction personnel about the life history and status of the beetle, the need to avoid damaging the elderberry plants, measures to avoid and minimize impacts on the beetle and its habitat, the conditions of relevant regulatory permits, and the possible penalties for not complying with these requirements. Written documentation of the training will be submitted to the Service within 30 days of completion.
3. All elderberry shrubs that are located adjacent to construction areas, but can be avoided, will be protected through establishment of a fenced avoidance area. The high visibility fencing will be placed at least 20 feet from the drip-line of the shrubs, unless otherwise

approved by the Service. This fencing will prevent the encroachment of construction personnel and vehicles.

4. Deer exclusionary fencing will be installed around the elderberry transplant area and the habitat creation area to protect the elderberry transplants, elderberry seedlings, and native associates until they have become established.
5. Elderberry shrubs that require removal will be transplanted to the elderberry transplant area.
 - a. If feasible, and based on Service authorization, elderberry shrubs will be transplanted when the plants are dormant (November through the first 2 weeks of February) to increase success of transplanting. Transplanting will not occur during the beetle's typical flight season (March 15 through June 15). A Service-approved biologist will be available to monitor transplanting activity.
 - b. Shrubs will be removed with a truck mounted hydraulic tree spade, backhoe, front-end loader, or other suitable equipment. When a shrub is being excavated, as much of the root ball as possible will be removed and replanted immediately at the elderberry transplant site. Care will be taken to ensure that the soil is not dislodged from the root ball. Typically, the transplant hole will be excavated and deep-watered before the shrub is excavated so it can immediately be transported to the planting hole.
 - c. Upon completion of planting, the soil will be saturated with water. No fertilizers, other supplements or marking paint will be used on the shrubs. The frequency of watering will be determined based on soil conditions present at the transplant site. Either a drip irrigation system or watering truck will be used to provide water to the site.
6. As described under the *Description of the Proposed Action*, a restoration, monitoring, and management plan will be prepared and implemented. This plan will specify how the elderberry transplant area will be managed to ensure that the appropriate habitat conditions are provided. The plan will, at a minimum: describe requirements for transplanting shrubs that require removal; specify the number of elderberry plantings and associated native plantings to be established; list the success criterion for the elderberry transplants, seedlings and associated plantings; specify remedial measures to be undertaken if the survival success criterion is not met; and describe short- and long-term maintenance and management. Long-term protection of the habitat creation and elderberry transplant areas, and funding for their management, will be provided through appropriate mechanisms to be determined by SAFCA, the Service, and other entities cooperating in implementation of the proposed action.

Action Area

The action area is defined in 50 CFR § 402.02 as, "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the

proposed project, the Service considers the action area to be the 4.28 acre grading footprint for the aquatic and riparian habitat creation area, the 6.35 acre elderberry shrub transplantation area, and the 1.18 acre staging and access area, all of which are within the American River Parkway (Parkway). The action area also includes the 8.65 acre area along SREL Reach 19A where the excavated soil will be placed, and all areas at these four sites that will be temporarily impacted by dust during project activities.

Analytical Framework for the Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which evaluates the beetle's range-wide condition, the factors responsible for that condition, and their survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the beetle in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the beetle; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed federal action and the effects of any interrelated or interdependent activities on the beetle; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the beetle.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the beetle's current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of this species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the beetle and the role of the action area in the survival and recovery of the beetle as the context for evaluating the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Status of the Species

On August 8, 1980, the valley elderberry longhorn beetle was listed as a threatened species (45 FR 52803) (USFWS 1980). Critical habitat for this species was designated and published at 50 CFR §17.95. Two separate areas along the American River in the Sacramento metropolitan area have been designated as critical habitat for the beetle. These designated areas of critical habitat are the American River Parkway Zone, an area along the lower American River at River Bend Park (formally Goethe Park) and Ancil Hoffman Park, and the Sacramento Zone, an area located approximately one-half-mile from the American River downstream from the American River Parkway Zone. In addition, an area along Putah Creek, Solano County, and the area east of Nimbus Dam along the American River Parkway, Sacramento County, are considered essential habitat, according to the *Valley Elderberry Longhorn Beetle Recovery Plan* (USFWS 1984). These critical and essential habitat areas support large numbers of mature elderberry shrubs with extensive evidence of use by the beetle.

Life History

The beetle is dependent on its host plant, the elderberry (*Sambucus* species), which is a locally common component of the remaining riparian forests and savannah areas and to a lesser extent, the mixed chaparral-foothill woodlands of the Central Valley. The occupancy rates of the beetle are reduced in non-riparian habitats (e.g. Talley *et al.* 2007), indicating that riparian elderberry habitat is an important habitat type for the beetle.

Each stage of the beetle's life cycle requires a different part of the elderberry shrub. The adults feed on the nectaries, flowers, and leaves. Gravid females lay eggs on leaves and crevices of green stems (Barr 1991) and larvae feed down the pith of a healthy stem into the larger living branches (Halstead and Oldham 2000).

Use of elderberry shrubs by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the shrub's use by the beetle is an exit hole created by the larva just prior to the pupal stage. Observations of elderberry shrubs along the Cosumnes River and in the Folsom Lake area indicate that larval beetles may be present in elderberry shrubs with no evidence of exit holes; the larvae either succumb prior to constructing an exit hole or are not developed sufficiently to construct one. Larvae appear to be distributed in stems which are 1.0 inch or greater in diameter at ground level. *The Valley Elderberry Longhorn Beetle Recovery Plan* (Service 1984) and Barr (1991) further describe the beetle's life history.

Population Structure

The beetle is a specialist on elderberry shrubs, tends to have small population sizes, and occurs in low densities (Barr 1991; Collinge *et al.* 2001). It has been observed feeding upon both blue and red elderberry (USFWS 1984, Barr 1991) with stems greater than or equal to one inch in diameter (Barr 1991). Sightings of the beetle are rare, and in most circumstances evidence of the beetle is derived from the presence of exit holes left in the elderberry stems by the beetle larva. The beetle tends to occur in areas with higher elderberry densities, but has lower exit-hole densities than a closely related species, the California elderberry longhorn beetle (*Desmocerus californicus californicus*) (Collinge *et al.* 2001).

