

**Meeting of the Central Valley Flood Protection Board
May 20, 2016**

**Staff Report – Title 33, U.S.C. 408 Request
to the U.S. Army Corps of Engineers, Sacramento District**

**On Behalf of Sutter Butte Flood Control Agency
Feather River West Levee, Laurel Avenue Repair Project, Sutter County**

1.0 – ITEM

Consider Central Valley Flood Protection Board (Board) approval to send a letter (Attachment A) to the U.S. Army Corps of Engineers (USACE) Sacramento District requesting permission to alter a portion of the Sacramento River Flood Control Project (SRFCP) along the Feather River West Levee (FRWL) based on Application No. 18793-4 and pursuant to Title 33, U.S.C. 408 (Section 408). The Section 408 letter from the Board is intended only to facilitate USACE review of the project.

The letter states:

- That the Board has reviewed the relevant documents and has determined that the improvement will not be injurious to the public interest and will not impair the usefulness of the Sacramento River Flood Control Project (SRFCP).
- That within 180 days of completion of the proposed alteration, the Board will provide both information to the USACE for the purpose of preparing a revised Operation and Maintenance Manual for this portion of the FRWL and As-built Plans and Specifications for the alteration.
- That if the proposed project is formally incorporated by the USACE, the State of California, acting through the Board, will accept the altered project for operation and maintenance and hold and save the United States free from damage due to the construction works.

This is not a flood system improvement project hearing, and no construction permit is being considered for issuance at this time. This action is based upon Board staff's review of 100% plans and specifications. Prior to final project approval at a future Board flood system alteration project hearing, Board staff and USACE will complete all additional required design or environmental reviews, Board staff will receive all needed USACE approvals, and Board staff and USACE will comply with all California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) mandates. Board staff is requesting that the attached draft letter be finalized and sent

to USACE Sacramento District to complete the Section 408 review for the proposed project.

2.0 – APPLICANT

Sutter Butte Flood Control Agency (SBFCA)

3.0 – PROJECT LOCATION

The proposed project is located south of Yuba City, east of State Route (SR) 99, west of SR 70 and along the FRWL (Attachment B). The project is approximately 4,900 linear feet in length and is located between project station 178+00, south of Laurel Avenue, and station 227+00, just south of Oak Avenue. Levee improvements would extend from station 181+00 to station 224+00.

4.0 – PROJECT DESCRIPTION

The proposed project would be completed in one phase under the proposed permit with the objective to provide 100-year flood protection to the area south of Yuba City that contains several small rural communities and extensive agricultural land by remediating: levee seepage and slope stability deficiencies, levee geometry deficiencies, and pipe penetration and encroachment deficiencies. This objective is consistent with the 2012 Adopted Central Valley Flood Protection Plan (CVFPP) and the California Water Action Plan. It would remediate geotechnical deficiencies in the FRWL and reduce the risk of levee failure that could result in shallow flooding of the southern and western edges of Yuba City.

In order to meet the project objective, SBFCA proposes to construct the following improvements (Attachment C):

- degrade the levee by approximately one third its height in order to place approximately 4,300 linear-feet of cutoff wall;
- correct levee geometry deficiencies to three horizontal to one vertical (3H:1V) waterside slope (starting at the levee degrade), 20-ft wide levee crown, and 2H:1V landside slope;
- fill an existing swale south of Laurel Avenue and an existing ditch north of Laurel Avenue; and

- replace pipe penetrations and correct various encroachments that do not comply with California Code of Regulations, Title 23, Division 1, Article 8 (Title 23 Standards).

5.0 – AUTHORITY OF THE BOARD

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

California Code of Regulations, Title 23, Division 1 (Title 23):

- § 6 - Need for a Permit
- § 13 - Evidentiary Hearings
- § 106 - Existing Encroachments within the Adopted Plan of Flood Control
- § 112 - Streams Regulated and Nonpermissible Work Periods
- § 116 - Borrow and Excavation Activities – Land and Channel
- § 120 - Levees
- § 121 - Erosion Control
- § 131 - Vegetation

Rivers and Harbors Act of 1899, Title 33 United States Code, § 408 (Section 408)

Memorandum of Understanding Respecting the Sacramento River Flood Control Project, November 30, 1953 (between USACE South Pacific Division and the State of California, acting by and through The Reclamation Board), and November 29, 1958 Supplement

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

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

- A prior USACE Washington DC headquarters Section 408 Record of Decision (ROD) dated September 13, 2013 (Attachment D), approved alteration of the northern section of the proposed project from station 202+50 to 227+00
- The Sutter Basin Project, authorized by Congress through the Water Resources Reform and Development Act of 2014, covers federal approval of the proposed project from station 180+00 to 202+50

- Maintenance Area 3 (MA 3) endorsed the proposed project on May 4, 2016 with no conditions (Attachment E).

7.0 – PROJECT ANALYSIS

7.1 – Project Background and Objectives

The Sutter-Butte Basin includes the communities of Yuba City, Live Oak, Gridley, and Biggs and has experienced numerous flood events since the 1800's. In order to reduce flood risks in the basin and its urban areas, SBFCA is implementing the FRWLP (Projects 1 and 2), which include rehabilitating over 41 miles of the FRWL between Thermalito Afterbay Dam to the Sutter Bypass.

Project 1 extends from the Thermalito Afterbay Dam to south of Star Bend and was approved under prior Board permits (18793-1, 18793-2, and 18793-3). Project 1 construction began in 2013 with completion currently anticipated in 2016.

Project 2 (Laurel Avenue Repair Project) addresses flood risk reduction for the predominantly rural area in the southern and southwestern portion of the Sutter-Butte basin protecting thousands of people, private and public structures, and valuable farmland. This area is protected by the FRWL south of Star Bend, the east levee of the Sutter Bypass, and the south levee of the Wadsworth Canal. Failure of any of these levees during severe flood events would likely inundate extensive agricultural areas and several small rural communities within the southern/southwestern portion of the Sutter-Butte basin, and could also result in shallow flooding of the southern and western edges of Yuba City.

7.2 – Hydraulic Review

The overall FRWL Project hydraulic analysis (from Thermalito Afterbay Dam to the Sutter Bypass) was considered and approved as part of the FRWL, Project Area C Permit No. 18793-1 in 2013. The proposed Laurel Avenue Repair Project does not include any features which change the approved hydraulic analysis. Therefore, Board staff has determined that no further hydraulic analysis is needed.

7.3 – Geotechnical Review

Board staff has reviewed the geotechnical information provided by SBFCA for their 100% design and has determined that the proposed project is expected to result in no adverse geotechnical impacts to the SRFCP or the FRWL. The current design complies

with applicable Title 23 Standards and would remediate levee seepage, slope stability, levee geometry, and encroachment deficiencies within the proposed project area.

7.4 –Environmental Review

SBFCA, as the lead State agency, has prepared a Draft Supplemental Environmental Impact Report (DSEIR) to comply with the California Environmental Quality Act (CEQA). The DSEIR is currently under public review with the comment period ending on June 3, 2016. The required mandates of CEQA will be completed prior to the Board's consideration of approval of an alteration permit, including consideration of CEQA Findings, as the Non-Federal sponsor pursuant to Title 23 and Section 408.

7.5 – Project Benefits

The proposed SBFCA Laurel Avenue Repair Project has the following benefits:

- It is consistent with the 2012 Adopted CVFPP and associated Sacramento River Basin-wide planning efforts
- It is consistent with the goal to achieve 100-year protection for the surrounding non-urban areas
- It is consistent with the California Water Action Plan
- It remediates current geometry, penetration, and encroachment deficiencies along the FRWL

8.0 – STAFF RECOMMENDATION

Staff recommends that the Board:

Approve: the Draft USACE 408 Request Letter (Attachment A), in substantially the form provided; and

Direct: the Executive officer to sign and send the letter to USACE, Sacramento District.

9.0 – LIST OF ATTACHMENTS

A – Draft USACE 408 Request Letter

B – Project Maps

C – Project Design Plans

D – 2013 USACE Washington DC Headquarters ROD

E – MA 3 Endorsement

Prepared By: Nancy Moricz, PE, Senior Engineer, Plan Implementation and Compliance Branch
Environmental: Andrea Buckley, Senior Environmental Scientist, Acting Environmental Services and Land Management Branch Chief
Staff Report: Eric Butler, PE, Supervising Engineer, Plan Implementation and Compliance Branch Chief
Jit Dua, Legal Counsel
Leslie Gallagher, Executive Officer

CENTRAL VALLEY FLOOD PROTECTION BOARD

3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682



May 20, 2016

Colonel Michael Farrell, Commander
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Sutter Butte Flood Control Agency, Feather River West Levee, Laurel Avenue
Repair Project (Application No. 18793-4)

Dear Colonel Farrell:

Pursuant to 33 United States Code Section 408 (Section 408) as described by the U.S. Army Corps of Engineers (USACE) Engineering Circular 1165-2-216, Section 7c(2) *Policy and Procedural Guidance for Processing Requests to Alter US Army Corps of Engineers Civil Works Projects Pursuant to 33 USC 408*, the Central Valley Flood Protection Board (Board), on behalf of the Sutter Butte Flood Control Agency (SBFCA), is requesting permission to alter approximately 0.93 miles of the Sacramento River Flood Control Project (SRFCP) along the west levee of the Feather River in Sutter County, California. The SBFCA levee system is part of the SRFCP authorized by Congress in the Flood Control Act of 1917.

For the past three years, SBFCA has undertaken significant efforts to reduce flood risk to the Sutter basin by constructing the Feather River West Levee Project (FRWLP). Work began in 2013 and is planned to continue through the 2016 construction season. SBFCA initiated project development of the Laurel Avenue Repair Project (the Project) as part of the Pre-Design of the Feather River West Levee Project (FRWLP) in 2009. Preliminary design efforts defined the scope of the Project eligible for funding under the State of California's Flood System Repair Project (FSRP) program administered by the Department of Water Resources. The Project was deemed eligible for State funding because this levee reach was identified by both the Department of Water Resources and SBFCA as a critical repair project.

The proposed project consists of in place repair/remediation of the existing levee including: degrading the existing levee by approximately one third its height in order to construct approximately 4,300 linear-feet of cutoff wall (Station 181+00 to 224+00) at an approximate depth of 60-80 feet; correct levee geometry deficiencies; and correct various encroachments that do not comply with California Code of Regulations, Title 23, Division 1, Article 8 Standards. The project does not propose raising the existing levee height. All construction is proposed to begin in July 2016 and be completed in 2016.

Colonel Michael Farrell, Commander
May 20, 2016
Page 2

Based on the Board's review of 100% plans, the Board concludes the following:

- That the Board has reviewed the relevant documents and has determined that the improvement will not be injurious to the public interest and will not impair the usefulness of the SRFCP.
- That within 180 days of completion of the proposed alteration, the Board will provide both information to the USACE for the purpose of preparing a revised Operation and Maintenance Manual for this portion of the SRFCP and As-built Plans and Specifications for the alteration.
- That if the proposed project is formally incorporated within the federal SRFCP by the USACE, the State of California, acting through the Board, will accept the altered project for operation and maintenance and hold and save the United States free from damage due to the construction works.

If you have any questions regarding this request, please contact me at (916) 574-0609, or your staff may contact Ms. Nancy Moricz, Senior Engineer at (916) 574-2381 or by email at nancy.moricz@ewater.ca.gov.

Sincerely,

Leslie Gallagher
Executive Officer

Enclosure: Attachments for project application materials including all maps, 100% design drawings and specifications, and analyses submitted by SBFCA to the Board

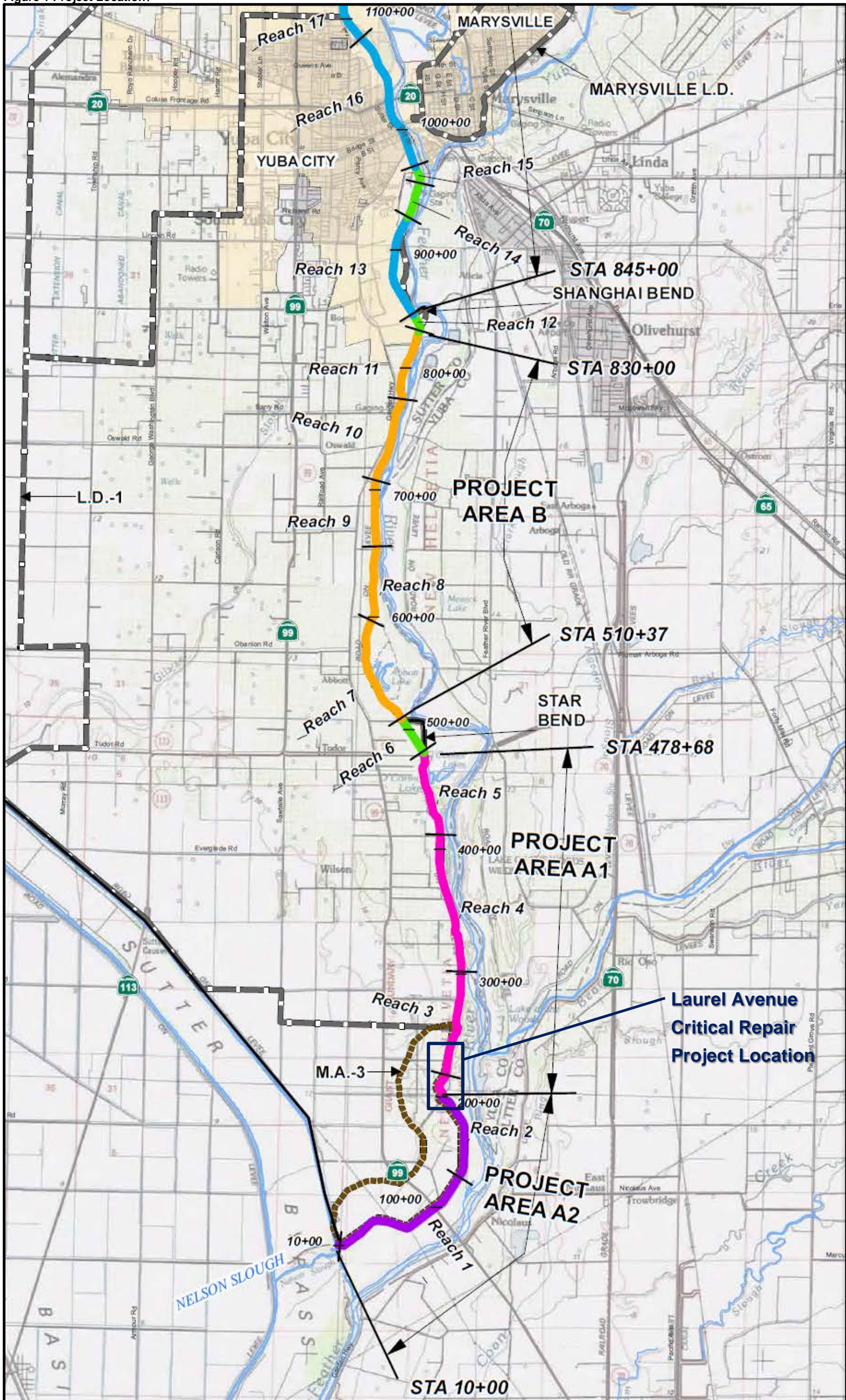
cc: (via electronic file)

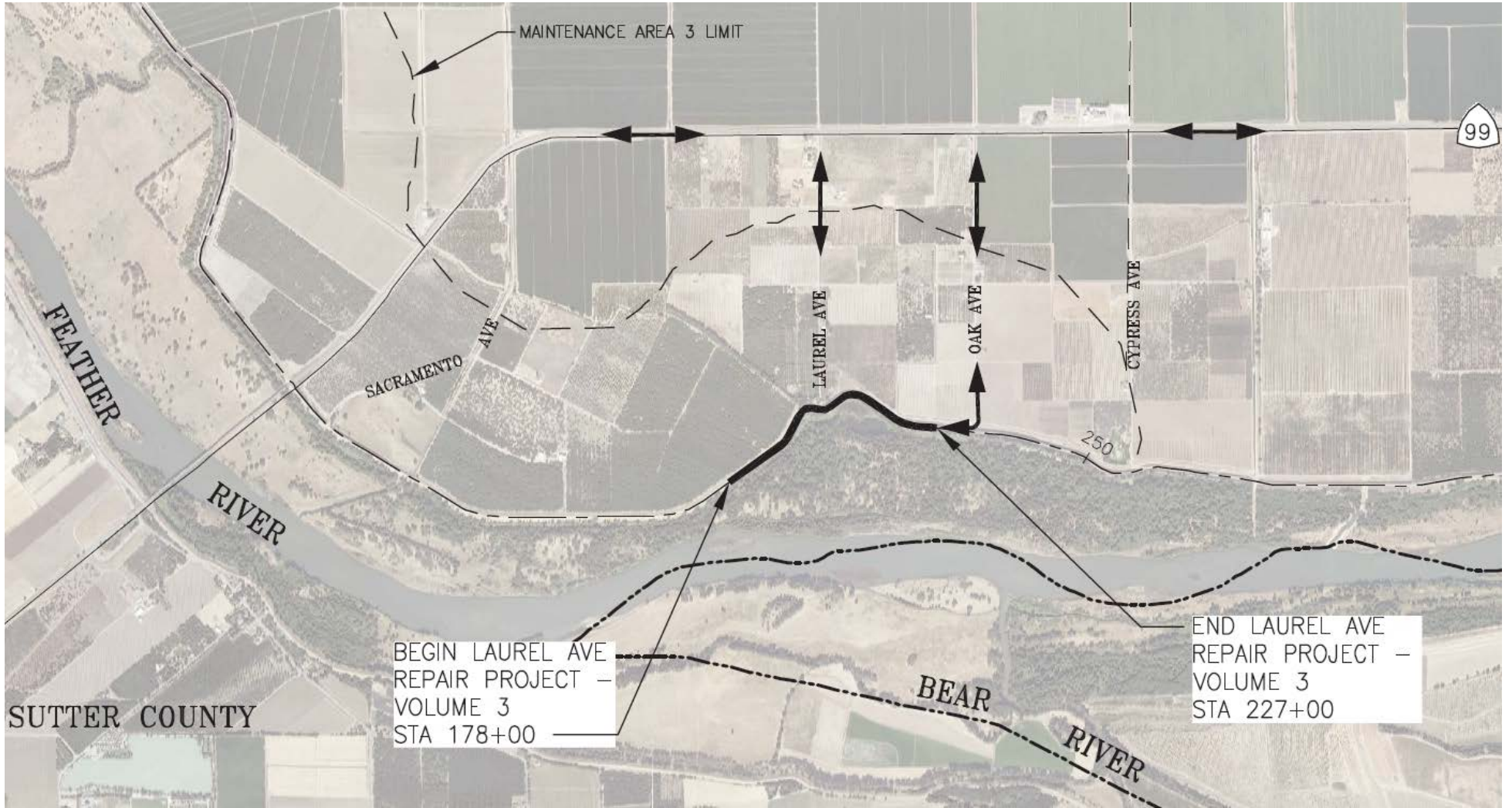
Mr. Mike Inamine, Executive Director
Sutter Butte Flood Control Agency

Mr. Michael W. Bessette, Director of Engineering
Sutter Butte Flood Control Agency

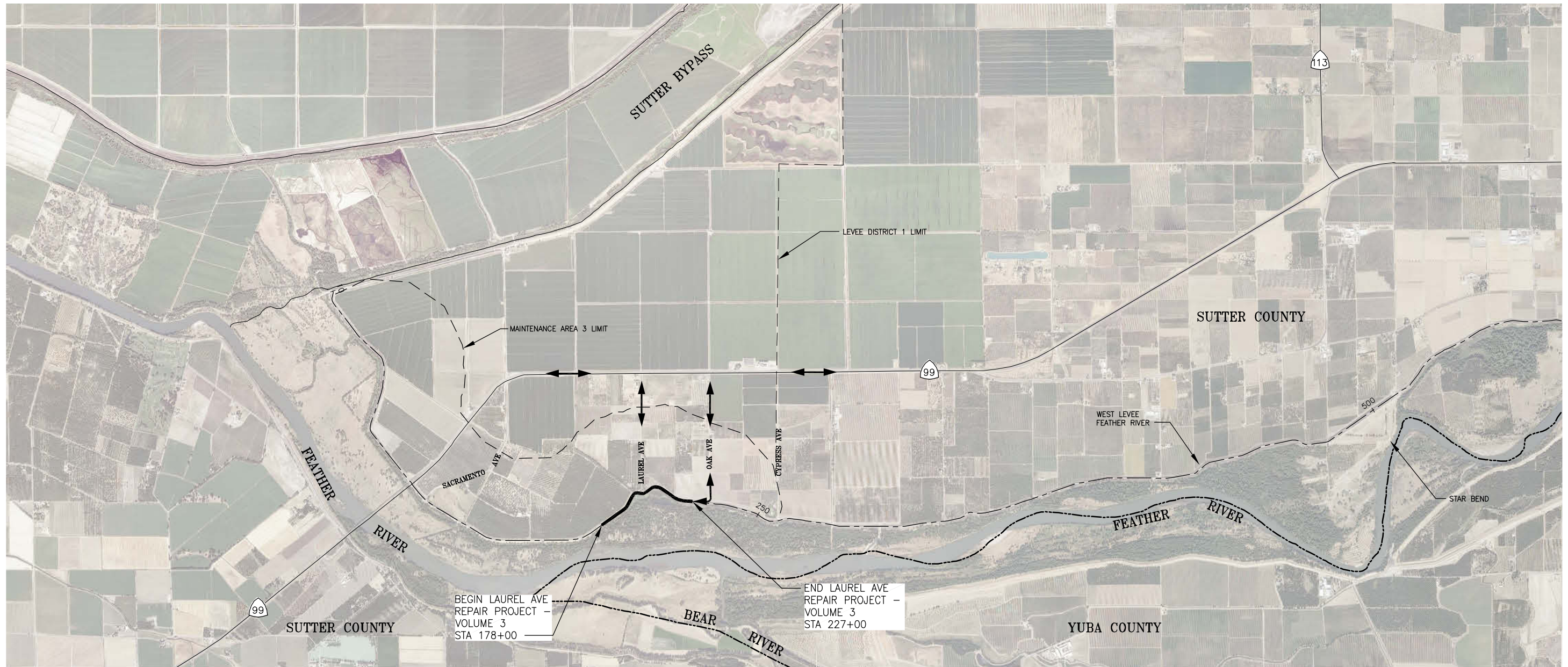
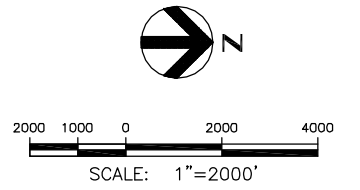
Mr. Daniel Jabbour
HDR Engineering

Figure 1 Project Location





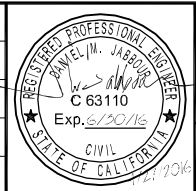
SUTTER BUTTE FLOOD CONTROL AGENCY
FEATHER RIVER WEST LEVEE PROJECT
 LAUREL AVE REPAIR PROJECT - VOLUME 3: STA 178+00 TO 227+00



ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:
J. NETTLETON
 DRAWN BY:
A. JACKSON
 IN CHARGE:
D. JABBOUR
 PROJECT MANAGER:
C. KRIVANEC
 DATE:
5/2/2016



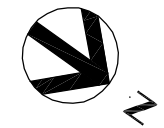
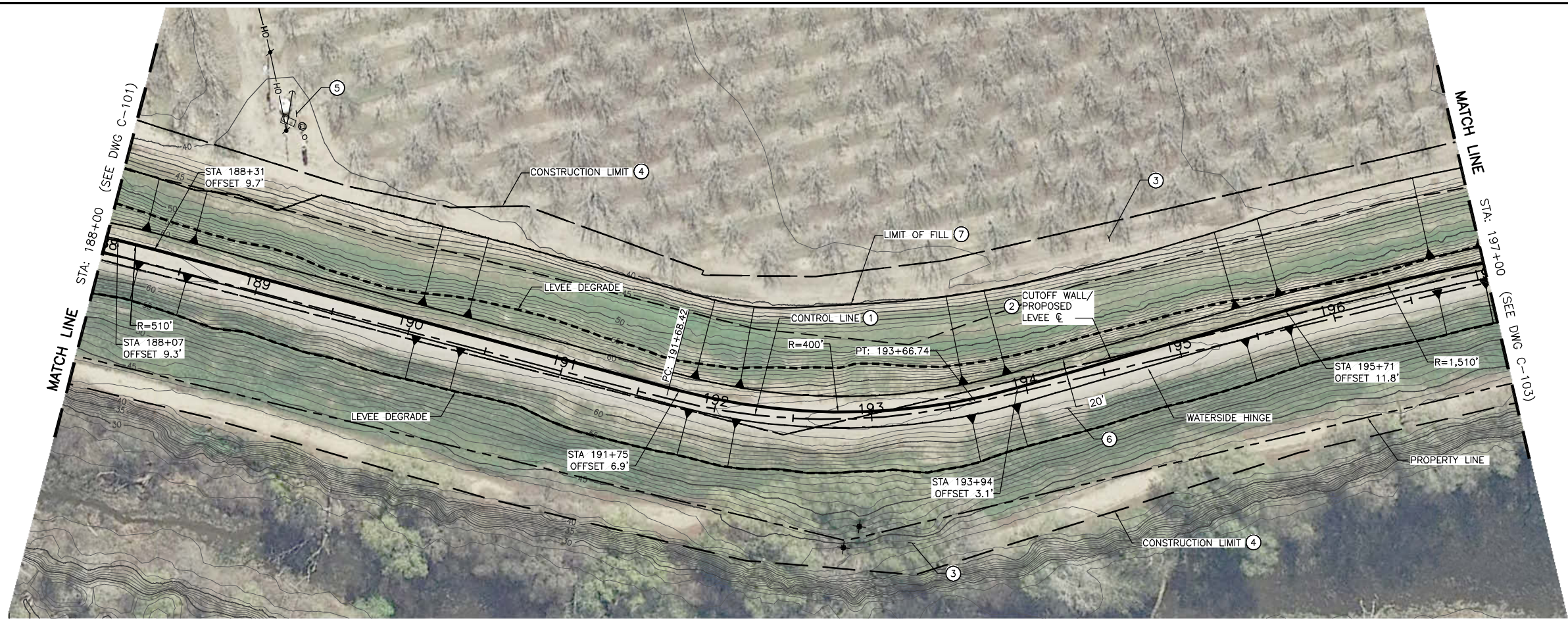
SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

VICINITY AND HAULE ROUTE MAP

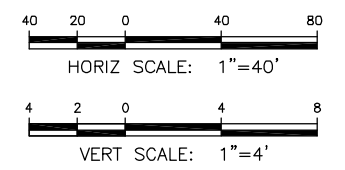
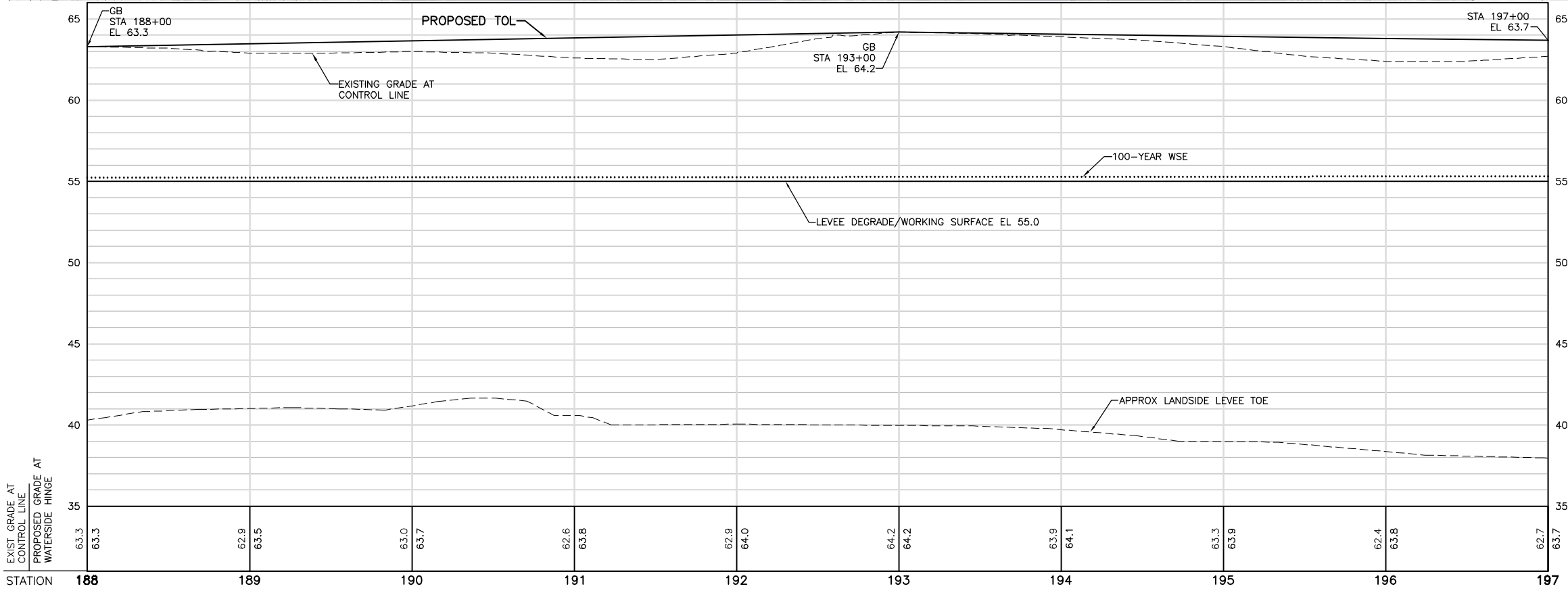
VERIFY SCALES
 BAR IS ONE INCH ON
 ORIGINAL DRAWING,
 ADJUST SCALES FOR
 REDUCED PLOTS
 0"=1"

DRAWING NO. SHEET
 G-003 3

Attachment C - Project Design Plans



- CONSTRUCTION NOTES:**
- ① SEE SHEET G-009 FOR CONTROL LINE TABLE.
 - ② SEE SHEETS C-401 TO C-402 FOR CUTOFF WALL PROFILES.
 - ③ ORCHARD TREES TO REMAIN. REFER TO SHEET C-304 FOR REMOVAL OF NON ORCHARD TREES.
 - ④ CONTRACTOR SHALL PROVIDE HIGH VISIBILITY CONSTRUCTION FENCING AT THE CONSTRUCTION LIMIT LINE. FENCING SHALL BE OMITTED WHERE SILT FENCING IS REQUIRED AT THE CONSTRUCTION LIMIT LINE BY THE PROJECT SWPPP OR IS SHOWN ON THE PLANS. FENCING MAY BE OMITTED WHERE THE CONSTRUCTION LIMIT COINCIDES WITH EXISTING FENCING.
 - ⑤ EXISTING PUMP STATION, STAND PIPE AND APPURTENANCES OUTSIDE OF THE CONSTRUCTION LIMIT. DO NOT DISTURB.
 - ⑥ EXISTING LEVEE MILE MARKER. CONTRACTOR TO REMOVE AND REINSTALL.
 - ⑦ SEE TYPICAL DETAIL ON C-302.