Distribution and Range

When the beetle was listed as threatened in 1980, the species was known from less than 10 localities along the American River, Merced River, and Putah Creek. By the time the *Valley Elderberry Longhorn Beetle Recovery Plan* was prepared in 1984 additional occupied localities had been found along the American River and Putah Creek. As of 2005, the California range-wide distribution extends from the Sacramento River in Shasta County southward to an area along Caliente Creek in Kern County (CNDDDB 2006). The California Natural Diversity Database (CNDDDB) contained 190 occurrences for the beetle in 44 drainages throughout the Central Valley. However, the number of records should be viewed with caution as a record does not necessarily indicate a unique population. In many cases, there are multiple records within close proximity to one another within the same watershed or river.

The beetle is considered a poor disperser based on the spatial distribution of occupied shrubs (Barr 1991; Collinge *et al.* 2001). Huxel and Hastings (1999) used computer simulations of

colonization and extinction patterns based on differing dispersal distances, and found that the short dispersal simulations best matched the 1997 census data in terms of site occupancy. This suggests that dispersal and colonization are limited to nearby sites. At spatial scales greater than 6.2 miles, such as across drainages, beetle occupancy appears to be strongly influenced by regional extinction and colonization processes, and colonization is constrained by limited dispersal (Collinge *et al.* 2001; Huxel and Hastings 1999). Except for one occasion, drainages examined by Barr that were occupied in 1991 remained occupied in 1997 (Collinge *et al.* 2001; Huxel and Hastings 1999). The one exception was Stony Creek, which was occupied in 1991, but not in 1997. All drainages found to be unoccupied by Barr in 1991, were also unoccupied in 1997. Collinge *et al.* (2001) further found that while the proportions of occupancy were similar, the number of sites examined containing elderberry and the density of elderberry at sites had decreased since Barr (1991), resulting in fewer occupied sites. Studies indicate the beetle is unable to re-colonize drainages where the species has been extirpated because of its limited dispersal ability (Barr 1991; Collinge *et al.* 2001), suggesting that drainages unoccupied by the beetle remain unoccupied.

Threats to the Species

The beetle continues to be threatened by habitat loss, habitat fragmentation, predation by the non-native Argentine ant (*Linepithema humile*) (Holway 1998; Huxel 2000; Huxel and Hastings 1999; Huxel *et al.* 2001; Ward 1987), and possibly other factors such as pesticide drift, non-native plant invasion, improper burning regimes, off-road vehicle use, rip-rap bank protection projects, wood cutting, and overgrazing by livestock.

Habitat Loss

Habitat destruction is one of the most significant threats to the beetle. In the final rule to list the beetle as threatened, habitat destruction was cited as the primary factor contributing to the need to list the species (45 FR 52803). Riparian forests, the primary habitat for the beetle, have been severely depleted throughout the Central Valley over the last two centuries as a result of expansive agricultural and urban development (Huxel *et al.* 2001; Katibah 1984; Roberts *et al.* 1977; Thompson 1961). As of 1849, the rivers and larger streams of the Central Valley were largely undisturbed. They supported continuous bands of riparian woodland 4 to 5 miles in width along some major drainages, and generally about 2 miles wide along the lesser streams (Thompson 1961). Most of the riverine floodplains supported riparian vegetation to about the 100-year flood line (Katibah 1984).

A large human population influx occurred after 1849, however, and much of the Central Valley riparian habitat was rapidly converted to agriculture and used as a wood source for fuel and construction material to serve a wide area (Thompson 1961). The clearing of riparian forests for fuel and construction material made this land available for agriculture (Thompson 1977). Natural levees bordering the rivers, once supporting vast tracts of riparian habitat, became prime agricultural land (Thompson 1961). As agriculture expanded in the Central Valley, needs for increased water supply and flood protection spurred water development and reclamation projects. Artificial levees, river channelization, dam building, water diversion, and heavy groundwater pumping further reduced riparian habitat to small, isolated fragments (Katibah 1984).

In recent decades, these riparian areas have continued to decline as a result of ongoing agricultural conversion, urban development, and stream channelization. As of 1989, there were over 100 dams within the Central Valley drainage basin, as well as thousands of miles of water delivery canals and stream bank flood control projects for municipal and industrial water supplies, irrigation, hydroelectric power, flood control, navigation, and recreation (Frayer *et al.* 1989). Riparian forests in the Central Valley have dwindled to discontinuous strips that are measured in the number of yards wide rather than miles.

Some accounts state that the Sacramento Valley supported approximately 775,000 to 800,000 acres of riparian forest as of approximately 1848, just prior to statehood (Smith 1977; Katibah 1984). No comparable estimates are available for the San Joaquin Valley. Based on early soil maps, however, more than 921,000 acres of riparian habitat are believed to have been present throughout the Central Valley under pre-settlement conditions (Huxel *et al.* 2001; Katibah 1984). Another source estimates that of the approximately 5 million acres of wetlands in the Central Valley in the 1850s, approximately 1.6 million acres were riparian wetlands (Warner and Hendrix 1985; Frayer *et al.* 1989).

Based on a California Department of Fish and Wildlife (CDFW) riparian vegetation distribution map, by 1979 there were approximately 102,000 acres of riparian vegetation remaining in the Central Valley (Katibah 1984). This represents a decline in acreage of approximately 89 percent (Katibah 1984). More extreme figures were given by Frayer *et al.* (1989), who reported that woody riparian forests in the Central Valley had declined to 34,600 acres by the mid-1980s (from 65,400 acres in 1939).

A more recent analysis, completed by The Central Valley Historic Mapping Project, observed similar decreases in the amount of riparian habitat (Geographic Information Center 2003). Loss of riparian habitat between 1900 and 1990 was about 96 percent in the southern portion of the Central Valley (Kern County to Fresno County) (16,000 acres remaining), 84 percent in the mid-Central Valley (Merced County to San Joaquin Valley) (21,000 acres remaining) and 80 percent in the northern portion of the Central Valley (Sacramento and Solano counties to Shasta County) (96,000 acres remaining). Although these studies have different findings in terms of the number of acres lost (most likely explained by differing methodologies), they attest to a dramatic historic loss of riparian habitat in the Central Valley.