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PROJECT MANAGER:
C. KRIVANEC

DATE:
5/2/2016

SUBMITTED _____

APPROVED _____

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

PLAN AND PROFILE
STA: 188+00 TO 197+00

VERIFY SCALES
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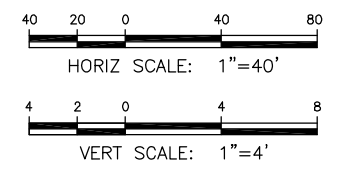
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Attachment C - Project Design Plans



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 - ② SEE SHEETS C-401 TO C-402 FOR CUTOFF WALL PROFILES.
 - ③ ORCHARD TREES TO REMAIN. REFER TO SHEET C-304 FOR REMOVAL OF NON ORCHARD TREES.
 - ④ CONTRACTOR SHALL PROVIDE HIGH VISIBILITY CONSTRUCTION FENCING AT THE CONSTRUCTION LIMIT LINE. FENCING SHALL BE OMITTED WHERE SILT FENCING IS REQUIRED AT THE CONSTRUCTION LIMIT LINE BY THE PROJECT SWPPP OR IS SHOWN ON THE PLANS. FENCING MAY BE OMITTED WHERE THE CONSTRUCTION LIMIT COINCIDES WITH EXISTING FENCING.
 - ⑤ CONSTRUCT ACCESS RAMP AS SHOWN. RAMP SHALL BE 16-FT WIDE WITH 14% MAXIMUM LONGITUDINAL SLOPE AND 2% CROSS SLOPE. RAMP SURFACING SHALL BE PER CROWN SURFACING DETAIL ON C-303. AGGREGATE SURFACING SHALL EXTEND FROM RAMP TOE TO MATCH GRADES AT LEVEE CROWN.
 - ⑥ EXISTING FENCE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
 - ⑦ EXISTING FARM GATE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
 - ⑧ EXISTING INFORMATION SIGN TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
 - ⑨ EXISTING POWER POLE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
 - ⑩ EXISTING STRUCTURE TO REMAIN. CONTRACTOR TO PROTECT IN PLACE.
 - ⑪ SEE TYPICAL DETAIL ON C-302.
 - ⑫ EXISTING FENCE. CONTRACTOR TO DEMOLISH AND WASTE PORTION WITHIN CONSTRUCTION LIMIT AS A PART OF CLEAR AND GRUB.
 - ⑬ EXISTING 18" CMP. CONTRACTOR TO PROTECT IN PLACE AND REPLACE IN KIND IF DAMAGED DURING CONSTRUCTION.
 - ⑭ EXISTING SHALLOW CMP CULVERTS ARE LOCATED ALONG LAUREL AVE (NOT SHOWN). CONTRACTOR TO LOCATE CULVERTS AND PROTECT THEM IN PLACE DURING CONSTRUCTION. REPLACE IN KIND IF DAMAGED DURING CONSTRUCTION.
 - ⑮ CONTRACTOR TO RESTORE LAUREL AVE TO PRE-PROJECT CONDITION AND PLACE 6-IN CLASS 2 AB (12FT WIDE) ALONG LAUREL AVE FROM EXISTING FARM GATE AND TIE TO EXISTING AC (WEST APPROX 750 LF; TIE-IN POINT TO AC NOT SHOWN). TOP OF AB GRADES SHALL MATCH TOP OF AC GRADES.

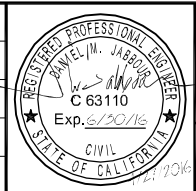
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13	200+69	17.6'	63.40	22	204+23	32.8'	63.10
14	200+65	33.1'	63.10	23	202+62	69.5'	45.22
15	201+51	37.0'	52.50	24	202+44	77.9'	43.25
16	201+87	45.3'	48.00	25	202+20	99.9'	39.97
17	202+32	55.8'	42.60	26	201+99	92.4'	39.87
18	202+70	52.4'	46.70	27	202+11	83.3'	41.78
19	203+60	37.4'	55.60	28	202+05	66.8'	44.86
20	204+18	17.6'	63.50				



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SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)




VERIFY SCALES
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 ADJUST SCALES FOR
 REDUCED PLOTS
 0"=1"

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C-103 15

PLAN
 STA: 197+00 TO 207+00

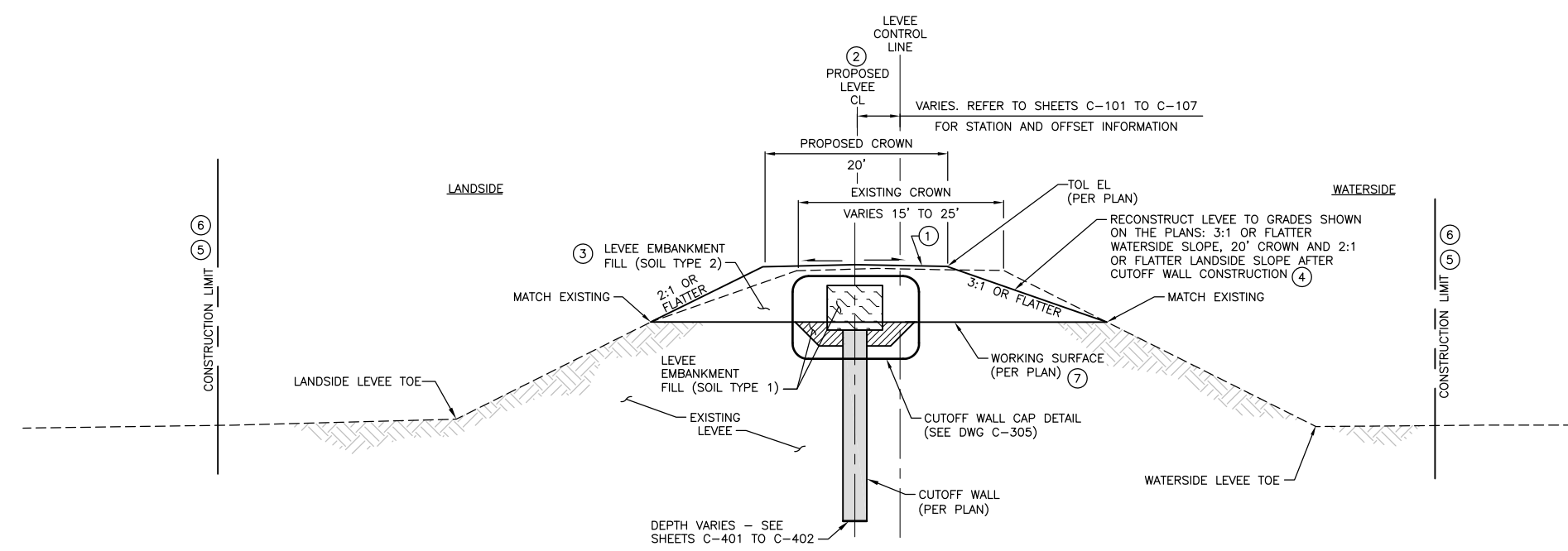
Attachment C - Project Design Plans

LEGEND:

-  LEVEE EMBANKMENT FILL (SOIL TYPE 1)
-  CUTOFF TRENCH (SOIL TYPE 1)
-  CUTOFF WALL

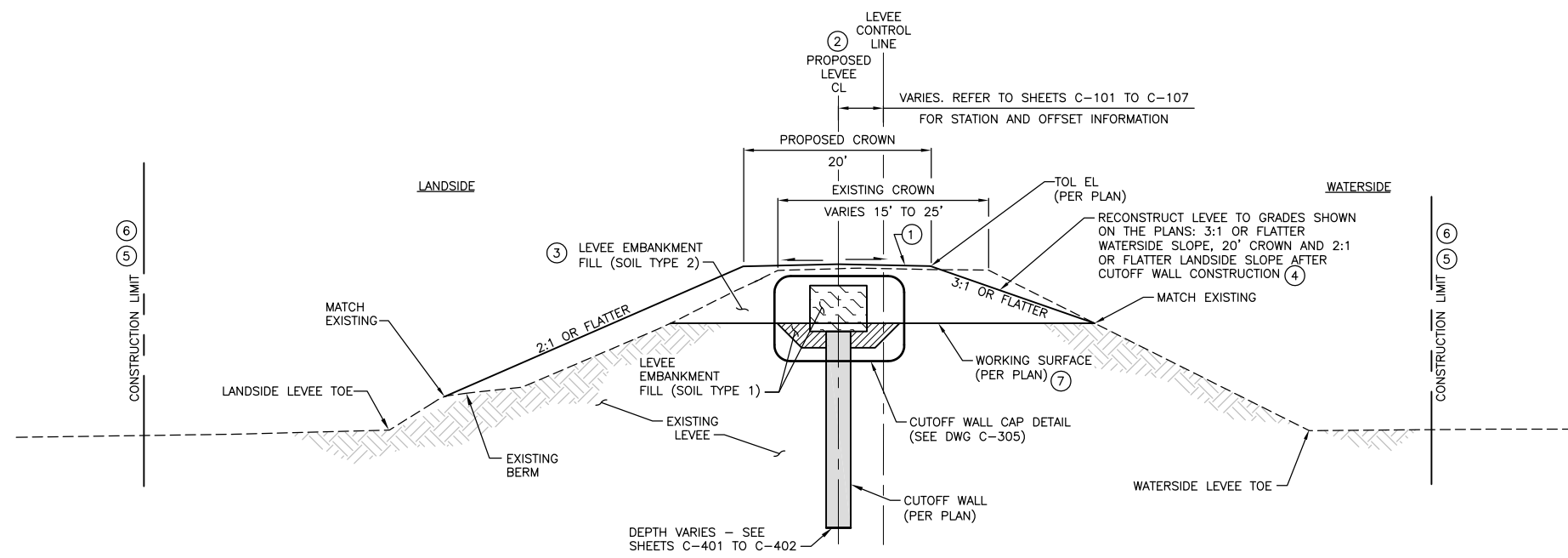
NOTES:

- ① CONTRACTOR SHALL SALVAGE EXISTING AGGREGATE BASE IN ACCORDANCE WITH THE SPECIFICATIONS. CROWN RESURFACING PER DETAIL ON SHEET C-303.
- ② STATION AND OFFSET PER PLAN.
- ③ FILL MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.
- ④ FINISH GRADE LINES SHOWN DO NOT INCLUDE PLACEMENT OF TOPSOIL. TOPSOIL PLACEMENT SHALL BE PER PROJECT SPECIFICATIONS (4" MIN).
- ⑤ CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMIT SHOWN ON THESE PLANS.
- ⑥ CONSTRUCTION LIMIT SHOWN IS TYPICAL. VARIATIONS ARE SHOWN ON THE PLANS. SEE SHEET G-010 FOR CONSTRUCTION LIMIT LAYOUT.
- ⑦ CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.



① **TYPICAL CUTOFF WALL**
NTS

LEVEE SECTION SCHEDULE				
BEGIN	END	SECTION DESIGNATION	REHABILITATION MEASURE	DRAWING NO.
181+00	189+00	2	CUTOFF WALL	C-301
189+00	223+50	3	CUTOFF WALL	C-302
223+50	224+00	1	CUTOFF WALL	C-301



② **TYPICAL CUTOFF WALL**
NTS

ISSUED FOR BID

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DRAWN BY:
A. JACKSON

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PROJECT MANAGER:
C. KRIVANEC

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SUBMITTED _____ APPROVED _____

SUTTER BUTTE FLOOD CONTROL AGENCY




VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

TYPICAL LEVEE SECTIONS

VERIFY SCALES
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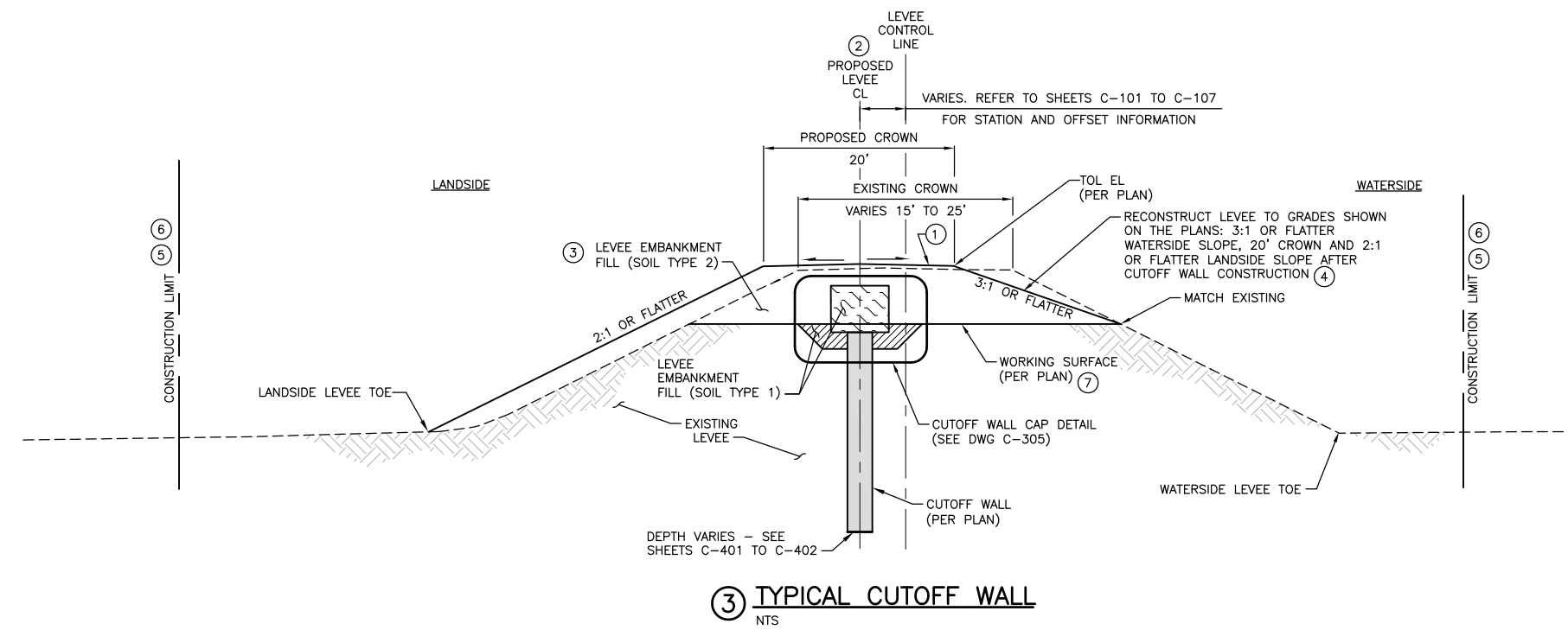
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LEGEND:

-  LEVEE EMBANKMENT FILL (SOIL TYPE 1)
-  CUTOFF TRENCH (SOIL TYPE 1)
-  CUTOFF WALL

NOTES:

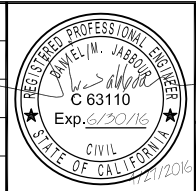
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- ⑦ CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.



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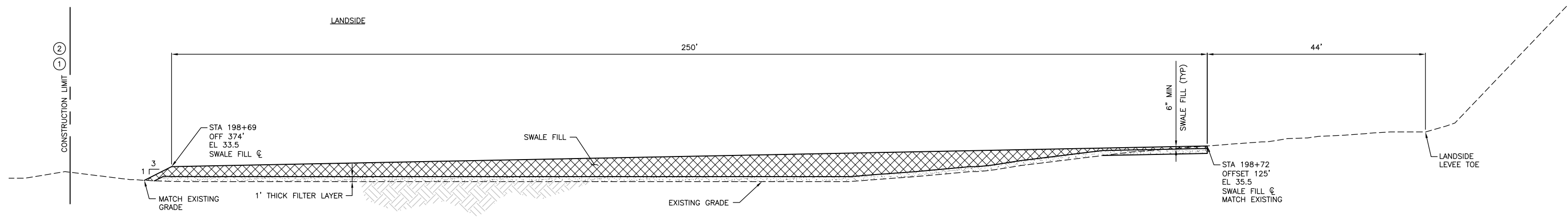
TYPICAL LEVEE SECTIONS

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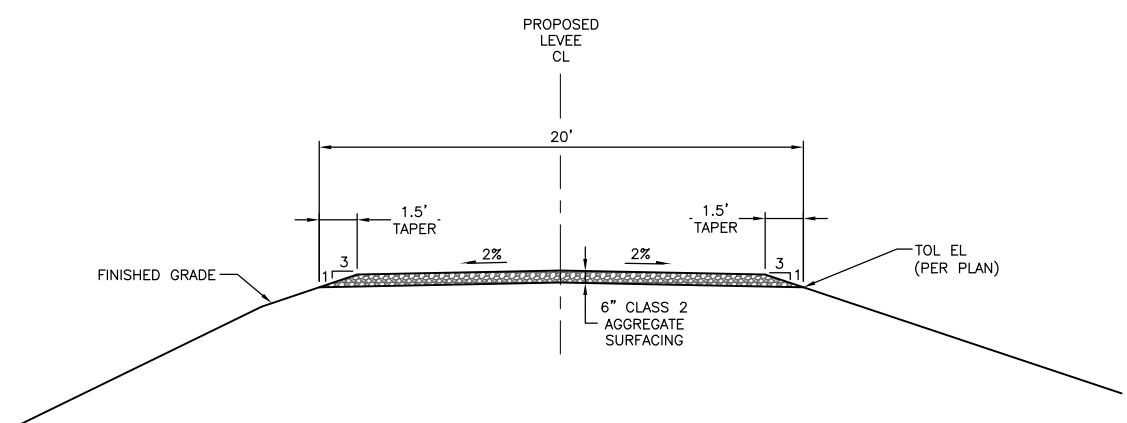
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NOTES:

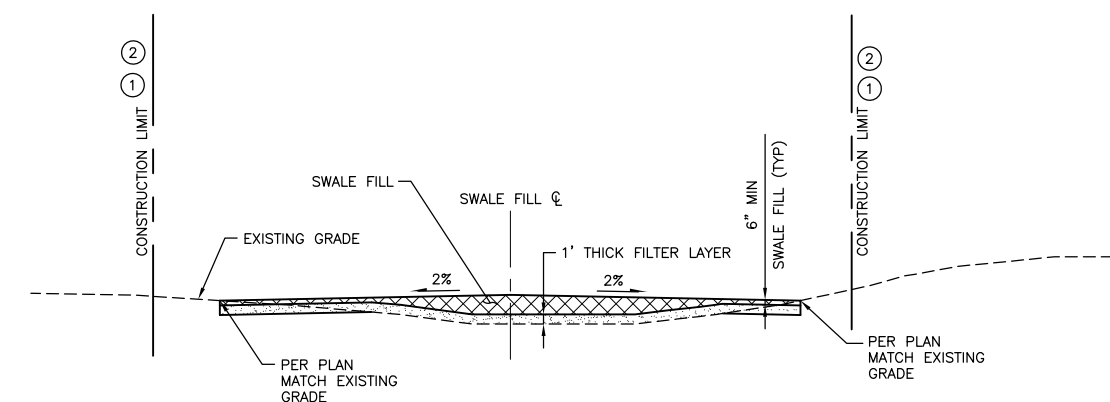
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④ **SWALE FILL**
NTS



CROWN SURFACING DETAIL (TYP)
NTS

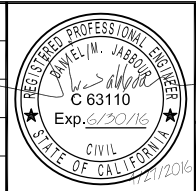


⑤ **SWALE FILL**
NTS

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

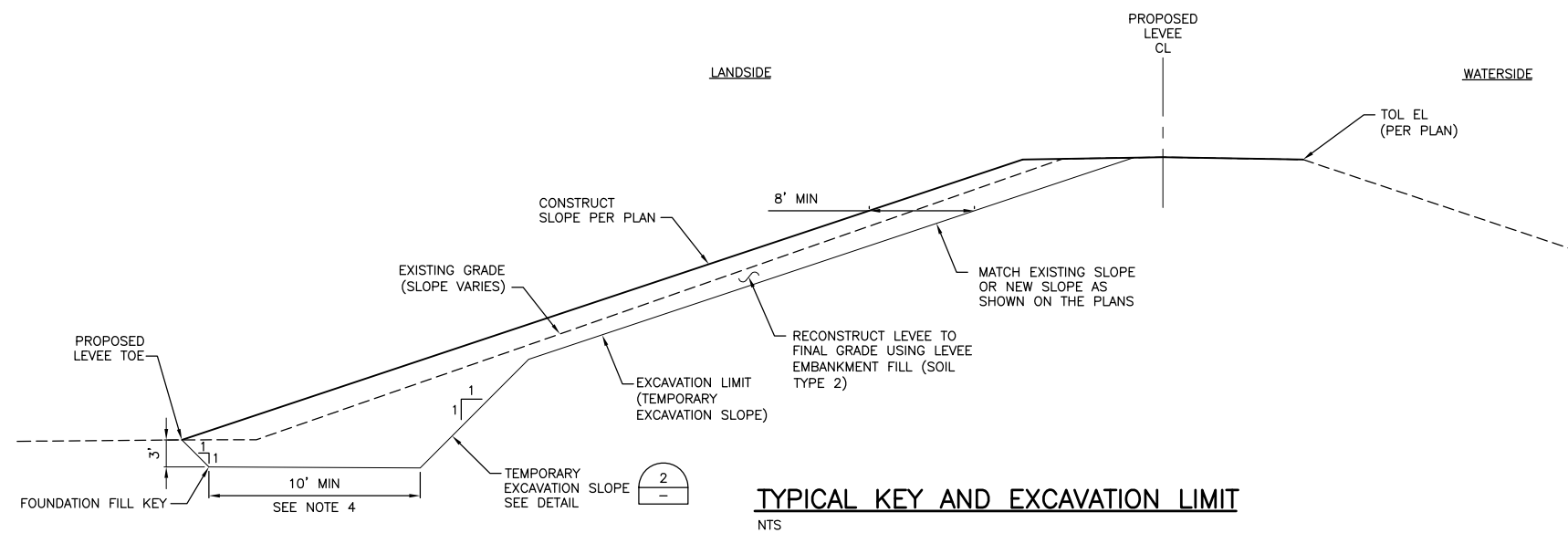
DESIGNED BY:
J. NETTLETON
DRAWN BY:
A. JACKSON
IN CHARGE:
D. JABBOUR
PROJECT MANAGER:
C. KRIVANEC
DATE:
5/2/2016



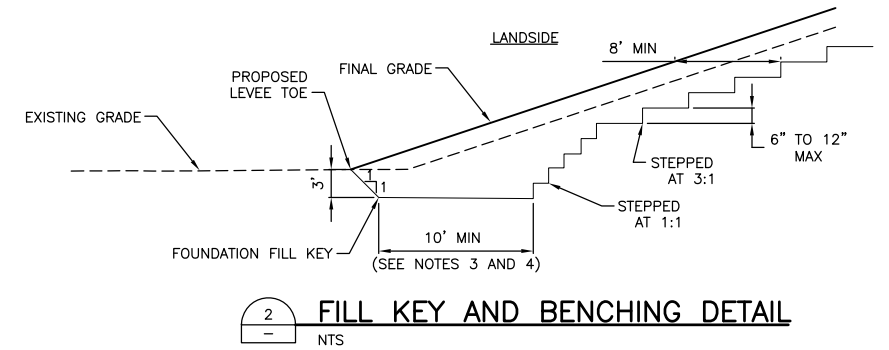
SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

TYPICAL LEVEE DETAILS

VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0" = 1"
DRAWING NO. SHEET
C-303 22



TYPICAL KEY AND EXCAVATION LIMIT
NTS

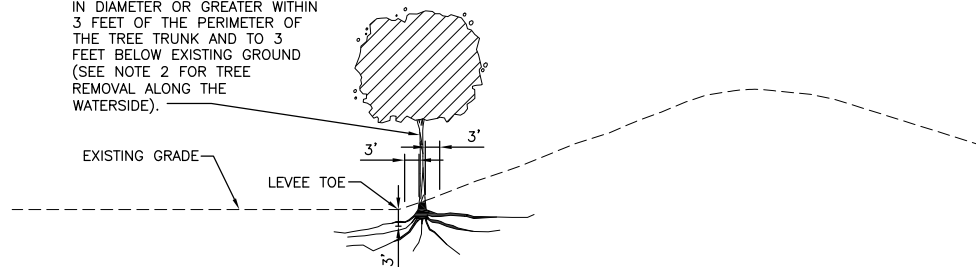


FILL KEY AND BENCHING DETAIL
NTS

TYPICAL KEY & BENCHING NOTES:

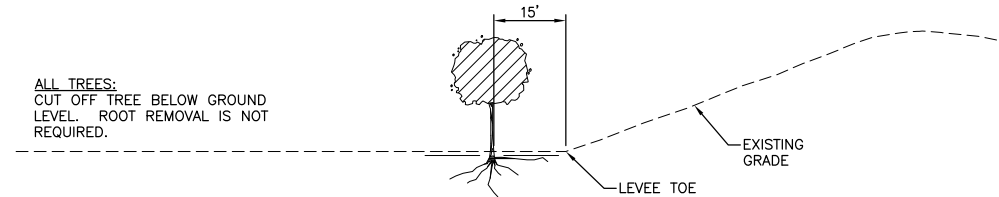
1. PLACE FILL IN HORIZONTAL LIFTS AGAINST VERTICAL FACES CUT INTO EXISTING LEVEE MATERIAL.
2. THE BOTTOM OF THE KEY TRENCH SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES AND RECOMPACTED TO 95% MAXIMUM DENSITY PER ASTM D698.
3. THE LEVEE KEY TRENCH SHALL BE INSPECTED BY THE AGENCY'S GEOTECHNICAL ENGINEER BEFORE PLACEMENT OF FILL.
4. WHERE EMBANKMENT FILL IS GREATER THAN 10' IN WIDTH, FOUNDATION KEY SHALL EXTEND FROM THE TOE OF THE NEW LEVEE TO THE TOE OF THE EXISTING LEVEE. IN NO CASE SHALL THE FOUNDATION KEY WIDTH BE LESS THAN 10'.

REMOVE ALL ROOTS 1/2 INCHES IN DIAMETER OR GREATER WITHIN 3 FEET OF THE PERIMETER OF THE TREE TRUNK AND TO 3 FEET BELOW EXISTING GROUND (SEE NOTE 2 FOR TREE REMOVAL ALONG THE WATERSIDE).



TYPICAL TREE REMOVAL DETAIL FOR TREES ON THE LEVEE OR WITHIN 15 FEET OF THE LEVEE TOE
NTS

ALL TREES: CUT OFF TREE BELOW GROUND LEVEL. ROOT REMOVAL IS NOT REQUIRED.



TYPICAL TREE REMOVAL DETAIL FOR TREES MORE THAN 15 FEET FROM THE LEVEE TOE
NTS

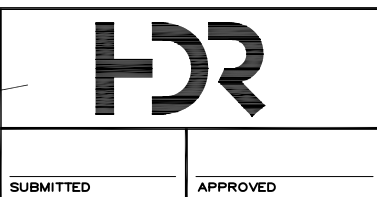
TREE REMOVAL NOTES:

1. ALL TREES ON THE LEVEE SHALL BE REMOVED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE DETAILS ON THIS SHEET.
2. TREES OUTSIDE OF THE CONSTRUCTION LIMIT SHALL NOT BE REMOVED.
3. ORCHARD TREES SHALL NOT BE REMOVED.
4. CONTRACTOR SHALL COORDINATE TREE REMOVAL WITH THE AGENCY PRIOR TO START OF CONSTRUCTION.