Habitat Fragmentation

Destruction of riparian habitat in central California has resulted in a significant acreage loss, but has also resulted in beetle habitat fragmentation. Fahrig (1997) states that habitat fragmentation is only important for habitats that have suffered more than an 80 percent loss. Riparian habitat in the Central Valley, which has experienced greater than 90 percent loss by most estimates, would meet this criterion as habitat vulnerable to the effects of fragmentation. Barr (1991) found that small, isolated habitat remnants were less likely to be occupied by beetles than larger patches, indicating that beetle subpopulations are extirpated from small habitat fragments. Barr (1991) and Collinge *et al.* (2001) consistently found beetle exit holes occurring in clumps of elderberry bushes rather than isolated bushes, suggesting that isolated shrubs do not typically provide long-term viable habitat for the beetle.

Habitat fragmentation can be an important factor contributing to species declines because: (1) it divides a large population into two or more small populations that become more vulnerable to direct loss, inbreeding depression, genetic drift, and other problems associated with small populations; (2) it limits a species' potential for dispersal and colonization; and (3) it makes habitat more vulnerable to outside influences by increasing the edge:interior ratio (Primack 1998).

Small, isolated subpopulations are susceptible to extirpation from random demographic, environmental, and/or genetic events (Shaffer 1981; Lande 1988; Primack 1998). While a large area may support a single large population, the smaller subpopulations that result from habitat fragmentation may not be large enough to persist over a long time period. As a population becomes smaller, it tends to lose genetic variability through genetic drift, leading to inbreeding depression and a lack of adaptive flexibility. Smaller populations also become more vulnerable to random fluctuations in reproductive and mortality rates, and are more likely to be extirpated by random environmental factors. When a sub-population becomes extinct, habitat fragmentation reduces the chance of recolonization from any remaining populations. The effect of habitat fragmentation likely is exacerbated by the poor dispersal abilities of the beetle (Collinge *et al.* 2001; Talley 2005).

Habitat fragmentation not only isolates small populations, but also increases the interface between habitat and urban or agricultural land, increasing negative edge effects such as the invasion of non-native species (Huxel *et al.* 2001; Huxel 2000) and pesticide contamination (Barr 1991). Several edge effect-related factors may be related to the decline of the beetle.

Predation

The invasive Argentine ant (*Linepithema humile*) is a potential threat to the beetle (Huxel 2000) because it is both an aggressive competitor and predator on native fauna. The Argentine ant is spreading throughout riparian habitats in California and displacing assemblages of native arthropods (Ward 1987; Human and Gordon 1997; Holway 1998). The Argentine ant requires moisture and it may thrive in the riparian or irrigated areas that the beetle is found. A negative association between the presence of the ant and beetle exit holes was observed along Putah Creek in 1997 (Huxel 2000). This aggressive ant could interfere with adult mating or feeding behavior, or prey on eggs and larvae (e.g., Way *et al.* 1992). Surveys along Putah Creek found beetle presence where Argentine ants were not present or had recently colonized, but the beetle was absent from otherwise suitable sites where Argentine ants had become well-established (Huxel 2000). Between 1998 and 2002, the number of sites infested by the Argentine ant increased by three along Putah Creek and the American River (30 sites total were examined) (Huxel 2000; Holyoak and Talley 2001). The Argentine ant has been expanding its range throughout California since its introduction around 1907, especially in riparian woodlands associated with perennial streams (Holway 1998; Ward 1987). Huxel (2000) concluded that, given the potential for Argentine ants to spread with the aid of human activities such as movement of plant nursery stock and agricultural products, this species may come to infest most drainages in the Central Valley along the valley floor, where the beetle is found.

The beetle is also likely preyed upon by insectivorous birds, lizards, and European earwigs (*Forficularia auricularia*) (Klasson *et al.* 2005). These three predators move freely up and down elderberry stems searching for food. The European earwig is a scavenger and omnivore that is

often found feeding on tethered mealworm (*Tenebrio monitor*) larvae. The earwig may be common in riparian areas and it may lay its eggs in dead elderberry shrubs. The earwig, like the Argentine ant, requires moisture and is often found in large numbers in riparian and urban areas. Earwig presence and densities tended to be highest in mitigation sites. This is likely because of irrigation, although this needs to be statistically tested (Klasson *et al.* 2005).

Pesticide Drift

Direct spraying with pesticides and related pesticide drift is a potentially harmful factor for the beetle. A wide range of such spraying is done to control mosquitoes, crop diseases, and undesirable plants and insects. Although there have been no studies specifically focusing on the direct and indirect effects of pesticides on the beetle, evidence suggest that the species may be adversely affected by some pesticide applications. Commonly used pesticides within the range of the beetle include insecticides, most of which are broad-spectrum and likely toxic to the beetle; herbicides, which may harm or kill its elderberry host; and broad-spectrum pesticides toxic to many forms of life. The greatest pesticide use occurs in the San Joaquin Valley. Four counties in this region had the highest use: Fresno, Kern, Tulare, and San Joaquin (California Department of Pesticide Regulation (CDPR) 2006). The peak timing of application depends on the chemical agent and other factors, including the activity period of the targeted pest insects. The use of these agents may coincide with the most vulnerable period of adult beetle activity, egg-laying and initial larval exposure on the outside of elderberry stems (Talley *et al.* 2006). The CDPR in 1997 listed 239 pesticide active ingredients applied in proximity to locations of the beetle (same square mile per Marovich and Kishaba 1997 cited in Talley *et al.* 2006). Pesticide active ingredients sold in California have averaged in the order of 600 million pounds per year since about 1998 (CDPR 2006).

Pesticide use reported to the CDPR is only a fraction of the pesticides sold in California each year. About two-thirds of the active ingredients sold in a given year are not subject to use reporting, including home-use pesticide products. Studies of major rivers and streams documented that 96 percent of all fish, 100 percent of all surface water samples and 33 percent of major aquifers contained one or more pesticides at detectable levels (Gilliom 1999). Pesticides were identified as one of the 15 leading causes of impairment for streams included on the Clean Water Act section 303(d) lists of impaired waters. Because the beetle occurs primarily in riparian habitat, the contamination of rivers and streams likely has effects on the beetle and its habitat. Given the amount and scope of pesticide use, along with unreported household and other uses, and the proximity of agriculture to riparian vegetation in the Central Valley, it appears likely that pesticides are affecting the beetle and its elderberry habitat.