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

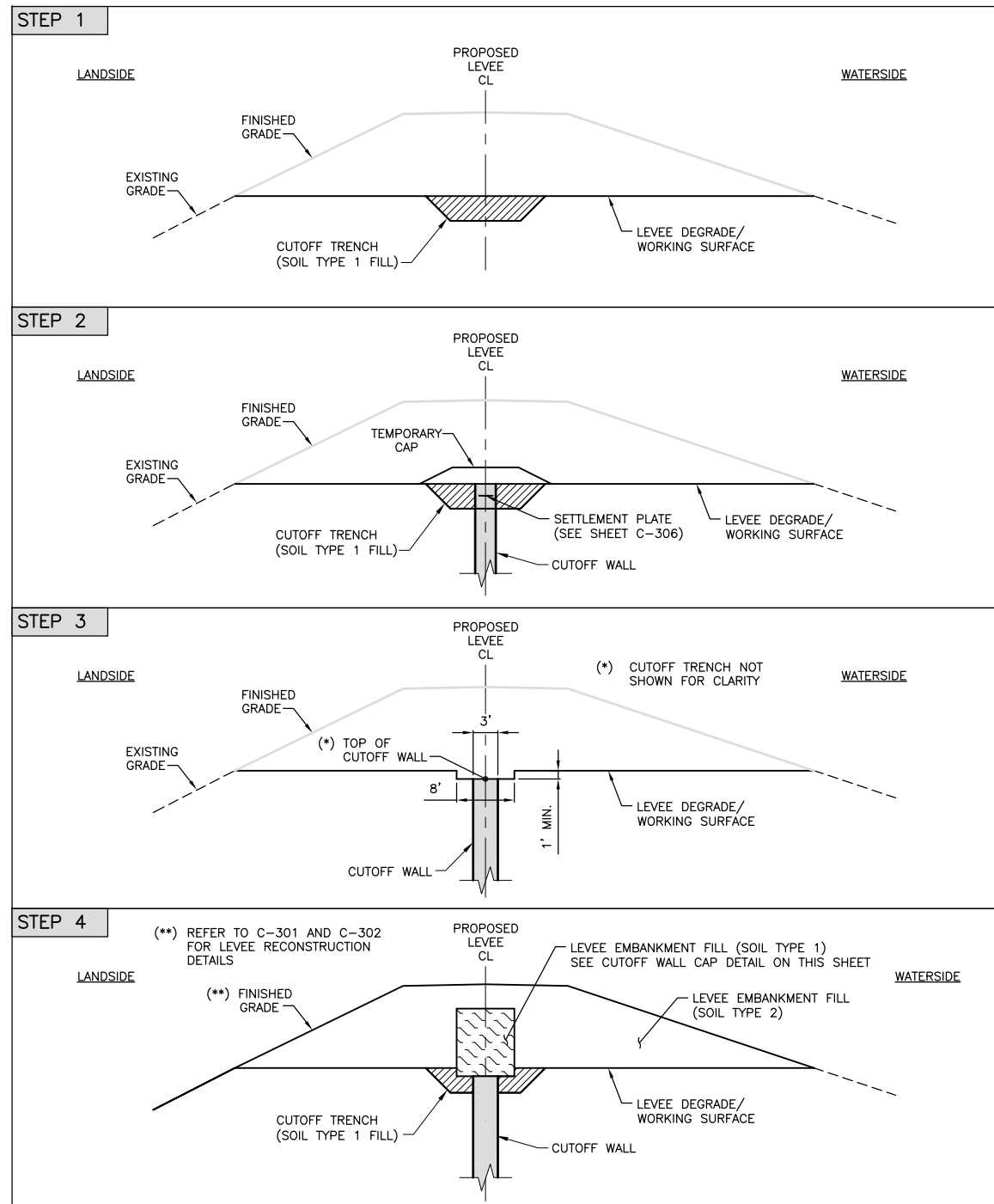
DESIGNED BY:
J. NETTLETON
DRAWN BY:
A. JACKSON
IN CHARGE:
D. JABBOUR
PROJECT MANAGER:
C. KRIVANEC
DATE:
5/2/2016



SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)
TYPICAL LEVEE DETAILS

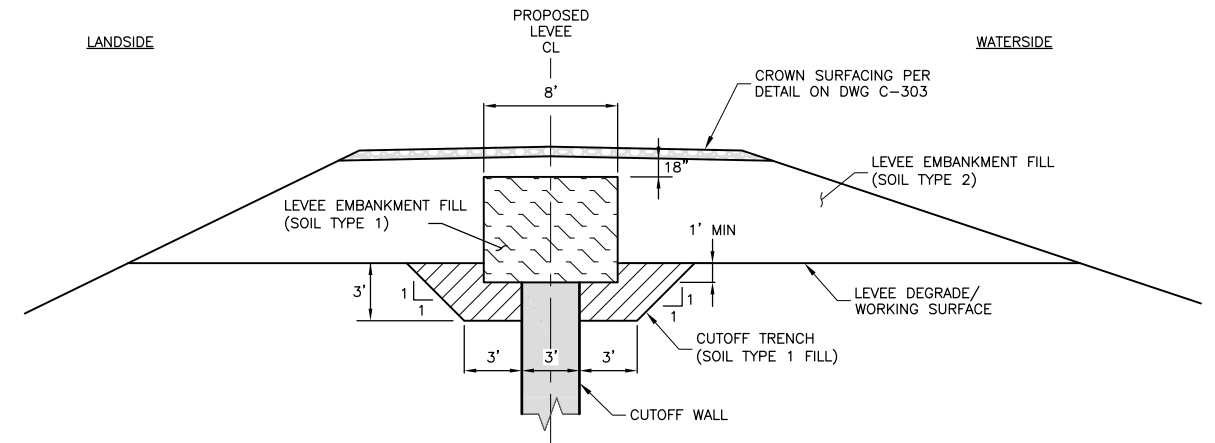
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
DRAWING NO. SHEET
C-304 23

TYPICAL CUTOFF WALL CONSTRUCTION SEQUENCE



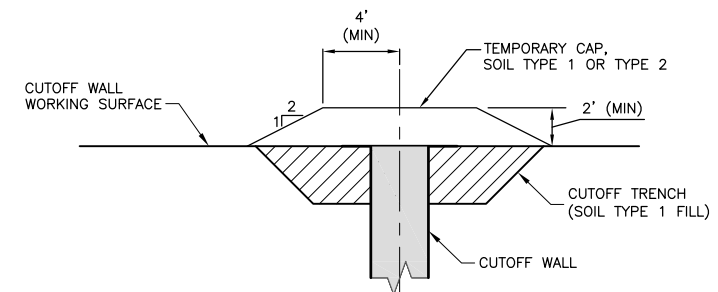
CONSTRUCTION SEQUENCE:

- STEP 1: DEGRADE LEVEE TO ESTABLISH WORKING SURFACE THEN EXCAVATE CUTOFF TRENCH AND FILL WITH TYPE 1 SOIL.
- STEP 2: CONSTRUCT CUTOFF WALL.
 - o INSTALL SETTLEMENT PLATES AS INDICATED IN THE PROJECT SPECIFICATIONS.
 - o PLACE TEMPORARY CAP.
 - o MONITOR SETTLEMENT PLATE PER THE SPECIFICATIONS, WHERE APPLICABLE.
- STEP 3: AFTER APPROVAL BY THE AGENCY, REMOVE TEMPORARY CAP AND EXCAVATE CUTOFF WALL TO A MINIMUM DEPTH OF 1.0 FT BELOW WORKING SURFACE.
 - o REMOVE SETTLEMENT PLATE, WHERE APPLICABLE.
 - o CONFIRM THAT EXCAVATION EXTENDS INTO ACCEPTABLE CUTOFF WALL MATERIAL AS DETERMINED BY THE ENGINEER.
 - o PLACE SOIL TYPE 1 FILL MATERIAL IN THE EXCAVATION IN ACCORDANCE WITH THE SPECIFICATIONS.
- STEP 4: RECONSTRUCT LEVEE EMBANKMENT IN ACCORDANCE WITH SECTION 31 00 00 OF THE PROJECT SPECIFICATIONS.



CUTOFF TRENCH AND CUTOFF WALL CAP DETAIL

NTS



TEMPORARY CAP DETAIL

NTS

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: J. NETTLETON
 DRAWN BY: A. JACKSON
 IN CHARGE: D. JABBOUR
 PROJECT MANAGER: C. KRIVANEC
 DATE: 5/2/2016

SUBMITTED _____
APPROVED _____

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

CUTOFF WALL DETAILS

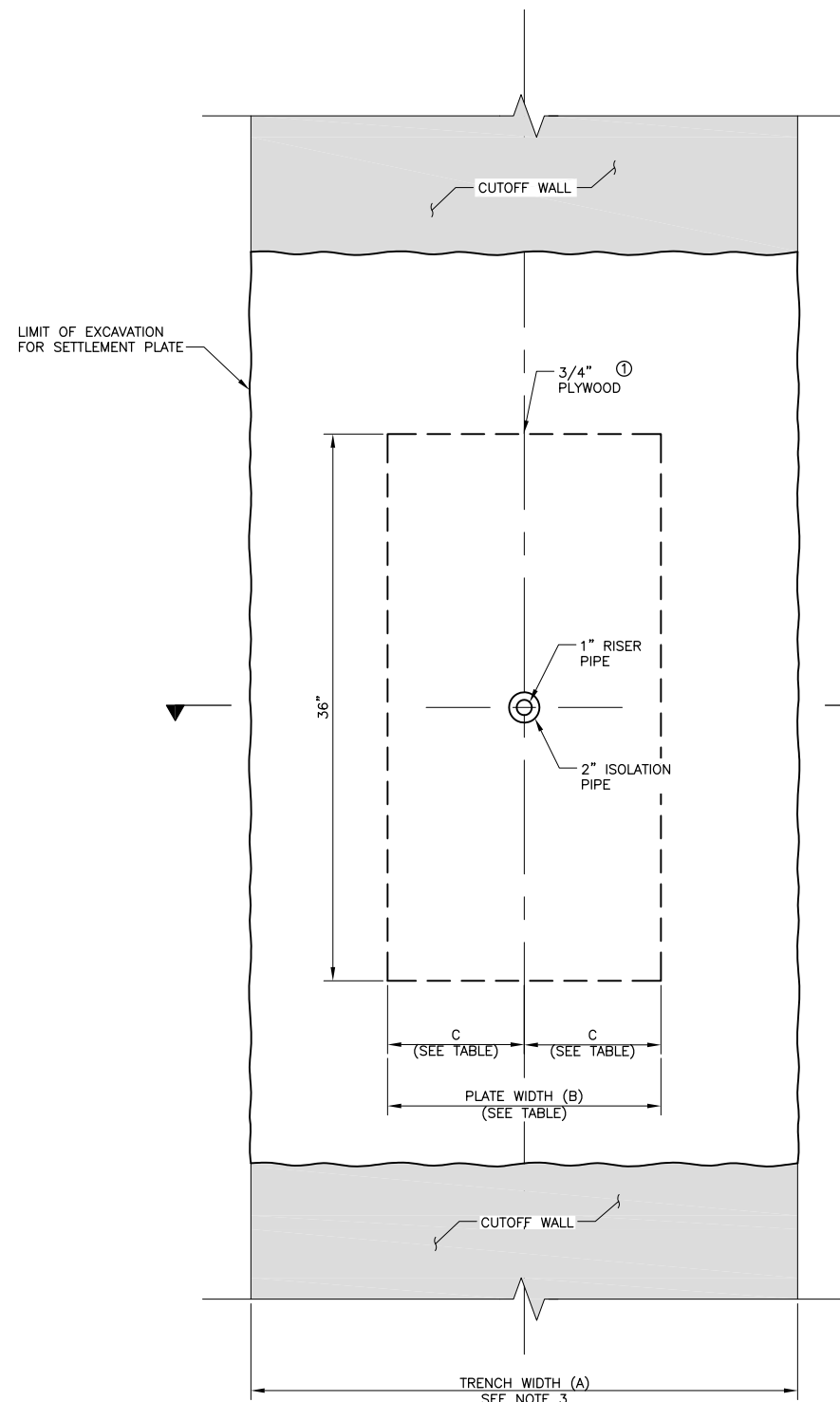
DRAWING NO. C-305

SHEET 24

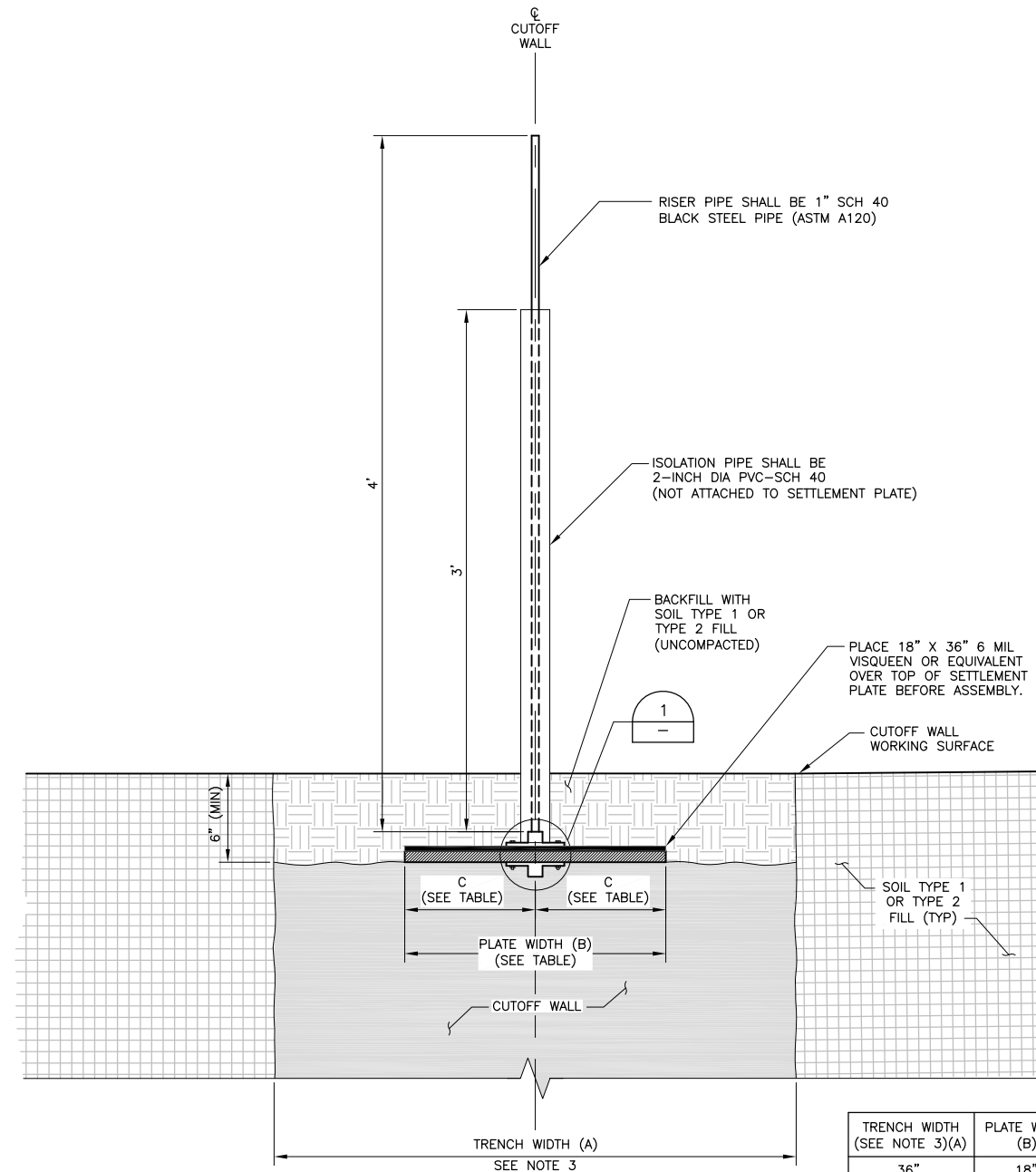
VERIFY SCALES BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

NOTES:

- ① SETTLEMENT PLATE SHALL BE CONSTRUCTED OF 3/4" PLYWOOD (EXTERIOR) - COATED WITH WATERPROOF SEALANT.
- ② SETTLEMENT PLATE INSTALLATION IN ACCORDANCE WITH THE SPECIFICATIONS.
- ③ WALL WIDTH IN ACCORDANCE WITH THE SPECIFICATIONS.

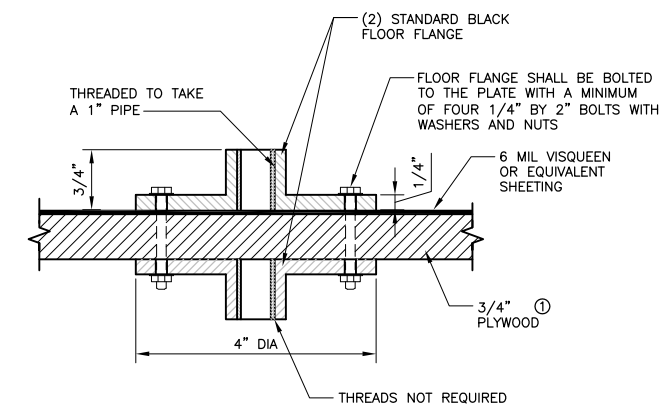


PLAN
NTS



SECTION
NTS

TRENCH WIDTH (SEE NOTE 3)(A)	PLATE WIDTH (B)	(C)
36"	18"	9"
30"	15"	7.5"
27"	14"	7"



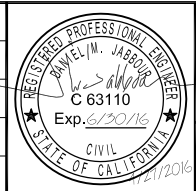
DETAIL
NTS

SETTLEMENT PLATE INSTALLATION

ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:
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DRAWN BY:
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IN CHARGE:
D. JABBOUR
PROJECT MANAGER:
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DATE:
5/2/2016



SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

SETTLEMENT PLATE DETAILS

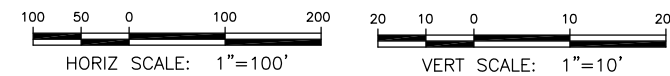
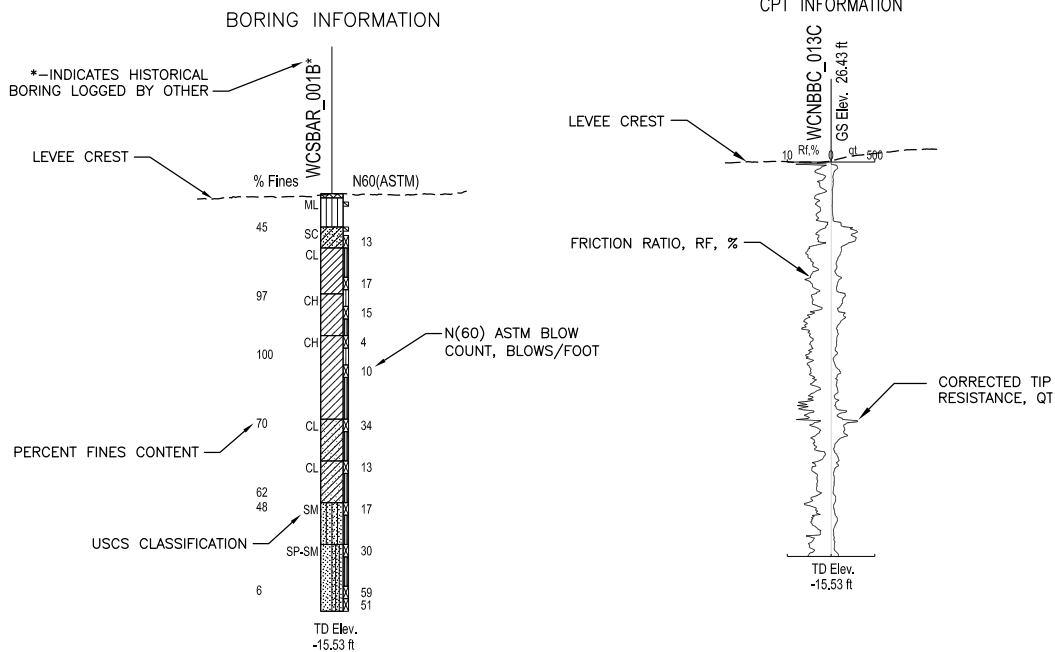
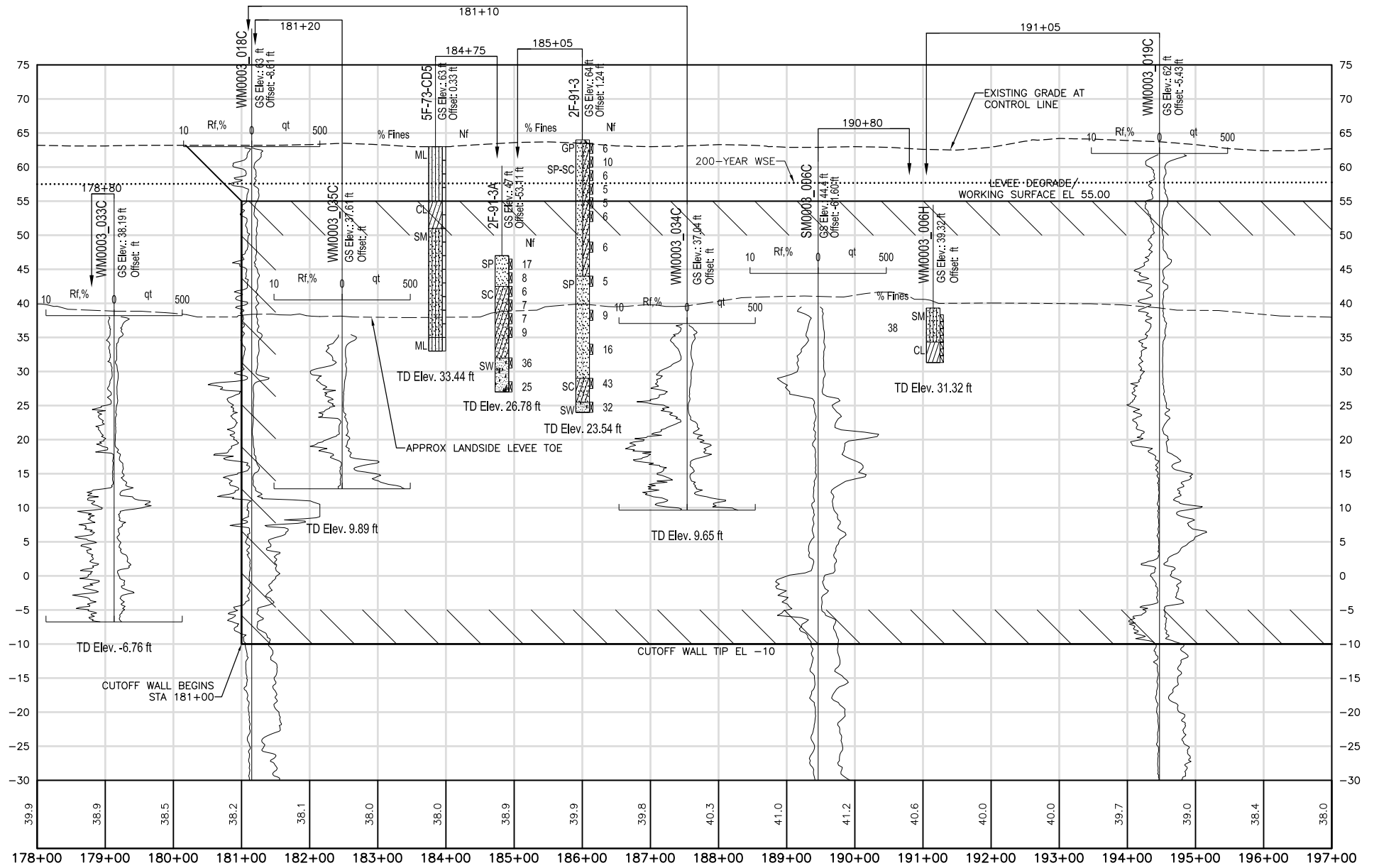
VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0" = 1"
DRAWING NO. SHEET
C-306 25

BEGIN STATION	END STATION	DEGRADE ELEVATION (FT)	CUTOFF WALL TIP ELEVATION (FT)
181+00	203+00	55	(-)10
203+00	211+00	55	(-)20
211+00	224+00	55	(-)25

GROUP SYMBOLS AND NAMES					
GRAPHIC	GROUP NAMES	GRAPHIC	GROUP NAMES	GRAPHIC	GROUP NAMES
	LEAN CLAY (CL)		LEAN CLAY WITH SAND (CL)		SANDY LEAN CLAY (CL)
	FAT CLAY (CH)		FAT CLAY WITH SAND (CH)		SANDY FAT CLAY (CH)
	SILTY CLAY (CL-ML)		SILT (ML)		SILT WITH SAND (ML)
	SANDY SILT (ML)		ELASTIC SILT (MH)		ELASTIC SILT WITH SAND (MH)
	SANDY ELASTIC SILT (MH)		POORLY GRADED SAND (SP)		POORLY GRADED SAND WITH CLAY (SP-SC)
	POORLY GRADED SAND WITH SILT (SP-SM)		CLAYEY SAND (SC)		SILTY SAND (SM)
	CLAYEY GRAVEL WITH SAND (GC)				

NOTE: SOILS WERE CLASSIFIED IN THE FIELD IN GENERAL ACCORDANCE WITH ASTM D2488-06, STANDARD PRACTICE FOR DESCRIPTION AND IDENTIFICATION OF SOILS (VISUAL MANUAL PROCEDURE). WHERE LABORATORY TESTING WAS PERFORMED, CLASSIFICATIONS WERE MODIFIED IN GENERAL ACCORDANCE WITH ASTM D2487-06, STANDARD PRACTICE FOR CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES (UNIFIED SOIL CLASSIFICATION SYSTEM).

BORDERLINE SYMBOLS, TWO GROUP SYMBOLS SEPARATED BY A SLASH, MAY BE USED IN FIELD VISUAL CLASSIFICATION WHEN (1) PERCENTAGE OF FINES IS ESTIMATED TO BE BETWEEN 45% AND 55%, (2) PERCENTAGES OF SAND AND GRAVEL ARE ESTIMATED TO BE ABOUT THE SAME, (3) SOIL COULD BE EITHER WELL GRADED OR POORLY GRADED, (4) SOIL COULD BE EITHER A SILT OR A CLAY, OR (5) FINE-GRAINED SOIL HAS PROPERTIES INDICATING THAT IT IS AT THE BOUNDARY BETWEEN LOW AND HIGH PLASTICITY. REFER TO DWR SOIL AND ROCK LOGGING, CLASSIFICATION, AND PRESENTATION MANUAL FOR GUIDELINES IN THE USE OF BORDERLINE SYMBOLS.



ISSUED FOR BID

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J. NETTLETON

DRAWN BY:
A. JACKSON

IN CHARGE:
D. JABBOUR

PROJECT MANAGER:
C. KRIVANEC

DATE:
5/2/2016

SUBMITTED

APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY

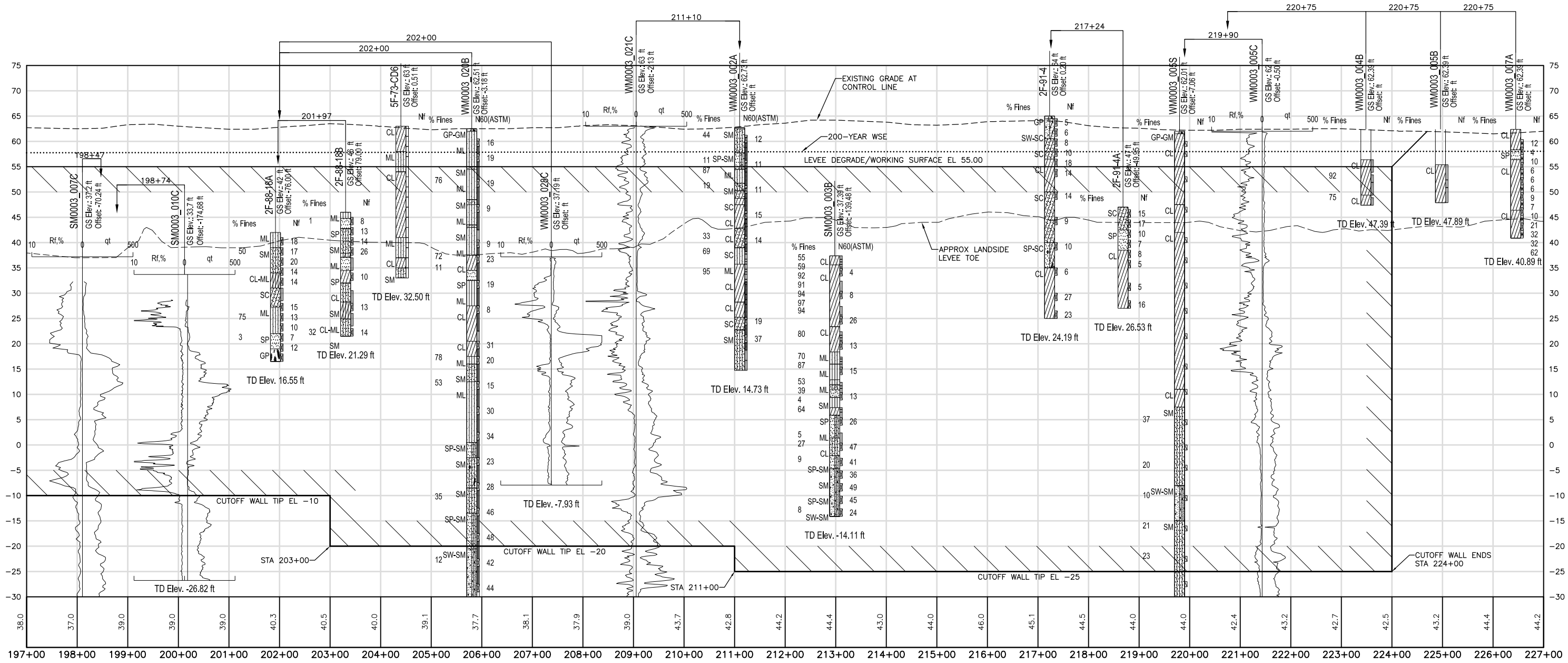
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

CUTOFF WALL SUBSURFACE PROFILE
STA: 178+00 TO 197+00

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

DRAWING NO. SHEET
C-401 26

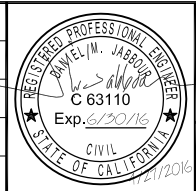
Attachment C - Project Design Plans



ISSUED FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY:
J. NETTLETON
DRAWN BY:
A. JACKSON
IN CHARGE:
D. JABBOUR
PROJECT MANAGER:
C. KRIVANEC
DATE:
5/2/2016



SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 3: FRWL IMPROVEMENTS PLANS (LAUREL AVE REPAIR PROJECT)

CUTOFF WALL SUBSURFACE PROFILE
STA: 197+00 TO 227+00

VERIFY SCALES
BAR IS ONE INCH ON
ORIGINAL DRAWING,
ADJUST SCALES FOR
REDUCED PLOTS
0" = 1"
DRAWING NO. SHEET
C-402 27

Attachment C - Project Design Plans



DEPARTMENT OF THE ARMY
U. S. ARMY CORPS OF ENGINEERS
441 G STREET, NW
WASHINGTON, DC 20314-1000

CECW-SPD

SEP 13 2013

MEMORANDUM FOR Commander, South Pacific Division (ATTN: Clark Frentzen, CESPDPDS-P), 1455 Market Street, San Francisco, California 94103-1398

SUBJECT: Record of Decision (ROD) – Feather River West Levee Project (FRWLP), Sutter and Butte Counties, California

1. References:

a. Memorandum, CESPCK-CO-OR, 16 July 2013, subject: Draft Record of Decision (ROD) for Section 408 Approval of a Flood Risk Reduction Project Alteration: Feather River West Levee Project (Sutter 408), Sutter & Butte Counties, California (Enclosure 3).

b. Memorandum, CESPDPDC, 17 July 2013, subject: Request for Section 408 Approval of a Flood Risk Reduction Project Alteration: Feather River West Levee Project (Sutter 408), Sutter and Butte Counties, California (Enclosure 2).

2. The ROD for subject project was signed by the approving official on 13 September 2013 (Enclosure 1).

3. The comments received during the Environmental Impact Statement (EIS) public review period did not require any changes to the Feather River West Levee Project (Sutter 408).

4. The FRWLP is a flood risk management project, proposed by the Central Valley Flood Protection Board (CVFPB) and to be constructed by the Sutter Butte Flood Control Agency (SBFCA). A ROD covering Reach 13 of Contract C, consisting solely of cutoff walls for approximately 2 miles of the FRWLP, to be constructed in 2013 was signed 19 July 2013. This ROD is for the remaining reaches of the FRWLP, approximately 39 miles, which consists of an additional 12 reaches for Contract C and various reaches for Contracts A, B, and D.

5. In order to ensure that the proposed action does not impair the usefulness of the existing federal project and that it will not be injurious to the public interest, the following conditions shall be imposed:

a. 33 U.S.C. §408 approval is conditional on compliance with all of the mandatory terms and conditions, as well as conservation measures, in the Biological Opinion (BO) (incorporated herein by reference). Failure to comply with these terms and conditions, and conservation measures associated with the incidental take statement in the BO, where the take of a listed species occurs, would constitute an unauthorized take and noncompliance with USACE's approval to proceed. The U.S. Fish and Wildlife Service (USFWS) is the appropriate authority

CECW-SPD

SUBJECT: Record of Decision (ROD) – Feather River West Levee Project (FRWLP), Sutter and Butte Counties, California

to determine compliance with the terms and conditions, as well as conservation measures, of the USFWS BO and with the Endangered Species Act.

b. The SBFCA is required to submit revisions to the Operations and Maintenance (O&M) Manuals for review and approval by the USACE, Sacramento District, within 180 days of construction completion. As-built drawings and permanent maintenance easement boundaries must be submitted in conjunction with the draft O&M Manual. Upon receipt of the draft O&M Manual, this office will schedule a transfer inspection with CVFPB to verify that all construction has been completed in accordance with the permission. Any features found to be deficient during that inspection will require CVFPB's correction prior to USACE accepting the alterations as part of the federal project. Within 180 days of construction completion, CVFPB must furnish a certification report that the work has been completed in accordance with the conditions of this permission. Further, if features constructed in accordance with the conditions of this permission differ from the federal project ultimately authorized, credit eligibility could be affected.

c. To ensure that there is mitigation for residual flood risk, CVFPB and SBFCA are required to update the Floodplain Management Plan that includes proactive elements for flood information dissemination, public awareness, notification and training, flood warning and evacuation plans, emergency flood operations plan with annual exercise, dedicated evacuation resources, and post-flood recovery plans. In accordance with items of local cooperation, this plan must be submitted within one year of the issuance of the 33 U.S.C. §408 letter of permission for Reach 13 Contract C. The CVFPB and SBFCA are required to participate in and comply with applicable federal flood plain management and flood insurance programs.

6. My point of contact for this project is Mr. Bradd Schwichtenberg, Deputy Chief, South Pacific Division Regional Integration Team, at (202) 761-1367.



STEVEN L. STOCKTON, P.E.
Director of Civil Works

Encls

CF:
CECW
CECW-SPD

RECORD OF DECISION
33 U.S.C. SECTION 408 PERMISSION FOR
THE FEATHER RIVER WEST LEVEE PROJECT
SUTTER AND BUTTE COUNTIES, CA

The Feather River West Levee Project (FRWLP) is a flood risk management project, proposed by the Central Valley Flood Protection Board (CVFPB) and to be constructed by the Sutter Butte Flood Control Agency (SBFCA). I have considered the District and Division Commander recommendations on the Final Environmental Impact Statement (FEIS), dated June 2013. A Record of Decision (ROD) covering Reach 13 of Contract C, consisting solely of cutoff walls for approximately 2 miles of the FRWLP, to be constructed in 2013 was signed 19 July 2013. This ROD is for the remaining reaches of the FRWLP, approximately 39 miles, which consists of an additional 12 reaches approximately 39 miles for Contract C and various reaches for Contracts A, B, and D.

Because the FRWLP consists of proposed modifications to the west levee of the Feather River, a feature of the Sacramento River Flood Control Project (SRFCP) authorized by Congress under the Flood Control Act of March 1917, the CVFPB must seek permissions by the US Army Corps of Engineers (Corps) pursuant to 33 U.S.C §408. The Assistant Secretary of the Army (Civil Works) has delegated approval authority to the U.S. Army Corps of Engineers' Chief of Engineers, who further delegated approval authority to the Director of Civil Works, to issue permission to proceed with the proposed construction pursuant to 33 U.S.C. §408 based on a finding that the proposed alteration is not injurious to the public interest and would not impair the usefulness of the SRFCP.

A ROD was prepared for the Section 408 Reach 13 increment to allow the CVFPB to expedite critical life safety flood risk reduction while I considered the broader more complex Section 408 decision. Reach 13, the Shanghai Bend reach represents the highest deficiency and risk in the system, and earlier construction of this reach would significantly reduce risk within the system. Reach 13 has the same design for the proposed Section 408 FRWLP and for the National Economic Development and Locally Preferred plans described in the Sutter Basin Pilot Feasibility Study (SBPFS). Therefore, Reach 13 required less policy review.

Based on this review and the views of other interested agencies and the public, I find that the selected plan for the FRWLP as presented in the FEIS (Notice of Availability for final EIS was published in the *Federal Register* on June 14, 2013) is based on life safety requirements, is considered cost effective, is technically sound, is in accordance with environmental statutes, and is in the public interest. The benefits to be gained from implementing the selected plan outweigh any known adverse effects. Thus, pursuant to 33 U.S.C. §408, I approve the request by the CVFPB and the SBFCA to modify the SRFCP as described below.

I. Background

The purpose of the FRWLP is to improve the flood risk management capability of the levee system in the project area. The FRWLP specifically focuses on seepage, slope stability, and

erosion along the 41 miles of levee of the SRFCP. The overall FRWLP comprises work to be implemented under four contracts (A, B, C, and D).

To initiate the process to seek Corps permission for the entire FRWLP, a letter from the CVFPB requesting 33 U.S.C. §408 permission was received on November 2, 2012. The Corps' authority to grant permission for the FRWLP under 33 U.S.C. §408 triggers the Corps requirement to comply with the National Environmental Policy Act (NEPA). The EIS was developed to fully evaluate the impacts of the proposed work. The Feather River levees have been evaluated in previous environmental documents for the SRFCP, including the 1992 SRFCP Systems Evaluation EIS. Currently, the Corps is conducting a related study, the SBPFS. The FRWLP is being advanced by SBFCA to expeditiously reduce flood risk before the SBPFS is completed. The Corps released an integrated Sutter Basin Draft Pilot Feasibility Report and Draft EIR/Draft Supplemental EIS (DEIR/SEIS) for public review in June 2013. The DEIR/SEIS for the SBPFS tiers from, and was released concurrently with release of the FEIS for the FRWLP.

This ROD considers Reaches 2-41 of the FRWLP (stations 202+50 to 2368+00) pursuant to the Corps' authority under 33 U.S.C. §408. The specific flood risk management features are summarized below and detailed in Table 2-4 of the FEIS:

- **Contract A** consists of reaches 2 to 5 and is scheduled for construction in 2014 and 2015. The work consists of cutoff walls and seepage berms.
- **Contract B** consists of reaches 6 to 12 and is scheduled for construction in 2014 and 2015. The work consists of cutoff walls, relief wells, and utility relocations.
- **Contract C** consists of reaches 13 to 25 and is scheduled for construction in 2013 (reach 13) and 2014. The work consists of cutoff walls.
- **Contract D** consists of reaches 26 to 41 and is scheduled for construction in 2014 and 2015. The work consists of cutoff walls, levee reconstruction, and seepage berms.

II. Alternatives Considered

The No Action Alternative was compared to three different alternative measures and their environmental effects. Each alternative was developed to address seepage related deficiencies and is summarized below. More detailed descriptions and environmental effects of the alternatives can be found in the FEIS, dated June 2013.

- **Alternative 1** focuses on those measures that would predominantly keep within the existing footprint of the Feather River west levee. Advantages of using this alternative are that it may minimize real estate acquisition and changes in land use. However, this alternative has a higher cost than the preferred alternative (below). This alternative primarily proposes cutoff walls as a technique to address the deficiencies to current design standards while minimizing change in the existing levee footprint.
- **Alternative 2** includes measures that would not be constrained by the existing footprint of the Feather River west levee. Advantages of this alternative are that it may more effectively address the deficiencies to current design standards. However, this alternative has the greatest environmental effect and the highest cost of these three alternatives. This alternative primarily proposes stability berms and seepage berms, which would

substantially extend beyond the current levee footprint. Some cutoff walls and other work such as levee reconstruction and utility replacements would also be included with this alternative.

- **Alternative 3** (preferred and selected alternative) is an optimized blend of the above two alternatives. This alternative is also considered the environmentally preferable alternative because it balances borrow material import needs, emissions, real estate acquisition, land use change, construction-related disturbance, and habitat effects and it has the least long-term effect on Waters of the U.S. and agricultural lands. Several factors were considered for optimization, including the effectiveness of addressing the deficiencies to current design standards, compatibility with land use, minimization of real estate acquisition, and avoidance of effects and costs. This alternative proposes a combination of cutoff walls, levee reconstruction, and seepage berms.

III. Consideration of Mitigation Measures

Although all practicable means to avoid, minimize, and compensate for adverse effects on environmental resources have been incorporated into the FRWLP, the proposed action would have several unavoidable significant effects. Mitigation for these and for other adverse effects is incorporated into the project. The Mitigation and Monitoring Plan will guide the SBFCA in the mitigation requirements for project effects to fish and wildlife habitat, including endangered species.

A. Significant and Unavoidable Effects. Due to the large volume of haul traffic and the operation of a wide range of construction equipment, short-term emissions of reactive organic gases during construction of the entire FRWLP would result in significant and unavoidable air quality effects in the Feather River Air Quality Management District (FRAQMD) covering Sutter County. Implementation of mitigation measures would greatly reduce project-generated construction emissions, but would not reduce all emissions to below FRAQMD thresholds. To compensate for any emissions above air quality thresholds the SBFCA has agreed to provide payment into the applicable air quality mitigation fee program.

During some time periods, short-term noise and vibrations affecting residents along the FRWLP would be significant and unavoidable. This is especially true for construction in reaches immediately adjacent to Yuba City.

Consultation with the SHPO and Native American Tribes, in accordance with Section 106 of the NHPA, has led to the determination that a number of potentially significant cultural resources could be affected by project activities. The Corps, SBFCA, and the SHPO are all parties to a programmatic agreement (PA), signed 1 July 2013. Pursuant to the PA and prior to construction, surveys would be conducted and Historic Properties Treatment Plans would be prepared by the Corps and SBFCA, in consultation with the SHPO and Native American Tribes, to resolve adverse effects to historic properties. The treatment plans would include mitigation measures that are consistent with those proposed in the FEIS. Additional work to identify and evaluate significant cultural resources and resolve any potential adverse effects to such resources is being undertaken pursuant to the PA. Following the requirements of the PA, construction shall not begin on any reach, contract, or phase of the project until the consultation process is complete.

B. Mitigation for Significant Effects. The May 2, 2013 USFWS Biological Opinion (BO) for the FRWLP included 4 terms and conditions and 16 conservation measures. SBFCA will implement all terms and conditions and conservation measures. The FRWLP includes mitigation for effects to the threatened valley elderberry longhorn beetle (VELB) and the threatened giant garter snake (GGS) and their habitats. Compensatory mitigation for project effects on VELB includes transplanting elderberries, planting of other vegetation, and protection of habitats that would support the species. Construction would require compensation for the loss of 91 elderberry plants and would require protection measures for 175 other plants, of which 16 were protected during the 2013 work for Reach 13. If transplanting of elderberries is undertaken outside of the normal transplanting window, the higher planting requirements specified in the BO would apply. Proposed compensatory mitigation for project effects to GGS would include pre-construction surveys, fencing, time of year restrictions, protection of agricultural areas that serve as GGS habitat, and purchase of credits at a compensation bank. Construction would have potential impacts to upland habitat for GGS along the levee.

The Mitigation and Monitoring Plan will guide the SBFCA and the CVFPB as they manage the compensatory land in perpetuity. The plan establishes specific success criteria for the habitat components, specifies contingency measures to be undertaken if success criteria are not met, and describes short-term and long-term management and maintenance of the mitigation lands.

The National Marine Fisheries Service (NMFS) provided the Corps with a letter of concurrence with the Corps determination of "not likely to adversely affect", which contains terms and conditions and requires applicable Conservation Measures. SBFCA will implement these terms and conditions and other measures.

The USFWS Coordination Act Report (CAR) for the FRWLP was issued on May 18, 2013. The CAR contained 7 (of 10 total) recommendations applicable for the FRWLP, including Reach 13. SBFCA will implement these recommendations. The other three CAR recommendations applied solely to the SBPFS.

The FRWLP includes designs to compensate for the loss of riparian vegetation and other long-term effects to vegetation on the waterside of the Feather River west levee slope. Long-term effects would be compensated through revegetation with native species at a 2:1 ratio, in-kind, where feasible. A bentonite slurry spill contingency plan (BSSCP) would be developed and included in the Stormwater Water Pollution and Prevention Plan (SWPPP) or slurry work plan developed prior to construction by the construction contractor.

Prior to initiation of each construction season, a qualified biologist will be required to conduct surveys in and near the work areas to determine the presence of any active migratory bird nests. If no nests are found, then construction may proceed. If active nests are found, then SBFCA would coordinate with the USFWS to determine appropriate buffer areas or other measures to avoid disturbing the nests until the young have fledged. When possible, construction would be conducted during the non-breeding season for migratory birds.

The FRWLP is expected to have a potentially significant effect on groundwater and surface water quality from contact with the water table. However, these water quality effects will be minimized through the development and implementation of the: BSSCP; SWPPP; and a spill, prevention, control, and counter measure plan.

The FRWLP would also have a potentially significant effect on the alteration of existing drainage patterns in the area. However, these geomorphic and flood risk management effects would be mitigated by coordinating the work with the owners and operators of the local drainage systems and affected landowners, preparing any needed drainage studies, and remediating effects through final project design.

Housing would also be potentially significantly affected by the FRWLP since five residences would need to be acquired and demolished to complete the project. However, the landowners would be provided fair monetary compensation, and SBFCA will develop a resident relocation plan to mitigate for the effects.

C. Mitigation for Less than Significant Effects. The entire FRWLP would have less-than-significant effects on other resources including traffic, fisheries, agriculture and land use, recreation, soils, climate change and greenhouse gases, and visual resources. However, mitigation measures, such as minimizing greenhouse gas emissions during construction, would be used by the construction contractor to further minimize effects on that resource. The SBFCA has also agreed to follow all 12 recommended measures in the April 10, 2013, NMFS concurrence letter to further minimize and compensate for effects on riparian habitat that provides fish habitat during floodwaters.

IV. Conclusion

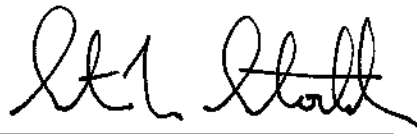
This ROD completes the NEPA process for the FRWLP. The ROD will be publicly available upon request or can be found on the Sacramento District's and SBFCA's web sites.

PERMISSION UNDER 33 U.S.C. §408

Based on my consideration of the District and Division Commander recommendations on the 33 U.S.C. §408 package, the FEIS, the views of the Federal, State, regional, and local agencies, and input from the public, I find the recommended FRWLP to be technically adequate and not an impairment to the usefulness of the existing Federal project; to be in accordance with environmental statutes; and not to be injurious to the public interest. Therefore, pursuant to my delegated authority under 33 U.S.C. §408, the request for alteration of the Sacramento River Flood Control Project, the Feather River West Levee Project, is approved. I hereby grant permission to the CVFPB to allow SBFCA to construct the FRWLP and to alter the Federal project.

13 SEP 13

Date



Steven L. Stockton
Director of Civil Works



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:
08ESMF00-2013-F-0342-1

MAY 02 2013

Ms. Alicia Kirchner
Chief, Planning Division
U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Formal Consultation on the Feather River West Levee Project, Sutter County, California

Dear Ms. Kirchner:

This is in response to your March 22, 2013, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the Feather River West Levee Project (FRWLP) (proposed project) in Sutter County, California. Your request was received on March 28, 2013. You requested our concurrence that the proposed project may affect, and is likely to adversely affect the federally-listed as threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)(beetle) and the giant garter snake (*Thamnophis gigas*)(snake). The Service concurs with your determination and this biological opinion addresses the effects of the proposed project on these two species. Critical habitat has been designated for the beetle; however, the proposed project is not located within any designated or proposed critical habitat. Critical habitat has not been designated for the snake; therefore, none will be affected. 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).

This biological opinion is based on information provided in the U.S. Army Corps of Engineers' (Corps) letter requesting consultation and their biological assessment. A complete administrative record is on file at the Sacramento Fish and Wildlife Office.

CONSULTATION HISTORY

July 13, 2012. The Service, ICF International, HDR Inc., consultants to Sutter Butte Flood Control Agency (SBFCA), SBFCA, California Department of Fish and Wildlife (CDFW), California Department of Water Resources, and the Corps participated in a site visit to the proposed project. Potential effects to giant garter snake were discussed on the trip.

September 27, 2012. The Service, Corps, HDR, and ICF met to discuss the biological opinion and the level of detail that will be available in order to initiate consultation. The applicant determined that they will have sufficient information to initiate consultation at the project level.

December 18, 2012. The Service, Corps, SBFCA, ICF, and HDR met to discuss effects to giant garter snake. Permanent and temporary effects were discussed as well as the Service providing suggestions on conservation measures that could be incorporated.

February 12, 2013. The Service, Corps, ICF, CDFW, and HDR met to discuss long-term operations and maintenance (O&M). The outcome of this meeting was that the SBFCA FRWLP will not include operations and maintenance in their project description because their project will not be changing O&M. However, the Corps will be initiating consultation on the Sutter Feasibility Study in the next 6 months and this project description will include O&M activities.

March 22, 2013. The Corps initiated section 7 consultation with the Sacramento Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF ACTION AREA

North to south, the Action Area consists of the 41-mile corridor along the west levee of the Feather River from the Thermalito Afterbay to a point about 4 miles north of the Sutter Bypass. The Action Area includes the project construction area and a 100-foot buffer around this area which includes staging and spoils areas. The project construction area was defined as the area in which levee improvements—such as seepage berms, stability berms, relief wells, sheet-pile walls, and slurry cutoff walls—are likely to be constructed. All direct and indirect effects will occur within this area and the 100-foot buffer around this area.

The corridor is divided into 41 relatively homogeneous reaches for ease of describing existing conditions, project components, land cover-types, and potential effects (note that this number is coincidental and one reach does not correspond to a length of 1 mile; additionally, Reach 1 is not part of the FRWLP) (Figure 1).

The Action Area also includes six potential borrow sites that could supply the borrow material necessary for levee construction and upgrades, and routes from the project construction area to the borrow sites. It is not anticipated that all six sites will be used over the multi-year phased construction period, but until additional geotechnical and soil samplings are completed, all sites will be available for use and are included in the Action Area.

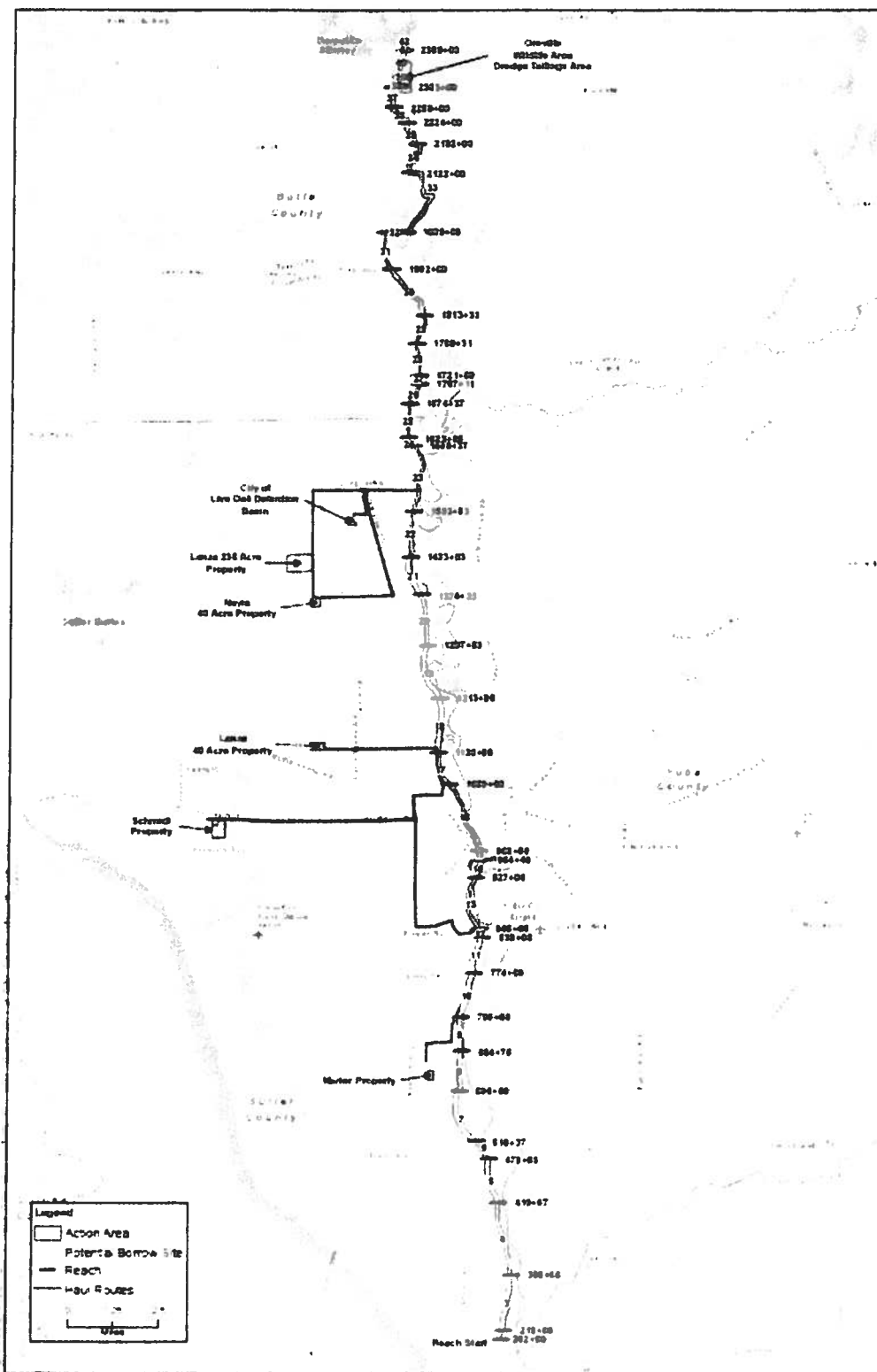


Figure 1. Proposed Project

Finally, the Action Area includes the existing 48.5-acre Star Bend Conservation Area, located on the west levee of the Feather River, about 6 miles south of Yuba City. Compensation for the Proposed Action's effects on the beetle is proposed to occur in a portion of this conservation area, which is discussed below under Conservation Measure 5.

Description of Proposed Action

The primary purpose of the FRWLP is to reduce flood risk in the Sutter Basin by addressing known levee deficiencies along the Feather River West Levee from Thermalito Afterbay downstream to a point about 4 miles upstream of the Feather River's confluence with the Sutter Bypass. While the FRWLP will not by itself reduce all flood risks affecting the Sutter Basin, it will address the most immediate risks based on the following.

- The proximity of the Feather River to population centers and key infrastructure.
- The nature of the Feather River West Levee being the longest and most contiguous portion of the planning area perimeter.
- The location of known levee deficiencies and the clarity and feasibility of available measures to address them.

The construction of the FRWLP will be divided into four separate construction contracts. Contract A begins near the intersection of the Feather River West Levee and Laurel Road. It continues north to the beginning of the improvements constructed as part of the Star Bend Setback Levee Project. The total length of the levee in this portion of the FRWLP is 27,618 linear feet. Contract B begins at the end of the improvements constructed as part of the Star Bend Setback Levee Project, and continues north for 31,963 linear feet. Contract C begins near the north end of the Shanghai Bend Setback Levee, and continues north for a total of 77,886 linear feet. Contract D then begins and continues north for 69,363 linear feet.

For Contract A, a cutoff wall ranging between 10 and 35 feet deep will be constructed along the centerline of the levee for the entire length of levee. The overall height of the levee will be degraded by about 50%. In addition to the cutoff wall, a portion of the levee will have a 9,816-foot-long; 100-foot-wide seepage berm installed.

For Contract B, a cutoff wall ranging between 5 and 25 feet deep will be constructed along the centerline of the levee for 31,600 linear feet. The overall height of the levee will be degraded by about 50%. Relief wells 60 feet apart and 50 feet deep will be installed along a 2,500 linear foot section. Finally, two small sections will involve pipe crossing work.

For Contract C, a cutoff wall ranging between 5 and 65 feet deep will be constructed along the centerline of the levee for 62,117 linear feet. The overall height of the levee will be degraded by about 50%, with about 5,900 linear feet of the levee needing to be fully degraded. A 7-foot tall

and 50-foot-wide seepage berm will be placed near the 10th Street bridge and extend through the existing abandoned railroad tunnel. Finally, there will be a few storm drain pipes replaced within the levee.

For Contract D, a cutoff wall ranging between 10 and 90 feet deep will be constructed along the centerline of the levee for 57,361 linear feet. For all but 317 linear feet of levee, the levee will be degraded by about 50%. The remaining 317 linear feet will have a full levee degrade and reconstruction. A canal runs adjacent to the landside of the levee for 4,723 feet. The landside levee will require reconstruction to the bottom of the canal. Six storm drain and irrigation pipes will need to be replaced along a section of the levee. About 4,800 linear feet of seepage berm will be constructed at the northern end of the proposed project. The berm will vary in width between 100 and 170 feet. Additionally, a waterside pit located in this area will be filled.

Materials imported to the construction site will include water, bentonite, cement, incidental construction support materials, aggregate base rock, hydroseed, and up to 1,500,000 cubic yards of embankment fill material for the new levee surfaces from offsite commercial borrow sites or local landowners willing to sell borrow material. For backfill of new pipelines crossing the levee, controlled low strength material (CLSM) (otherwise known as lightweight concrete) will be placed to the pipeline's spring line.

Construction methods for the flood management measures are described in detail below.

Slurry Cutoff Wall

A slurry cutoff wall consists of impermeable material that is placed parallel to the levee, typically through the center of the levee crown. There are three methods for constructing a slurry cutoff wall: (1) conventional slot trench, (2) deep soil mixing (DSM), and (3) jet grouting. The first two are the primary methods for application over longer areas, while jet grouting is a spot application based on limiting conditions. A slurry cutoff wall addresses the deficiency of seepage (through- and under-seepage).

Conventional Slot Trench Method - To begin construction, the construction site and any necessary construction staging or slurry mixing areas are cleared, grubbed, and stripped. In the conventional slot trench method, a trench is excavated at the top center of the levee and into subsurface materials. The size of the trench is based on the severity of the seepage but can be typically 3 feet wide and up to 80–90 feet deep. As the trench is excavated, it is filled temporarily with bentonite water slurry to prevent cave-in. The soil from the excavated trench is hauled to a nearby location where it is mixed with hydrated bentonite to reduce permeability and cement in some applications where increased strength is desired. The soil-bentonite mixture then is returned to the levee and backfilled into the trench. This mixture hardens and creates the impermeable barrier wall in the levee.

In most cases, degradation of the levee crown is necessary to create a large enough working platform to reduce the risk of hydraulic fracturing from the insertion of slurry fluids, and allowing greater depths to be reached. Dependent on the conditions of the particular levee, it may be necessary to degrade the levee by one- to two-thirds its existing height. The material

from degrading the levee is hauled to a nearby stockpile area. Following completion of the slurry cutoff wall, the material is hauled back to the levee to restore the levee to its original dimensions. The material may need to be hauled offsite to a local landfill, and borrow material may need to be imported if the in-situ levee material is found to be unsuitable for current levee standards.

One construction crew typically is able to construct 75–100 linear feet of slurry wall (about 70–80 feet deep) in an 8-hour shift. Equipment needed for the crew includes a long-reach track hoe, three or four dump trucks (15 cubic yard capacity each), two loaders at the mixing location, bulldozers, excavators, loaders, a rough terrain forklift, compactors, maintainers, and a water truck. Vertical clearance of about 40 feet is needed for the excavator boom. Horizontal clearance of about 30 feet beyond the levee crest may be required for excavator swing when loading dump trucks.

A mixing area is located at the construction staging area. The mixing area is to prepare the soil-bentonite mixture and supply bentonite-water slurry. The mixing area is contained to avoid inadvertent dispersal of the mixing materials. Dump trucks haul material between the excavator and the mixing area along the levee.

An access road made of aggregate base rock is constructed on the levee crown to enable regular levee inspections. Post-construction, areas used for construction staging, mixing, the levee crown, slopes, and any other disturbed areas are hydroseeded.

Deep Soil Mixing Method - The DSM method of constructing a slurry cutoff wall uses a crane-supported set of two to four mixing augers (typically 36 inches in diameter) set side by side. These augers are drilled through the levee crown and foundation to the required depth (capable of a maximum depth of about 200 feet). As the augers are inserted and withdrawn, a soil-bentonite grout is injected through the augers and mixed with the native soil. An overlapping series of mixed columns is drilled to create a continuous seepage cutoff barrier.

To provide a wide enough working platform on the levee crown, the upper portion of some segments of the levee requires excavation with a paddle wheel scraper. Material is scraped and stockpiled at a nearby stockpile area. Dependent on the depth of the wall required, vertical clearance for the crane also may be needed. An excavator manipulates injector return spoils near the DSM rig, and transport trucks are used to haul spoils offsite. A crane is used for in-place sampling of DSM material and also for loading bentonite into the batch plant hopper. A mobile batch plant (diesel-powered) is required near each DSM rig at the work area to prepare the cement-bentonite grout. The grout is transported to the DSM rig through flexible hoses. Each batch plant requires a pad of 50 by 100 feet. Hauling at the work area involves scraper runs along the levee to the staging area and cement and bentonite deliveries to the batch plant.