Invasive Plant Species

Invasive exotic plant species may significantly alter habitat for the beetle. Without adequate eradication and control measures, these non-native species may eliminate elderberry shrubs and other native plants. Pest plants of major importance in the Central Valley riparian systems include black locust (*Robinia pseudoacacia*), giant reed (*Arundo donax*), red sesbania (*Sesbania punicea*), Himalaya blackberry (*Rubus armeniacus*), tree of heaven (*Ailanthus altissima*), Spanish broom (*Spartium junceum*), Russian olive (*Eleagnus angustifolia*), edible fig (*Ficus carica*), and Chinese tallowtree (*Sapium sebiferum*). Non-woody invasives such as ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), *Lolium multiflorum*, and

starthistle/knapweed (*Centaurea* spp.) also may impair elderberry germination or establishment, or elevate the risk of fire. Invasive plant control efforts often are limited by funding, labor, coordination with landowners, and the resilience and spread of their target plants. No range-wide assessment has been completed on the overall degree of impact of invasive plants on the beetle and its habitat. However, there are a number of local efforts to control invasive riparian plant species. For example, the American River Parkway has invasive species removal efforts by Sacramento Weed Warriors (a community stewardship project associated with the California Native Plant Society) and others, and the Cosumnes River Preserve has a group of volunteers who regularly remove exotics and restore native habitats (Talley *et al.* 2006).

Other Threats

Several other factors may threaten the beetle including fire, flooding, and over-grazing by livestock. The condition of elderberry shrubs can be adversely affected by fire, which is often common at the urban-wildland interface. Brush fires initially have a negative effect on shrub condition and, therefore, beetle larvae through direct burning and stem die-off. However, a year after a fire surviving elderberry shrubs resprout and display rapid stem growth (Crane 1989). Fires often scarify the hard elderberry seed coat leading to germination of seedlings the following season (Crane 1989). Frequent or repeated fire, however, may kill remaining shoots, root crowns and seeds, causing elderberry shrubs to be eliminated from an area for many years since recruitment by seeds is patchy and generally slow (Crane 1989). Elderberry shrubs appeared suitable for the beetle 2 to 6 years after burning, but were often uninhabited, with the presence of old, burned exit holes suggesting pre-burn occupancy and post-burn vacancy (Talley *et al.* 2006). The post-fire lag in occupancy is likely the result of the limited movements of the beetle. No quantitative studies of the net effects of fire on the beetle have been undertaken (e.g., examining beetle and elderberry through time after burns or in areas with varying burn frequencies and magnitude).

The beetle can tolerate flooding of its riparian habitat. The animal has higher occupancy rates in riparian than non-riparian habitats, and associations between the beetle and proximity to rivers were either not observed or there was a weak positive correlation with nearness to the river (Halstead and Oldham 1990; Talley 2005; Talley *et al.* 2007). These findings illustrate that the beetle is likely not harmed by flooding and that higher habitat quality may be associated with rivers. In addition, if elderberry, a facultative riparian shrub, can withstand flooding, then the beetle likely will survive these events. Most floods occur during winter or early spring when the beetle is in its early life stages, so the effects of flooding are even less likely to affect the beetle. If the shrub is exposed to prolonged flooding (i.e., anoxia) and becomes severely stressed, then the beetle may be affected. The duration and magnitude of flooding at which elderberry shrubs undergo stress is uncertain and the levels of stress that affect the beetle are also unknown. Elderberry shrubs have adaptations that plants use to persist with flooding, such as lenticels and aerenchyma, demonstrating that it is probably at least somewhat flood tolerant. Finally, if an area is flooded too frequently so that elderberry shrubs cannot survive, then no beetles would be able to inhabit the area (Talley 2005).

Another potential factor in the beetle's decline is the effects of inappropriate levels of livestock grazing, which can result in destruction of entire elderberry shrubs and inhibition of elderberry regeneration. Cattle, sheep and goats readily forage on new elderberry growth, and goats will consume even decadent growth. Well-manicured stands of elderberries, such as occurs due to

livestock grazing, have generally been shown to have a relative absence of beetles (USFWS 1984). The effects of both grazing and exotic plant invasions on the beetle are likely significantly exacerbated by the problem of habitat fragmentation. Such fragmentation increases the edge:interior ratio of elderberry patches, thereby facilitating the adverse effects of these outside influences.

Environmental Baseline

The action area contains components that can be used by the beetle for feeding, resting, mating, and other essential behaviors. Evidence of the beetle, in the form of individuals and exit holes, have been found all along the Parkway. Elderberry shrubs with stems one inch or greater in diameter that provide suitable habitat are found in and adjacent to the action area. The estimated 200 elderberry shrubs described in this biological opinion are located on the 4.28 acre habitat creation area adjacent to the American River. Although there are no known documented occurrences of the beetle within the action area, the Service believes that the beetle is reasonably certain to occur within the action area because of its biology and ecology, the presence of suitable habitat within and adjacent to the action area, and the numerous CNDDDB documented occurrences of the beetle within 5 miles of the action area.

Effects of the Proposed Action

The construction of the proposed project will result in transplantation of an estimated 200 elderberry shrubs. Habitat loss for the beetle will be temporary until the transplanted shrubs and seedlings recover. Beetle larvae may be killed or the beetle's life cycle may be interrupted during or after the transplanting process. Transplantation of elderberry shrubs that are, or could be, used by beetle larvae is expected to adversely affect the beetle because shrubs may experience stress due to changes in soil, hydrology, microclimate, or associated vegetation; shrubs may die as a result of transplantation; and branches containing larvae may be cut, broken, or crushed as a result of the transplantation process. Some of these effects will be minimal since the shrubs will be transplanted to an area that has the same soil, microclimate and associated vegetation, as opposed to transplanting the shrubs to a compensation bank outside of the action area. Habitat in the form of transplanted elderberry shrubs will be available within a year or two of transplantation, therefore, the project will temporarily affect the existing habitat at the project site. This effect will be small and short term because habitat in the form of existing elderberry shrubs surrounds the project area and will be avoided during project construction.

The proposed project will adversely affect the beetle; however, the proposed conservation and minimization measures should limit effects to the beetle. Compensation for the proposed project will occur within the action area, which will maintain the connectivity of habitat for the beetle within the Parkway and will contribute to the long-term preservation and management of the beetle and its habitat that is important for the species' survival and recovery. The proposed compensation is the transplantation of all of the estimated 200 elderberry shrubs into the 6.35 acre elderberry transplantation area, and the planting of 612 elderberry seedlings and over 7,000 native associates within the elderberry transplantation and habitat creation areas.