During DSM slurry wall construction, one DSM rig typically can construct 50 linear feet of DSM wall per 8-hour shift (for wall depths up to 135 feet). Post-construction, areas used for construction staging, the levee slopes, and any other disturbed areas are hydroseeded.

Jet Grouting Method - Jet grouting involves injecting fluids or binders into the soil at very high pressure. The injected fluid can be grout; grout and air; or grout, air, and water. Jet grouting breaks up soil and, with the aid of a binder, forms a homogenous mass that solidifies over time to create a mass of low permeability. Jet grouting typically is used in constructing a slurry cutoff wall to access areas other methods cannot. In this regard, it is typically a spot application rather than a treatment to be applied on a large scale along an entire reach.

Equipment required for jet grouting consists of a drill rig fitted with a special drill string; a high pressure, high flow pump; and an efficient batching plant with sufficient capacity for the required amount of grout and water. The high-pressure pump conveys the grout, air, and/or water through the drill string to a set of nozzles located just above the drill bit. The diameter of the jet grout column is dependent on site-specific variables such as soil conditions, grout mix, nozzle diameter, rotation speed, withdrawal rate, and grout pressure. Jet grouted columns range from 1 to 16 feet in diameter and are typically interconnected to form cutoff barriers or structural sections. Under ideal conditions, one construction crew—consisting of a site supervisor, pump operator, batch plant operator, chuck tender, and driller—can construct two 6-foot diameter, 50-foot columns per day consisting of about 100 cubic yards of grout injected per 8-hour shift. Ideal conditions will be characterized by no technical issues occurring at either the batch plant or the drilling site, such as loss of fluid pressure, breakdown of equipment, or subsurface obstructions to drilling operations.

To initiate jet grouting, a borehole is drilled through the levee crown and foundation to the required depth (to a maximum depth of about 130 feet) by rotary or rotary-percussive methods using water, compressed air, bentonite, or a binder as the flushing medium. When the required depth is reached, the grout is injected at a very high pressure as the drill string is rotated and slowly withdrawn. Use of the double, triple, and superjet systems create eroded spoil materials that are expelled out of the top of the borehole, this material is frequently used as a construction fill.

To provide a wide enough working platform on the levee crown, the upper portion of some segments of the levee may require degradation with a paddle wheel scraper. Material is scraped and stockpiled at a nearby stockpile area. Hauling at the work area involves scraper runs along the levee to the staging area and grout, bentonite, and water deliveries to the batch plant.

Batch plants are typically centrally located to the injection site, with pipelines for mixed grout that run the length of the work. Grout mixing and injection equipment consists of grout mixers, high powered grout pumps and supporting generators and air compressors, holding tanks, and water tanks, with bulk silos of grout typically used to feed large mixers. Smaller equipment can be used in combination with the single phase-fluid system and can be permanently trailer-mounted to permit efficient mobilization and easy movement at the job site.

Prior to commencing production jet grouting, a field test program is typically completed to evaluate injection parameters and to assess jet grout column geometries, and mechanical and permeability properties. Where possible, jet grout test elements are exposed by excavation and properties are obtained by direct measurement. Where excavation is not possible, core drilling is employed to obtain samples from the jet grout test columns for strength testing.

Areas used for construction staging, the levee slope, and any other disturbed areas are restored and hydroseeded following construction.

Slope Flattening

Slope flattening is a mechanical method to repair or reshape slopes that do not meet standards for geometry and stability. Levee slopes are typically subject to a standard of 3:1 (horizontal to vertical), but this may vary based on site-specific conditions and supporting engineering analysis. Slope flattening addresses the deficiency of slope stability and geometry. To begin slope flattening activities, the area is cleared, grubbed, and stripped to provide space for construction and reshaping of slopes. Additional embankment fill material may be necessary to achieve slope flattening—if so, bulldozers excavate and stockpile borrow material from a nearby permitted borrow site. Front-end loaders load haul trucks with the borrow material. The haul trucks transport the material to slope flattening site. Motor graders spread material evenly according to levee design plans, and sheepsfoot rollers compact the material. Water trucks distribute water over the material to ensure proper moisture for compaction.

To reshape a waterside slope, the existing crown of the levee is shifted farther landward and the waterside slope is trimmed and reshaped to a 3:1 slope. The shifted levee crown will be a minimum of 20 feet wide, with a 3:1 slope on the landward side. An access road made of aggregate base rock is constructed on the levee crown. Post-construction, the construction staging areas, levee slopes, and any other disturbed areas will be hydroseeded.

Stability Berm

A stability berm will be constructed against the landside slope of the existing levee with the purpose of supplying support as a buttress. The height of the stability berm is generally two-thirds the height of the levee; the structural needs of the levee determine the distance it extends along that reach. A stability berm addresses the deficiency of stability. To begin the construction of a stability berm, the site is cleared, grubbed, and stripped to provide space for construction and shaping of the berm. Embankment fill material necessary to construct the berm is excavated by a bulldozer from a nearby borrow site. Front-end loaders load haul trucks with the borrow material, and the haul trucks transport the material to the stability berm site. Motor graders spread the material evenly according to design specifications, and a sheepsfoot roller compacts the material. Water trucks distribute water over the material to ensure proper moisture for compaction.

Stability berms may be drained or undrained. An undrained berm consists of embankment fill only. A drained berm includes a layer of drain rock placed along the ground surface underneath the fill material, separated by a casing of filter fabric. Drainage water seeping from the berm will sheetflow on the adjacent landside surface.

Levee Reconstruction

Levee reconstruction will be necessary where a levee has been degraded to facilitate implementation of another measure (such as a slurry cutoff wall), where a substantial

encroachment has been removed from within the levee prism, or otherwise where the levee is found to be deficient and needs to be replaced with materials and methods that meet current engineering standards. The existing levee is first cleared, grubbed, and stripped to the desired surface to allow a working platform for other measures (such as a slurry cutoff wall), to remove an encroachment, or to remove substandard material. Embankment fill material necessary to construct the new levee is excavated by a bulldozer from a nearby borrow site. Front-end loaders load haul trucks with the borrow material and the haul trucks transport the material to the stability berm site. Motor graders spread the material evenly according to design specifications, and a sheepsfoot roller compacts the material. Water trucks distribute water over the material to ensure proper moisture for compaction. The new levee will be built in cross section to meet current engineering standards.

Sheet-Pile Wall

A sheet-pile wall is a series of vertical panels of interlocking steel that is placed parallel to the levee, typically through the center of the levee crown to provide an impermeable barrier. A sheet-pile wall addresses the deficiencies of seepage and will be used only as a site-specific treatment (rather than applied on a reach-wide basis) such as at roadway or railroad crossings. The site where sheet piles are to be installed is cleared, grubbed, and stripped to allow for construction activities, including removal of the roadway or railroad. A hydraulic- or pneumatically-operated pile-driving head attached to a crane drives the sheet pile into the levee crown to the desired depth (up to 135 feet). If the levee material is particularly solid, pre-drilling may be necessary. The conditions of the site and the desired life of the project determine the thickness and configuration of the sheet piles.

Post-construction, construction staging areas, the levee crown, slopes, and any other disturbed areas are hydroseeded and the roadway or railroad will be replaced in-kind to the pre-project condition.

Seepage Berm

Seepage berms are wide embankment structures made up of low-permeability materials that resist accumulated water pressure and safely release seeping water. A seepage berm is typically one-third the height of the levee, extending outward from the landside levee toe for 300–400 feet, and laterally along the levee as needed relative to the seepage conditions. A seepage berm addresses the deficiency of under-seepage. A seepage berm can vary in width, from a minimum of four times the levee height to a maximum of 300 feet. Berm heights can also vary but are typically a minimum of 5 feet tall at the landside toe of the levee and generally taper down to 3 feet at the end of the berm.

Construction consists of clearing, grubbing, and stripping the ground surface. Bulldozers then excavate and stockpile borrow material from a nearby borrow site. Front-end loaders load haul trucks, and the haul trucks subsequently transport the borrow material to the berm site. The haul trucks dump the material and motor graders spread it evenly, placing 3–5 feet of embankment fill material. Sheepsfoot rollers compact the material, and water trucks distribute water over the material to ensure proper moisture for compaction.

Seepage berms may have an optional feature of a drainage relief trench under the toe of the berm. Drained seepage berms include the installation of a drainage layer (gravel or clean sand) beneath the seepage berm backfill and above the native material at the levee landside toe. A drained seepage berm does not increase the overall footprint of the berm. Post-construction, areas used for construction staging, the levee, the berm, and any other disturbed areas are hydroseeded.

Relief Wells

Relief wells are passive systems that are constructed near the levee landside toe to provide a low-resistance pathway for under-seepage to exit to the ground surface in a controlled and observable manner. A low-resistance pathway allows under-seepage to exit without creating sand boils or piping levee foundation materials. Relief wells are an option only in reaches where geotechnical analyses have identified continuous sand and gravel layers. Relief wells are constructed using soil-boring equipment to drill a hole vertically through the fine-grained blanket layer (sand) into the coarse-grained aquifer layer (gravel) beneath. Pipe casings and gravel/sand filters are installed to allow water to flow freely to the ground surface, relieving the pressure beneath the clay blanket without transporting fine materials to the surface, which can undermine the levee foundation. Relief wells will be designed to discharge onto a cobble splash, and the water will then sheet flow into adjacent agricultural fields. In areas where sheet flow is not feasible, a swale will be excavated and connected to a drainage canal.

Relief wells generally are spaced at 50- to 100-foot intervals, dependent upon the amount of under-seepage, and extend to depths of 150 feet. Areas for relief well construction are cleared, grubbed, and stripped. During relief well construction, a typical well-drilling rig is used to drill to the required depth and construct the well (including well casing, gravel pack material, and well seal) beneath the ground surface. The drill rig likely will be an all-terrain, track-mounted rig that could access the well locations from the levee toe.

Piezometers, also called monitoring wells, could be installed between relief wells to allow monitoring of groundwater levels to ensure the wells are relieving the pressure within the aquifer.

Areas along the levee toe may be used to store equipment and supplies during construction of each well. Construction of each well and the lateral drainage system typically takes 10–20 days. Additional time may be required for site restoration. Post-construction, areas used for construction staging, the levee slopes, and any other disturbed areas are hydroseeded.

Depression/Ditch Infilling

Landside depressions and ditches can contribute to risk of levee failure if a seepage pathway forms under the levee and the water then surfaces through the depression or ditch, exploiting its less resistive nature compared to surrounding soil mass. This measure involves placing fill soil in such depressions and ditches to remove localized susceptibility to seepage. Construction consists of clearing, grubbing, and stripping the ditch or depression surface to remove vegetative material. Bulldozers then excavate and stockpile borrow material from a nearby borrow site.

Front-end loaders load haul trucks, and the haul trucks subsequently transport the borrow material to the fill site. The depression or ditch may be further excavated to provide a surface that the fill soil may be keyed into. The haul trucks dump the material and motor graders or bulldozers smooth the material level with the surrounding land surface. An excavator may also be used for placement. Sheepsfoot rollers compact the material, and water trucks distribute water over the material to ensure proper moisture for compaction.

Removal and Relocation of Pacific Gas & Electric Facilities

Prior to and/or concurrent with levee rehabilitation construction, Pacific Gas and Electric Company (PG&E) will need to remove and relocate facilities located within the footprint of the FRWLP. PG&E's utility relocations will need to occur in advance of SBFCA's construction activities at any given location. Construction sequencing for SBFCA's work will be dynamic throughout SBFCA's project planning and design. PG&E's construction schedule will be determined by further engineering to clarify and determine efficacy of site-specific measures; the availability of funding for FRWLP; easement and right-of-way acquisition; availability of borrow material for the levee improvement activities; and/or environmental clearances based on wildlife presence, lifecycle activity, and location of habitats. PG&E's construction schedule will be further influenced by utility operation and maintenance constraints, particularly for relocation activities that require taking existing facilities temporarily out of service. As necessary, geotechnical mitigation measures will be incorporated into construction design to ensure that utility facilities effectively co-exist with the FRWLP, relocation will be done where this is not feasible.

For PG&E's electrical transmission and distribution activities, PG&E will install and remove new electrical transmission and distribution poles. Electrical transmission and distribution pole removal is conducted by a line crew, who typically access each pole site with a line truck and trailer or a boom truck, except in those instances when the pole is located on the levee crown (a crane may be used in those instances). On average, removal of vegetation up to 50 feet from the toe of the levee will need to occur to accommodate pole installation activities; this distance may be greater in instances where the installation activity is located further than 30 feet from the levee toe. After vegetation is cleared, PG&E will remove and replace the existing wood distribution and power poles and related equipment.

For PG&E's natural gas transmission and distribution activities, PG&E will install gas transmission and distribution steel pipe. This also typically includes the removal and disposal of existing pipe. Other typical types of gas transmission and distribution equipment that may be installed include Electric Test System/ Gas Cathodic Test System meter stations for future pipe monitoring purposes, and pipeline markers at angle points and at levee crossing locations. Clearing and grading operations in support of installation of natural gas facilities typically involve preparation of the right-of-way, including vegetation removal, debris disposal, and land leveling. Installation sites are backfilled using sand to create a 6-inch insulation zone around the pipe and then covered by native soil from the project area. In some instances, a crane may be required to place pipe at crossing sites located at the crowns of the levees. Dump trucks will be used to transport sand and soil materials. Spoil piles may be temporarily placed onsite while the installation activities are occurring.

Hydrostatic testing associated with installation of natural gas facilities will be performed to test the strength of the new pipeline. Test water intake and discharge will be performed in accordance with all regulations and permit requirements.

Typical electrical and natural gas transmission and distribution project work schedules are comprised of an average 9-hour day, at an average of 6 days per week per crew. Typical crews consist of 3 to 5 members.

PG&E work areas will be about 125 feet by 125 feet in diameter and located in close proximity to installation activity locations. On average, PG&E will require up to 10 work areas per contract phase. PG&E will utilize the work areas identified by SBFCA whenever possible. Typically, PG&E project access is achieved through existing public and private roads. Removal of vegetation to utilize access roads by PG&E equipment and transport of facilities may be required. PG&E currently owns easements along the entire project corridor. However, temporary and/or permanent easements as required for construction and maintenance of these facilities are being acquired by SBFCA.

Encroachment and Vegetation Removal

Encroachments - Existing facilities found within the footprint of an alternative may require removal and replacement nearby, abandonment, or relocation. Encroachments are numerous (over 400 identified) along the Feather River West Levee and may need to be addressed if they present a threat to the stability of the levee, do not currently comply with the levee encroachment criteria, or will be disrupted or otherwise impacted by construction activities. Typical encroachments include pressure pipelines (water supply pipelines from waterside pump stations and drainage pipelines from landside drainage pump stations), gravity drainage pipes, gas lines, telephone utilities, overhead utilities, structural encroachments, and other types and variations. Debris from structure and embankment fill material of poor quality will be hauled offsite to a permitted disposal site within 20 miles of the removal location.

Vegetation Removal - Vegetation removal will involve stripping of herbaceous (non-woody) vegetation by bulldozer. Vegetation will be removed only from within the direct construction footprint and the minimum areas necessary for staging and access. Consistent with the Central Valley Flood Protection Plan guidance for levee repair or improvement, vegetation will be removed to meet specific project objectives. Any vegetation removed as part of direct construction activities will not be replaced at that location, but will involve offsite, in-kind mitigation, to be determined in consultation with the appropriate resource agencies.

In accordance with the State of California's Urban Levee Design Criteria, at a minimum, all roots larger than 1.5 inches in diameter that are within 3 feet of the perimeter of the tree trunk will be removed. Immature trees less than 4 inches in diameter at breast height that will be removed may be cut off at or below ground level, generally without root removal. Any excavation will be

backfilled with engineered fill using appropriate placement, moisture conditioning, and compaction methods. Additional measures for removing non-compliant vegetation are listed below.

- Ensure that the resulting void is free of organic debris.
- Cut poles to salvage propagation materials for replanting, such as willows and cottonwoods.
- Conduct hand clearing using chainsaws and trimmers.
- Conduct mass clearing using bulldozers.

Debris from vegetation removal will be hauled offsite to a permitted disposal site within 20 miles of the removal location.

Construction Staging, Access, and Temporary Facilities

Staging areas will only be provided within the Action Area. Staging areas will be used for staging construction activities and to provide space to house construction equipment and materials, offices, employee parking, and other uses needed for construction of the proposed project.

To facilitate construction, temporary earthen ramps will be constructed for equipment access between the levee crown and the staging area(s). The earthen ramps will be removed when construction is complete.

Cutoff wall construction requires temporary establishment of an onsite slurry batch plant that will occupy about 1–2 acres. Batch plants will be located at about 1-mile intervals along the levee. The batch plant site will likely contain tanks for water storage, bulk bag supplies of bentonite, bentonite storage silos, a cyclone mixer, pumps, and two generators that meet air quality requirements. Slurry ingredients will be mixed with water and the mixture will be pumped from tanks through pipes to the construction work sites. The batch plant will produce two different slurry mixes, one for trench stabilization and one for the soil backfill mix. Therefore, two slurry pipes or hoses, typically 4- or 6-inch high-density polyethylene pipes, will be laid on the ground and will extend to all work sites. An additional pipe may be used to supply water to the work sites.

Staging, access, and other temporary construction areas will be located away from wetlands, woody vegetated areas, wildlife species habitat, known cultural resources, or other sensitive areas and will be limited to disturbed or ruderal grasslands subject to review by Corps and resource agencies.

Material Importation, Reuse, and Borrow

Materials imported to the FRWLP construction area will include water, bentonite, cement, incidental construction support materials, aggregate base rock, asphalt, concrete, hydroseed, and embankment fill soil. Large quantities of fill soil, or borrow will be required. To meet borrow demands, embankment fill material excavated as part of construction will be evaluated for reuse. Embankment fill material deemed suitable will be used as part of levee reconstruction and berms. The total volume of material required is 1,500,000 cubic yards.

SBFCA has explored the option of purchasing fill or borrow material from a local commercial quarry or other permitted source; however, there are not currently any sites near the Action Area that could supply the volume and type of material required. Consequently, SBFCA plans to purchase fill from local landowners willing to sell borrow material.

Six borrow sites have been identified in the Action Area. Each site was investigated to determine the quantity of available material, hauling distance, material composition, groundwater elevation, and prospects for acquisition. Sufficient fill volume is estimated to be present within an approximate 10-mile, one-way haul distance from the area of construction.

SBFCA will maximize the potential borrow sites' use through gradation, placement, and treatment so that they could continue to be used for their current use or otherwise returned to their pre-project condition. As part of borrow operations, the upper 4–6 inches of topsoil will be set aside and replaced after construction in each construction season. After the FRWLP is completed, the borrow site will be re-contoured and reclaimed.

Through outreach efforts, SBFCA identified a number of sites owned by individuals or government agencies willing to sell their property or provide material on a cubic yard basis. Each borrow site is described below.

North Valley Property - The North Valley property is owned by North Valley Properties, LLC and is located south of Ella Road between Feather River Boulevard and Arboga Road. The Wheeler Ranch housing development is proposed at the site. Borrow for the FRWLP will be taken from the northeast corner of the property to create a 24.5 acre detention pond (referred to as the Drainage Basin C Regional Detention Pond, but commonly referred to as the South Ella Detention Pond). The Ella Basin is being constructed as part of Reclamation District No. 784's Master Drainage Plan. Historically, the site was cultivated for agricultural purposes. Currently, the site is disked ruderal grassland with some roads cut in the southern portion of the property for the Wheeler Ranch development. The depth of excavation is anticipated to be 15–20 feet and the yield of material from this site could be 400,000–500,000 cubic yards. Borrow material from this site will be used for work in Contracts B and C. If borrow material is remaining, it may also be used for Contract D. The haul route to Contract C will use existing roads. The post-project land use of the site will be a regional detention pond for Reclamation District No. 784.

Marler Property - The Marler property is a 10-acre property at Johnson Road near Messick Road, north of Star Bend and south of Shanghai Bend. The site is currently an orchard. The depth of

excavation could be upwards of 6 feet. The yield of material from this site could be 75,000 cubic yards. The haul route will use existing roads. The post-project land use for the property will be agricultural production, likely row crops or orchard.

Lanza Property - The Lanza property is 40 acres in size and is currently farmed in field/row crops. It is located at North Township Road and Pease Road south of Live Oak and north of Yuba City. The site has not yet been investigated to determine the types of materials present. Excavation of the site to a depth of 6 feet may occur. The yield of material from this site could be 200,000 cubic yards. The likely haul route will be along Pease Road directly east to the levee. The post-project land use for the property will be rice production.

City of Live Oak Detention Basin - Live Oak owns the property formerly known as the Caltrans Detention Basin Site located west of SR 99 and south of Paseo Avenue. The site is currently fallow. Live Oak intends to construct soccer fields and a stormwater detention basin at the site in 2013 or later. Although the site will require hauling for a short distance through a residential neighborhood, it is anticipated the residents will be amenable to the hauling as it will be a part of the public amenity constructed by Live Oak. This site is about 25 acres, and the depth of excavation is anticipated to be 3–6 feet. The yield of material from this site could be 125,000 cubic yards, and will likely be used for Contract C. Haul routes will use existing roads.

Live Oak (2012) reports that land at this location has historically been cultivated for agricultural purposes and reported that there was no evidence of any wetland or other sensitive plant or wildlife areas remaining onsite. No wetland features were identified during a preliminary wetland delineation of the area in December 2012. The previous agricultural use has displaced native species of plants and animals except those varieties capable of co-existing with humans in urban settings. The post-project use of the site will be a community park and stormwater detention basin facility.

Oroville Wildlife Area Dredge Tailings Area - This site is within the Oroville Wildlife Area and consists of several mounds of dredge tailings waterside of the existing levee. The material is suitable for use in seepage berms in Contract D. The availability of tailings in the area should be sufficient to meet the total deficit for berm material in these reaches. The excavation of the material will be coordinated to maximize hydraulic benefits from the reshaping of the overbank area. The site also represents an opportunity to provide waterside habitat enhancements. The useful area of this site could be about 75 acres and the depth of excavation could be upwards of 10 feet. The yield of material from this site could be 375,000 cubic yards. Hauling from this site will not take place on public roads. It is anticipated the contractor will use an existing waterside levee ramp (or create one), directly accessing the levee patrol road. The future land use for this site will be similar to its present day use (managed habitat area).

Construction Timing

Specific sequencing of construction will be dynamic throughout planning and design of the FRWLP, subject to change based on factors including the following.

- Further engineering in determining the clarity and efficacy of site-specific measures.

- Easement and right-of-way acquisition (where necessary).
- Availability of proximate, suitable, and cost-effective borrow material.
- Environmental clearances based on wildlife presence, lifecycle activity, and location of habitats.

Based on current planning analysis for the FRWLP, construction will occur in more than one annual construction season (typically April 15 to November 30, subject to conditions). Although subject to change, the four contracts and their respective areas for construction of the FRWLP are identified below.

- Contract A, 2016 – 2017
- Contract B, 2014 – 2015
- Contract C, 2013 – 2014
- Contract D, 2014 – 2015

Construction is anticipated to occur in single 10-hour shifts, 6 days per week. An exception to this schedule is slurry cutoff wall construction, which is anticipated to occur in two 10-hour shifts (essentially 24-hour construction), 6 days per week. While actual construction will not occur between the two 10-hour shifts, equipment maintenance and preparations for the upcoming work shift will occur.

Conservation Measures

SBFCA will implement the following conservation measures to avoid and minimize effects on federally listed species. To ensure their implementation, the measures listed below will be included in the project specifications.

General

Conservation Measure 1: Conduct Mandatory Biological Resources Awareness Training for All Project Personnel and Implement General Requirements

Before any ground-disturbing work (including vegetation clearing and grading) occurs in the Action Area, a Service-approved biologist will conduct a mandatory biological resources awareness training for all construction personnel about federally-listed species that could potentially occur onsite (beetle and snake). The training will include the natural history, representative photographs, and legal status of each federally-listed species and avoidance and minimization measures to be implemented. Proof of personnel attendance will be provided to the Service within 1 week of the training. If new construction personnel are added to the project, the contractor will ensure that the new personnel receive the mandatory training before starting work. The subsequent training of personnel can include videotape of the initial training and/or the use of written materials rather than in-person training by a biologist. Requirements that will be followed by construction personnel are listed below.

- Where suitable habitat is present for listed species, SBFCA will clearly delineate the construction limits through the use of survey tape, pin flags, orange barrier fencing, or other means, and prohibit any construction-related traffic outside these boundaries.
- Project-related vehicles will observe the posted speed limit on hard-surfaced roads and a 10-mile-per-hour speed limit on unpaved roads during travel in the project construction area. Project-related vehicles and construction equipment will restrict off-road travel to the designated construction areas.
- All food-related trash will be disposed of in closed containers and removed from the project construction area at least once per week during the construction period. Construction personnel will not feed or otherwise attract fish or wildlife to the project site.
- No pets or firearms will be allowed in the project construction area.
- To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.
- Any worker who inadvertently injures or kills a federally-listed species or finds one dead, injured, or entrapped will immediately report the incident to the biological monitor and construction foreman. The construction foreman will immediately notify SBFCA, who will provide verbal notification to the Sacramento Fish and Wildlife Office and the local CDFW warden or biologist within 1 working day. SBFCA will follow up with written notification to Service and CDFW within 5 working days. The biological monitor will follow up with SBFCA to ensure that the wildlife agencies were notified.
- The biological monitor will record all observations of federally-listed species on California Natural Diversity Database (CNDDDB) field sheets and submit to CDFW.

Valley Elderberry Longhorn Beetle

Conservation measures for the beetle are based on Service's 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Conservation Guidelines) (U.S. Fish and Wildlife Service 1999a).

Conservation Measure 2: Fence Elderberry Shrubs to be Protected and Monitor Fencing during Construction

Elderberry shrubs/clusters within 100 feet of the construction area that will not be removed will be protected during construction. A qualified biologist (i.e., with elderberry/beetle experience), under contract to SBFCA, will mark the elderberry shrubs and clusters that will be protected during construction. Orange construction barrier fencing will be placed at the edge of the respective buffer areas. The buffer area distances will be proposed by the biologist and approved by the Service. No construction activities will be permitted within the buffer zone other than those activities necessary to erect the fencing. Signs will be posted every 50 feet (15.2 meters) along the perimeter of the buffer area fencing. The signs will contain the following information:

This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment.

In some cases, where the elderberry shrub dripline is within 10 feet of the work area, k-rails will be placed at the shrub's dripline to provide additional protection to the shrub from construction equipment and activities. Temporary fences around the elderberry shrubs and k-rails at shrub driplines will be installed as the first order of work. Temporary fences will be furnished, constructed, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. Temporary fencing will be 4 feet (1.2 meters) high, commercial-quality woven polypropylene, orange in color.

Buffer area fences around elderberry shrubs will be inspected weekly by a qualified biological monitor during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The biological monitor will be responsible for ensuring that the contractor maintains the buffer area fences around elderberry shrubs throughout construction. Biological inspection reports will be provided to the project lead and the Service.

Conservation Measure 3: Conduct Beetle Surveys Prior to Elderberry Shrub Transplantation

Surveys of elderberry shrubs to be transplanted will be conducted by a qualified biologist prior to transplantation. Surveys will be conducted in accordance with the Conservation Guidelines (U.S. Fish and Wildlife Service 1999a). The biologist will survey the area surrounding the shrub to be transplanted to ensure that there are not additional elderberry shrubs that need to be removed. Surveys will consist of counting and measuring the diameter of each stem, and examining elderberry shrubs for the presence of beetle exit holes. Survey results and an analysis of the number of elderberry seedlings/cuttings and associated native plants based on the survey results will be submitted to the Service. SBFCA plans to plant elderberry seedlings/cuttings and associated native plants prior to transplantation of elderberry shrubs. The data collected during the surveys prior to transplantation will be used to determine if SFBCA is exceeding their compensation needs or if additional plantings are necessary. Because the Proposed Action will be constructed in four separate contracts, elderberry survey data for each contract will be used to rectify any discrepancies in compensation for the previous contract and to ensure that SBFCA has minimized effects to the beetle.

Conservation Measure 4: Water Down Construction Area to Control Dust

SFBCA or the contractor will ensure that the project construction area will be watered down as necessary to prevent dirt from becoming airborne and accumulating on elderberry shrubs within the 100-foot buffer.

Conservation Measure 5: Compensate for Direct and Indirect Effects on Valley Elderberry Longhorn Beetle Habitat

Before construction begins, SBFCA will compensate for direct effects on elderberry shrubs by transplanting shrubs that cannot be avoided to a Service-approved conservation area (described below). Elderberry seedlings or cuttings and associated native species will also be planted in the conservation area. Each elderberry stem measuring 1 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) will be replaced, in the conservation

area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). The numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether the shrub lies in a riparian or non-riparian area. Stock of either seedlings or cuttings will be obtained from local sources (including the Action Area if acceptable to the Service).

At the discretion of the Service, shrubs that are unlikely to survive transplantation because of poor condition or location, or a plant that will be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible, compensation ratios will be increased to offset the additional habitat loss.

The relocation of the elderberry shrubs will be conducted according to Service-approved procedures outlined in the Conservation Guidelines (U. S. Fish and Wildlife Service 1999a). Elderberry shrubs within the project construction area that cannot be avoided will be transplanted during the plant's dormant phase (November through the first 2 weeks of February). A qualified biological monitor will remain onsite while the shrubs are being transplanted.

Property inaccessibility and the high density of vegetation along portions of the Feather River riparian corridor limited the number of elderberry shrubs that could be surveyed (73 shrubs were surveyed). For this reason, compensation for the removal of 91 shrubs was estimated based on the average number of stems in each stem diameter range for the 73 shrubs that could be surveyed. Those average shrub stem counts are as follows.

- Number of stems ≥ 1 inch and ≤ 3 inches = 4.
- Number of stems > 3 inches and < 5 inches = 1.
- Number of stems ≥ 5 inches = 1.

Table 1 shows the estimated compensation. Because the shrubs are located in riparian habitat and did not have exit holes, the compensation ratios for these conditions were used. As noted in Table 1, one elderberry shrub will need to be transplanted prior to the start of work in 2013 (in Reach 13) and outside of the elderberry dormancy period.

Based on the information in Table 1, the conservation area will be at least 12.15 acres in size to accommodate about 91 elderberry shrubs, 1,470 elderberry cuttings or seedlings, and 1,470 native plants. The conservation area in which the transplanted elderberry shrubs and seedlings are planted will be protected in perpetuity as habitat for the beetle.

Evidence of beetle occurrence in the conservation area, the condition of the elderberry shrubs in the conservation area, and the general condition of the conservation area itself will be monitored over a period of 10 consecutive years or for 7 years over a 15-year period from the date of transplanting. SBFCA will be responsible for funding and providing monitoring reports to the Service in each of the years in which a monitoring report is required. As specified in the Conservation Guidelines, the report will include information on timing and rate of irrigation, growth rates, and survival rates and mortality.

Table 1. Elderberry Stem Sizes and Compensation

Location	Stems (maximum diameter at ground level)	Exit Hole on Shrub (Yes or No)	Elderberry Seedling Ratio	Associated Native Plant Ratio	Multiplier for transplanting between June 15 – August 15	Number of Stems	Required Elderberry Plantings	Required Associated Native Plant Plantings
Riparian	stems ≥1" & ≤3"	No	2:1	1:1	No	360	720	720
Riparian	stems > 3" & <5"	No	3:1	1:1	No	90	270	270
Riparian	stems > 5"	No	4:1	1:1	No	90	360	360
2013 Construction - Reach 13								
Riparian	stems ≥1" & ≤3"	No	2:1	1:1	2.5	1	5	5
Riparian	stems > 3" & <5"	No	3:1	1:1	2.5	2	15	15
Riparian	stems > 5"	No	4:1	1:1	2.5	10	100	100
Total replacement plantings							1,470	1,470
Total elderberry shrubs to be transplanted								91
2940 /10 = 294 valley elderberry longhorn beetle credits or 12.15 acres								

To meet the success criteria specified in the Conservation Guidelines, a minimum survival rate of 60% of the original number of elderberry replacement plantings and associated native plants must be maintained throughout the monitoring period.

Proposed Conservation Area

SBFCA proposes to transplant elderberry shrubs to the existing 48.5-acre Star Bend Conservation Area, located on the west levee of the Feather River, about 6 miles south of Yuba City. In 2009, Levee District 1 of Sutter County proposed to construct the Feather River Setback Levee and Habitat Enhancement Project at Star Bend to replace a portion of existing levee that poses a high risk of failure in order to decrease the flood stage, velocity, and scour potential; increase and improve floodplain habitat; and improve habitat connectivity between the Abbot Lake and O'Connor Lakes Units of CDFW's Feather River Wildlife Area. The Star Bend project created 48.5 acres of floodplain habitat, which included habitat enhancement and onsite compensation for impacted elderberry shrubs.

In 2009, River Partners and Stillwater Sciences prepared a *Habitat Enhancement Plan for the Feather River Setback Levee and Habitat Enhancement Project at Star Bend* to be implemented by Levee District 1. It provides further information on the conditions at the time the site was proposed. About 20 acres have been used for elderberry transplants and associated native plants. In early 2012, a fire at the Star Bend site damaged portions of the site; however, elderberry shrub

planting losses were minimal. The remaining 28.5 acres are available at the conservation area for compensating for impacts on elderberry shrubs from construction of the FRWLP. The long-term goal of the conservation area is to merge this area with CDFW's adjoining O'Conner Lakes and Abbott Lakes Wildlife Units. SBFCA will prepare a mitigation and monitoring plan for the 28.5 acres that are available and will be used as a conservation area for effects to the beetle, as well as riparian impacts. This plan is currently being coordinated with the Service, Corps, and CDFW. Additionally, SBFCA will obtain a conservation easement for the 28.5 acre conservation area.

Giant Garter Snake

Conservation Measure 6: Conduct Construction Activities during the Active Period for Giant Garter Snake

Construction activity within giant garter snake aquatic and upland habitat (200 feet of aquatic habitat) will be conducted during the snake's active period (May 1–October 1). During this timeframe, potential for injury and mortality are lessened because snakes are actively moving and avoiding danger. The only work that will be conducted outside of the active season is levee slope flattening within the Sutter-Butte Canal in Reaches 26–28 (scheduled for 2016) and pipe reconstruction at two sites in the same reaches because these activities must be conducted when the canal is dry (February–March). Additional protective measures will be implemented at these locations (see Conservation Measure 14 below).

Conservation Measure 7: Install and Maintain Exclusion and Construction Barrier Fencing around Suitable Giant Garter Snake Habitat

To reduce the likelihood of giant garter snakes entering the construction area, SBFCA will install exclusion fencing and orange construction barrier fencing along the portions of the construction area that are within 200 feet of suitable aquatic and upland habitat. The exclusion and construction barrier fencing will be installed during the active period for giant garter snakes (May 1–October 1) to reduce the potential for injury and mortality during this activity.

The construction specifications will require that SBFCA or its contractor retain a qualified biologist to identify the areas that are to be avoided during construction. Areas adjacent to the directly affected area required for construction, including staging and access, will be fenced off to avoid disturbance in these areas. Before construction, the contractor will work with the qualified biologist to identify the locations for the barrier fencing and will place flags or flagging around the areas to be protected to indicate the locations of the barrier fences. The protected area will be clearly identified on the construction specifications. The fencing will be installed the maximum distance practicable from the aquatic habitat areas and will be in place before construction activities are initiated.

The exclusion fencing will consist of 3-foot-tall silt fencing buried 6 inches below ground level. The exclusion fencing will ensure that giant garter snakes are excluded from the construction area and that suitable upland and aquatic habitat is protected throughout construction. The construction barrier fencing will be commercial-quality, woven polypropylene, orange in color,

and 4 feet high (Tensor Polygrid or equivalent). The fencing will be tightly strung on posts with a maximum of 10-foot spacing.

Barrier and exclusion fences will be inspected daily by a qualified biological monitor during ground-disturbing activities and weekly after ground-disturbing activities until project construction is complete or until the fences are removed, as approved by the biological monitor and the resident engineer. The biological monitor will be responsible for ensuring that the contractor maintains the buffer area fences around giant garter snake habitat throughout construction. Biological inspection reports will be provided to the project lead and the Service.

Conservation Measure 8: Minimize Potential Impacts on Giant Garter Snake Habitat

SBFCA will implement the following measures to minimize potential impacts on giant garter snake habitat.

- Staging areas will be located at least 200 feet from suitable giant garter snake habitat.
- Any dewatered habitat will remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- Vegetation clearing within 200 feet of the banks of suitable giant garter snake aquatic habitat will be limited to the minimum area necessary. Avoided giant garter snake habitat within or adjacent to the Action Area will be flagged and designated as an environmentally sensitive area, to be avoided by all construction personnel.
- The movement of heavy equipment within 200 feet of the banks of suitable giant garter snake aquatic habitat will be confined to designated haul routes to minimize habitat disturbance.

Conservation Measure 9: Prepare and Implement a Stormwater Pollution Prevention Plan

SBFCA will prepare a stormwater pollution prevention plan (SWPPP) that describes the BMPs that will be implemented to control accelerated erosion, sedimentation, and other pollutants during and after project construction. The SWPPP will be prepared prior to commencing earth-moving construction activities. This will also comply with the U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) general construction activity stormwater permit.

The specific BMPs that will be incorporated into the erosion and sediment control plan and SWPPP will be site-specific and will be prepared by the construction contractor in accordance with the California Regional Water Quality Control Board Field Manual. However, the plan likely will include, but not be limited to, one or more of the following standard erosion and sediment control BMPs.

- **Timing of construction.** The construction contractor will conduct all construction activities during the typical construction season to avoid ground disturbance during the rainy season.
- **Staging of construction equipment and materials.** To the extent possible, equipment and materials will be staged in areas that have already been disturbed.

- **Minimize soil and vegetation disturbance.** The construction contractor will minimize ground disturbance and the disturbance/destruction of existing vegetation. This will be accomplished in part through the establishment of designated equipment staging areas, ingress and egress corridors, and equipment exclusion zones prior to the commencement of any grading operations.
- **Stabilize grading spoils.** Grading spoils generated during the construction will be temporarily stockpiled in staging areas. Silt fences, fiber rolls, or similar devices will be installed around the base of the temporary stockpiles to intercept runoff and sediment during storm events. If necessary, temporary stockpiles may be covered with an appropriate geotextile to increase protection from wind and water erosion.
- **Install sediment barriers.** The construction contractor may install silt fences, fiber rolls, or similar devices to prevent sediment-laden runoff from leaving the construction area. Natural/biodegradable erosion control measures (i.e., coir rolls, straw wattles or hay bales) will be used. Plastic monofilament netting (erosion control matting) will not be allowed because animals can become caught in this type of erosion control material.
- **Stormwater drain inlet protection.** The construction contractor may install silt fences, drop inlet sediment traps, sandbag barriers, and/or other similar devices.
- **Permanent site stabilization.** The construction contractor will install structural and vegetative methods to permanently stabilize all graded or otherwise disturbed areas once construction is complete. Structural methods may include the installation of biodegradable fiber rolls and erosion control blankets. Vegetative methods may involve the application of organic mulch and tackifier and/or the application of an erosion control seed mix. Implementation of a SWPPP will substantially minimize the potential for project-related erosion and associated adverse effects on water quality.

Conservation Measure 10: Prepare and Implement a Bentonite Slurry Spill Contingency Plan (Frac-Out Plan)

Before excavation begins, SBFCA will ensure the contractor will prepare and implement a bentonite slurry spill contingency plan (BSSCP) for any excavation activities that use pressurized fluids (other than water). The plan will be subject to approval by the Corps, Service, and SBFCA before excavation can begin. The BSSCP will include measures intended to minimize the potential for a frac-out (short for “fracture-out event”) associated with excavation and tunneling activities; provide for the timely detection of frac-outs; and ensure an organized, timely, and “minimum-effect” response in the event of a frac-out and release of excavation fluid (i.e., bentonite). The BSSCP will require, at a minimum, the following measures.

- If a frac-out is identified, all work will stop, including the recycling of the bentonite fluid. In the event of a frac-out into water, the location and extent of the frac-out will be determined, and the frac-out will be monitored for 4 hours to determine whether the fluid congeals (bentonite will usually harden, effectively sealing the frac-out location).
- NMFS, the Service, CDFW, and the RWQCB will be notified immediately of any spills and will be consulted regarding clean-up procedures. A Brady barrel will be onsite and used if a frac-out occurs. Containment materials, such as straw bales, also will be onsite prior to and during all operations, and a vacuum truck will be on

retainer and available to be operational onsite within notice of 2 hours. The site supervisor will take any necessary follow-up response actions in coordination with agency representatives. The site supervisor will coordinate the mobilization of equipment stored at staging areas (e.g., vacuum trucks) as needed.

- If the frac-out has reached the surface, any material contaminated with bentonite will be removed by hand to a depth of 1-foot, contained, and properly disposed of, as required by law. The drilling contractor will be responsible for ensuring that the bentonite is either properly disposed of at an approved Class II disposal facility or properly recycled in an approved manner.
- If the bentonite fluid congeals, no other actions, such as disturbance of the streambed, will be taken that will potentially suspend sediments in the water column.
- The site supervisor has overall responsibility for implementing this BSSCP. The site supervisor will be notified immediately when a frac-out is detected. The site supervisor will be responsible for ensuring that the biological monitor is aware of the frac-out, coordinating personnel, response, cleanup, regulatory agency notification and coordination to ensure proper clean-up, disposal of recovered material, and timely reporting of the incident. The site supervisor will ensure all waste materials are properly containerized, labeled, and removed from the site to an approved Class II disposal facility by personnel experienced in the removal, transport, and disposal of drilling mud.
- The site supervisor will be familiar with the contents of this BSSCP and the conditions of approval under which the activity is permitted to take place. The site supervisor will have the authority to stop work and commit the resources (personnel and equipment) necessary to implement this plan. The site supervisor will ensure that a copy of this plan is available (onsite) and accessible to all construction personnel. The site supervisor will ensure that all workers are properly trained and familiar with the necessary procedures for response to a frac-out, prior to commencement of excavation operations.

Conservation Measure 11: Prepare and Implement a Spill Prevention, Control, and Counter-Measure Plan

A spill prevention, control, and counter-measure plan (SPCCP) is intended to prevent any discharge of oil into navigable water or adjoining shorelines. SBFCA or its contractor will develop and implement an SPCCP to minimize the potential for and effects from spills of hazardous, toxic, or petroleum substances during construction and operation activities. The SPCCP will be completed before any construction activities begin. Implementation of this measure will comply with State and Federal water quality regulations. The SPCCP will describe spill sources and spill pathways in addition to the actions that will be taken in the event of a spill (e.g., an oil spill from engine refueling will be immediately cleaned up with oil absorbents). The SPCCP will outline descriptions of containments facilities and practices such as doubled-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures and spill response kits. It will also describe how and when employees are trained in proper handling procedure and spill prevention and response procedures.

SBFCA will review and approve the SPCCP before onset of construction activities and routinely inspect the construction area to verify that the measures specified in the SPCCP are properly implemented and maintained. SBFCA will notify its contractors immediately if there is a non-compliance issue and will require compliance.

The Federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that results in one or more of the following.

- Violates applicable water quality standards.
- Causes a film or sheen on or discoloration of the water surface or adjoining shoreline.
- Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

If a spill is reportable, the contractor's superintendent will notify SBFCA, and SBFCA will take action to contact the appropriate safety and cleanup crews to ensure that the SPCCP is followed. A written description of reportable releases must be submitted to the Central Valley RWQCB. This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

Conservation Measure 12: Conduct Preconstruction Surveys and Monitoring for Giant Garter Snake

Prior to ground-disturbing activities within 200 feet of suitable habitat, a Service-approved biological monitor will conduct a preconstruction survey of suitable aquatic and upland habitat and inspect exclusion and orange barrier fencing to ensure they are both in good working order each morning. If any snakes are observed within the construction area at any other time during construction the Service-approved biological monitor will be contacted to survey the site for giant garter snakes. The biological monitor will have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. Giant garter snakes encountered during construction activities will be allowed to move away from construction activities on their own. If unable to move away on their own, trapped or injured giant garter snakes will be only be removed by a biologist with a federal 10(a)1(a) permit which allows them to handle the snake and will be placed in a location determined through discussions with the Service. The biological monitor will immediately report the finding of a snake to Service by phone and will provide a written account of the details of the incident within 24 hours.

Once all initial ground-disturbing activities are completed, the biological monitor will perform weekly checks of the site for the duration of construction in order to ensure that construction barrier fences and exclusion fences are in good order, trenches are being covered, project personnel are conducting checks beneath parked vehicles prior to their movement, and that all other required biological protection measures are being complied with. The biological monitor will document the results of monitoring on construction monitoring log sheets, which will be provided to the Service within 1 week of each monitoring visit.

Conservation Measure 13: Provide Escape Ramps or Cover Open Trenches at the End of Each Day

To avoid entrapment of giant garter snake, thereby preventing injury or mortality resulting from falling into trenches, all excavated areas more than 1 foot deep will be provided with one or more escape ramps constructed of earth fill or wooden planks at the end of each workday. If escape ramps cannot be provided, then holes or trenches will be covered with plywood or other hard material. The biological monitor or construction personnel designated by the contractor will be responsible for thoroughly inspecting trenches for the presence of giant garter snakes at the beginning of each workday. Capture and relocation of trapped or injured individuals can only be attempted by personnel or individuals with current Service recovery permits pursuant to section 10(a)1(A) of the Act.

Conservation Measure 14: Implement Additional Protective Measures during Work in Suitable Habitat during the Giant Garter Snake Dormant Period

SBFCA will implement additional protective measures during time periods when work must occur during the giant garter snake dormant period (October 2–April 30), when snakes are more vulnerable to injury and mortality. It is expected that these additional measures will be implemented during levee slope flattening within the Sutter-Butte Canal in Reaches 26–28 (scheduled for 2016) and pipe reconstruction adjoining the canal at two sites in the same reaches during February–March, and if construction activities extend to the period between October 2 and November 1. SBFCA will implement additional protective measures when conducting work in suitable giant garter snake habitat between October 2 and April 30.

- A full-time Service-approved biological monitor will be onsite for the duration of construction activities.
- All emergent vegetation within the Sutter-Butte Canal on the levee side, and vegetation within 200 feet of the canal will be cleared prior to the giant garter snake hibernation period (i.e., vegetation clearing must be completed by October 1 for following winter work).
- Exclusion fencing will be installed around the perimeter of the work area and across the Sutter-Butte Canal where construction activities associated with levee slope flattening and pipe reconstruction activities will occur. The fencing should enclose the work area to the maximum extent possible to prevent giant garter snakes from entering the work area. Fencing will be installed during the active period for giant garter snakes (May 1–October 1) to reduce the potential for injury and mortality during fence installation. The Service-approved biological monitor will work with the contractor to determine where fencing should be placed and will monitor fence installation. The exclusion fencing will consist of 3-foot-tall erosion fencing buried 4–6 inches below ground level. The exclusion fencing will minimize opportunities for giant garter snake hibernation in the adjacent upland area (between canal and existing levee).
- Portions of the Sutter-Butte Canal that are temporarily disturbed during construction will be revegetated with emergent vegetation and adjacent disturbed upland habitat will be revegetated with native grasses and forbs after construction is complete.

Conservation Measure 15: Restore Temporarily Disturbed Aquatic and Upland Habitat to Pre-Action Conditions

Upon completion of the proposed project, SBFCA will restore 42.52 acres of suitable aquatic habitat and 118.80 acres of suitable upland habitat for the giant garter snake to pre-project conditions. Restoration of aquatic vegetation and annual grassland will be detailed in a mitigation and monitoring plan that will be reviewed and approved by the Corps and Service prior to the start of construction. Habitat will be restored within one season (defined as May 1–October 1) and providing vegetative cover within 1 year of construction beginning in that area.

Conservation Measure 16: Compensate for Permanent Loss of Aquatic Habitat for Giant Garter Snake

SBFCA will compensate for the permanent loss of 0.004 acre of suitable aquatic habitat for giant garter snake by purchasing preservation credits equal to 0.012 acre of giant garter snake habitat at Westervelt Ecological Services' Sutter Basin Conservation Bank in Sutter County. This bank has available giant garter snake credits and is approved by both the Service and CDFW.

The 0.012 acre of habitat at the conservation bank will be protected in perpetuity for giant garter snake. Prior to the start of construction (excluding Reach 13, as there is no giant garter snake habitat in this reach), SBFCA will provide funding to Westervelt Ecological Services for preservation credits equivalent to 0.012 acre of giant garter snake habitat at the Sutter Basin Conservation Bank. The transaction will take place through a purchase and sale agreement, and funds must be transferred within 30 days, and before any construction activities are initiated. SBFCA will provide the Service and CDFW with copies of the credit sale agreement and fund transfer.

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 and snake'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 and the snake 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 and snake; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the beetle and snake; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the beetle and snake.

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 and snake'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 the beetle and snake.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the beetle and snake and the role of the action area in the survival and recovery of the beetle and snake 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

Valley Elderberry Longhorn Beetle

Please refer to the *Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) 5-year Review: Summary and Evaluation* (Service 2006) for the current status of the species.

Giant Garter Snake

Please refer to the *Giant Garter Snake (Thamnophis gigas) 5-year Review: Summary and Evaluation* (Service 2012) for the current status of the species.

Environmental Baseline

Valley Elderberry Longhorn Beetle

The closest beetle occurrence in the CNDDDB (2013) is about 0.5 mile from the proposed project. Suitable habitat for the beetle (in the form of elderberry shrubs) exists in numerous places along the 41 miles of proposed levee repair. A total of 267 elderberry shrubs were mapped within the action area. Many others exist at various locations between the levee and the river. Of these SBFCA is proposing to avoid 175 elderberry shrubs and transplant 91 elderberry shrubs. Because the action area is within the range of the species, there are known occurrences from the vicinity of the action area, and suitable habitat is present, the Service concludes that it is reasonably likely for the beetle to occupy the action area.

Giant Garter Snake

The *Draft Recovery Plan for the Giant Garter Snake* subdivides the range of the species into four recovery units (Service 1999b). The action area for the proposed project is located within the Sacramento Valley Recovery Unit. There are 20 records of the snake within 5 miles of the action area. The closest occurrence documented in the CNDDDB is 2 miles from the action area. Snakes have the potential to occur within the action area because suitable aquatic and upland habitat is present as it is hydrologically connected to areas that support rice agriculture and areas where the snake has previously been detected. The action area is a long corridor that occasionally has irrigation ditches, which run parallel to the levee for limited stretches. The main threat to the snake in the action area is loss of habitat or connectivity due to channel and levee maintenance.

Effects of the Proposed Action

Valley Elderberry Longhorn Beetle

Ninety-one elderberry shrubs will be removed and transplanted. The 91 affected shrubs have 361 stems between 1 and 3 inches, 92 stems between 3 and 5 inches and 100 stems greater than 5 inches at ground level.

Loss of an elderberry shrub or even a stem can affect the beetle breeding and feeding because adult beetles rely solely on elderberry foliage and flowers for food and must lay their eggs on elderberry stems to successfully reproduce.

Transplantation of elderberry shrubs that are or could be used by beetle larvae is expected to adversely affect the beetle. Beetle larvae will be killed or the beetle's life cycle will be interrupted during or after the transplanting process. For example:

1. Transplanted elderberry shrubs may experience stress or become unhealthy due to changes in soil, hydrology, microclimate, or associated vegetation. This may reduce their quality as habitat for the valley elderberry longhorn beetle, or impair their production of habitat-quality stems in the future.
2. Elderberry shrubs may die as a result of transplantation.
3. Branches containing larvae may be cut, broken, or crushed as a result of the transplantation process.

SBFCA has proposed to transplant one shrub outside of the elderberry shrub's dormant season (November 1 to February 15). To offset the increased risk of the transplantation not being successful SBFCA has proposed to plant 2.5 times the number of elderberry seedlings at the Star Bend Conservation Area.

Temporal loss of habitat will occur. Although conservation measures for effects on the beetle will involve creation or restoration of habitat, it generally takes 5 or more years for elderberry plants to become large enough to support beetles, and it may take 25 years or longer for riparian habitats to reach their full value. Temporal loss of habitat may cause fragmentation of habitat and isolation of subpopulations.

Permanent and temporary habitat loss adversely affects the beetles breeding and foraging requirements. Habitat creation and transplantation of the shrubs will minimize these effects. Success of a restoration site has been linked to presence of transplanted elderberry shrubs that have served to colonize a newly created riparian habitat. Transplants that survive also provide diversity within the conservation area as they are older, larger shrubs within the plantings of young small elderberry seedlings. The Star Bend Conservation Area will be protected with a conservation easement and managed in perpetuity for riparian habitat including valley elderberry longhorn beetle habitat, through development of the *Feather River West Levee Project Mitigation and Monitoring Plan*.

Giant garter snake

Aquatic habitat for the snake near the levee construction varies along the 41 miles of the proposed project. Small areas of aquatic habitat are present in Contract A and C and they are hydrologically connected to areas that support habitat for the snake (rice). Contract D has the largest amount of snake aquatic habitat as the Sutter Butte Canal parallels the levee for longer lengths. Canal filling due to cutoff wall construction will permanently fill 0.004 acre of snake aquatic habitat. Upland habitat around this aquatic habitat will be temporarily disturbed but returned to pre-project condition within one year. Temporary effects will result from temporary fill of aquatic habitat for construction access, reshaping the slope of the Sutter Butte Canal and adjacent levee, and degradation and reconstruction of the levee. These activities will temporarily affect 6.81 acres of aquatic habitat. Levee degradation and reconstruction will temporarily affect 112.47 acres of upland habitat. All temporarily affected areas will be restored to pre-project conditions within the same year the disturbance will occur. This will minimize effects to giant garter snakes because the amount of time the habitat will be unavailable to the snake will be minimized. Permanently affected habitat, such as the canals that will be made smaller will be offset by purchasing 0.012 acre of giant garter snake habitat at Westervelt Ecological Services' Sutter Basin Conservation Bank in Sutter County. None of the borrow sites in the project description have upland or aquatic giant garter snake habitat.

The majority of the construction work will occur during the giant garter snake active season (May 1 to October 1). Increased construction activity in areas where snakes are known to occur could expose snakes to increased risks of injury and mortality from predation, exposure, vehicular traffic, and construction equipment. Because snakes are more mobile during the active season, these effects should be lessened. There are a few activities which SBFCA could not construct during the active season. Because of cooler temperatures in the inactive season (October 1 to May 1), the snake is not as mobile and is most frequently found within burrows. Ground disturbing activities during this timeframe will increase the likelihood of snake mortality when the burrows are disturbed with heavy equipment. SBFCA has proposed to disturb (clear and grub) the out of season work area and place exclusion fencing around the work area during the active season which will create an area that will not support overwintering snakes (lack of burrows). This will minimize the chance of injuring or killing an overwintering snake during out of season construction. This will only occur on one side of the canal, leaving the other side of the canal available as overwintering habitat for the snake.

Temporary effects within the action area will affect both aquatic and upland snake habitat. In some locations degradation of the levee could cause soil to fall into the aquatic habitat or fuel or oil leaks could also adversely affect the habitat and the snake. Placement of sediment fencing and implementing sediment and contaminant BMPs will lessen this effect. Levee degradation will temporarily make upland habitat unavailable to the snake during the active season. Snakes use upland habitat for thermoregulation both as a place to bask and as a place to escape extreme heat (burrows) and cover for shedding and giving birth to young. While snakes are more active during the summer months and more likely to move away from construction, some snakes may choose to remain where they are and therefore will be subject to mortality when construction activities are occurring. In addition to direct mortality, the upland habitat will be temporarily unavailable to the snake during construction. Even once construction is completed it will take a

year or two for the upland habitat to become completely functional for the snake, with burrows or crevices available for them to use. This is likely to result in disturbance, displacement, injury, and/or mortality of snakes. To lessen these effects SBFCA is implementing the conservation measures described above as well as affecting only one side of the canal. This will leave the other side of the canal intact and available to the snake for use, minimizing displacement of snakes. Additionally, because of the staging of construction not all of the upland habitat will be unavailable for use at one time. It will be staged as construction progresses through the various contracts.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed project are not considered in this section, because they require separate consultation pursuant to section 7 of the Act. Any future land use conversions and routine agricultural practices are not subject to Federal authorization or funding and may alter the habitat or result in take of listed valley elderberry longhorn beetle or giant garter snake and are, therefore, cumulative to the proposed project.

Conclusion

After reviewing the current status of the valley elderberry longhorn beetle and giant garter snake, the environmental baselines for these species, the effects of the proposed project, and the cumulative effects on this species, it is the Service's biological opinion that the proposed FRWLP, as described herein, is not likely to jeopardize the continued existence of these species. Although critical habitat has been designated for the beetle, the proposed action will not affect critical habitat.

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 harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including 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 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 this Incidental Take Statement.

The measures described below are nondiscretionary for listed species of this biological opinion and must be implemented by the Corps and SBFCA in order for the exemption in section 7(o)(2)

to apply. The Corps has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Federal agency (1) fails to adhere to the terms and conditions of the incidental take statement, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

Valley Elderberry Longhorn Beetle

The Service expects that incidental take of the valley elderberry longhorn 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 number of elderberry stems one inch or greater in diameter at ground level (beetle habitat) that will become unsuitable for beetles due to direct or indirect effects as a result of levee construction. Therefore, the Service estimates that all beetles inhabiting 91 elderberry plants containing stems 1 inch or greater at ground level (361 stems between 1-3 inches, 92 stems between 3 and 5 inches and 100 stems ≥ 5 inches; see Table 1 in the text) will be taken as a result of the proposed action.

Giant Garter Snake

The Service anticipates that incidental take of the snake will be difficult to detect or quantify for the following reasons: the snake is cryptically colored, secretive, and known to be sensitive to human activities. Snakes may avoid detection by retreating to burrows, soil crevices, vegetation, or other cover. Individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Most close-range observations represent chance encounters that are difficult to predict. It is not possible to make an accurate estimate of the number of snakes that will be harassed, harmed or killed during construction activities (staging areas, work on canal banks, levee degradation and reconstruction, soil borrow areas, and vehicle traffic to and from borrow areas). In instances when take is difficult to detect, the Service may use the quantification of acreage as a surrogate for the individuals that will be taken. Therefore, the Service anticipates take incidental to this project as the 0.004 acre of suitable habitat that will be permanently lost and the 119.28 acres (6.81 acres aquatic and 112.47 acres upland) of suitable snake habitat that will be temporarily lost. Upon implementation of the Reasonable and Prudent Measure, Terms and Conditions, and the Proposed Conservation Measures considered herein, incidental take within this acreage for the proposed project, will be exempt from the prohibitions described under Section 9 of the Act.

Effect of the Take

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

Reasonable and Prudent Measures

The Service has determined that the following reasonable and prudent measure is necessary and appropriate to minimize the adverse effects of the Feather River West Levee Project to the beetle and snake and their habitat in the action area.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and SBFCA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

The following Terms and Conditions implement the Reasonable and Prudent Measure:

1. All the conservation measures as described in the project description, and as restated here in this biological opinion, must be fully implemented and adhered to.
2. The Corps, SBFCA, and PG&E shall include full implementation and adherence to the conservation measures as outlined in the biological opinion as a condition of any permit or contract issued for the project.
3. In order to monitor whether the amount or extent of take anticipated from implementation of the proposed project is approached or exceeded, the Corps and SBFCA shall adhere to the following reporting requirement. Should this anticipated amount or extent of incidental take be exceeded, the Corps must immediately reinstate formal consultation as per 50 CFR 402.16.
 - a. For those components of the proposed project that will result in habitat degradation or modification whereby incidental take in the form of harm or mortality is anticipated, the Corps and SBFCA will provide weekly updates to the Service with a precise accounting of the total acreage of habitat effected or number of elderberry shrubs and size of stems at ground level transplanted. Updates shall also include any information about changes in the Project Description and not analyzed in this biological opinion.
4. SBFCA shall provide a photo documentation report showing pre- and post-project area conditions for giant garter snake.

Salvage and Disposition of Individuals

The Sacramento Fish and Wildlife Office will be notified within 1 day of the finding of any dead or injured snake or beetle to determine the appropriate measures for salvage and disposition. The Service contact person is the Habitat Conservation Division Chief. In addition, the Recovery Division Chief shall also be notified within 1 day of the procedures implemented for salvage and disposition of the snake or beetle. The applicant must report to the Service immediately any information about take or suspected take of listed species not authorized in this biological

opinion. Notification must include the date, time, and location of the incident or of the finding of a dead or injured listed species. The Habitat Conservation and Recovery Divisions Chiefs can be contacted at (916) 414-6600. The California Department of Fish and Wildlife should also be contacted at (916)358-2900.