Temporal loss of beetle habitat may occur. Although compensation for impacts to the beetle involves the creation of habitat, it may take several years for the elderberry seedlings to grow to a size suitable for use by the beetle. While the temporal loss of habitat will temporarily reduce

the amount of habitat available to beetles, the loss will be minimal because the transplants and seedlings will be transplanted within an area that is adjacent to already available habitat for the beetle.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions on endangered and threatened species that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The Service is not aware of specific projects that might affect the beetle that are currently under review by State, county, and local authorities. Nevertheless, continued human population growth in the Central Valley and other parts of California is expected to drive further development of agriculture, cities, industry, transportation, and water resources in the foreseeable future. Some of these future activities will not be subject to federal jurisdiction (and thus are considered to enter into cumulative effects), and are likely to result in loss of riparian and other habitats where elderberry shrubs and the beetle live.

Conclusion

Implementation of the proposed action will require the removal of an estimated 200 elderberry shrubs, which will result in adverse effects to the beetle. The elderberry shrubs that will be removed will be transplanted to an area adjacent to the grading footprint, which will maintain the connectivity of the beetle's habitat within and adjacent to the action area. Compensation for potential unavoidable adverse effects to the beetle will be provided by planting 612 elderberry seedlings and over 7,000 native associates into the elderberry transplant and habitat creation areas within the project footprint. These plantings will be maintained and monitored as described above in the *Description of the Proposed Action*. Monitoring reports will be provided to the Service every even numbered year for 10 consecutive years.

The Service believes the proposed compensation is adequate because the transplants and seedlings will be planted in the beetle's range of dispersal within the action area, the plantings will maintain the connectivity of the landscape within the Parkway, and the proposed project will create high quality riparian habitat. The planting plan will provide a more diverse riparian habitat than what currently exists within the action area since the riparian habitat currently is overgrown with non-native vegetation. An additional intent of the elderberry and associated native planting plan is to make the newly created riparian habitat areas more open and visible to discourage occupation by transients and associated illegal campfires, and to hinder re-colonization of Himalayan blackberry overgrowth.

After reviewing the current status of the beetle, the environmental baseline for the project area, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the beetle.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

Amount or Extent of Take

The Service expects that incidental take of the beetle will be difficult to detect or quantify. The cryptic nature of this species and their relatively small body size make the finding of an injured or dead specimen unlikely. The species occurs in habitats that make them difficult to detect. Due to the difficulty in quantifying the number of beetles that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the estimated 200 affected elderberry shrubs with an unknown number of stems one inch or greater in diameter at ground level that will become unsuitable for beetles due to the construction of the aquatic and riparian habitat creation area. Therefore, the Service estimates that all beetles inhabiting these transplanted elderberry shrubs will be taken as a result of the proposed action.

Effect of the Take

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the beetle.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the effects of the proposed American River Mile 0.5 Aquatic and Riparian Habitat Creation Project, as described, on the beetle.

1. All conservation measures outlined in the biological assessment, and as restated in this biological opinion, must be fully implemented. Further, these conservation measures shall be supplemented by the Terms and Conditions below.
2. Impacts of temporary and permanent losses and degradation of habitat of the beetle shall be minimized, and the loss of habitat shall be compensated.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and SAFCA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. The terms and conditions are non-discretionary.

The following terms and conditions implement reasonable and prudent measure number one (1):

1. The Corps and SAFCA shall assure that all of the conservation measures described in this biological opinion are fully implemented.
2. During construction operations, the number of access routes, the number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance, and all vehicle traffic on the access road will observe a speed limit of 20 miles per hour. The stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging area.
3. The Corps and SAFCA will ensure contamination of habitat does not occur during operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur. Any spills or hazardous materials will be cleaned up immediately. Such spills will be reported in the post-construction compliance reports.
4. Runoff from dust control and oil or other chemicals used for construction activities shall be retained in the construction site and prevented from flowing into adjacent waterways.

The following terms and conditions implement reasonable and prudent measure number two (2):

5. The Corps and SAFCA shall transplant an estimated 200 elderberry shrubs, plant 612 elderberry seedlings and plant over 7,000 associated natives into the elderberry transplant and habitat creation areas.

6. Roadways and disturbed areas within 100 feet of elderberry plants shall be watered at least twice a day to minimize dust emissions.
7. The Corps and SAFCA shall comply with the *Reporting Requirements* described within this biological opinion.

Reporting Requirements

Monitoring reports, as described in Conservation Measure 5, must be submitted to the Service by the end of every even-numbered year for 10 years following the implementation of the project. The Sacramento Fish and Wildlife Office is to be notified within 3 working days of the finding of any dead listed wildlife species, or of any unanticipated harm to the beetle described in this biological opinion. The Service contact is the Chief, Habitat Conservation Division, at (916) 414-6600.

The Corps must report to the Service within 24 hours if any information about take or suspected take of listed wildlife species occurs that is not authorized in this opinion. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The Service contact is the Service's Law Enforcement Division at (916) 414-6660.

Any contractor or employee who, during routine operations and maintenance activities inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. This representative must contact CDFW immediately. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045.

Proof of environmental training and fulfillment of compensation requirements shall be delivered to the Chief of the Habitat Conservation Division, Sacramento Fish and Wildlife Office, 2800 Cottage Way, Room W-2605, Sacramento, California 95825-1846, phone (916) 414-6600.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and databases.

1. The Corps should work with the Service to address significant, unavoidable environmental impacts to federally-listed species approved by local agencies.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION-CLOSING STATEMENT

This concludes formal consultation on the proposed American River Mile 0.5 Aquatic and Riparian Habitat Creation Project in Sacramento County, California. As provided for in 50 CFR

Dr. Kathleen A. Dadey

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§402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law), and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action.

If you have any questions regarding the American River Mile 0.5 Aquatic and Riparian Habitat Creation Project, please contact Amber Aguilera, Fish and Wildlife Biologist, or Doug Weinrich, Division Chief, at 916-414-6600.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Norris', with a long horizontal flourish extending to the right.

Jennifer M. Norris
Field Supervisor

cc:

Peter Buck, SAFCA, Sacramento, California

Kelly Fitzgerald-Holland, AECOM, Sacramento, California

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TECHNICAL MEMORANDUM ADDENDUM

DATE: October 27, 2014

TO: Peter Buck, SAFCA

FROM: Don Trieu, PE

SUBJECT: Hydraulic Analysis of Mitigation Project – LAR RM 0.5

MBK Engineers performed a hydraulic analysis of the proposed project at RM 0.5 on the lower American River in 2007. Based on the analysis, MBK Engineers concluded that the project does not result in significant changes in velocity or water surface elevations, as presented in the attached 2007 Technical Memorandum.

The project was never constructed and SAFCA now plans to implement the project independently. Due to the length of time that has passed since the original analysis, design refinements of the planting palette made by SAFCA, and the potential for changed conditions at the project site, MBK Engineers has reviewed the previous analysis, new planting palette, and existing condition at the site to determine if the original analysis is still representative of the project.

The existing condition at the site consists of heavy trees with a thick understory of non-native species and blackberries. This is consistent with the condition in 2005 which was used for the previous analysis.

The project site would be planted in six zones: the transition zone, zones 1-4, and the transplant area.

The transition zone, elevation 5-6 feet NGVD29, includes willow and button bush brush mattresses to reduce erosion and provide fish habitat during fall and summer. The brush mattresses would be installed along most of the project site and would be triangular, bounded by IWM on two sides, and the shoreline on the third. IWM is also proposed in three alcoves along the river edge.

Technical Memorandum Addendum

Zone 1, elevation 6-8 feet NGVD29, would be comprised of species that can accommodate saturated soil conditions such as willows, cottonwoods, and box elders. Plants in Zone 1 would be installed at a spacing of 5' off center.

Zone 2, elevation 8-11 feet NGVD29, would be planted with the same types of species as in Zone 1, but would also include shrub species such as California wild rose, mulefat, button brush, and Santa Barbara sedge. Plants in Zone 2 would be installed at a spacing of 5' off center.

Zone 3, elevation 11-16 feet NGVD29, and Zone 4 elevation 16-24 feet NGVD29, would be would be considered as typical riparian zones. Species planted in these zones would consist of typical riparian species including herbaceous species such as mugwort, creeping wildrye, and wild grape as well as shrub and tree species such as California blackberry, mulefat, coyote brush, Fremont cottonwood, box elder, California sycamore, Oregon ash, valley oak, and blue elderberry. Plants in Zone 3 would generally be installed at a spacing of 5' off center, and Zone 4 a spacing of 10' off center.

The transplant area would be planted with elderberry (in clusters), sycamore, cottonwood, and Valley oak at a spacing of 20' off center.

Roughness coefficients for these zones would remain unchanged from the previous analysis.

CONCLUSION

After review of the previous analysis, refined planting palette, and current site conditions, the hydraulic analysis prepared in 2007 is still valid.



Don Trieu, PE



TECHNICAL MEMORANDUM

DATE: November 20, 2007

TO: LAR Team Members

FROM: Don Trieu

SUBJECT: Hydraulic Analysis of Mitigation Project – LAR RM 0.5

This memorandum documents the hydraulic analysis of the proposed mitigation project at RM 0.5 on the lower American River. The Corps of Engineers and SAFCA are proposing to transplant elderberry shrubs, degrade the existing bank, installing erosion control structures, and planting native plant species. The purpose of the hydraulic analysis is to determine the effects to water surface elevation and velocity for one flood event.

The methodology for the hydraulic analysis will be to simulate the proposed project condition and then compare the results with a baseline condition to determine if there are any effects to water surface elevation and velocity. The baseline condition is the 2005 vegetation condition (Baseline 2) as documented in MBK Engineers memo dated October 13, 2005.

The hydraulic analysis was performed using the RMA-2 hydraulic model of the lower American River. The model was developed and calibrated by Ayers Associates (Ayers, 2003) and further refined by MBK Engineers to update it to 2005 vegetation conditions (MBK October 13, 2005).

The existing condition at the site consists of a heavy stand of non-native grasses & shrubs, mainly wild blackberry, and a few native trees. The project area under existing condition was calibrated and simulated using a Manning's roughness coefficient of 0.11. Figure 1 shows the model mesh and "n" values used under the baseline condition.

The project condition was modeled by changing the Manning's roughness coefficient in the hydraulic model in the project area. The planting plan consists of four planting zones: (1) elev. 6 to 8, button bush, cottonwood, willows, mulefat, and box elders are proposed at 2 feet o.c.; (2) elev. 8 to 11, same plant species as zone 1 but white alder, sedges, and California rose added; (3) elev. 11 to 16, elder, cottonwood, sycamore, valley oak at 6 feet o.c., with mulefat, wildrye and wild grape for ground cover; and (4) elev. 16 to 24, sycamore, cottonwood, valley oak, with wildrye, coyote brush, and elderberry ground cover. A roughness coefficient of 0.07 was assigned for planting zone 1 and 2; and 0.085 for planting zone 3 and 4. For the elderberry transplant area, a roughness coefficient of 0.045 was used. In addition to the plantings, the project consists of minor contouring at the site. The elevations in the hydraulic model were modified to reflect the major contours at the site. Figure 2 shows the model mesh and roughness coefficients used to simulate the project condition.

ATTACHMENT 4: H&H ANALYSIS

The project condition was simulated for 115,000 cfs. The boundary condition used for the simulation is as follows:

Table 1: Boundary Conditions

Flow Regime	Flow at LAR RM 14.0 (cfs)	NEMDC flow (cfs)	Flow at Sacramento Weir (cfs)	Stage at I-Street (ft-NGVD)
115,000 cfs	115,000	11,400	18,900	30.4

Results:

The results of the hydraulic modeling were plotted using differential contours between the Project Condition and Baseline 2. Positive values indicate a higher water surface or velocity under the project condition; a negative difference indicates a lower water surface or velocity.

- Figure 3: Base Condition Velocity Map - 115,000 cfs.
- Figure 4: Project Condition Velocity Map - 115,000 cfs.
- Figure 5: Velocity Difference Map - 115,000 cfs.
- Figure 6: Water Surface Difference Map - 115,000 cfs.

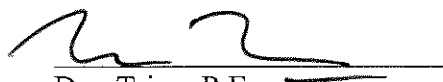
Conclusions:

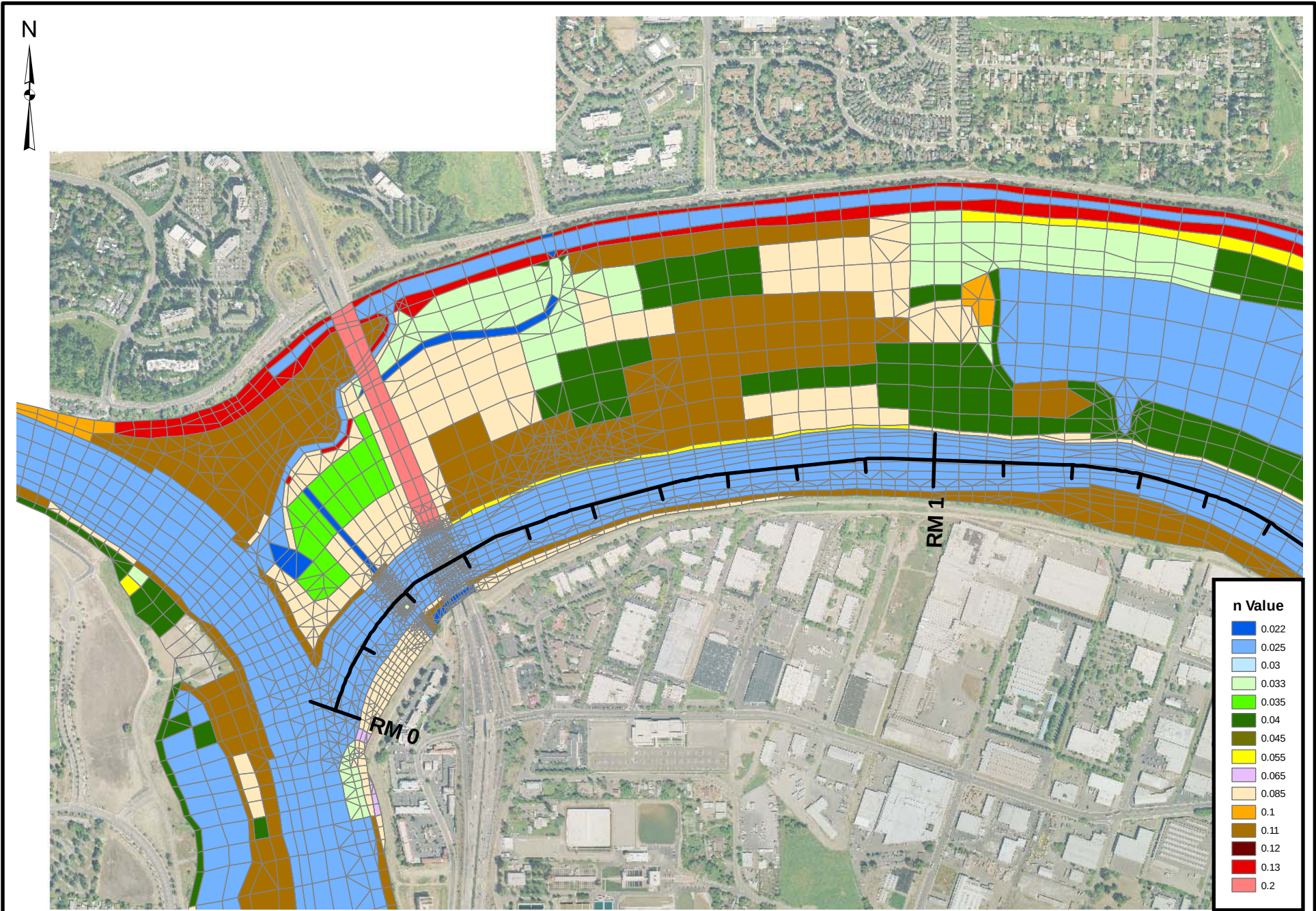
Based on the hydraulic results:

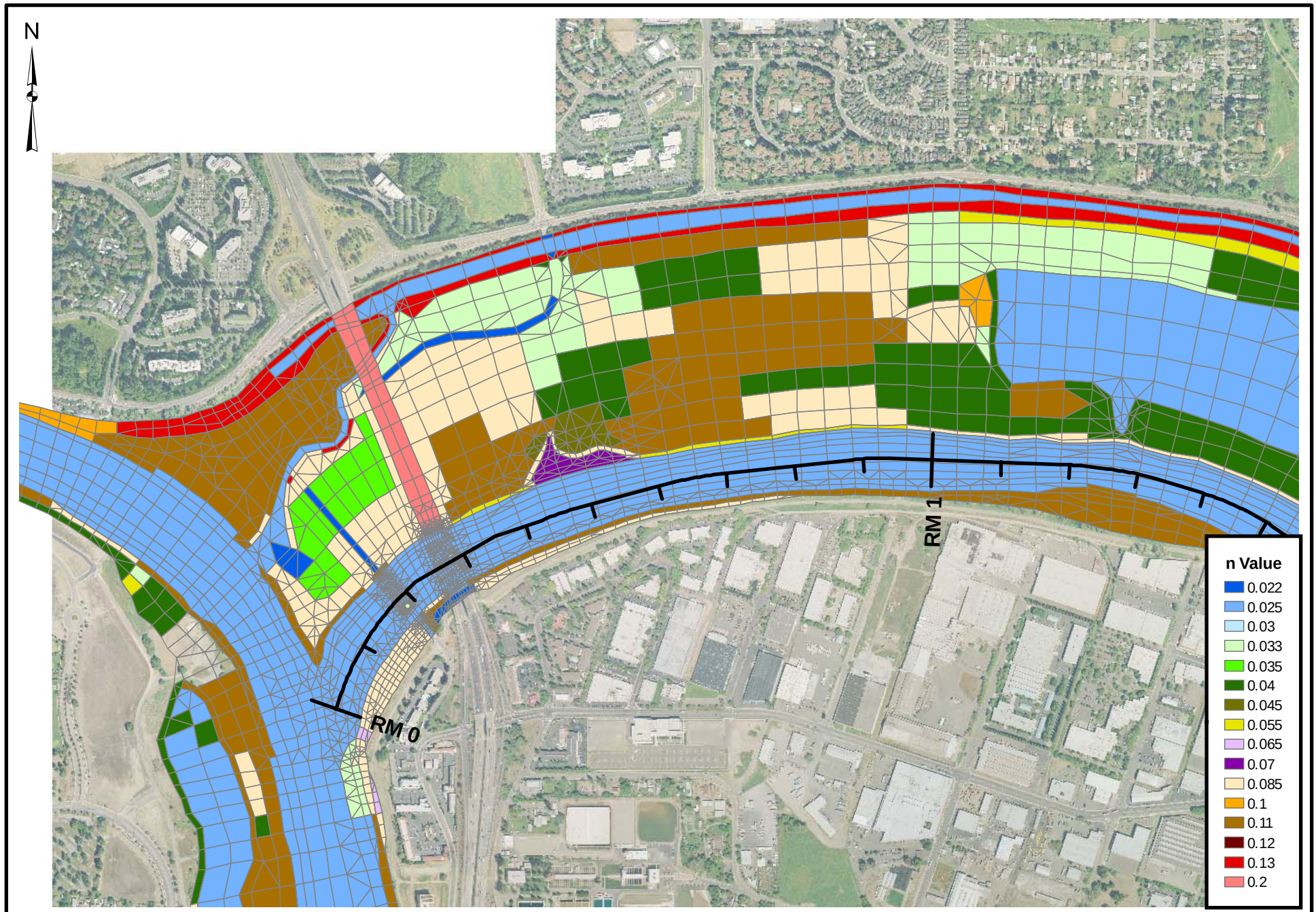
- The project condition increases and decreases velocity in the immediate vicinity of the project. The velocity decrease is on the order of less than 1.5 fps within the project footprint. The velocity increase is along the bank of the river and is between 0.5 to 1.0 fps. The velocity impacts adjacent to the levee are less than significant. See Figure 5.
- Under the project condition, there are no significant increases or decreases in water surface elevation along or near the levees. The project would decrease the water surface on the order of less than 0.1 feet just downstream of the project footprint. See Figure 6.

References:

Ayers, 2003. Lower American River, FEMA Certification, Draft Report, July 2003.


 Don Trieu, P.E.





STATE OF CALIFORNIA
THE RESOURCES AGENCY
THE CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION No. 08-10

SACRAMENTO RIVER BANK PROTECTION PROJECT
LOWER AMERICAN RIVER MILE 0.5 MITIGATION SITE

WHEREAS, on December 16, 1988 The Central Valley Flood Protection Board, formerly Reclamation Board and U.S. Army Corps of Engineers (Corps) entered into Local Cooperation Agreement of the Sacramento River Bank Protection Project (SRBPP), Separable Elements 38B, 40, and 42; and

WHEREAS, the Corps is the federal sponsor, the Central Valley Flood Protection Board is the nonfederal sponsor of the SRBPP; and

WHEREAS, on February 24, 2006 Governor Schwarzenegger declare a state of emergency for the California's levee system and on March 3, 2006 signed Executive Order S-01-06 instructing the California Department of Water Resources (DWR) to repair 24 identified critical levee erosion sites; and

WHEREAS, 14 of 24 declared critical erosion sites were repaired under the SRBPP, including Sacramento River Mile 56.7 left bank, and 10 were completed by DWR; and

WHEREAS, the bank erosion repair at Sacramento River Mile 56.7, completed in October 2006, resulted unavoidable habitat loss for listed fish species under the State and federal Endangered Species Act (ESA) and Essential Fish Habitat; and

WHEREAS, U.S. Fish and Wildlife Service issued a Biological Opinion (BO) on August 16, 2004 (1-1-04-F-0237) requiring off site compensation for 0.29 acres for shallow water habitat for delta smelt for repairs at Sacramento River Mile 56.7 pursuant to Section 7 of the ESA of 1973, as amended; and

WHEREAS, National Marine Fisheries Service (NMFS) issued a (BO) on September 8, 2004 (151422SWR04SA9167:HLB), for repairs at Sacramento River RM 56.7 pursuant to Section 7 of the ESA of 1973, as amended; and

WHEREAS, NMFS required the Corps and Central Valley Flood Protection Board to implement offsite compensation within 30 months of the construction at Sacramento River Mile 56.7 to improve fluvial function and shaded riverine aquatic habitat to support growth and survival of federally listed anadromous fish; and

WHEREAS, Sacramento Area Flood Control Agency identified the site at American River Mile 0.5 right bank to provide a significant opportunity to create aquatic and riparian habitat without excessive land costs or other prohibitive restrictions for compensation for unavoidable habitat losses due to past and future levee improvements and bank protection work under the SRBPP; and

WHEREAS, the Corps and the Central Valley Flood Protection Board have jointly prepared in December 2007 an Environmental Assessment/Initial Study (EA/IS), and a proposed Finding of No Significant Impact/Mitigated Negative Declaration (FONSI/MND) for this Project; and

WHEREAS, on December 15, 2007, the Central Valley Flood Protection Board issued a Notice of Completion and circulated a Notice of Intent to adopt a Mitigated Declaration as required by the California Environmental Quality Act Guidelines Section 15070 for the Project; and

WHEREAS, the 30-day comment period described in the aforementioned notices expired January 15, 2008; and

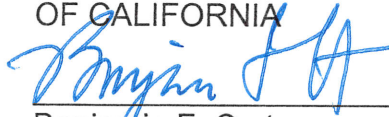
WHEREAS, the Corps and the Central Valley Flood Protection Board have reviewed public and agency comments and have jointly prepared responses to those comments; and

NOW, THEREFORE, IT IS HEREBY RESOLVED that the Central Valley Flood Protection Board, acting in its capacity as California Environmental Quality Act lead agency:

1. Approves the Mitigated Negative Declaration, Findings, and Mitigation Measures for the Sacramento River Bank Project, Lower American River Mile 0.5 Mitigation Site; and
2. Approves construction of the Sacramento River Bank Project, Lower American River Mile 0.5 Mitigation Site

DATED: May 16, 2008

CENTRAL VALLEY FLOOD
PROTECTION BOARD OF THE STATE
OF CALIFORNIA



Benjamin F. Carter
President



Maureen "Lady Bug" Doherty
Secretary