CONSERVATION RECOMMENDATIONS

Conservation recommendations are suggestions of the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of new information. These measures may serve to further minimize or avoid the adverse effects of a proposed action on listed, proposed, or candidate species, or on designated critical habitat. They may also serve as suggestions on how action agencies can assist species conservation in furtherance of their responsibilities under section 7(a)(1) of the Act, or recommend studies improving an understanding of a species' biology or ecology. Wherever possible, conservation recommendations should be tied to tasks identified in recovery plans. The Service is providing you with the following conservation recommendations:

1. The Corps and SBFCA should assist in the implementation of the draft, and when published, the final Recovery Plan for the snake.
2. The Corps and SBFCA should provide funding to researchers studying topics identified by the Service in the draft, and when published, the final Recovery Plan for the snake.
3. The Corps should use environmental restoration authorities to acquire and restore beetle and snake habitat.

To be kept informed of actions minimizing or avoiding adverse effects or benefiting listed and proposed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation with the Corps on the Feather River West Levee Project. As provided in 50 CFR 402.16, re-initiation 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 proposed action 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 or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

Ms. Alicia Kirchner

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If you have any questions regarding this Feather River West Levee Project biological opinion, please contact Jennifer Hobbs, at (916) 414-6541 or Doug Weinrich, Deputy Assistant Field Supervisor, at (916) 414-6563.

Sincerely,



for

Jan C. Knight
Acting Field Supervisor

cc:

Jeff Koschak, Corps, Sacramento, CA

Jenny Marr, CDFW, Chico, CA

Jennifer Haire, ICF, Sacramento, CA

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UNITED STATES DEPARTMENT OF COMMERCE
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In response refer to:
 2013/9542

Alicia E. Kirchner
 Chief, Planning Division
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 U.S. Army Corps of Engineers
 1325 J Street
 Sacramento, California 95814-2833

Dear Ms. Kirchner:

This letter is in response to your March 22, 2013, request for initiation of section 7 consultation with NOAA's National Marine Fisheries Service (NMFS) pursuant to the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), concerning the Feather River West Levee Project (FRWLP). The proposed project includes modifying approximately 41 miles of a U.S. Army Corps of Engineers (Corps) levee to reduce the potential for flooding, flood damage, and public risk in the Yuba City area. The proposed project is currently scheduled to be constructed by the Sutter Butte Flood Control Agency (SBFCA), in five construction seasons from 2013 to 2017. To construct the FRWLP, SBFCA is requesting permission from the Corps pursuant to Section 14 of the Rivers and Harbors Act of 1899 (Title 33 of the U.S. Government Code [USC], Section 408, [33 USC 408]), for the alteration of a levee as part of the Sacramento River Flood Control Project.

The Corps has determined that the proposed project may affect, but is not likely to adversely affect federally listed as threatened Central Valley (CV) spring-run Chinook salmon (*Oncorhynchus tshawytscha*) evolutionarily significant unit (ESU), endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*) ESU, threatened California CV (CCV) steelhead (*O. mykiss*) distinct population segment (DPS), threatened Southern DPS of North American green sturgeon (*Acipenser medirostris*), and their designated critical habitats. In addition, the Corps has determined that the proposed project will not adversely affect essential fish habitat (EFH) of Pacific salmon and thus fulfills section 305 (b)(2) of the Magnuson – Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). This letter also serves as consultation under the authority of, and in accordance with, the provisions of the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended.

Consultation to Date

The following is a summary of the NMFS consultation activities on the proposed project:



- (1) On December 28, 2012, SBFCA submitted a letter to NMFS via email to request technical assistance regarding potential effects of the proposed project on listed fish species and their designated critical habitat, identify additional data needs, and determine needs for consultation. The letter included a summary of waterside riparian impacts and a map of the project footprint in relation to the ordinary high water mark (OHWM).
- (2) On February 5, 2013, the Corps and SBFCA held a meeting with Michael Hendrick of NMFS to provide an overview of the proposed project and discuss proposed project effects on ESA-listed fish species, proposed conservation measures, consultation requirements, and schedule.
- (3) In response to the SBFCA's December 28, 2012, letter, NMFS provided a list of federally listed fish species that could occur in the proposed project area and designated critical habitat occurring in the proposed project area (letter to SBFCA dated March 4, 2013).

Project Description

SBFCA is proposing the FRWLP to reduce flood risk in the Sutter Basin, which includes portions of Sutter and Butte counties in California's Sacramento Valley. Communities in the basin include Yuba City, Biggs, Gridley, Live Oak, and Sutter. Floodwaters that potentially threaten the basin originate from the Feather River watershed or the upper Sacramento River watershed.

The FRWLP will reduce flood risk in the Sutter Basin by addressing known levee deficiencies along the Feather River West Levee from Thermalito Afterbay downstream to a point approximately 4 miles upstream of the Feather River's confluence with the Sutter Bypass. The proposed project includes modifying approximately 41 miles of a Corps levee to reduce the potential for flooding, flood damage, and public risk in the Yuba City area. The levee modification will involve: (1) installing approximately 34 miles of soil and bentonite cutoff walls into the levee core, (2) constructing 0.72 miles of seepage berms on the landside of the levee, (3) placing 0.42 miles of ditch fill, (4) dredging 1.8 miles of canal, and (5) relocating or removing encroachments along approximately 3.44 miles of the Feather River west levee. When completed, the work will reduce levee deficiencies, including through- and under-seepage, slope stability, erosion, and encroachments, within the construction footprint. Materials imported to the construction site will include water, bentonite, cement, incidental construction support materials, aggregate base rock, hydroseed, and up to 1,500,000 cubic yards of embankment fill material. While the specific sequencing of construction will be dynamic throughout the planning and design of the FRWLP, the construction will occur from 2013 to 2017.

Action Area

The regulations governing consultations under the ESA define *action area* as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (51 FR 19957). The action area should be determined based on all direct and indirect effects of the proposed action (50 CFR 402.02 and 402.14(b)(2)).

The proposed action area consists of the 41-mile corridor along the west levee of the Feather River from the Thermalito Afterbay to approximately 4 miles north of the Sutter Bypass. The proposed action area includes the project construction area and a 100-foot buffer around this area. The proposed construction area is defined as the area in which levee improvements (seepage berms, stability berms, relief wells, and slurry cutoff walls) are likely to be constructed. All of the potential direct and indirect effects will occur within this area and the 100-foot buffer around this area.

The proposed action area also includes six potential borrow sites that could supply the borrow material necessary for levee construction and upgrades, and routes from the project construction area to the borrow sites. The proposed action area also includes the existing 48.5-acre Star Bend Conservation Area, located within the setback area adjacent to the west levee of the Feather River, approximately 6 miles south of Yuba City.

Effects of Proposed Action

All federally listed fish species potentially found in the area of the proposed project, the CV spring-run Chinook salmon ESU, CCV steelhead DPS, and Southern DPS of North American green sturgeon, have life histories, biological and habitat requirements that may be impacted by the proposed project. The Sacramento River winter-run Chinook salmon ESU is not found within the proposed project's action area; therefore there will be no impacts.

The proposed action area of the FRWLP provides migratory habitat for adult CV spring-run Chinook salmon, and migratory and rearing habitat for juveniles. Based on observations in the Feather River, adults are likely to be present in the proposed action area between February and July as they migrate to summer holding habitat. The proposed action area of the FRWLP borders the designated critical habitat of CV spring-run Chinook salmon in the Feather River. Primary constituent elements (PCEs) of critical habitat in the adjacent reaches of the Feather River include: (1) freshwater rearing sites that have adequate water quality and quantity, floodplain connectivity, and natural cover that supports juvenile growth and mobility, and (2) freshwater migration corridors that support adequate water quantity and quality as well as natural cover to provide food and migration pathways for juveniles as well as adults. Critical habitat includes the river channel and lateral extent as defined by the ordinary high water line. In areas where the ordinary high water line has not been defined, the lateral extent is defined by the bankfull elevation or the elevation at which water begins to leave the channel and move on to the floodplain (this generally corresponds to a discharge that generally has a recurrence interval of one to two years on the annual flood series) (70 FR 52488).

The proposed action area of the FRWLP provides migratory habitat for adult steelhead, and migratory and rearing habitat for juveniles. Adult steelhead immigration in the Feather River occurs from September through March (SWRI 2003). The proposed action area of the FRWLP borders the designated critical habitat of CV steelhead in the Feather River, which includes the river channel and lateral extent as defined by the ordinary high water line. The PCEs of critical habitat are as described for spring-run Chinook salmon.

The proposed action area provides migratory and foraging habitat and likely spawning habitat for green sturgeon (Beamesderfer et al. 2004; Seesholtz pers. comm.). Historical sightings of adult green sturgeon in the Feather River have been in the spring during the general period of upstream migration in the Sacramento River. The proposed action area of the FRWLP borders designated critical habitat of the Southern DPS of North American green sturgeon, which includes the Feather River upstream to Oroville Dam.

Freshwater PCEs for the Southern DPS of North American green sturgeon include sufficient food resources for juvenile foraging, growth, and development; suitable substrates for egg incubation and development; suitable water quantity and quality for normal behavior, growth, and survival of all life stages; suitable passage conditions for adults, larvae, and juveniles; suitable holding pools and water depths for adults; and sediments free of elevated levels of contaminants capable of adversely affecting green sturgeon (74 FR 52300).

The Corps has determined that there will be no direct effect on the designated critical habitat for federally listed fish species, because all work on the waterside slope will stay above the OHWM and at least 50 feet from the top of the bank of the Feather River. All vegetation loss will be confined to the construction footprint, and there will be no additional removal of vegetation to comply with the Corps vegetation policies. As a result, there will be no modification of riparian vegetation or shaded riverine aquatic cover within designated critical habitat of federally listed fish species.

Direct effect to riparian vegetation will be limited to approximately 27 acres of riparian forest and scrub-shrub above the OHWM. Approximately 135 trees (mixed native and non-native riparian and orchard trees) will be removed from the waterside levee slope and toe. In addition, approximately 27 acres of orchard trees (344 trees) will be removed from the permanent and temporary footprints adjacent to the waterside levee slope. These areas are set well back from the river, ranging from approximately 50 to 5,600 feet from the Feather River during typical summer base flows. To compensate for permanent and temporary loss of woody riparian vegetation, SBFCA developed a mitigation and monitoring plan (MMP) to ensure no net loss of habitat functions and values.

Proposed construction and levee repair activities are not likely to result in adverse turbidity- or sedimentation-related effects on winter-run Chinook salmon, spring-run Chinook salmon, steelhead, and green sturgeon or their critical habitat. For the FRWLP, no in-river construction activities are proposed and all activities that will result in physical disturbance or removal of soil or vegetation on the waterside slope of the levee will be limited to areas above the OHWM. With implementation of the stormwater pollution prevention plan (SWPPP) and the associated erosion and sediment control best management practices (BMPs), exposed or imported soil will be largely contained within the immediate project footprint and stabilized using structural or vegetative methods. Any increases in turbidity and sedimentation attributable to the proposed project are expected to be well below levels associated with injury or reduced growth of juvenile salmonids, and will not likely result in significant disruption of normal feeding, sheltering, and migratory behavior of Chinook salmon, steelhead, or green sturgeon.

Contaminants used at construction sites, including gasoline, diesel fuel, lubricants, and hydraulic fluid, could enter the Feather River as result of spills or leakage from machinery or storage containers and injure or kill listed salmon, steelhead, and sturgeon. These substances can kill aquatic organisms through exposure to lethal concentrations or exposure to non-lethal levels that cause physiological stress and increased susceptibility to other sources of mortality such as predation. There is also a slight risk of the release of bentonite into the Feather River during jet grouting or deep soil mixing used to construct slurry cut off walls. Implementation of a spill prevention, control, and countermeasure plan (SPCCP) and bentonite slurry spill contingency plan as part of the environmental commitments of the project is anticipated to minimize the potential for toxic or hazardous spills or discharges into the Feather River. Adherence to all preventative, contingency, and reporting measures in the approved plans will reduce the risk of injury or mortality of listed fish species to negligible levels.

For the FRWLP, sheet piles will be used only as a site-specific treatment at roadway or railroad crossings, and will be restricted to the levee crown above the OHWM where sound waves will be expected to attenuate quickly before reaching the Feather River. Consequently, pile driving activities will have negligible noise and vibration effects on fish in the Feather River.

Potential utilization of the Oroville Wildlife Area dredge tailing site for borrow material could increase the potential for stranding of listed fish species. Based on current estimates, the area identified as a potential source of borrow material is approximately 75 acres and could be lowered up to 10 feet. The proposed elevation of the tailings will remain above the OHWM but will increase the frequency of overbank flows from the Feather River. Following periods of inundation, the tailings could retain surface water or direct surface water to isolated depressions, resulting in fish stranding and high mortality rates due to lethal water temperatures, low dissolved oxygen, predation, and desiccation. If this site is selected as a source of borrow material, SBFCA proposes to re-contour the area to completely drain to the river and reduce the risk of stranding from current levels. The design will be developed in consultation with NMFS, U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the Corps, and submitted to the agencies for approval prior to the start of excavation. A monitoring plan will be developed and implemented to evaluate the effectiveness of the design in minimizing fish stranding and will include provisions for remediation should the design fail to meet established performance or success criteria. The net effect may be beneficial in terms of alleviating current stranding risk while also making more floodplain surface available to fish at lower water surface elevations.

ESA Section 7 Consultation

Based on our review of the material provided with your request and the best scientific and commercial information currently available, NMFS concurs that the Corps determination that the proposed project as described is not likely to adversely affect federally listed CV spring-run Chinook salmon ESU (*O. tshawytscha*), Sacramento River winter-run Chinook salmon ESU (*O. tshawytscha*), CCV steelhead DPS (*O. mykiss*), Southern DPS of North American green sturgeon (*Acipenser medirostris*), or their designated critical habitats. No construction activities are proposed in-river or below the OHWM; all activities that will result in physical disturbance and removal of vegetation on the waterside slope of the levee will be limited to areas above OHWM.

The proposed project is not likely to result in adverse water quality or noise effects on listed fish species or their critical habitat. The proposed project is not likely adversely affect PCEs of critical habitat of winter-run Chinook salmon, spring-run Chinook salmon, steelhead, and green sturgeon. There will be no direct physical impacts to riparian vegetation or SRA cover within the designated critical habitat of these species. Therefore, no physical modification of critical habitat for ESA-listed fish species will be expected because all proposed construction activities will occur above the OHWM of the Feather River.

In addition to the above, NMFS reached this determination based on the incorporation of the following measures into the project description:

- (1) Construction personnel will receive worker environmental awareness training. This training will instruct workers to recognized sensitive species and their habitats.
- (2) Erosion control BMPs and a SWPPP will be implemented to address and minimize water quality issues.
- (3) Where suitable habitat is present for listed species, SBFCA will clearly delineate the construction limits through the use of survey tape, pin flags, orange barrier fencing, or other means, and prohibit any construction-related traffic outside these boundaries.
- (4) If a sensitive species is encountered by a biological monitor during construction, activities will cease until appropriate corrective measures have been completed or it has been determined that the species will not be harmed.
- (5) Implementation of a spill prevention, control, and countermeasure plan and bentonite slurry spill contingency plan is anticipated to minimize the potential for toxic or hazardous spills or discharges into the Feather River.
- (6) To prevent possible resource damage from hazardous materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas unless it is done offsite.
- (7) The biological monitor will record all observations of federally listed species on California Natural Diversity Database field sheets and submit to the Corps, NMFS, USFWS, and CDFW.
- (8) Because ground disturbance for the proposed project will be greater than one acre, SBFCA will obtain coverage under the U.S. Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System general construction activity stormwater permit.
- (9) The specific BMPs that will be incorporated into the erosion and sediment control plan and SWPPP will be site-specific and will be prepared by the construction contractor in accordance with the California Regional Water Quality Control Board Field Manual.
- (10) Compensation for permanent and temporary losses of woody riparian vegetation will be achieved through a combination of onsite and offsite compensation. To the extent feasible, SBFCA proposes to conduct onsite compensation in floodplain areas within the proposed project footprint or in the proposed project vicinity. SBFCA proposes to conduct offsite compensation for riparian impacts in the existing 48.5-acre Star Bend Conservation Area, located within the setback area adjacent to the west levee of the Feather River, approximately 6 miles south of Yuba City.
- (11) SBFCA prepared an MMP for compensation of riparian impacts with the goal of ensuring no net loss of habitat functions and values. The MMP has been submitted to the

agencies for review and approval. The MMP identifies the compensation ratios and describes how riparian habitat will be restored, monitored, and reported upon over a specified period of time.

- (12) To help ensure that there is limited temporal habitat damage to riparian habitat, the mitigation project will be implemented during the fall of 2013.

This concludes ESA section 7 consultation for the proposed project. This concurrence does not provide incidental take authorization pursuant to section 7(b)(4) and section 7(o)(2) of the ESA. Re-initiation of the consultation is required where discretionary Federal agency involvement or control over the proposed project has been retained (or is authorized by law), and if: (1) new information reveals effects of any of the proposed projects that may affect listed species or critical habitat in a manner or to an extent not considered; (2) any of the proposed projects are subsequently modified in a manner that causes adverse effects to listed species or critical habitat; or (3) a new species is listed or critical habitat designated that may be affected by any of the proposed projects.

EFH Consultation


With regards to EFH consultation, the proposed action area has been identified as EFH for Pacific salmon in Amendment 14 of the Pacific Salmon Fishery Management Plan pursuant to the MSA. Federal action agencies are mandated by the MSA (section 305(b)(2)) to consult with NMFS on all actions that may adversely affect EFH, and NMFS must provide EFH conservation recommendations to those agencies (section 305(b)(4)(A)). Based on our review of the material provided, and the best scientific and commercial information currently available, NMFS has determined that the proposed action will adversely affect EFH for Pacific salmon. However, the proposed action includes adequate measures (described in the ESA section 7 Consultation above) to avoid, minimize, or otherwise offset the adverse effects to EFH. Therefore, additional EFH Conservation Recommendations are not being provided at this time and written response as required under section 305(b)(4)(B) of the MSA and Federal regulations (50 CFR 600.920(k)) will not be required. However, if there are substantial revisions to the project description that could result in adverse effects to EFH, the lead Federal agency will need to re-initiate EFH consultation.

FWCA Consultation

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration and is coordinated with other aspects of water resources development (16 U.S.C. 661). The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage (16 U.S.C. 662(a)). Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the purpose of conserving fish and wildlife resources. The FWCA provides the opportunity to offer recommendations for the conservation of species and habitats beyond those currently managed under the ESA and MSA. Because the proposed project is designed to avoid environmental impacts to aquatic habitat within the action area, NMFS has no additional FWCA comments to provide.

Please contact Michael Hendrick at (916) 930-3605, or via e-mail at Michael.Hendrick@noaa.gov, if you have any questions or require additional information concerning this project.

Sincerely,


Rodney R. McInnis
Regional Administrator

cc: Copy to File ARN 151422SWR2013SA00015
NMFS-PRD, Long Beach, CA

Literature Cited

- Beamesderfer, R., M. Simpson, G. Kopp, J. Inman, A. Fuller, and D. Demko. 2004. Historical and current information on green sturgeon occurrence in the Sacramento and San Joaquin rivers and tributaries. Prepared for State Water Contractors by S.P. Cramer and Associates, Inc., Gresham, Oregon. 46 pages.
- SWRI. 2003. Literature review of life history and habitat requirements for Feather River fish species. Oroville FERC Relicensing (Project No. 2100) Interim Report SP-F3.2 Task 2/SP-F21 Task 1. January 2003.

Personal Communication

- Seesholtz, Alicia. 2008. Environmental Scientist. California Department of Water Resources. Sacramento, CA. September 19, 2008—telephone conversation.

**PROGRAMMATIC AGREEMENT
AMONG THE
U.S. ARMY CORPS OF ENGINEERS, SUTTER BUTTE FLOOD CONTROL AGENCY, AND
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER
REGARDING THE
FEATHER RIVER WEST LEVEE PROJECT
SUTTER AND BUTTE COUNTIES, CALIFORNIA**

WHEREAS, the Sutter Butte Flood Control Agency (SBFCA) proposes to design and construct the Feather River West Levee Project (Project), to reduce flood risk in the Sutter Basin, which includes portions of Sutter and Butte Counties in the Sacramento Valley of California, and;

WHEREAS, this project requires permits from the U.S. Army Corps of Engineers (Corps) to modify federal levees under Section 14 of the River and Harbors Act (33 US Code Section 408) and a permit to discharge fill to waters of the United States under Section 404 of the Clean Water Act (33 US Code Section 1344), and;

WHEREAS, the project is an undertaking as defined under Section 106 of the National Historic Preservation Act (NHPA, 16 US Code Section 470f) and the implementing regulations (33 CFR Section 800.16[y]) because the project requires federal permitting, and;

WHEREAS, the Corps is the lead federal agency for Section 106 compliance per 36 CFR Section 800.2(a)(2) for the project, and;

WHEREAS, the Corps may not be able to resolve adverse effects by preparing a Memorandum of Agreement under 36 CFR Section 800.2(a)(2) in advance of 408 authorization and 404 permitting; and;

WHEREAS, the Section 106 regulations allow a federal agency to phase identification and evaluation of historic properties if provided for in a programmatic agreement (36 CFR Section 800.4(b)(2)), and;

WHEREAS, the Corps has consulted with and will continue to consult with both federally recognized and other Native American tribes, and the public, and;

WHEREAS, the Corps has provided notice to the Advisory Council on Historic Preservation (ACHP) and by letter dated July 18, 2012, the ACHP has declined to participate in this programmatic agreement (Agreement), and;

WHEREAS, the Corps has consulted with the State Historic Preservation Officer (SHPO) and will continue to consult with the SHPO and provide the SHPO the opportunity to review documents covered by this Agreement, and;

WHEREAS, SBFCA has invited the Central Valley Flood Protection Board (CVFPB) to review and participate as a concurring party to this Agreement because the CVFPB must approve alterations to the project levees per California Water Code Section 8710,

NOW THEREFORE, the Corps, SHPO, SBFCA and the Central Valley Flood Protection Board (CVFPB) agree that the following stipulations will be implemented for all portions of the project, in accordance with this Agreement and the Inventory and Historic Property Treatment Plan (Plan) that will be appended to this Agreement after execution.

STIPULATIONS

Stipulation I. Applicability and Scope, Relationship to Other Agreements

(A) Applicability, Scope, and Method of Implementation

1. This Agreement applies to the project because the project is an undertaking within the meaning of Section 106 of the NHPA, as defined in 36 CFR Section 800.16(y).
2. Although other state and local agencies may issue permits and otherwise provide assistance for portions of the project covered by this Agreement, the Corps remains the lead federal agency responsible for ensuring compliance with all Section 106 responsibilities under the provisions of this Agreement.
3. This Agreement does not negate or supersede any agreements in effect between the Corps and Indian tribes at the time the Agreement is executed, nor does it negate or supersede any agreement documents executed between the Corps and SHPO pursuant to 36 CFR Part 800, with amendments, effective August 5, 2004.
4. SBFCA assumes responsibility for the contracting and supervision of technical cultural resources management work performed to satisfy the stipulations of this Agreement and Section 106 of the NHPA. SBFCA understands that all substantive management decisions and completion of Section 106 milestones are subject to the review, approval, and ultimate discretion of the Corps.

(B) Conflicts with Other Agreement Documents

1. It is possible that a conflict may arise between this Agreement and other agreement documents that govern associated undertakings. The Corps shall endeavor to avoid conflicts with other agreement documents, but in the event of a direct conflict, the Corps shall determine which standards govern and how to proceed. For the Project, SBFCA will only be responsible for implementing the terms of this Agreement.

Stipulation II. Definitions and Standards

1. The definitions set forth at 36 CFR Section 800.16 are applicable throughout this Agreement.
2. "Plan" as used in this document, refers to the Inventory and Historic Property Treatment Plan. This document will describe methodology covering inventory methods, recording of resources, evaluation and treatment of identified resources, curation of recovered materials, and other technical specifications necessary to implement this Agreement. This Plan may be amended separately from the Agreement but cannot revise the substantive requirements of this Agreement.

3. Professional Qualifications: All inventory and evaluation activities prescribed by this Agreement shall be carried out under the authority of the Corps by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739) in the appropriate disciplines. Nothing in this stipulation, however, may be interpreted to preclude the Corps, SBFCA, or any agent or contractor thereof from using the services of persons who do not meet the Secretary of Interior's Professional Qualifications Standards if they are supervised by an individual who does meet these standards.

Stipulation III. Notices and Communications

(A) Methods of Transmittal

1. The signatory parties agree that reports and deliverables such as inventory reports, findings of effect, and treatment plans may be submitted electronically to signatory parties for review. All decisions from SHPO, such as concurrence in evaluations, findings of effect, and adequacy of treatment, shall be delivered in hard copy and retained by SBFCA and the Corps.

Stipulation IV. Identification of Historic Properties

(A) Phasing of Identification, Evaluation, Determination of Adverse Effects, and Resolution of Adverse Effects on Historic Properties

1. The Corps will perform, or ensure that SBFCA performs, the following steps for discrete phases or activities identified by SBFCA and the Corps, according to the construction schedule or timeline of the larger project.

2. For each phase or activity, the Corps and SBFCA shall define an area of potential effects (APE), complete an inventory of the APE, evaluate identified resources for the National Register of Historic Places (NRHP), make a finding of effect, and develop treatment methods to resolve adverse effects. The Corps will typically submit separate reports for the inventory (including evaluation and findings of effect) and treatment. For example, where identified properties require property-specific treatment that requires consideration and collaboration among consulting parties, the Corps would typically submit the inventory, evaluation, and finding of effect for the APE in one report and submit treatment in a separate later deliverable. All reports prepared under this stipulation shall be subject to the review and approval requirements defined below as part of this stipulation (IV[F]).

(B) Definition of the Area of Potential Effects for Each Phase or Activity

1. The Corps has conducted initial consultation with the SHPO regarding the APE. For each activity or phase dependent on federal authorization or permits from the Corps, the Corps and SBFCA shall define a phase-specific APE, in consultation with the SHPO. The APE shall consist of the construction footprint and any ancillary areas, including but not limited to staging areas, haul roads, utility relocations, and mitigation sites for each phase or activity identified by SBFCA, as well as the surrounding vicinity where the phase-specific footprint may result in direct or indirect effects on historic properties, based upon the nature of the activity and the potentially affected resources, subject to the review and approval of the Corps prior to initiation of cultural resource inventories. The APE will determine the location where the

Corps shall conduct inventory efforts, evaluate identified resources, make a finding of effect, and develop treatment as defined below (Stipulation IV[C] through IV[E]).

(C) Inventory of the Area of Potential Effects

1. The Corps and SBFCA, in consultation with the SHPO and any interested Native American tribes, shall complete an inventory of cultural resources within each phase or activity-specific APE. The inventory shall use efforts appropriate to the kind and frequency of cultural resources that may be encountered, consistent with the methodology of the plan. The inventory will cover the entire APE and shall be designed to identify historic properties prior to construction, to the extent feasible.

2. Based upon the inventory of each phase or activity-specific APE, the Corps may require construction monitoring. The Corps' decision shall be based upon relevant factors such as the density and distribution of identified resources, geomorphology, recommendations from Native Americans (including both federally recognized tribes and other individuals and organizations), historic maps, and other data. Monitoring efforts shall conform to the requirements of the plan with any necessary modifications made based upon the results of the inventory effort.

(D) Evaluation and Finding of Effect

1. For all identified cultural resources, the Corps and SBFCA shall prepare an evaluation for the NRHP, consistent with the methods and standards in the Plan. The Corps shall apply the criteria for evaluation for the NRHP provided in 36 CFR Section 60.4. The Corps and SBFCA shall also include a finding of effect in the inventory and evaluation report, or in a separate deliverable, by applying the criteria of adverse effect in 36 CFR Section 800.5(a)(1).

(E) Resolution of Adverse Effects

1. For all identified historic properties that would be adversely affected by the project, the Corps and SBFCA shall develop treatments to resolve adverse effects. Treatment may consist of avoidance, documentation, data recovery excavations, preservation in place, or other methods identified by the Corps. The Corps may use treatment methods provided in the Plan or may develop, in consultation with the SHPO, interested Native American tribes, or other stakeholders as appropriate, property-specific treatment. If treatment methods described in the Plan are adequate, the Corps may simply refer to those methods in the inventory report, finding of effect document, or stand-alone treatment plan and incorporate them by reference without repeating the full text of the relevant treatment methods.

(F) Review of Reports

1. Reports describing the results of inventory, evaluation, findings of effect and proposed treatment shall be submitted to the SHPO for review. The Corps shall also distribute reports to signatories, concurring parties, and other interested parties upon request. SHPO and other reviewing parties shall have 30 calendar days to review reports, starting on the day the report is transmitted electronically or the date it was received if sent by mail or other physical means. If SHPO does not respond within 30 calendar days, the Corps may proceed with the proposed actions. If SHPO responds with comments, the Corps shall incorporate the comments and provide a revised copy to SHPO and other consulting parties for further review. The SHPO shall have 15 calendar days from the date the revised report is received to review

revised reports prepared under this stipulation. If the SHPO does not respond within this time frame, the Corps may implement the proposed actions in the report and construction dependent upon those findings, if any.

2. Every report and associated management milestone performed under this stipulation shall be deemed complete and adequate when the SHPO provides written concurrence by e-mail or letter.

(G) Ongoing Consultation with Native American Individuals and Organizations

1. The Corps has consulted with the Native American community during development of this Agreement document. During management milestones, such as completion of inventory reports, resource evaluations, findings of effect, and development and implementation of treatment, the Corps shall consult with the Native American individuals and organizations that may attach cultural significance to resources affected by relevant undertakings. The Corps will consider the results of these consultations and attempt to incorporate and follow suggestions regarding management of cultural resources.

(H) Annual Reports

1. At the end of every calendar year during which management activities are performed under this Agreement, SBFCA and the Corps shall prepare and deliver to the SHPO a memorandum summarizing management activities and findings for that calendar year.

Stipulation V. Monitoring and Inadvertent Discoveries and Unanticipated Effects

(A) Workforce Training and Construction Monitoring

1. The Corps or qualified archaeologists retained by SBFCA will provide training to construction personnel regarding proper procedures and conduct in the event that archaeological materials are encountered during construction. This training will cover both the identification of resources that may be encountered during construction and procedures to be followed in the event of a discovery.

2. SBFCA shall conduct monitoring of construction where the Corps, in consultation with the SHPO, determines it is necessary to ensure that identified resources are protected or where there is a high sensitivity for previously unidentified resources. These determinations will be described in each phase or activity-specific inventory report and the plan.

(B) Discovery Procedures for Resources Encountered During Construction

1. If cultural resources are discovered during construction, all construction shall immediately stop within 100 ft (30 m) of the discovery, the location of the discovery will be marked for avoidance, and efforts will be made to prevent inadvertent destruction of the find. The contractor must notify the Corps and SBFCA (if no Corps or SBFCA representatives are on location). The Corps shall determine whether the discovery is a potential NRHP-eligible resource per the criteria in 36 CFR Section 60.4. If the Corps determines that the discovery is not a potentially NRHP-eligible resource, the discovery will be documented and construction may proceed at the direction of the Corps.

2. If the Corps determines that human remains have not been encountered, that the discovery is not an isolated find, and that the discovery may be eligible for the NRHP, the Corps will notify the SHPO and other relevant parties within 48 hours of the discovery. Notification should include a description of the discovery, the circumstances leading to its identification, and recommendations for further action. Where feasible, the notification will also include a tentative NRHP-eligibility discussion per 36 CFR Section 60.4 and a finding of effect per 36 CFR Section 800.5(a)(1). If the resource cannot be evaluated based upon available evidence (for example, where test excavation is required), the Corps shall include a plan of action for further technical work necessary to determine the eligibility of the resource and make a finding of effect per 36 CFR Section 800.5(a)(1). Treatment shall be implemented where necessary to resolve adverse effects on inadvertently discovered historic properties. If treatment is necessary to resolve adverse effects, SBFCA and the Corps shall consult with Native American individuals and organizations that attach cultural significance to the relevant historic properties and with the SHPO prior to implementing treatment. The SHPO shall have 15 calendar days to review findings of effect and treatment plans submitted under this stipulation, when treatment is selected from the attached historic property treatment plan. When new treatment methods are developed, review shall follow Stipulation IV(F) above.

3. If human remains are present, treatment shall conform to the requirements of state law under California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.98, unless the discovery occurs on federal land. Discoveries on federal land shall conform to the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA, 25 US Code Section 3001 et seq.), after complying with the requirements of California Health and Safety Code Section 7050.5, which requires notice to the County Coroner so the coroner may determine if an investigation into the cause of death is required. These legal requirements, as well as appropriate monitoring, will be described in the plan, as indicated in Attachment 2.

Stipulation VI. Administrative Provisions

(A) Documentation Standards

1. Written documentation of inventory, evaluations, findings of effect and treatment prescribed per this Agreement shall conform to the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716-44740), as well as to applicable standards and guidelines established by the State of California Office of Historic Preservation¹ and the plan for each phase, agreed upon by the Corps and the SHPO, in consultation with all pertinent stakeholders.

(B) Curation Standards

1. The Corps shall ensure that the materials and records resulting from the activities prescribed in this Agreement are curated in accordance with 36 CFR Part 79, except where state law and regulations, including, but not limited to, California Public Resources Code Sections 5097.98 and 5097.991 for Native American human remains and associated grave goods discovered on non-federal land, require different treatment. Non-burial associated archaeological materials removed from private land shall be subject to the control of the landowner. Additionally, the disposition of any abandoned shipwrecks and

¹California State Parks, Office of Historic Preservation, *Publications and Forms*. Available: http://ohp.parks.ca.gov/?page_id=1069, Accessed March 5, 2013.

archaeological sites and historic resources on state lands under the jurisdiction of the California State Lands Commission (CSLC) shall be determined by CSLC as provided by California Public Resources Code Section 6313. The Corps will ensure that, to the extent permitted by applicable laws and regulations, the views of the appropriate Native American descendant group(s) are taken into consideration when decisions are made about the disposition of Native American archaeological materials and records.

(C) Confidentiality

1. The signatory parties to this Agreement acknowledge that historic properties covered by this Agreement are subject to the provisions of Section 304 of the NHPA and California Government Code 6254.10 (Public Records Act) relating to the disclosure of archaeological site information and, having so acknowledged, will ensure that all actions and documentation prescribed by this Agreement maintain the confidentiality required by law.

Stipulation VII. Resolving Objections

(A) Resolving Objections

1. Should any party to this Agreement object in writing at any time to the manner in which the terms of this Agreement are implemented, to any action carried out or proposed with respect to implementation of the Agreement (other than the undertaking itself), or to any documentation prepared in accordance with and subject to the terms of this Agreement, the Corps shall immediately notify the other Agreement parties of the objection, request their comments on the objection within 15 days following receipt of the Corps' notification, and proceed to consult with the objecting party for no more than 30 days to resolve the objection. The Corps will honor the request of the other parties to participate in the consultation and will take any comments provided by those parties into account.

2. If the objection is resolved during the 30-day consultation period, the Corps may proceed with the disputed action in accordance with the terms of such resolution.

3. If at the end of the 30-day consultation period, the Corps determines that the objection cannot be resolved through such consultation, then the Corps shall forward all documentation relevant to the objection to the ACHP, including the Corps' proposed response to the objection, with the expectation that the ACHP will, within 45 days after receipt of such documentation:

- a. Advise the Corps that the ACHP concurs in the Corps' proposed response to the objection, whereupon the Corps will respond to the objection accordingly. The objection shall thereby be resolved; or
- b. Provide the Corps with recommendations, which the Corps will take into account in reaching a final decision regarding its response to the objection. The objection shall thereby be resolved; or
- c. Notify the Corps that the objection will be referred for comment pursuant to 36 CFR Section 800.7(c) and proceed to refer the objection and comment. The Corps shall take the resulting comments into account in accordance with 36 CFR Section 800.7(c)(4). The objection shall thereby be resolved.

4. Should the ACHP not exercise one of the above options within 45 days after receipt of all pertinent documentation, the Corps may proceed to implement its proposed response. The objection shall thereby be resolved.

5. The Corps shall take into account any of the ACHP's recommendations or comments provided in accordance with this stipulation with reference only to the subject of the objection. The Corps' responsibility to carry out all actions under this Agreement that are not the subject of the objection shall remain unchanged.

6. At any time during implementation of the measures stipulated in this Agreement, should a member of the public raise an objection in writing pertaining to such implementation to any signatory party to this Agreement, that signatory party shall immediately notify the Corps. The Corps shall immediately notify the other signatory parties in writing of the objection. Any signatory party may choose to comment in writing on the objection to the Corps. The Corps shall establish a reasonable time frame for this comment period. The Corps shall consider the objection, and in reaching its decision, the Corps will take all comments from the other signatory parties into account. Within 15 days following closure of the comment period, the Corps will render a decision regarding the objection and respond to the objecting party. The Corps will promptly notify the other signatory parties of its decision in writing, including a copy of the response to the objecting party. The Corps' decision regarding resolution of the objection will be final. Following issuance of its final decision, the Corps may authorize the action subject to dispute hereunder to proceed in accordance with the terms of that decision.

7. The Corps shall provide all parties to this Agreement, and the ACHP, if the ACHP has commented, and any parties that have objected pursuant to Section C.6 of this stipulation, with a copy of its final written decision regarding any objection addressed pursuant to this stipulation.

8. The Corps may authorize any action subject to objection under this stipulation to proceed after the objection has been resolved in accordance with the terms of this stipulation.

Stipulation VIII. Amendments

(A) Methods for Amending this Agreement

1. Any signatory party to this Agreement may propose that this Agreement be amended, whereupon the signatory parties will consult for no more than 30 calendar days to consider such amendment. The Corps may extend this consultation period. The amendment process shall comply with 36 CFR Section 800.6(c)(1) and Section 800.6(c)(7). This Agreement may be amended only upon the written agreement of the signatories.

(B) Failure to Reach Agreement

1. If the signatory parties cannot reach agreement on proposed amendments, the dispute shall be resolved as provided for in Stipulation VII above.

Stipulation IX. Termination

(A) Power to Terminate

1. Only signatory parties to this Agreement may terminate this Agreement. If this Agreement is not amended as provided for in Stipulation VIII or if any signatory proposes termination of this Agreement, the party proposing termination shall notify the other signatory parties in writing, explain the reasons for proposing termination, and consult with the other parties for no more than 30 calendar days to seek alternatives to termination.
2. Should such consultation result in an agreement on an alternative to termination, the signatories shall proceed in accordance with that agreement and if necessary, shall amend this document in accordance with Stipulation VIII.
3. Should such consultation fail to result in an agreed-upon resolution by the signatory parties, the signatory party proposing termination may terminate this Agreement by promptly notifying the other signatories in writing.
4. If this Agreement is terminated hereunder, and if the Corps determines that the undertaking will nonetheless proceed, then the Corps shall comply with the requirements of 36 CFR Section 800.3-800.6, or request the comments of the ACHP, pursuant to 36 CFR Part 800.

Stipulation X. Duration of the Agreement

1. Unless it is terminated pursuant to Stipulation IX of this Agreement or superseded by another agreement executed for the covered undertakings, this Agreement shall remain in effect until the Corps, in consultation with the other signatory parties to this Agreement, determines that construction, monitoring, and maintenance of all aspects of the undertakings have been completed and all terms of this Agreement have been fulfilled in a satisfactory manner, or until 10 years have passed from the date of execution of this Agreement, whichever comes first. Upon a determination by the Corps that construction, monitoring, and maintenance of all aspects of the covered undertakings have been completed and that all terms of this Agreement have been fulfilled in a satisfactory manner, or upon reaching the 10 year limit, the Corps shall notify the other signatory and concurring parties of this determination in writing, whereupon this Agreement shall be null and void.

Stipulation XI. Effective Date

1. This Agreement shall take effect on the date that it has been executed by all signatory parties.

EXECUTION and implementation of this Agreement is evidence that the Corps has afforded ACHP a reasonable opportunity to comment on this Agreement and the associated undertakings; that the Corps has taken into account the effects of the undertakings on historic properties; and that the Corps has complied with Section 106 of the NHPA and 36 CFR Part 800 for all relevant aspects of the undertaking.

ATTACHMENTS AND FIGURES

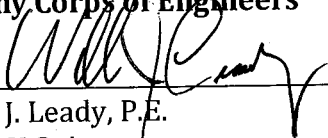
Figures 1 and 2, Project Location and Project Area

Attachment 1. Feather River West Levee Project: Description of the Project and U.S. Army Corps of Engineers Undertakings

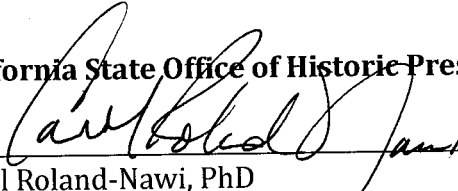
Attachment 2. Feather River West Levee Project: Outline and Guidance for the Historic Property Treatment Plan

SIGNATORY PARTIES:

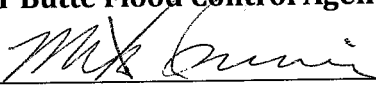
U.S. Army Corps of Engineers

By  Date 22 May 2013
William J. Leady, P.E.
Colonel, U.S. Army
District Commander

California State Office of Historic Preservation

By  Date 7-1-13
Carol Roland-Nawi, PhD
State Historic Preservation Officer

Sutter Butte Flood Control Agency

By  Date 6/14/13
Michael Inamine
Interim Executive Director
Sutter Butte Flood Control Agency

CONCURRING PARTIES:

Central Valley Flood Protection Board

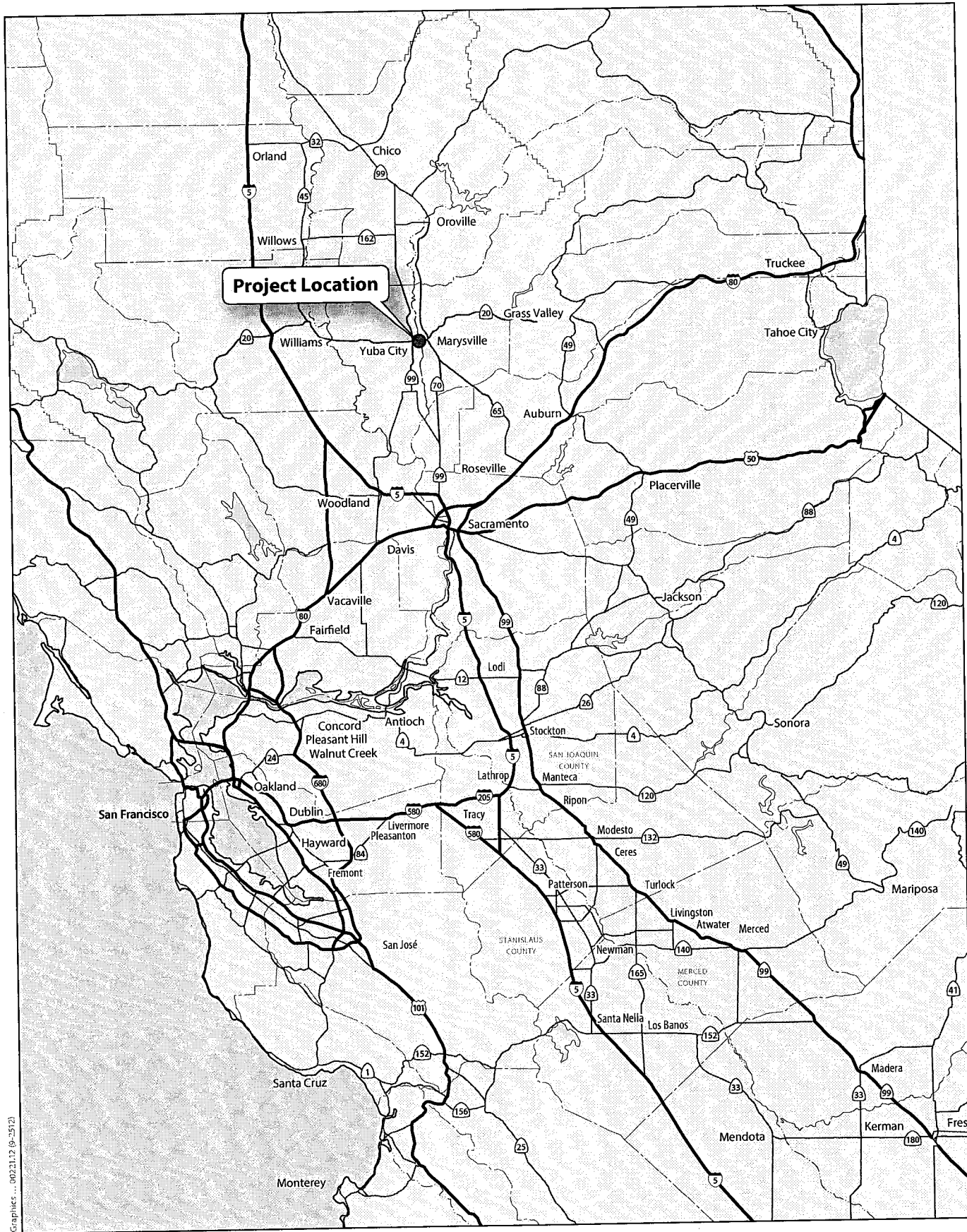
By _____ Date _____
Jay Punia
Executive Officer

United Auburn Indian Community

By _____ Date _____
Gene Whitehouse
Chairperson

Enterprise Rancheria Estom Yumeka Maidu Tribe

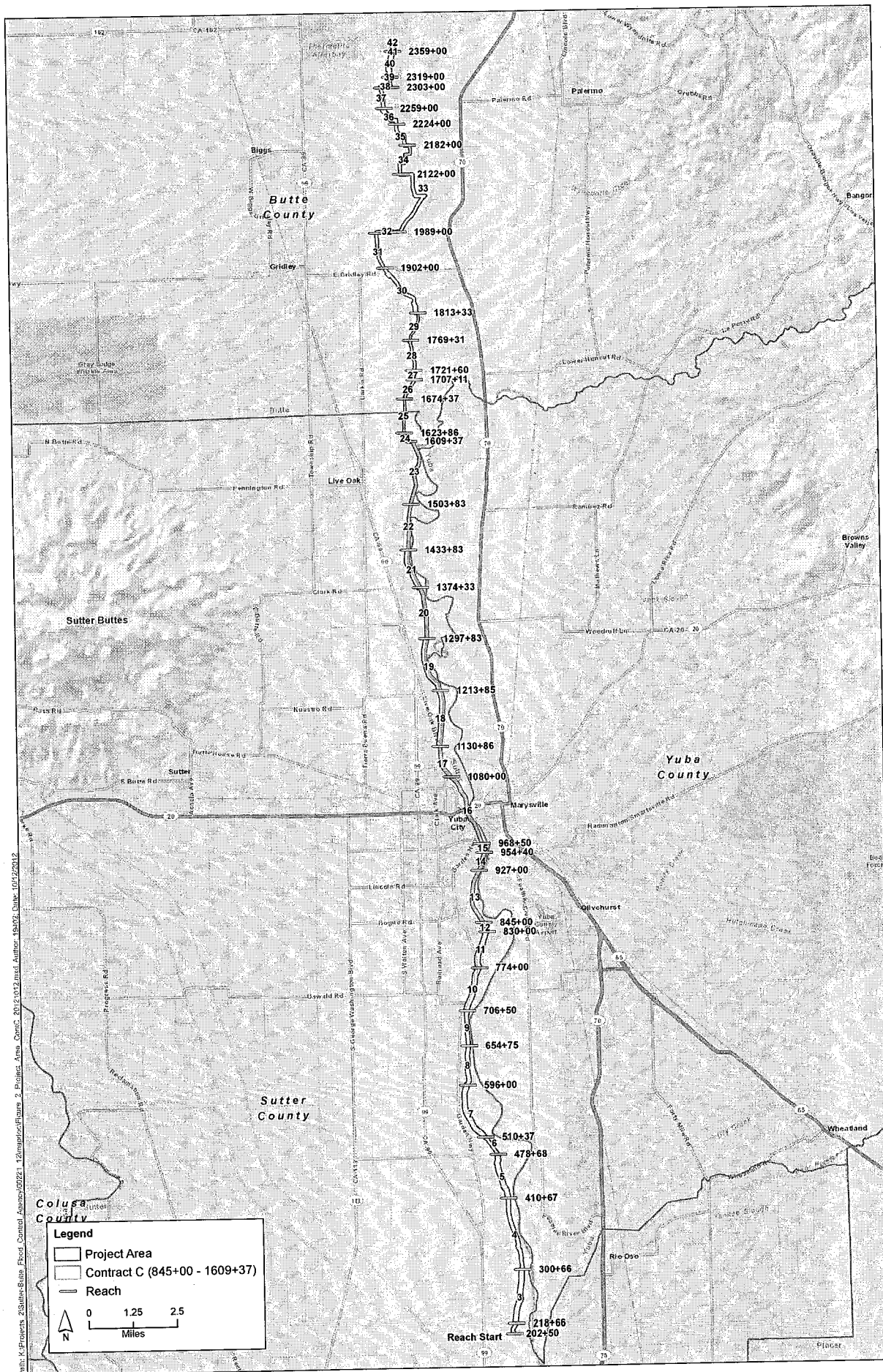
By _____ Date _____
Glenda Nelson
Chairperson



Graphics: ... 0023112 (9-2512)



Figure 1
Project Location



Path: X:\Projects_2\Sutter Buttes Flood Control Areas\59221_12\workspace\Figures_2\Project Area_CoverC_2012\2012.mxd; Author: 12/02/2012; Date: 10/22/2012

Figure 2
Project Area

Attachment 1

Feather River West Levee Project: Description of the Project and U.S. Army Corps of Engineers Undertakings

Introduction

The Sutter Butte Flood Control Agency (SBFCA) is proposing the Feather River West Levee Project (FRWLP, or project) to reduce flood risk in the Sutter Basin, which includes portions of Sutter and Butte Counties in the Sacramento Valley of California. This project would result in the construction of improvements to the Feather River West Levee on levee reaches 2–41.

Within the planning area, SBFCA's goal is to achieve a minimum of 200-year flood protection for the more urbanized areas with population centers and 100-year protection for the remaining more rural agricultural parts. A 200-year flood is a flood that has a 0.5% chance of occurring in any given year, also referred to as a 0.5% annual exceedance probability (AEP). A 100-year flood has a 1% AEP. The primary purpose of the FRWLP is to reduce flood risk in the Sutter Basin by addressing known levee deficiencies along the Feather River West Levee from Thermalito Afterbay downstream to a point approximately 4 miles upstream of the Feather River's confluence with the Sutter Bypass.

SBFCA would manage the construction of these improvements through four discrete construction contract mechanisms, spanning construction seasons from 2013 to 2015. The project vicinity and levee reaches where construction is proposed are depicted in Figures 1 and 2. These contracts and the associated levee reaches proposed for repair are summarized in Table 1.

Table 1. Feather River West Levee Project Construction Contracts, Reaches, and Years for Construction

Construction Contract	Project Reaches	Years for Construction
A	2–5	2014–2015
B	6–12	2014–2015
C	13–25	2013–2014
D	26–41	2014–2015

To complete the project, SBFCA must receive authorization from the U.S. Army Corps of Engineers (Corps) to modify the levee under Section 14 of the Rivers and Harbors Act (33 U.S. Code Section 408) (Section 408). SBFCA must also receive authorization from the Corps to discharge fill to waters of the United States under Section 404 of the Clean Water Act (33 U.S. Code Section 1344). Because the project associated with these permits and authorizations may affect historic properties, the Corps must comply with Section 106 of the National Historic Preservation Act (16 U.S. Code Section 470f) (Section 106).

Description of U.S. Army Corps of Engineers Undertakings and Management Approach

The Corps anticipates reviewing and authorizing the entire project under Section 408 in early 2013. This authorization would precede the completion of 100% design drawings for all phases as well as the

construction of the four contracts. Completion of the final design drawings depends on the design of ancillary project features such as borrow sites and landside utilities; these features are unrelated to the portion of the project relevant to Section 408. Because the final design would proceed in phases, the delineation of the final area of potential effects on historic properties would also proceed in phases; consequently, the Corps is using the programmatic agreement (PA) as a means of defining Corps commitments for management of historic properties and phasing that management process. The PA would document Section 106 compliance sufficiently for authorization under Section 408 and would guide the Corps in managing historic properties in a phased process that tracks with SBFCA's contracting mechanisms, construction schedule, and design constraints. The PA will also provide a means of documenting how Section 106 compliance will be completed in support of permits under Section 404 of the Clean Water Act.

Project Description

The project would be completed in the Sutter Basin. Located in north-central California in Sutter and Butte Counties, the Sutter Basin is part of the Sacramento River Flood Control Project (SRFCP). This elongated, irregularly shaped basin covers about 326 square miles; it is approximately 43 miles long north to south and up to 14 miles wide east to west and is roughly bounded by the Feather River (to the east), Cherokee Canal, the Sutter Buttes, and Sutter Bypass (to the west). Floodwaters potentially threatening the basin originate in the Feather River watershed or the upper Sacramento River watershed above Colusa Weir. These waterways have drainage areas of 5,921 and 12,090 square miles, respectively. Communities in the basin include Yuba City, Biggs, Gridley, Live Oak, and Sutter.

The project is focused on the corridor along the Feather River West Levee from Thermalito Afterbay to a point approximately 4 miles north of the Sutter Bypass. This corridor is roughly 500 feet toward the land side of the existing levees and 100 feet toward the water side. This corridor was determined as the area in which levee improvements, such as seepage berms, stability berms, relief wells, setback levees, erosion protection, and slurry cutoff walls, are likely to be made. The corridor is approximately 41 miles long, divided into 41 relatively homogeneous reaches for ease of describing existing conditions, proposed actions, the affected environment, and potential environmental effects. (Note that this number is coincidental and one reach does not consistently correspond to a length of 1 mile; additionally, Reach 1 is not a part of the project.) The project area would also include borrow/spoil sites or project mitigation sites outside this corridor.

The affected area generally includes the 40+ miles of the Feather River West Levee from the Thermalito Afterbay to a point approximately 4 miles north of the Sutter Bypass. Along this linear area, open-water habitats include the river, ponds, and canals. Small ditches that provide open-water habitat for wildlife are also present in the affected area. Smaller agricultural canals associated with rice and other flooded crops are also present in the project area. Prehistoric cultural resources are documented in the project footprint and vicinity on both the landside and waterside of the Feather River West Levee. Historic-era archaeological and built environment resources are largely confined to the landside uplands but have the potential to occur on both the landside and waterside.

Attachment 2

Feather River West Levee Project: Outline and Guidance for the Historic Property Treatment Plan

1. Introduction and Description of the Project and Undertakings
 - 1.1. Description of the Project
 - 1.1.1. (brief description of the project that relies upon Corps undertakings)
 - 1.2. Section 106 Undertakings
 - 1.2.1. (brief description of the Section 106 undertakings such as Rivers and Harbors act and Clean Water Act authorization and permits)
 - 1.3. Purpose and Organization of this Historic Properties Treatment Plan
2. Regulatory Context
 - 2.1. Section 106 of the National Historic Preservation Act
 - 2.1.1. Phasing of Management Steps under Section 106 and the Programmatic Agreement
 - 2.2. State and Federal Law Governing Human Remains
 - 2.2.1. California Law
 - 2.2.2. Native American Graves Protection and Repatriation Act
3. Public and Native American Consultation
 - 3.1. Initial Consultation Efforts
 - 3.1.1. (summary of consultation efforts to date)
 - 3.2. Future Consultation
 - 3.2.1. (summary of future consultation as required under the PA)
4. Natural and Cultural Setting
 - 4.1. Natural Environment
 - 4.2. Prehistoric Context
 - 4.3. Ethnographic Context
 - 4.4. Historic Context
5. Technical Methods for Implementing the Programmatic Agreement
 - 5.1. Inventory
 - 5.1.1. Defining the Area of Potential Effects
 - 5.1.1.1. (describe how the APE will be defined for each phase)
 - 5.1.2. Inventory and Recording Methods
 - 5.1.3. Evaluation
 - 5.1.3.1. Evaluation for the National Register of Historic Places
 - 5.1.3.1.1. Archaeological Resources
 - 5.1.3.1.2. Built Environment Resources
 - 5.1.3.1.3. Traditional Cultural Properties
 - 5.1.3.1.4. Rural Historic Landscapes

- 5.2. Finding of Effect
 - 5.2.1. Application of the Criteria of Adverse Effect Under Section 106

- 6. Treatment Methods for Resolving Adverse Effects
 - 6.1. Archaeological Resources
 - 6.1.1. (typical treatment methods such as data recovery or preservation in place)
 - 6.2. Built Environment Resources
 - 6.2.1. (typical treatments such as HABS/HAER)
 - 6.3. Traditional Cultural Properties
 - 6.3.1. (typical treatments such as documentation, avoidance, etc.)
 - 6.4. Rural Historic Landscapes
 - 6.4.1. (HALS)

- 7. Curation of Recovered Materials
 - 7.1. Curation Methods and Standards

- 8. Construction Monitoring and Inadvertent Discoveries
 - 8.1. Workforce Training
 - 8.2. Monitoring
 - 8.3. Procedures for Inadvertent Discoveries
 - 8.3.1. Stopping Work
 - 8.3.2. Notification to the Corps and Levee Maintaining Agency
 - 8.3.3. Evaluation of the Discovery
 - 8.3.4. Finding of Effect/Treatment (As Necessary)

- 9. References Cited

**APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD
ENCROACHMENT PERMIT**

Application No. _____
(For Office Use Only)

1. Description of proposed work being specific to include all items that will be covered under the issued permit.
In 2010, the Sutter Butte Flood Control Agency initiated the Feather River West Levee Project. This application covers the fourth phase of work for the Laurel Avenue Repair Project located between Stations 178+00 and 224+00, which includes cutoff wall to address levee through and under seepage issues as well as utility and geometry corrections (Attachment A).

2. Project
Location: Sutter County County, in Section NA
Township: T13N (N) (E)
(S), Range: R3E (W), M. D. B. & M.
Latitude: 38°55'49.82"N Longitude: 121°35'24.52"W
Stream: Feather River, Levee: Feather River W Levee Designated Floodway: _____
APN: Multiple (Attachment C)

3. Sutter Butte Flood Control Agency of P.O. Box M
Name of Applicant / Land Owner Address
1441 Garden HWY California 95991 530-755-9859
City State Zip Code Telephone Number
Info@Sutterbutteflood.org
E-mail

4. Daniel M Jabbour of HDR, Inc
Name of Applicant's Representative Company
Folsom California 95630 916-817-4943
City State Zip Code Telephone Number
daniel.jabbour@hdrinc.com
E-mail

5. Endorsement of the proposed project from the Local Maintaining Agency (LMA):

We, the Trustees of Levee Maintenance Area 3 approve this plan, subject to the following conditions:
Name of LMA

Conditions listed on back of this form Conditions Attached No Conditions

[Signature] 5-11-16 _____
Trustee Date Trustee Date

Trustee Date Trustee Date

APPLICATION FOR A CENTRAL VALLEY FLOOD PROTECTION BOARD ENCROACHMENT PERMIT

6. Names and addresses of adjacent property owners sharing a common boundary with the land upon which the contents of this application apply. If additional space is required, list names and addresses on back of the application form or an attached sheet.

Name	Address	Zip Code
See Attachments B and C		

7. Has an environmental determination been made of the proposed work under the California Environmental Quality Act of 1970? Yes No Pending

If yes or pending, give the name and address of the lead agency and State Clearinghouse Number:

Sutter Butte Flood Control Agency (address on page 1 of this permit application)

SCH No. 2011052085

8. When is the project scheduled for construction? April 2016 through October 2016

9. Please check exhibits accompanying this application.

- A. Regional and vicinity maps showing the location of the proposed work.
- B. Drawings showing plan view(s) of the proposed work to include map scale.
- C. Drawings showing the cross section dimensions and elevations (vertical datum?) of levees, berms, stream banks, flood plain,
- D. Drawings showing the profile elevations (vertical datum?) of levees, berms, flood plain, low flow, etc.
- E. A minimum of four photographs depicting the project site.


5/2/16

 Signature of Applicant Date

Include any additional information:
