Meeting of the Central Valley Flood Protection Board
February 28, 2014

Staff Report

Sutter Butte Flood Control Agency
Feather River West Levee Project
Project Areas B (Reaches 7 through 12) and D (Reaches 29 through 41)
Sutter and Butte Counties

1.0 –REQUESTED ITEM

Consider Central Valley Flood Protection Board (Board) adoption of the next phases of construction of the Feather River West Levee Project (FRWLP) (Attachment A) through Resolution 2014-01 (Attachment B) to approve:

- Draft Permit No. 18793-2, Project Area B (Attachment C1)
- Draft Permit No. 18793-3, Project Area D (Attachment C2)

2.0 – APPLICANT

Sutter Butte Flood Control Agency (SBFCA)

SBFCA is a Joint Powers Agency (JPA) formed in 2007 by Butte and Sutter Counties, the cities of Biggs, Gridley, Live Oak and Yuba City, and Levee Districts 1 and 9 of Sutter County (LD 1 and LD 9). The agency has the authority to finance and construct regional levee improvements, and is governed by a 13-member board comprised of elected officials from the cities, counties, and levee districts.

3.0 – PROJECT LOCATION

The entire FRWLP extends from Thermalito Afterbay in Butte County downstream approximately 41 miles to a point approximately 3.5 miles north of the Feather River's confluence with the Sutter Bypass in Sutter County (Attachment A). In this action, SBFCA requests permits for two project areas, Area B and Area D.

3.1– Project Area B

Project Area B includes approximately 6.1 miles of levee improvements south of Yuba City from Shanghai Bend upstream to Star Bend (Reaches 7 through 12 of the

overall FRWLP) in Sutter County (Attachment A1). Levee maintenance is performed by Levee District 1.

3.2– Project Area D

Project Area D includes approximately 11.4 miles of levee improvements from Gridley upstream to the Thermalito Afterbay (Reaches 29 through 41 of the overall FRWLP) in Butte County (Attachment A2). Levee maintenance is performed by the California Department of Water Resources (DWR) State Maintenance Area 7 (MA 7).

4.0 – PROJECT DESCRIPTIONS

4.1– Project Area B

SBFCA proposes to construct approximately 6.1 miles of levee improvements on the west levee of the Feather River (Reaches 7 through 12) from Station 512+00 to 832+40. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 47 to 78 feet in depth along the centerline of the levee; reconstruction of the levee; installation of 28 new relief wells between Station 543+60 and 568+30; reconstruction of approximately 3,100 linear-feet of an existing concrete relief well drainage ditch; construction of an additional 2,500 linear-feet of new concrete relief well drainage ditch; and correction of various encroachments which do not comply with California Code of Regulations, Title 23.

4.2– Project Area D

SBFCA proposes to construct approximately 11.4 miles of levee improvements on the west levee of the Feather River (reaches 29 through 41) from Station 1765+00 to 2368+26. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 17 to 99 feet in depth along the centerline of the levee; reconstruction of the levee; construction of seepage berms from 100 to 170 feet in width; and correction of various encroachments which do not comply with California Code of Regulations, Title 23.

5.0 – AUTHORITY OF THE BOARD

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

- § 6, Need for a Permit
- § 11, Variances

- § 12, Protests
- § 13, Evidentiary Hearings
- § 108, Existing Encroachments
- § 112, Streams Regulated and Nonpermissible Work Periods
- § 116, Borrow and Excavation Activities – Land and Channel
- § 120, Levees
- § 121, Erosion Control
- § 123, Pipelines, Conduits and Utility Lines
- § 124, Abandonment of Pipelines
- § 128, Bridges
- § 130, Patrol Roads and Access Ramps

California Water Code, Division 5, Part 4, Chapters 3 and 4

Rivers and Harbors Act of 1899, Title 33 United States Code, § 408, hereafter referred to as Section 408

6.0 – AGENCY COMMENTS AND ENDORSEMENTS

The comments and endorsements associated with the projects are as follows and shall be incorporated into each respective draft permit as an Exhibit by reference:

6.1– Project Area B (Draft Permit No. 18793-2, Attachment C1)

- U.S. Army Corps of Engineers (USACE) Washington DC headquarters Section 408 Record of Decision (ROD) dated September 13, 2013 (Exhibit A)
- USACE Sacramento District Letter of Permission (LOP), which is anticipated late February 2014 (Exhibit B)
- LD 1 Board endorsement (Exhibit C)

6.2– Project Area D (Draft Permit No. 18793-3, Attachment C2)

- USACE Washington DC headquarters Section 408 ROD dated September 13, 2013 (Exhibit A)
- USACE Sacramento District LOP, which is anticipated late February 2014 (Exhibit B)
- MA 7 endorsement (Exhibit C).

7.0 – PROJECT ANALYSIS

7.1– Project Background

- The FRWL was originally constructed in the 19th century by local interests
- Several high water and flood events led to repeated performance problems in 1909, 1914, 1955, 1986, and 1997 (including levee breaches in 1909, 1914, and 1955)
- Performance problems during high water events have included such issues as: through- and under-seepage, landside and waterside instability, and erosion
- In multiple locations throughout the FRWL improvements have been made over the years, such as construction of stability berms, drainage ditches, relief wells, and slurry cutoff walls
- Various geotechnical studies have been performed to investigate the performance of the FRWL, including the DWR Urban Levee Evaluation (ULE) Program (2007 – 2010)
- SBFCA was formed as a JPA in 2007 and began comprehensive evaluations of the FRWL
    - SBFCA found that several areas of the FRWL were in need of improvements to reduce issues of through- and under-seepage, landside and waterside instability, and erosion
- The FRWLP was conceived as an Early Implementation Project prior to adoption of the Central Valley Flood Protection Plan (CVFPP) in 2012
- SBFCA is pursuing the FRWLP in parallel but in a coordinated effort with the federal Sutter Basin Feasibility Study
- SBFCA's project goals are to achieve a minimum 200-year level of flood protection for urbanized and urbanizing areas within the Sutter Basin
- On October 30, 2012 the Board sent a letter to the USACE requesting Section 408 approval (Attachment D)
- On May 24, 2013 the CVFPB conditionally approved Permit No. 18793-1 (Project Area C)
- ROD for 18793-1, Project Area C (Reach 13 only) was issued on July 19, 2013
- LOP for 18793-1, Project Area C (Reach 13 only) was issued on July 22, 2013

- Flood System Improvement Permit 18793-1, Project Area C (Reach 13 only) was issued on July 23, 2013 to approve expedited construction of Reach 13
- ROD for the remaining reaches of the FRWLP was issued on September 13, 2013
- LOP for the remaining reaches of Project Area C was issued on September 19, 2013
- A proposal to amend Flood System Improvement Permit No. 18793-1 was approved by the Board on September 27, 2013 to authorize construction of the entire Project Area C (Reaches 13 through 24), and to authorize a Project Design Change to address changes in field conditions during construction
- The amended permit for Project Area C was issued on September 27, 2013
- Formal permit applications for Areas B and D, 90 percent design plans and specifications were received by October 2013 followed by 100 percent design plans and specifications in December 2013

7.2– Proposed Project Schedule

An outline of SBFCA's proposed construction schedule for Project Areas B and D, pending USACE and CVFPB approval, is as follows:

Out to Bid	February 3, 2014
Pre-bid Meeting	February 11, 2014
LOP from USACE	Anticipated by late February 2014
CVFPB Permit Hearing (Areas B and D)	February 28, 2014
Open Bids	March 4, 2014
DWR Funding Commitment Letter	Anticipated Early March
SBFCA to Award Contract	March 12, 2014
SBFCA to Issue a Notice to Proceed	March 24, 2014
SBFCA to Mobilize Equipment	after April 15, 2014
Funding Agreement with DWR	Anticipated June 2014

7.3– Project Benefits

The proposed projects are expected to provide the following benefits:

- Address major geotechnical concerns such as through- and under-seepage, slope stability, and the condition and impact of existing encroachments

- Reduce the risk of flooding for existing urban areas, agricultural commodities, infrastructure, and other properties
- Increase the level of flood protection to a targeted 200-year level, which is consistent with the adopted CVFPP and pursuant to the legislative mandates of the Central Valley Flood Protection Act of 2008 (Water Code §§ 9600 – 9625), for the City of Yuba City (Project Areas B and D) and the cities of Biggs, Gridley, and Live Oak (Project Area D)
- Bring existing encroachments surveyed by SBFCA into compliance with Title 23, while addressing 100 percent of the encroachment issues categorized by the USACE in their 2010 periodic inspections as "Unacceptable – likely to prevent performance in the next flood event"

7.4– Project Design Review

Board staff completed a technical review of the following documents to prepare this Staff Report for the hearing on the permits:

- 90 percent design plans and specifications submittal packages (August 2013 – Project Area B and September 2013 – Project Area D)
- Permit Application Packages (October 2013)
- 100 percent design plans and specification submittal packages (December 2013) including typical cross sections for Project Areas B and D (Attachments E1 and E2, respectively)

Any subsequent plans and specification submittal packages or addendums shall be handled in a manner consistent with Special Conditions FORTY-TWO and FORTY-THREE.

7.5– Hydraulic Summary

Board staff has reviewed SBFCA's hydraulic analysis. The analysis computed various design water surface profiles and evaluated the incremental hydraulic impacts resulting from levee improvement measures designed to achieve a 200-year level of flood protection for the urban and urbanizing northern portion of the Sutter-Yuba City Basin, and to achieve 100-year protection south of Star Bend downstream of Yuba City. The analysis modeled a 44-mile reach of the Feather River from Thermalito Afterbay downstream to the Sutter Bypass. SBFCA and its consultant, Peterson Brustad, Inc. (PBI) determined that the project will have no adverse incremental impacts to the Feather River West Levee or the Sacramento River Flood Control Project (SRFCP).

PBI modeled the FRWLP using HEC-RAS modeling software with the “Shanghai” storm centering. Calibration was completed using data from two historical flood events (1997 and 2006). Flows of 150,000 cubic feet per second (cfs), 174,000 cfs, and 327,000 cfs were calculated for the 100-, 200-, and 500-year levels of flood protection, respectively. By comparison, the USACE Levee and Channel 1957 profile lists the Feather River design flow rates at 210,000 cfs upstream of the Yuba River confluence, and 300,000 cfs below the confluence.

The water surface profile for the entire FRWLP (Attachment F), and water surface profiles for Project Areas B and D (Attachments F1 and F2, respectively) demonstrate that both the 100-year plus 3 feet of freeboard and 200-year plus 3 feet of freeboard profiles are lower than the existing levee crown profiles throughout Project Areas B and D.

Based on the applicant’s modeling results, Board staff concludes that the proposed projects are expected to result in no adverse hydraulic impacts to the Sacramento River Flood Control Project (SRFCP).

7.6– Geotechnical Summary

The proposed project areas have been evaluated for susceptibility to through- and under-seepage, slope stability, and geometry deficiencies (such as levee side slopes). Sections 7.6.1 and 7.6.2 below outline geotechnical details for each project area. Attachment G contains a reach-by-reach breakdown of levee deficiencies and levee rehabilitation measures.

7.6.1– Project Area B

Project Area B is divided into five reaches extending upstream from Reach 7 (south) through Reach 12 (north). The predominant deficiencies determined by the geotechnical analyses are levee through- and under-seepage. The project will include construction of approximately six miles of cutoff wall along with 28 relief wells. Relief wells are being utilized in the southern portion of Reach 7 because there is no underlying aquaclude into which a slurry wall can be tied.

The recommended depths for the cutoff walls range from approximately 47 to 78 feet. The recommended depths are not constant over the length of a reach, but vary along each reach to correspond to the varying subsurface conditions. In addition to seepage mitigation, the removal, relocation, and modification of a number of levee encroachments are included as a part of the project.

7.6.2– Project Area D

Project Area D is divided into 13 reaches extending upstream from Reach 29 (south) through Reach 41 (north). The predominant deficiencies determined by the geotechnical analyses are levee through- and under-seepage. The project will include construction of approximately nine miles of cutoff wall and approximately 0.93 miles of seepage berm.

The recommended depths for the cutoff walls range from approximately 17 to 99 feet in depth. The recommended depths are not constant over the length of a reach, but vary along each reach to correspond to the varying subsurface conditions. In addition to seepage mitigation, the removal, relocation, and modification of a number of levee encroachments are included as a part of the project. Seepage berms ranging in width from 100 to 170 feet are proposed in Reaches 38, 40 and 41 near Thermalito Afterbay because the underlying foundation of gravels and cobbles are not conducive to cutoff wall construction.

Settlement and rapid drawdown issues are not apparent or anticipated in either project area. Based on subsurface conditions encountered in the field during Project Area C (Reach 13) construction in 2013, and based on the anticipation that similar conditions are likely to be encountered during construction of Project Area B and D, SBFCA has requested several levee construction variances to Title 23 standards. These variances, and Board staff conclusions regarding them, are further outlined in Section 7.7 below.

7.7– Project Variances

SBFCA is requesting variances to four sections of Title 23 standards based on their proposed design. SBFCA submitted a Variance Request Package (Attachment H) describing the requested variances and justifying their needs. In accordance with Title 23, § 11(b), Variances, SBFCA is requesting the variances outlined in Section 7.7.1 through 7.7.3, below and referenced in Special Condition FIFTY-FIVE in Draft Permit Nos. 18793-2 and 18793-3. The request is based on grounds that the Board's standards are infeasible for these specific projects due to various site conditions, funding, and other constraints as detailed in their Variance Request.

7.7.1– Project Variances Common to Both Project Areas B and D (Attachment H, Attachment 1)

§ 120, Levees

- Use of cohesionless soil in outer shells for reconstructed zoned levee

- Compaction requirements for cohesionless soils
- Moisture content requirements for cohesionless soils tested in compliance with test methods for cohesive soils
- Use of Type 3 material in the upper waterside slope of the levee
- Use of impervious material with a liquid limit equal to or less than 65

§ 123, Pipelines, Conduits and Utility Lines (Attachment H, Attachment 1)

Attachment H, Tables A1.1 and A4.1 detail the pipeline related variance requests. SBFCA is requesting variances to the following Title 23 pipeline standards, with references to the number of occurrences within the two Project Areas:

Title 23 Standard	No. of Occurrences (Area B)	No. of Occurrences (Area D)
§ 123(d)(1)	4	0
§ 123(d)(7)	0	1
§ 123(d)(20)	11	26
§ 123(e)(1)	0	10
§ 123(e)(3)	0	10
§ 123(g)(6),(7)	0	13
§ 123(g)(7)(D)	6	9

7.7.2– Project Variances Specific to Project Area B (Attachment H, Attachment 2)

§ 108, Existing Encroachments

- Shared farm access road at the landside levee toe from Station 532+00 to 674+50

7.7.3– Project Variances Specific to Project Area D (Attachment H, Attachment 3)

§ 108, Existing Encroachments

- Existing structure encroaching into the waterside of the levee near Station 2282+00 to remain
- Existing head works structure near Station 2359+50 to remain

§ 120, Levees

- Use of dredge tailing material for seepage berm construction (Station 2290+00 to 2368+00)

§ 112, Streams Regulated and Nonpermissible Work Periods

- Time variance for pipeline replacement near the Sutter Butte Main Canal

Board staff has determined that the proposed projects will result in an improved levee system, ensure continuity with Project Area C (already under construction), and are not expected to pose a threat to levee stability. However, due to the lack of performance data supporting the requested variances to Title 23 staff is requiring additional site inspections to take place prior to the flood season and after high water events in order to determine that the levee is performing in the manner intended by the approved plans and specifications. Please refer to Special Condition NINETY-THREE in Draft Permit Nos. 18793-2 and 18793-3 for specific requirements.

In addition to Special Condition NINETY-THREE, Board staff has added or modified the following Special Conditions to Draft Permit Nos. 18793-2 and 18793-3 in order to incorporate the requested variances to Title 23 into the permits:

- TWENTY-SIX, regarding existing encroachment relocation/modified
- SIXTY, regarding fill material
- SIXTY-ONE, regarding backfill for excavations
- SIXTY-TWO, regarding method specification for Type 3 material
- SIXTY-THREE, regarding utilization of cobbles greater than eight inches
- SIXTY-SEVEN, regarding density testing for Type 3 material
- SEVENTY-TWO, regarding potholing to reveal deviations in soil material
- EIGHTY-TWO, regarding post-construction surveys and settlement

During construction any additional variance requests will be reviewed by Board staff and, if substantive in nature, may require approval by the Board for submittal to the USACE as requested Project Design Changes.

7.8–Protest Letters Received

Board staff has received four protest letters, one for Project Area B and three for Project Area D, from adjacent landowners. All four protest letters question the

need for SBFCA to acquire a portion of their land for the proposed projects.

A protest for Project Area B was received on January 27, 2014 from Ms. McFeely (Attachment I1). Ms. McFeely is protesting the acquisition of a portion of her property. SBFCA is planning to acquire 0.48 acres in fee and 0.19 acres in easement of Ms. McFeely's property. The proposed work in this area consists of cutoff wall construction. Land acquisition is needed to acquire the desired project right-of-way (typically 20 feet in fee plus 10 feet in easement from the landward levee toe, but less in selected areas as described in the approved plans) throughout the FRWLP to establish sufficient access for operations, maintenance, and flood fight access.

The first protest for Project Area D was received on February 3, 2014 from Mr. Peekema (Attachment I2). Mr. Peekema is protesting the acquisition of a portion of his property. SBFCA is planning to acquire 2.0 acres in fee and 0.23 acres in easement (1.62 acres are already in easement) of Mr. Peekema's property. The proposed work in this area consists of cutoff wall construction and pipeline reconstruction work. Land acquisition is needed to acquire the desired project right-of-way.

The second protest for Project Area D was received on February 11, 2014 from Mr. Jeff Fredericks (Attachment I3). Mr. Fredericks is protesting the acquisition of a portion of his property and is concerned about potential impacts to his wells from slurry wall cutoff wall construction. SBFCA is planning to acquire 1.0 acres in fee and an additional 0.27 acres in easement (approximately 0.5 acres is already in easement) of Mr. Fredericks's property. The work to be done in this area consists of cutoff wall construction. Land acquisition is needed to acquire the desired project right-of-way.

The third protest for Project Area D was received on February 11, 2014 from Mr. Brian Manning, attorney with the firm Desmond, Nolan, Livaich & Cunningham, representing Ms. JoAnn Stuke Diethrich (Attachment I4). Mr. Manning is protesting the acquisition of a portion of Ms. Diethrich's property. SBFCA is planning to acquire approximately 2.0 acres in fee and an additional 0.8 acres in easement (approximately 0.43 acres already in easement) of Ms. Diethrich's property. The work to be done in this area consists of cutoff wall construction. Land acquisition is needed to acquire the desired project right-of-way. Mr. Manning is recommending that the acquisition width be reduced to 15 feet.

All of the protests were properly submitted pursuant to Title 23, § 12, Protests. Board staff has considered and reviewed the submitted protests and found that they are not based on flood control concerns, and therefore the protests have not

altered staff's recommendation to the Board. The staff recommends no changes to the permit conditions or to the project footprint because of the protest letters received.

SBFCA is required to obtain all lands, easements, and right-of-way necessary (Special Condition EIGHTEEN of Draft Permit Nos. 18793-2 and 18793-3) to comply with conditions of the Board permits and DWR Funding Agreement. Board staff agrees with the need to acquire the lands proposed (either in fee or easement) for operations, maintenance, and flood fighting to ensure successful project completion as proposed by SBFCA.

7.9– Advance Elderberry Transplant Authorization

On January 16, 2014 the Board's Chief Engineer authorized work to transplant elderberry shrubs from 49 locations throughout Project Areas B, C and D. These transplants were required to be completed prior to construction due to the limited time window for elderberry shrub transplantation. Transplantation must occur during the first two weeks of February, which is the plant's dormant phase.

The authorization has been incorporated into both draft permits through Special Condition SEVENTY-THREE by reference as Exhibit D. This special condition also incorporates the as-built planting details and consultation documents from the completed work by reference into the permits as Exhibit E (within 30 days of transplant completion).

7.10– Utility Relocations

In addition to the work proposed for Project Areas B and D, there will be several utility relocations (Attachment J) that will require separate permits or Board Chief Engineer authorizations. SBFCA will assist the utilities to prepare and submit any required Board encroachment permit applications and will coordinate encroachment relocation work with the levee construction schedule.

8.0 – CEQA ANALYSIS

Board staff has prepared the following California Environmental Quality Act (CEQA) Determination:

The Board, acting as a responsible agency under CEQA, has independently reviewed the Feather River West Levee Project Draft Environmental Impact Report (DEIR) (SCH No. 2011052062, December 2012) the Final Environmental Impact Report (FEIR) (SCH No. 2011052062, April 2013) and the Mitigation Monitoring

and Reporting Plan (MMRP) submitted by SBFCA. These documents consider the environmental impacts and required mitigation measures for the entire Feather River West Levee Project including Project Areas B and D. SBFCA as lead agency determined the project would have a significant effect on the environment and adopted Resolutions 2013-05 and 2013-06 on April 10, 2013 (including Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program) and subsequently filed a Notice of Determination with the State Clearinghouse on April 12, 2013. These documents including project design may be viewed or downloaded from the Board website at http://www.cvfpb.ca.gov/meetings/2014/02-28-2014.cfm under a link for this agenda item. The documents are also available for review in hard copy at the Board and SBFCA offices.

On May 24, 2013 the Board approved Project Area C of the Feather River West Levee Project and issued Board Flood System Improvement Permit 18793-1. The Board, as a Responsible Agency, also made appropriate Agency CEQA findings for unavoidable environmental impacts for the entire Feather River West Levee Project (approximately 41 miles of project works inclusive of Project Areas A, B, C and D). The Board now finds that the proposed Project Areas B and D are within the scope of the previously adopted FEIR including Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program.

The Board also now finds that construction of the proposed projects described herein would result in no new adverse environmental impacts, and no new mitigation measures are required pursuant to CEQA Guidelines Section 15162. Therefore no new environmental document is required pursuant to CEQA Guidelines Section 15168. The Board's findings on the significant environmental effects of the project are further described in its previously adopted Resolution 2013-07 (Attachment K).

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

9.0 – CALIFORNIA WATER CODE § 8610.5 CONSIDERATIONS

This information is located in Resolution 2014-01 (Attachment B) and has been removed from this report to eliminate redundant language.

10.0 – STAFF RECOMMENDATION

Board staff has determined that the proposed projects are consistent with the adopted CVFPP, are not injurious to the SRFCP, and provide an overall betterment to reduce the risk of flooding in the protected areas. Staff therefore recommends that the Board:

Adopt (in substantially the form provided):

- the CEQA findings and Resolution 2014-01 (Attachment B)

Approve:

- the requested construction variances to Title 23, § 108, 120, and 123 (Project Areas B and D) and § 112 (Project Area D only) pursuant to § 11(a) and (b) summarized in Section 7.7, and further detailed in Attachment H, herein;
- Draft Flood System Improvement Permit No. 18793-2, conditioned on receipt of Section 408 Letter of Permission from the USACE Sacramento District (in substantially the form provided); and
- Draft Flood System Improvement Permit No. 18793-3, conditioned on receipt of Section 408 Letter of Permission from the USACE Sacramento District (in substantially the form provided);

Delegate:

- authority to the Executive Officer to make non-substantive changes to the draft permits as needed to incorporate additional design changes submitted by SBFCA prior to receipt of the Letter of Permission, and that if substantive changes to the draft permit(s) are required, the Board staff will bring the permit(s) back to the Board at a future meeting to seek approval for substantive changes

Direct the Executive Officer:

- to take the necessary actions to prepare and execute Permit Nos. 18793-2 and 18793-3 and all related documents;
- to prepare and file a Notice of Determination pursuant to CEQA with the State Clearinghouse;
- to process applications to amend existing or request new encroachment permits to owners of utilities within the project areas that will be reconstructed as part of the projects, as detailed in Staff Report Sections 7.7 and 7.10; and
- that if, during construction, additional non-conforming encroachments or constructability issues are discovered by any party SBFCA will consider

whether or not they can be brought into compliance during construction. Board staff will evaluate subsequent proposals for Board approval to be made either by direct Board action or by delegation to the Executive Officer as appropriate; and

- authorize any additional utility relocations and / or elderberry shrub transplants deemed necessary for the project.

11.0 – LIST OF ATTACHMENTS

A – Construction Phasing Map of Overall FRWLP

A1 – Enlarged Construction Phasing Map of Project Area B

A2 – Enlarged Construction Phasing Map of Project Area D

B – Draft Resolution No. 2014-01

C – Draft Permits

C1 – Draft Permit No. 18793-2

Exhibit A – USACE ROD

Exhibit B – USACE LOP

Exhibit C – LD 1 Endorsement

Exhibit D – Advanced Elderberry Transplant Authorization

Exhibit E – Elderberry As-built Planting Details and Consultation Documents

C2 – Draft Permit No. 18793-3

Exhibit A – USACE ROD

Exhibit B – USACE LOP

Exhibit C –MA-7 Endorsement

Exhibit D – Advanced Elderberry Transplant Authorization

Exhibit E – Elderberry Transplant As-built Planting Details and Consultation Documents

D – Board 408 Request for the FRWLP

E – Typical Cross Sections

E1 – Typical Cross Sections for Project Area B

E2 – Typical Cross Sections for Project Area D

F – Water Surface Profile of Overall FRWLP

F1 – Water Surface Profile of Project Area B

F2 – Water Surface Profile of Project Area D

G – Levee Deficiency and Rehabilitation Measures by Reach

H – SBFCA Variance Request Package

I – Project Protests Received

I1 – Project Area B Protest, Ms. McFeely (received January 27, 2014)

I2 – Project Area D Protest, Mr. Peekema (received February 3, 2014)

I3 – Project Area D Protest, Mr. Fredericks (dated February 3, 2014)

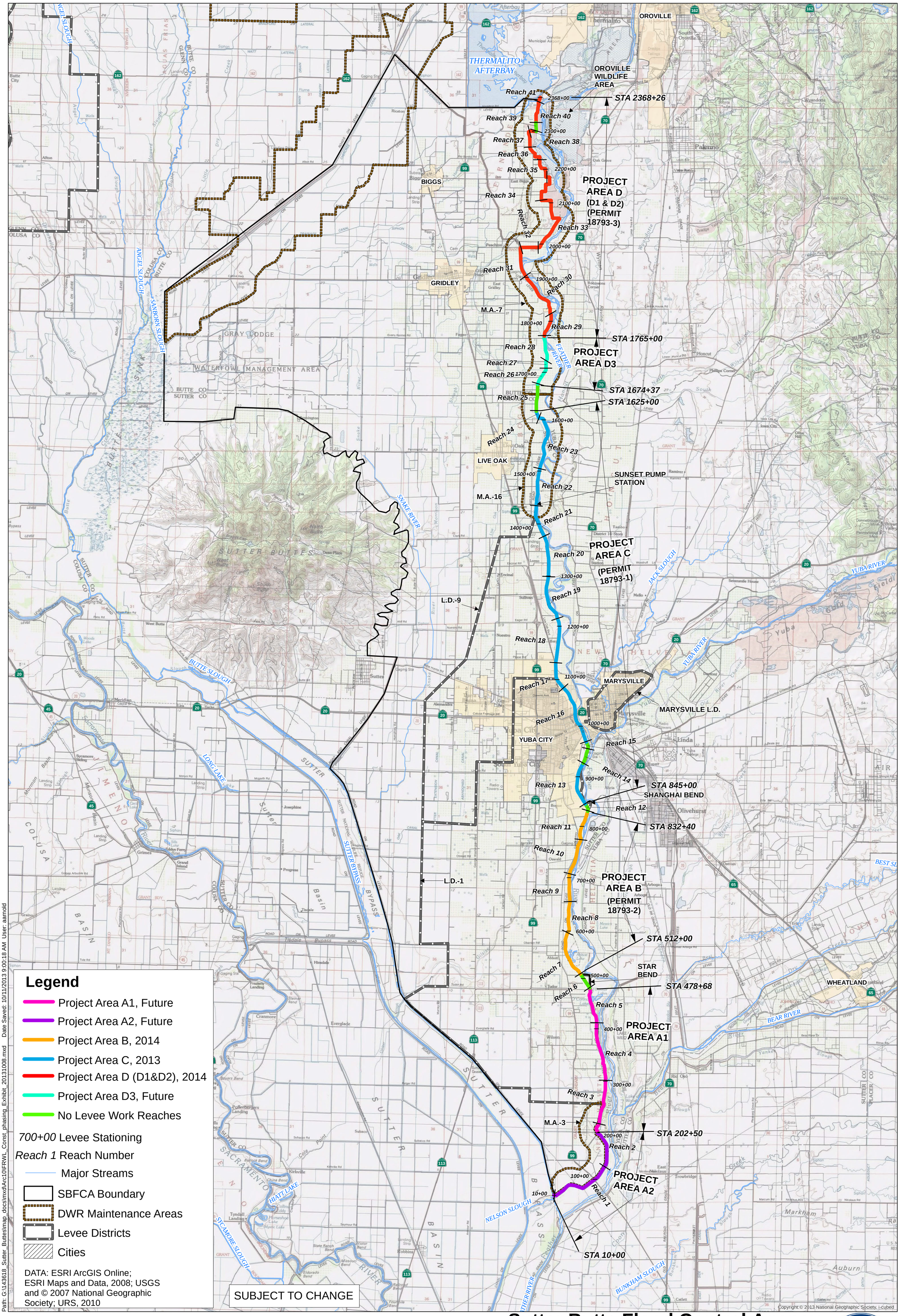
I4 – Project Area D Protest, Mr. Manning (dated February 5, 2014)

J – Utility Encroachment Table (to be handled with separate permits)

K – Board Resolution 2013-07, Project Area C

Prepared by:	Nancy C. Moricz, Senior Engineer, Projects and Environmental Branch
Hydraulics Review:	Sungho Lee, Engineer, Water Resources, Projects Section
Geotechnical Review:	Debabrata Biswas, Engineer, Water Resources, Projects Section
Document Review:	Eric Butler, Projects and Environmental Branch Chief
	Len Marino, Chief Engineer
Legal Review	Leslie Gallagher, Chief Counsel

Attachment A - Construction Phasing Map of Overall FRWLP



Legend

- Project Area A1, Future
- Project Area A2, Future
- Project Area B, 2014
- Project Area C, 2013
- Project Area D (D1&D2), 2014
- Project Area D3, Future
- No Levee Work Reaches

700+00 Levee Stationing

Reach 1 Reach Number

- Major Streams
- SBFCA Boundary
- DWR Maintenance Areas
- Levee Districts
- Cities

DATA: ESRI ArcGIS Online; ESRI Maps and Data, 2008; USGS and © 2007 National Geographic Society; URS, 2010

0 1 2 3 4 5 Miles

1 in = 1.5 miles

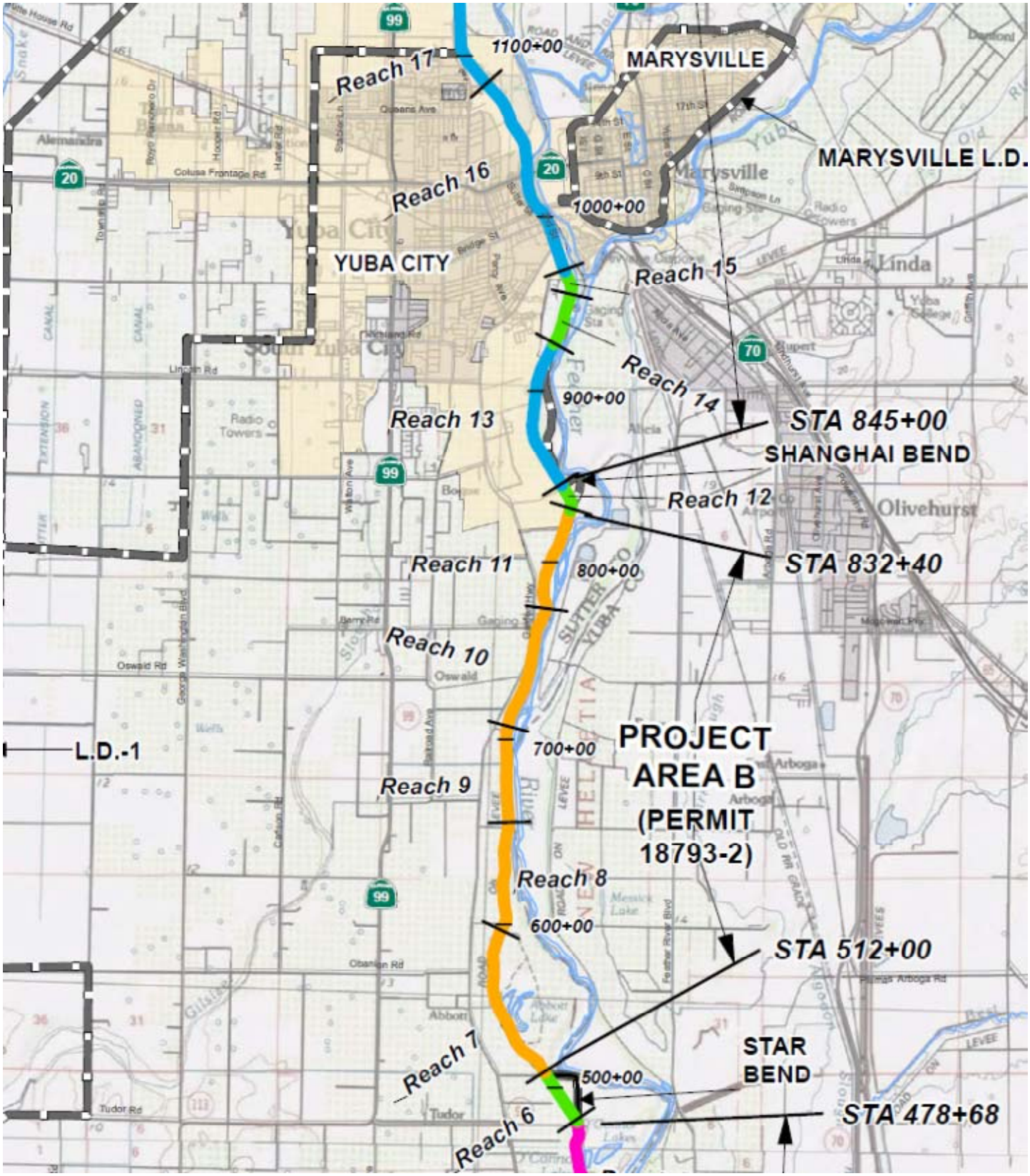
N

HDR ONE COMPANY | *Many Solutions* SM

Sutter Butte Flood Control Agency
Feather River West Levee
Construction Phasing Plan

October, 2013

Path: G:\143618_Sutter_Butte\smap_docs\mxd\Arc10\FRWL_Const_phasing_Exhibit_20131008.mxd Date Saved: 10/11/2013 9:00:18 AM User: aarnold


MARYSVILLE
MARYSVILLE L.D.
YUBA CITY
Reach 17
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Reach 15
Reach 14
Reach 13
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Reach 11
Reach 10
Reach 9
Reach 8
Reach 7
Reach 6
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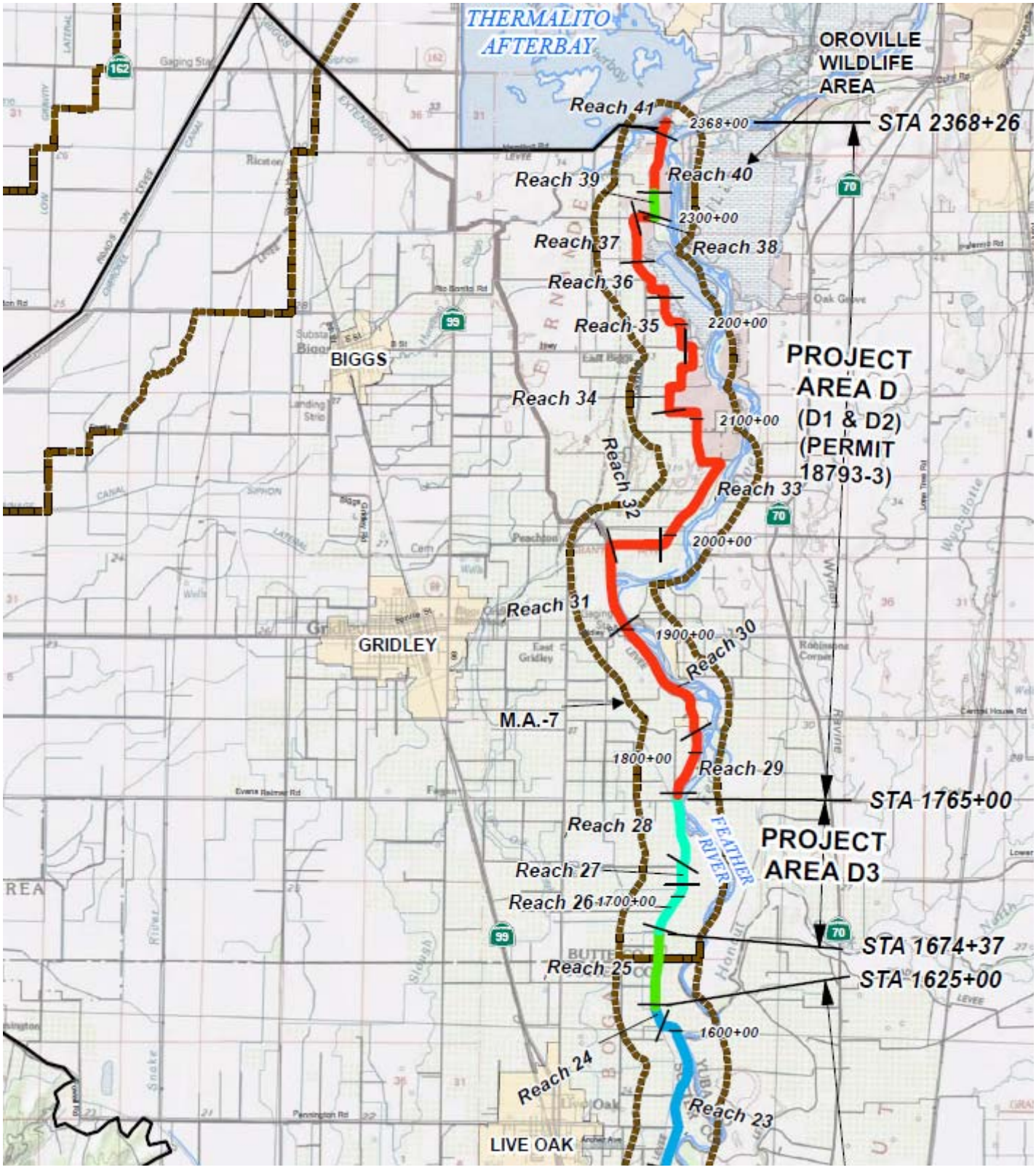
700+00
600+00
500+00
STA 845+00
SHANGHAI BEND
STA 832+40
STA 512+00
STAR BEND
STA 478+68
PROJECT AREA B (PERMIT 18793-2)
L.D.-1


THERMALITO AFTERBAY
OROVILLE WILDLIFE AREA
Reach 41
2368+00
STA 2368+26
Reach 39
Reach 40
2300+00
Reach 37
Reach 38
Reach 36
Reach 35
2200+00
BIGGS
PROJECT AREA D (D1 & D2) (PERMIT 18793-3)
Reach 34
2100+00
Reach 32
Reach 33
2000+00
Reach 31
1900+00
Reach 30
GRIDLEY
M.A.-7
1800+00
Reach 29
STA 1765+00
Reach 28
FEATHER RIVER
PROJECT AREA D3
Reach 27
Reach 26
1700+00
STA 1674+37
Reach 25
STA 1625+00
1600+00
Reach 24
Reach 23
LIVE OAK

STATE OF CALIFORNIA
NATURAL RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 2014-01

FINDINGS AND DECISION AUTHORIZING ISSUANCE OF
FLOOD SYSTEM IMPROVEMENT PROJECT
PERMIT APPLICATION NOS. 18793-2 AND 17893-3

SUTTER BUTTE FLOOD CONTROL AGENCY
FEATHER RIVER WEST LEVEE PROJECT
PROJECT AREAS B (REACHES 7 THROUGH 12) AND D (REACHES 29 THROUGH 41)
SUTTER AND BUTTE COUNTIES

WHEREAS, the Central Valley Flood Protection Board (Board), in support of the Sutter Butte Flood Control Agency (SBFCA), approved on October 26, 2012 a request to the U.S. Army Corps of Engineers (USACE) for 33 U.S.C. Section 408 (Section 408) approval to alter 41 miles of federal flood control project levee, the Feather River West Levee Project (FRWLP), located on the west side (right bank) of the Feather River from Thermalito Afterbay in Butte County downstream to approximately 3.5 miles north of the Feather River's confluence with Sutter Bypass in Sutter County; and

WHEREAS, SBFCA submitted applications and supporting documentation to the Board in October 2013 to construct Project Areas B and D, including approximately 6.1 miles of levee improvements in Project Area B (Reaches 7 through 12) in Sutter County, and approximately 11.4 miles of levee improvements in Project area D (Reaches 29 through 41) in Butte County; and

WHEREAS, SBFCA released a Notice of Preparation initiating a 30-day public comment period on May 20, 2011 and extended the comment period to July 8, 2011; and

WHEREAS, SBFCA as lead agency pursuant to the California Environmental Quality Act, Public Resources Code sections 21000 *et seq*. ("CEQA") prepared a Draft Environmental Impact Report (DEIR) (SCH No. 2011052062, December 2012), and Final Environmental Impact Report (FEIR) (SCH No. 2011052062, April 2013), and Mitigation Monitoring and Reporting Plan (MMRP) for the FRWLP (incorporated herein by reference and available at Board or SBFCA offices); and

WHEREAS, the SBFCA Board approved the FRWLP (SBFCA Resolutions 2013-05 and 2013-06), the FEIR, and MMRP, and approved findings and a Statement of Overriding Considerations pursuant to the CEQA Guidelines (incorporated herein by reference), and filed a Notice of Determination with the State Clearinghouse on April 12, 2013; and

WHEREAS, the Board, as a responsible agency pursuant to CEQA, has independently reviewed the analyses in the Feather River West Levee Project Draft Environmental Impact Report (DEIR) (SCH No. 2011052062, December 2012), the Final Environmental Impact Report (FEIR) (SCH No. 2011052062, April 2013), and the Mitigation Monitoring and Reporting Plan (MMRP) submitted by SBFCA, and has reached its own conclusions regarding them; and

WHEREAS, the Board adopted Resolution 2013-07, made findings pursuant to CEQA, and approved Permit No. 18793-1at the May 24, 2013 Board public hearing for SBFCA's Project Area C, the first phase of the FRWLP; and

WHEREAS, the Board received USACE Section 408 permission to construct Reach 13 of Project Area C (18793-1) of the FRWLP on July 13, 2013; and

WHEREAS, the Board received USACE Section 408 approval of the remaining reaches of the FRWLP on September 13, 2013; and

WHEREAS, the Department of Water Resources (DWR) Flood Maintenance Office conditionally endorsed the Project Area D application (No. 18793-3) on February 6, 2014; and

WHEREAS, the Board of Levee District 1 (Sutter) conditionally endorsed the Project Area B application (No. 18793-2) on February 10, 2014; and

WHEREAS, the USACE Sacramento District Letters of Permission (LOP) are anticipated in late February 2014; and

WHEREAS, when the Section 408 LOP is received from the USACE, staff will review and incorporate any USACE conditions into the final permit; and

WHEREAS, Board staff completed a comprehensive technical review of SBFCA's Project Areas B and D permit applications including 100 percent design plans, specifications, and supporting documentation; and

WHEREAS, in accordance with California Code of Regulations, Title 23 (hereafter referred to as Title 23), § 11(a), the Board may grant variances to its standards for uses that are not consistent with the Board's standards; and § 11(b), when approval of a permit requires variances, the applicant must clearly state in its application why compliance with the Board's standards is infeasible or not appropriate; and

WHEREAS, in accordance with Title 23, § 11(b) SBFCA has requested the Board to grant variances to § 108, 120, and 123 (Project Areas B and D) and § 112 (Project Area D only), on the grounds that the Board's standards are infeasible for these specific projects due to various site conditions, funding, and other constraints as detailed in Staff Report Section 7.7 and in further detail in Attachment H; and

WHEREAS, Board staff has added Special Condition FIFTY-FIVE to Draft Permit Nos. 18793-2 and 18793-3 to incorporate the above referenced requested variances to Title 23; and

WHEREAS, Board staff has added or modified Special Conditions TWENTY-SIX, SIXTY, SIXTY-ONE, SIXTY-TWO, SIXTY-THREE, SIXTY-SEVEN, SEVENTY, and EIGHTY-TWO into Draft Permit Nos. 18793-2 and 18793-3 in order to incorporate the above referenced variances to Title 23 into the permits; and

WHEREAS, Board staff has also added Special Condition NINETY-THREE into Draft Permit Nos. 18793-2 and 18793-3 to require additional monitoring to take place prior to the flood season and after high water events in order to provide extra assurances that the levee is performing in the manner intended by the approved plans and specifications; and

WHEREAS, Board, SBFCA, DWR, and USACE staffs have developed a strategy to: (1) update existing pipeline crossing encroachment permits to ensure that they conform to current Title 23 regulations and USACE policies, and (2) issue new encroachment permits to owners of currently unpermitted encroachments to ensure that all regulatory parties, levee maintainers, and owners will be able to accurately and efficiently track and inspect future operations and maintenance of these encroachments; and

WHEREAS, SBFCA has agreed to act on each owner's behalf to prepare all required encroachment permit application documents, obtain owner signatures, and support the Board staff's application review and permitting activities; and

WHEREAS, the SBFCA Project Areas B and D construction projects will:

- address major geotechnical concerns such as through- and under-seepage and related slope stability, and the condition and impact of existing encroachments;
- reduce the risk of flooding for existing urban areas, agricultural commodities, infrastructure, and other properties;
- increase the level of flood protection to a targeted 200-year level of protection, consistent with the adopted CVFPP and pursuant to the legislative mandates of the Central Valley Flood Protection Act of 2008 (Water Code § 9600 – 9625) for Yuba City (Project Areas B and D) and the cities of Biggs, Gridley, and Live Oak (Project Area D) to provide 200-year flood protection for urban and urbanizing areas;
- bring encroachments surveyed by SBFCA into Title 23 compliance, while addressing 100 percent of the encroachment issues categorized by the USACE in their 2010 periodic inspections as "Unacceptable – likely to prevent performance in the next flood event".

WHEREAS, The Board has conducted a public hearing on Permit Application Nos. 18793-2 and 18793-3 and has reviewed the Staff Report and Attachments, the documents and correspondence in its file, and the environmental documents prepared by the SBFCA.

NOW, THEREFORE, BE IT RESOLVED THAT,

Findings of Fact.

1. The Board hereby adopts as findings the facts set forth in the accompanying Staff Report.

2. The Board has reviewed all Attachments, Exhibits, Figures, and References listed in the Staff Report.

CEQA Findings.

3. The Board finds that its prior CEQA findings made on May 24, 2013 regarding the Feather River West Levee Project are still valid and the proposed projects are within the scope of the previously adopted FEIR including Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program.

4. The Board finds that construction of the proposed projects described herein would result in no new adverse environmental impacts, and no new mitigation measures are required pursuant to CEQA Guidelines Section 15162. Therefore, no new environmental document is required pursuant to CEQA Guidelines Section 15168.

5. **Custodian of Record**. The custodian of the CEQA record for the Board is its Executive Officer, Jay Punia, at the Board offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821. These documents may be viewed or downloaded from the Board website at http://cvfpb.ca.gov/meetings/2014/02-28-2013.cfm on the February 28, 2014 Board meeting page. The documents are also available for review in hard copy at the Board and SBFCA offices.

Considerations pursuant to California Water Code Section 8610.5

6. **Evidence Admitted into the Record**. The Board has considered all the evidence presented in this matter, including the applications for Permit Nos. 18793-2 and 18793-3, and all supporting technical documentation provided by SBFCA on the Feather River West Levee Project, past and present Staff Reports and attachments, the EIR (Draft and Final Versions), and SBFCA Resolutions 2013-05 and 2013-06 including findings, Statement of Overriding Considerations, the Mitigation Monitoring and Reporting Program.

   The custodian of the file is Executive Officer Jay Punia at the Central Valley Flood Protection Board, 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

7. **Best Available Science**. In making its findings, the Board has used the best available science relating to the issues presented by all parties. On the important issue of hydraulic impacts and the computed water surface profiles, SBFCA used the HEC-RAS one-dimensional unsteady flow model that was also utilized by the USACE for the ongoing Sutter Basin Feasibility Study. The model is considered by many experts as the best available scientific tool for the purpose of modeling river hydraulics for the Feather River.. Geotechnical and overall standards for levee design including those of the USACE, DWR Urban Levee Design Criteria, and Board have been taken into consideration and the design in in compliance with these standards.

8. **Effects of the Decision on the State Plan of Flood Control**. This project has positive effects on the State Plan of Flood Control as it includes features that will provide 200-year protection to urban and urbanizing areas of the Sutter Basin. The Board finds that none of the changes in project design made subsequent to the 65 percent designs up to and including the 100 percent issued for bid design result in adverse hydraulic impacts on the entire State Plan of Flood Control. This project is consistent with the adopted 2012 CVFPP.

   The Board further finds that the proposed project alterations can be constructed in a manner not injurious to the public interest, and that will not impair the usefulness of the SRFCP.

9. **Effects of Reasonably Projected Future Events**. The project was designed to account for future events such as changes in hydrology and climate change. Specifically, the project design incorporated an increase in the design water surface elevation, consistent with DWR's Interim Levee Design Criteria, to increase resilience in the face of climate change and uncertainties in hydrologic/hydraulic analyses. Therefore, there are no anticipated effects of reasonably projected future events on the project.

Other Findings/Conclusions regarding Issuance of the Permit.

10. Based on the foregoing the Board finds that the proposed design for Permit Nos. 18793-2 and 18793-3 to construct Project Areas B and D of the Feather River West Levee Project:
    - will result in an overall betterment to the Sacramento River Flood Control Project and State Plan of Flood Control,
    - are consistent with the adopted 2012 Central Valley Flood Protection Plan,
    - will not be injurious to the public interest, and
    - will not impair the usefulness of the Sacramento River Flood Control Project.

11. This resolution shall constitute the written decision of the Board in the matter of Permit Nos. 18793-2 and 18793-3.

Approval of Encroachment Permit Nos. 18793-2 and 18793-3.

12. The Board adopts the CEQA findings and Resolution 2014-01, and

13. The Board approves variances to Title 23, § 108, 120, and 123 (Project Areas B and D) and § 112 (Project Area D only), pursuant to CCR 23, § 11(a) and (b) with regard to Variances to Board Standards, summarized in the Staff Report Section 7.7 and further detailed in Attachment H, and

14. Based on the foregoing, the Board hereby conditionally approves issuance of Permit Nos. 18793-2 and 18793-3 in substantially the form provided by the Board Staff at the February 28, 2014 meeting of the Board, subject to receipt, review and incorporation of conditions required by the USACE in their Record of Decision dated September 13, 2013 and Letter of Permission anticipated to be received by late February 2014, and

15. The Board delegates authority to the Executive Officer to make non-substantive changes to the draft permits as needed to incorporate additional design changes submitted by SBFCA prior to receipt of the Letter of Permission, and that if substantive changes to the draft permit(s) are required, the Board staff will bring the permit(s) back to the Board at a future meeting to seek approval for substantive changes, and

16. The Board directs the Executive Officer to take the necessary actions to prepare and execute Permit Nos. 18793-2 and 18793-3 and all related documents, and to prepare and file a Notice of Determination pursuant to the California Environmental Quality Act for the Feather River West Levee, Project Areas B and D construction projects, and

17. The Board directs the Executive Officer to process applications to amend existing or request new encroachment permits to owners of utilities within the project areas that will be reconstructed as part of the projects, as detailed in Staff Report Sections 7.7 and 7.10, and

18. The Board directs the Executive Officer that if, during construction, additional non-conforming encroachments or constructability issues are discovered by any party SBFCA will consider whether or not they can be brought into compliance during construction. Board staff will evaluate subsequent proposals for Board approval to be made either by direct Board action or by delegation to the Executive Officer as appropriate.

PASSED AND ADOPTED by vote of the Board on _____, 2014

_____	_____
William H. Edgar	Jane Dolan
President	Secretary

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18793-2 BD

This Permit is issued to:

Sutter Butte Flood Control Agency
1227 Bridge Street
Suite C
Yuba City, California 95991

This flood system improvement permit is granted to the Sutter Butte Flood Control Agency (SBFCA) to construct approximately 6.1 miles of levee improvements on the west levee of the Feather River (Reaches 7 through 12) from Station 512+00 to 832+40. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 47 to 78 feet in depth along the centerline of the levee; reconstruction of the levee; installation of 28 new relief wells between Station 543+60 and 568+30; reconstruction of approximately 3,100 linear-feet of an existing concrete relief well drainage ditch; and construction of an additional 2,500 linear-feet of new concrete relief well drainage ditch. In addition to the project construction removal, relocation, and modification of several existing levee encroachments to bring them into compliance with federal and State standards through revised or new Board encroachment permits will also be necessary. Other existing encroachments will be relocated or removed in their entirety. These additional encroachment permits will be issued to the individual encroachment owners as required through the Project Area B construction schedule.

The project extends from Star Bend Road to Shanghai Bend in Yuba City, CA. (Sta 512+00 to 832+40) Reaches 7 through 12 (Section 2, T 14N, R3E, MDB&M, Levee District 1 Sutter, Feather River, Sutter County).

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

(SEAL)

Dated: _____ _____

Executive Officer

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL CONDITIONS FOR PERMIT NO. 18793-2 BD

LIABILITIES / IMDEMNIFICATION

THIRTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FOURTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection

Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

FIFTEEN: The permittee is responsible for all liability and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all such claims and damages arising from construction of the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The Central Valley Flood Protection Board, Department of Water Resources, and Levee District 1 shall not be held liable for damages to the permitted alterations resulting from releases of water from reservoirs, flood fight or emergency operations, maintenance, inspection, or repair.

EASEMENT, LICENSE, TEMPORARY ENTRY PERMIT, AND LAND ACQUISITION

SEVENTEEN: If the construction project extends onto land owned in fee and / or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

EIGHTEEN: Prior to construction, the permittee, shall have obtained legal possession of all property where work to be performed under this permit is located.

BOARD CONTACTS

NINETEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

TWENTY: Project Area B of the Sutter Butte Flood Control Agency's Feather River West Levee Project (FRWLP) is permitted pursuant to 33 U.S.C. Section 408 authority of the U.S. Army Corps of Engineers. The Feather River west levee is a facility of the Sacramento River Flood Control Project and State Plan of Flood Control regulated by the Board. By acceptance of this permit, the permittee acknowledges the authority of the Board to regulate all future flood system improvement projects and encroachments along the project levee reach.

TWENTY-ONE: The permittee shall comply with all conditions set forth in the U.S. Army Corps of Engineers (USACE) Record of Decision dated September 13, 2013, which is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY-TWO: The permittee shall comply with all conditions set forth in the USACE Letter of Permission dated February XX, 2014, which is attached to the permit as Exhibit B and is incorporated by reference.

TWENTY-THREE: The permittee shall comply with all conditions set forth in the Levee District 1 endorsement letter dated February 10, 2014, which is attached to the permit as Exhibit C and is incorporated by reference.

TWENTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-FIVE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-SIX: The permittee shall cooperate with the Board such that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of flood system improvements permitted herein is relocated, modified or otherwise altered in compliance with current applicable State and federal standards. If the affected encroachment has an existing Board permit or is subject to other Board authorization, the permittee shall cooperate with the Board such that the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and FRWLP. If the encroachment does not have a Board permit or other Board authorization the permittee shall cooperate with the Board to determine whether a Board permit is required. If required the permittee shall cooperate with the Board to ensure that the permit application is made and, if granted, the permit reflects the changed condition(s) as shown on as-built drawings for the encroachment and the FRWLP project.

TWENTY-SEVEN: If the permittee does not comply with the conditions of this permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-EIGHT: Upon completion of this flood system improvement project, the permittee will cooperate with the Board to update the supplement to the standard Operations and Maintenance Manual covering the project area, and to cooperate with the Board to obtain federal acceptance of the project works into the Sacramento River Flood Control Project by the U.S. Army Corps of Engineers, followed by federal turnover to the State for Operations and Maintenance through existing assurance agreements.

TWENTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

THIRTY: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee

shall, if any cultural artifact or an unusual amount of bone, shell, or nonnative stone is uncovered during construction, halt work in that area so that a professionally qualified archaeologist approved by the USACE can determine the significance of the find. If human bone is uncovered the coroner and California Native American Heritage Commission shall be contacted immediately. Refer to Exhibit B for complete requirements.

THIRTY-ONE: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee shall develop and submit a Floodplain Management Plan. Refer to Exhibit B for complete requirements.

THIRTY-TWO: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the USACE may reevaluate its decision to approve the work permitted herein at any time the circumstances warrant. Should field conditions or future investigations require a deviation from the Final Plans, this deviation must be approved by the USACE through a request from the Board. Refer to Exhibit B for complete requirements.

THIRTY-THREE: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee shall abide by all terms and conditions, and shall ensure that all conservation measures and long-term management and maintenance are implemented in perpetuity. Refer to Exhibit B for complete requirements.

THIRTY-FOUR: The permittee shall develop a Stormwater Water Pollution and Prevention Plan and shall make a copy readily available for review at the project site during construction.

PRE-CONSTRUCTION

THIRTY-FIVE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

THIRTY-SIX: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to an existing federal flood control project that will be incorporated into the Sacramento River Flood Control Project, a facility of the State Plan of Flood Control.

THIRTY-SEVEN: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 30 days of beginning the project.

THIRTY-EIGHT: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior written approval of the Board. This condition excludes the work authorized as described in Special Condition SEVENTY-THREE.

THIRTY-NINE: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request

additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed thirty (30) working days.

FORTY: A profile of the existing levee crown roadway and access ramps that will be utilized for access to and from the borrow area shall be submitted to the Board prior to commencement of excavation.

FORTY-ONE: Keys shall be provided to local levee maintenance agencies and the Department of Water Resources for all locks on gates providing access to the floodway, levee ramp, levee toe, and along the levee crown.

CONSTRUCTION

FORTY-TWO: All work approved by this permit shall be in accordance with the approved plans and specifications, except as modified by special permit conditions herein. Any subsequent plans, specifications, and / or addenda shall be submitted immediately to the Board's Chief Engineer as outlined in Special Condition FORTY-THREE. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Board.

FORTY-THREE: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

FORTY-FOUR: Any additional project features proposed by the permittee in the floodway, on or in the levee section, and within the project right of way as shown on the approved plans (typically 20 feet in fee plus 10 feet in easement from the landward levee toe, but less in selected areas as described in the approved plans) will require either incorporation by amendment to this permit, or will require issuance of a separate encroachment permit to the encroachment owner from the Board.

FORTY-FIVE: Existing or proposed utility poles and guy anchors shall be relocated or installed a minimum distance of 10 feet landward of the landward levee toe.

FORTY-SIX: All debris generated by this project shall be disposed of outside the floodway, levee prism and proposed right-of-way.

FORTY-SEVEN: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval from the Central Valley Flood Protection Board.

FORTY-EIGHT: During construction of the project, any and all anticipated or unanticipated conditions encountered which may impact levee integrity or flood control shall be brought to the attention of the Board inspector immediately and prior to continuation of construction. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Board inspector.

FORTY-NINE: The stability of the levee shall be maintained at all times during construction.

FIFTY: Excavations below the design flood plain and within the project right of way owned in fee (as described in Special Condition FORTY-FOUR) shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation. Authorized activities such as farming may occur in the portion of the project right of way obtained in easement (as described in Special Condition FORTY-FOUR).

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

FIFTY-TWO: Equipment used in the construction of the cutoff wall shall not exceed the live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

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

FIFTY-FOUR: All existing fencing, gates and signs removed during construction of this project, which are shown on the approved plans to be replaced, shall be replaced in kind and at the locations indicated on the approved plans. If it is necessary to relocate any fence, gate or sign that is not shown on the approved plans or to a location different than shown on the approved plans, the permittee is required to obtain written authorization from the Board's Chief Engineer prior to installation at a new location. All fencing, gates, and sign locations shall be accurately shown on any submitted as-built plans.

FIFTY-FIVE: Any construction work by the permittee within the project right of way (as described in Special Condition FORTY-FOUR) shall meet California Code of Regulations, Title 23 (hereafter referred to as Title 23) standards or shall have an approved Board variance per Title 23, Sections 11(a) and (b). The permittee has requested specific construction variances to Title 23, Sections 108, 120, and 123 that are described in Board Staff Report Section 7.7 and Attachment H.

FIFTY-SIX: Any pipeline or conduit which is to be abandoned by filling with concrete, must have a minimum cover of three (3) feet below the waterward levee slope and one (1) foot below the landward levee slope.

FIFTY-SEVEN: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FIFTY-EIGHT: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FIFTY-NINE: Some existing levee slopes are less than 2 horizontal to 1 vertical on the land side, or less than 3 horizontal to 1 vertical on the water side, and will remain so after the work permitted herein. This permit approves these steeper slopes by a variance to Board standards.

CONSTRUCTION MATERIALS

SIXTY: All fill material shall be as stated in the Project Area B contract specifications and free of lumps or stones exceeding 8 inches in greatest dimension, vegetative matter, or other unsatisfactory material, with the exception of materials and locations approved under Board variance per Title 23, Sections 11(a) and (b).

SIXTY-ONE: Backfill material for excavations within the existing levee sections and within the project right of way (as described in Special Condition FORTY-FOUR) shall be placed in 12-inch layers, moisture conditioned ranging from 3 above to 1 below optimum moisture content, and compacted to a minimum of 95 percent relative compaction as measured by ASTM Method D698, or as provided for in the contract specifications, and utilizing a method specification (refer to Special Condition SIXTY-TWO) for newly defined Type 3 soils within the levee prism and imported top soil.

SIXTY-TWO: This permit allows for a method specification to be utilized for placement of Type 3 soils in the upper waterside surficial zone and the imported topsoil. To achieve desired relative density of levee backfill under the method specification the permittee shall make three passes with selected compaction equipment at specified speed and moisture content, excluding four (4) to six (6) inches of topsoil.

SIXTY-THREE: All cobbles greater than eight (8) inches in size shall be utilized in approved waterside slope protection areas or hauled off site.

SIXTY-FOUR: Placement of reconstructed levee fill shall be limited to the existing levee footprint and adjacent landside toe area and shall be done so as to not result in unstable outer levee slopes.

SIXTY-FIVE: Earthen material meeting the requirements designated in this permit and included Project Area B specifications shall be used when constructing or reconstructing the waterside levee slope and levee crown fill areas, and no cuts shall remain in the levee section upon completion.

SIXTY-SIX: Fill material shall be placed only within the area indicated in the approved plans and specifications. Placement of additional fill in excess of 1,500 cubic yards beyond what is specified in these plans shall require written authorization from the Board's Chief Engineer.

SIXTY-SEVEN: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the project right of way (as described in Special Condition FORTY-FOUR, above). A method specification will be utilized in Type 3 zone fills for the upper waterside surficial zone and the imported topsoil layer to be placed on the upper landside slope.

SIXTY-EIGHT: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of three (3) inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A or equivalent) over three (3) inches of salvaged aggregate base.

SIXTY-NINE: Fluid pressures in the cutoff wall construction zone shall be monitored and controlled to minimize the potential for hydrofracturing.

SEVENTY: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids can be used as Type 1 or Type 2 backfill material for levee reconstruction if properly mixed within borrow or stockpile sites, and per the requirements within the contract specification for gradation, moisture and compaction.

SEVENTY-ONE: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557 (2012) or equivalent, with a moisture content sufficient to obtain the required compaction, or per the Project Area B contract specifications for exterior improvements, aggregate base course.

SEVENTY-TWO: Potholing may be required to determine whether the proposed levee degrade material meets current specifications. Potholes shall be performed perpendicular to the levee centerline at a minimal spacing of 2,500 linear-feet. If the investigation results reveal deviations in soil materials from the current specifications, the permittee shall notify the Board in writing, shall describe the nature and extent of the deviations, and shall propose a detailed plan for Board consideration.

VEGETATION / ENVIRONMENTAL MITIGATION

SEVENTY-THREE: On January 16, 2014 the Board's Chief Engineer authorized advanced elderberry transplant work for Project Areas B, C, and D. The work is described in the Advanced Elderberry Transplant Authorization package and the Planting Details and Consultation Documents, which are attached to this permit as Exhibits D and E, respectively, and incorporated by reference.

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

SEVENTY-FIVE: The permittee shall replant or re-seed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SEVENTY-SIX: The mitigation measures approved by the permittee and found in its Mitigation and Monitoring Reporting Program (MMRP) are made a condition of this permit. The permittee shall implement all such mitigation measures. The measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162. The permittee shall notify the Board's Environmental Section staff in advance of any proposed changes and shall submit supporting documentation for staff review and comment.

SEVENTY-SEVEN: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SEVENTY-EIGHT: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood Control occurs at or adjacent to and as a result of the permitted flood system improvement project or related encroachment work, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

CONSTRUCTION COMPLETION

SEVENTY-NINE: All temporary fencing, gates and signs shall be removed upon completion of project.

EIGHTY: The project site including the levee section and access ramps shall be restored to at least the condition that existed prior to commencement of work.

EIGHTY-ONE: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The levee crown profile survey and photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 120 days of project completion.

EIGHTY-TWO: The permittee acknowledges that the levee improvements are designed to be constructed to match the existing levee crown profile and any settlement over time shall be addressed through future operations and maintenance or subsequent Board authorization. Per DWR's October 2013 Urban Level of Protection Criteria (ULOP), all findings determining an urban level of flood protection require a review every five (5) years including a written report and determination by a California licensed Professional Engineer. The report must either confirm that the urban level of flood protection for the specified project meets the guidelines pursuant to the ULOP or identify remediation measures to be completed over the subsequent five (5) years. The permittee or Levee District 1, shall submit a comparison of the as-built survey to any subsequent surveys that may be required to confirm the urban level of flood protection and a copy of the written report to the Board's Chief Engineer within 30 days of its completion.

EIGHTY-THREE: When DWR releases the completed Central Valley Floodplain Evaluation and Delineation Program data the permittee will recalculate levee freeboard using only that data for both cross section and top of levee elevations. The permittee will develop and present a plan for Board approval to correct any freeboard deficiencies under this or a future phase of construction.

EIGHTY-FOUR: The potential for earthquake-induced levee damage and displacement along the Feather River West Levee Project will be incorporated into an Emergency Action Plan (EAP) in accordance with DWR Urban Levee Design Criteria (ULDC) requirements. The permittee shall submit the EAP to the Board staff for review and comment 180 days after completion of Project Area B construction.

EIGHTY-FIVE: Upon completion of the construction contract for Project Area B the permittee will conduct a Final Construction Walk-through for Board, Department of Water Resources, and U.S. Army Corps of Engineers staff. The walk-through is a condition for Board project acceptance, State funding, and as predecessor to U.S. Army Corps of Engineers system wide acceptance and eligibility for Public Law 84-99 rehabilitation and inspection program. This walk-through is critical to successful permit and project close-out.

POST-CONSTRUCTION

EIGHTY-SIX: Within 120 days of completion of the project, the permittee shall submit to the Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit conditions and the permittee's submitted drawings and specifications, addenda and contract change orders.

EIGHTY-SEVEN: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Board, a permanent easement or joint use agreement granting all flood control rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee. The easement must include the project right of way (as described in Special Condition FORTY-FOUR) if the area is not presently encumbered by a Board easement. For information regarding Board easements please contact Angelica Aguilar at (916) 653-5782.

EIGHTY-EIGHT: If the project, or any portion thereof, is to be abandoned in the future, the permittee or Levee District 1 shall abandon the project under direction of the Board and Department of Water Resources, at the permittee's cost and expense.

OPERATIONS AND MAINTENANCE

EIGHTY-NINE: The permittee shall maintain the permitted project works in the manner required by the approved Operations and Maintenance Manual, while under contract to do so. At which time maintenance responsibilities are transferred to the local maintaining agency (Levee District 1), Levee District 1 shall maintain the project works in the manner required by the supplement to the standard Operations and Maintenance Manual and any revisions thereto.

NINETY: Haul ramps and utilized levee crown roadway shall be maintained during construction in a manner prescribed by authorized representatives of the Board, Department of Water Resources, Levee District 1 or any other agency responsible for maintenance.

NINETY-ONE: Within 180 days of completion of the project, the permittee shall submit to the Board proposed revisions to the U. S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations to be incorporated into the federal Sacramento River Flood Control Project.

NINETY-TWO: The improvements permitted herein are designed to manage flows from a storm with a probability of occurrence of .005 in any year (200-year protection). Permittee's design assumed that non-urban existing upstream levees will not be raised above the design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow and calculations assumed no upstream levee overtopping where permittee's design storm water surface elevation exceeds the 1957 profile top of levee elevation. Permittee acknowledges that the adopted 2012 Central Valley Flood Protection Plan will be regularly updated by the State and that the plan and future updates could include improvements that would change the flow and water surface elevation associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to these levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the Plan. Permittee further agrees that should the Plan include measures that reduce the level of protection

provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic impacts.

NINETY-THREE: Due to the limited performance data associated with the requested variances to Title 23 approved for this project, the permittee or Levee District 1 shall provide the Board's Chief Engineer with the information described in Special Condition EIGHTY-TWO and an additional written determination to assure satisfactory levee performance and stability prior to each flood season and after each high water event. The written determination must be stamped and signed by a California licensed Professional Engineer stating that the levee is performing in the manner intended by the approved plans and specifications. The additional monitoring and reporting shall continue until three (3) consecutive high water events result in positive determinations. The method for making these determinations is the responsibility of the permittee, Levee District 1, or agent thereof and shall be acceptable to the Board's Chief Engineer.

END OF CONDITIONS

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

CECW-SPD

SEP 1 3 2013

MEMORANDUM FOR Commander, South Pacific Division (ATTN: Clark Frentzen, CESPD-PDS-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, CESPK-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, CESPD-PDC, 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

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.

Encls

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

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.

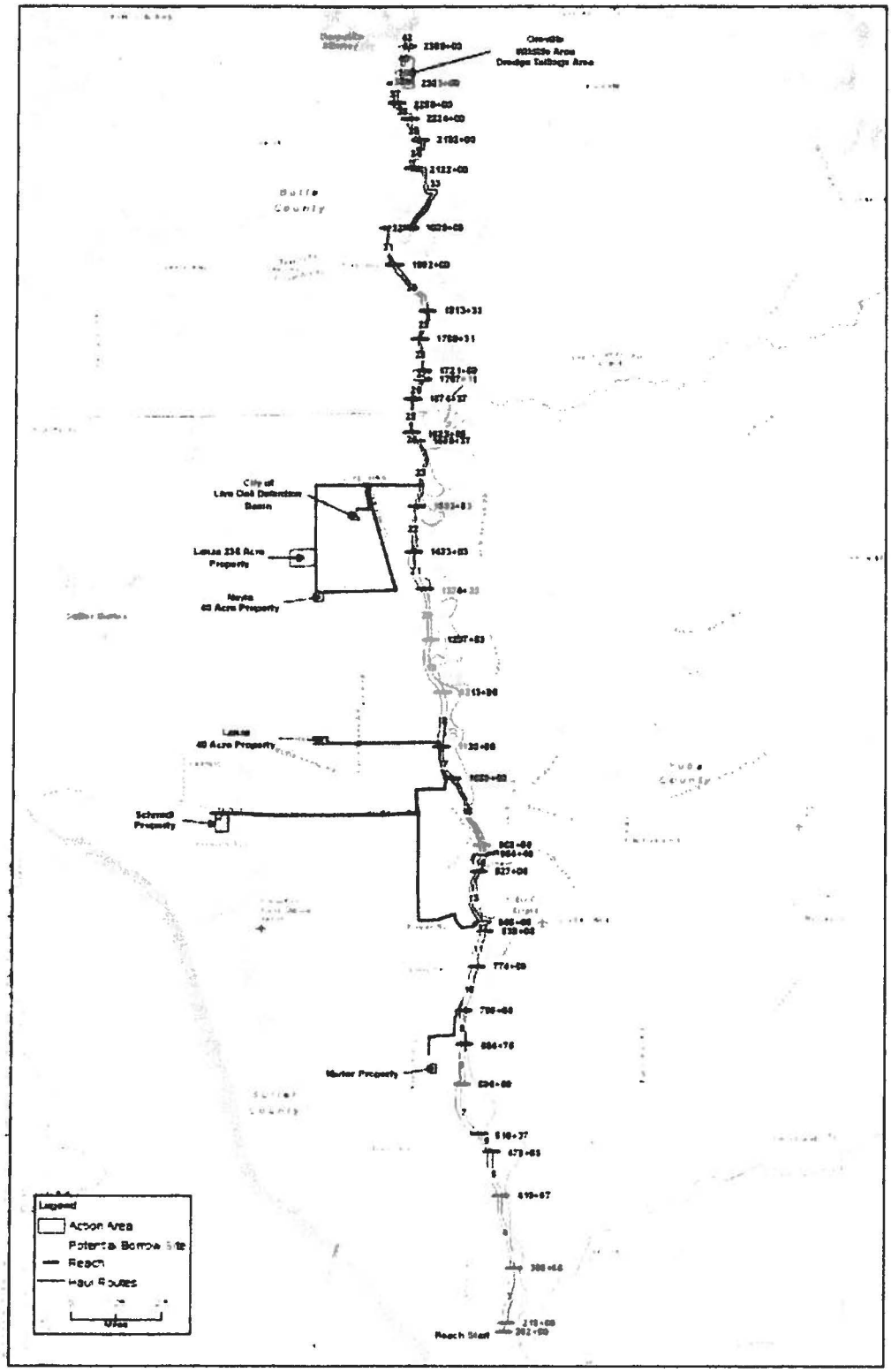


Figure 1. Proposed Project

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 very 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 scrapper. 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 polyethelene 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, SFBCA 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 (CNDDB) 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 $\geq$1 inch and $\leq$3 inches = 4.
- Number of stems >3 inches and <5 inches = 1.
- Number of stems $\geq$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 CNDDB (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 CNDDB 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 $\geq$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 reinitiate 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.

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
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

In response refer to:
2013/9542

Alicia E. Kirchner
Chief, Planning Division
Department of Army
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 tress) 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,

for 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 SFBCA 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 Preservation[1] 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

[1]California 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 5-1-13
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

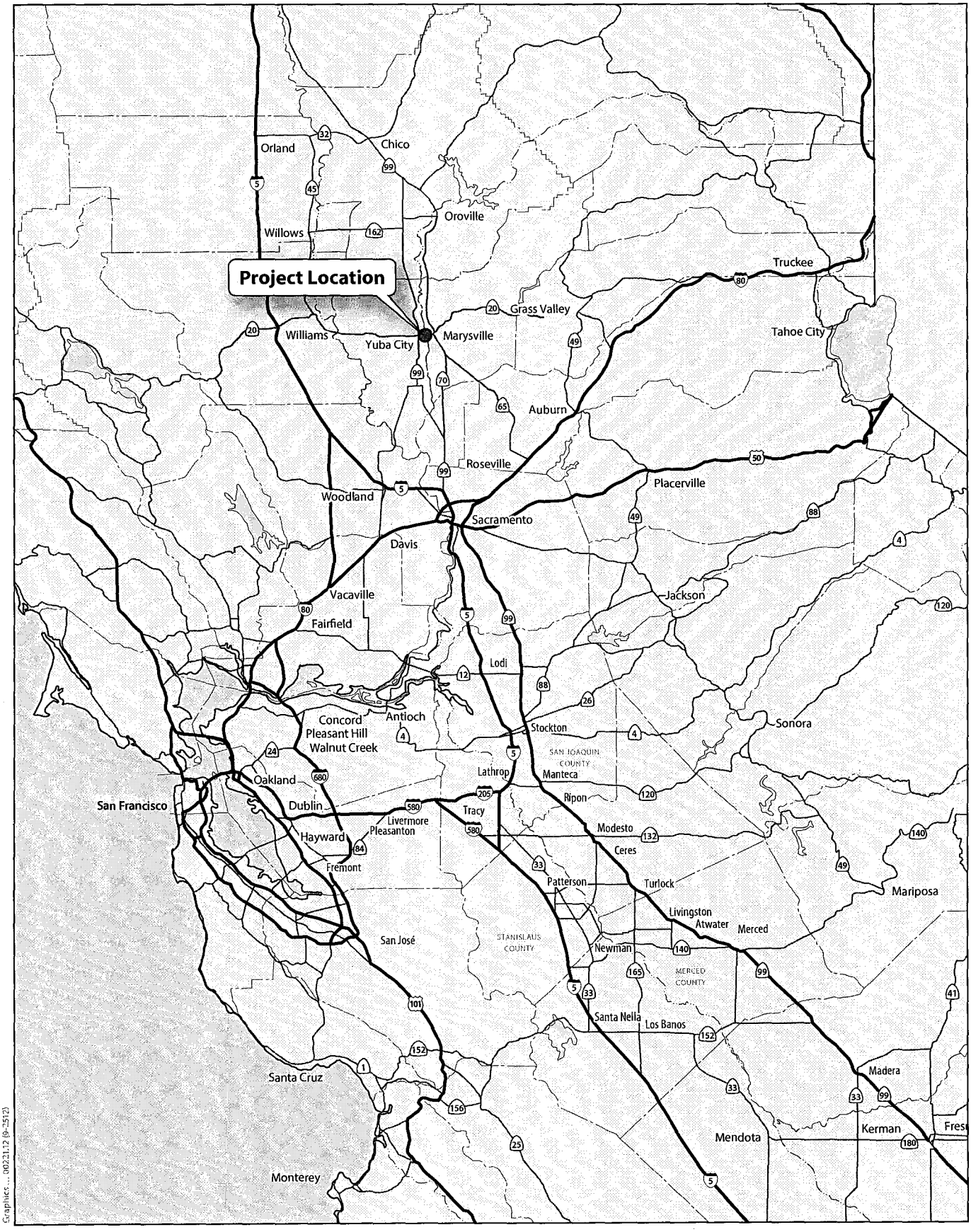

Figure 1
Project Location

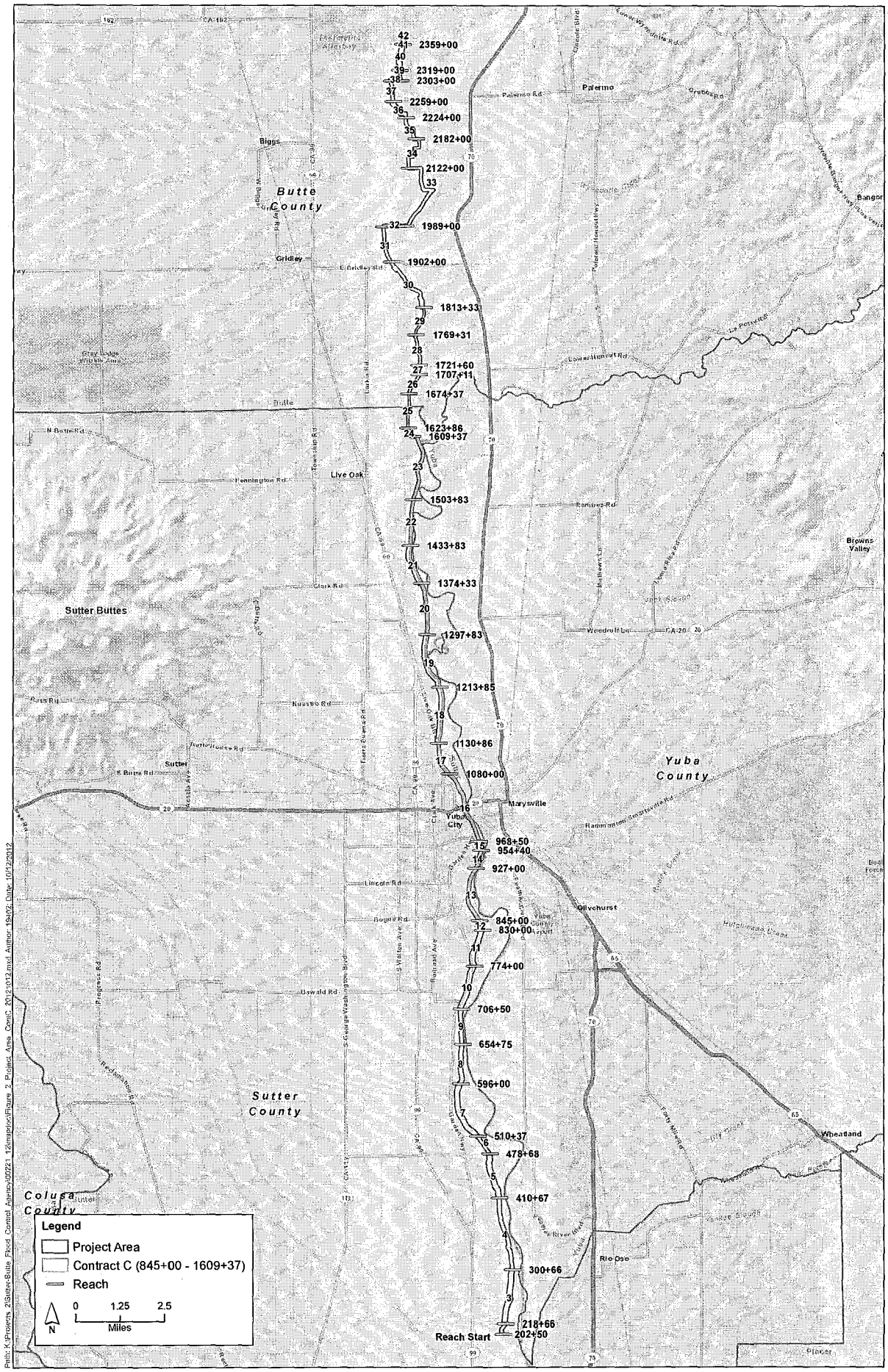

Figure 2
Project Area

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

ATTACHMENT C1 – Exhibit B: USACE Letter of Permission

This letter has not yet been received by Board staff; however, it is expected to arrive prior to the Board Meeting on February 28, 2014

State of California | DEPARTMENT OF WATER RESOURCES
CENTRAL VALLEY FLOOD PROTECTION BOARD | California Natural Resources Agency

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 (FRWL) Project. This application covers the second phase of work, Construction Project B, between Station 512+00 & Station 832+40. The levee rehabilitation includes installing cut-off walls and relief wells to remediate levee throughseepage and underseepage. (Attachment A)

2. Project Location: Sutter County (Near Yuba City) County, in Section Multiple (Attachment B)
Township: Multiple (Attachment B) (N) (S), Range: Multiple(Attachment B) (E) (W), M. D. B. & M.
Latitude: 38°53'51.02"N Longitude: 121°37'0.36"W
Stream : Feather River , Levee : Feather River W. Levee Designated Floodway: _____
APN: (See attachment C)

3. Sutter Butte Flood Control Agency (Name of Applicant / Land *Owner*) of 1227 Bridge Street, Suite C (Address)
Yuba City (City) | California (State) | 95991 (Zip Code) | 530-755-9859 (Telephone Number)
Info@Sutterbutteflood.org (E-mail)

4. Jonathan Kors (Name of Applicant's Representative) of Wood Rodgers, Inc. (Company)
Sacramento (City) | California (State) | 95816 (Zip Code) | 916-326-5294 (Telephone Number)
JKors@woodrodgers.com (E-mail)

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

We, the Trustees of Levee District 1 (Name of LMA) approve this plan, subject to the following conditions:

☐ Conditions listed on back of this form ☒ Conditions Attached ☐ No Conditions

× _____ 2/10/14
Trustee Date

Francis E. Silva 2/10/14
Trustee Date

× _____ 2/10/14
Trustee Date

_____
Trustee Date

SBFCA – PROJECT AREA B – PERMIT 18793-2

Levee District No. 1 of Sutter County (LD1) has the following conditions to be included on the Central Valley Flood Protection Board Encroachment Permit for the SBFCA Project Area B (Star Bend Road to Shanghai Bend Road) improvement project. The conditions are as follows:

1. All improvements shall meet or exceed Central Valley Flood Protection Board Title 23, Department of Water Resources, DWR Urban Levee Design Criteria, FEMA, and U.S Army Corps of Engineers Standards and requirements.

2. All work endorsed by this permit shall be in accordance with the Volumes 1 through FOR BID submitted drawings and specifications referenced as "Feather River West Levee Project Area B and D Contract 01-2014B-D Volumes 1 through 3 and Volume 6" dated February 4, 2014. No further work, other than approved by this permit, shall be done in the area without prior endorsement of Levee District No. 1 of Sutter County.

3. A copy of operation and maintenance manual shall be provided to Levee District No. 1 of Sutter County upon completion of the work. The O&M manual shall include provisions for annual inspection which meet or exceed the CVFPB, DWR, USACE, and LD 1 standards. The results of the annual inspection shall be provided to Levee District No. 1 of Sutter County prior to November 1 each year.

4. The encroachment permit shall include a provision that the permittee shall be required to remove or alter all or any part of the herein permitted project if removal or alteration is necessary as part of or in conjunction with any present or future flood control plan or project, or if damaged by any cause. If the permittee or successor does not comply, LD 1, USACE, and/or the CVFPB may remove or modify the herein permitted project at the permittee's expense.

5. The permitted encroachment(s) shall not interfere with operation and maintenance of the flood control project. If the permitted encroachment(s) are determined by any agency responsible for operation and maintenance of the flood control project to interfere, the permittee shall be required, at permittee's or successor's sole cost and expense, to modify or remove the permitted encroachment(s).

6. Grading or Tree Plantings shall be designed not to direct water towards the existing levee or the diversion levees. Grading shall not affect the hydraulic characteristics of the river in a negative manner;

7. If the project or any portion thereof, is to be abandoned in the future, the permittee or successor shall abandon the project, at the permittee's or successor's sole cost and expense.

8. A set of As-Built Mylar plans and specifications shall be provided to Levee District No. 1 of Sutter County upon completion of the work.

9. A copy of the final Central Valley Flood Protection Board Permit shall be provided to Levee District No. 1 of Sutter County prior to any work.

10. Levee District No. 1 of Sutter County shall be notified five (5) working days prior to any construction activities.

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
Sutter County

Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

January 13, 2014

Mr. Len Marino
Chief Engineer
Central Valley Flood Protection Board
3310 El Camino Avenue, Ste LL40
Sacramento, California 95821

Subject: Feather River West Levee Project, Project Areas B, C and D
Request for authorization to Transplant Elderberry Shrubs

Dear Mr. Marino:

As you know, the Sutter Butte Flood Control Agency (SBFCA) is already under construction with Project Area C (Shanghai Bend to Live Oak) of the Feather River West Levee Project, and plans to go to bid with Project Area B (Star Bend to Shanghai Bend), and Project Area D (Live Oak to Thermalito) in early 2014. Implementation of the project requires transplanting elderberry shrubs from 49 locations within the project limits per the Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) for the Feather River West Levee Project (see Attachment A). Of these 49 locations, 10 are locations where the shrubs are growing on the levee prism. The Biological Opinion requires that the elderberry shrubs be transplanted during the plant's dormant phase which is November through the first 2 weeks of February. The transplanted shrubs will be replanted at the Star Bend habitat enhancement area directly adjacent to Project Area B.

The work associated with transplanting the elderberry shrubs involves using an excavator to extract the shrub and its root ball, and then hoisting and placing the shrubs on a trailer for transport to the Star Bend habitat enhancement area for replanting. Any voids will be backfilled and the disturbed area recompacted. SBFCA's construction management team will observe all the work in coordination with the State's inspection team.

At their January 13, 2014 Board meeting, Levee District 1gave SBFCA permission to transplant the elderberry shrubs to the Star Bend site. 30 days after the elderberry bushes have been transplanted SBFCA will provide the CVFPB will a plan sheet showing the location and count of the transplanted elderberry shrubs and also the environmental consultation documents associated with the transplantings.

Attached for your information are exhibits showing the locations of the shrubs to be transplanted: Attachment B shows the shrubs within Project Area B which need to be transplanted; Attachment C shows the shrubs within Project Area C which need to be transplanted; and Attachment D shows the shrubs within Project Area D which need to be transplanted.

SBFCA hereby requests authorization to perform the shrub transplanting work described above. Please indicate your authorization to undertake elderberry shrub transplanting as described and return a copy to SBCFA. If you have any questions, please contact at (916) 679-8861.

Sincerely,

Michael W. Bessette, P.E.
Director of Engineering

The above request to perform elderberry shrub transplanting, as described is approved.

By: Eric R. Butler

Date: January 16, 2014

for Len Marino, Chief Engineer
Central Valley Flood Protection Board

Cc: Eric Butler, CVFPB
Nancy Mortiz, CVFPB
Jennifer Fasani, DWR
Erin Brehmer, DWR
Andrew Pendery, DWR
Michael Abeyta, DWR
Adam Riley, USACE
Mark Martin, Parsons Brinckerhoff
Monique Briard, ICF

Attachment A - Feather River West Levee Project Biological Opinion

Attachment B - Feather River West Levee Project – Project Area B Elderberry Shrub Transplant Locations

Attachment C - Feather River West Levee Project – Project Area C Elderberry Shrub Transplant Locations

Attachment D - Feather River West Levee Project – Project Area D Elderberry Shrub Transplant Locations

Attachment E – Levee District 1 Elderberry Shrub Transplant Approval

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.

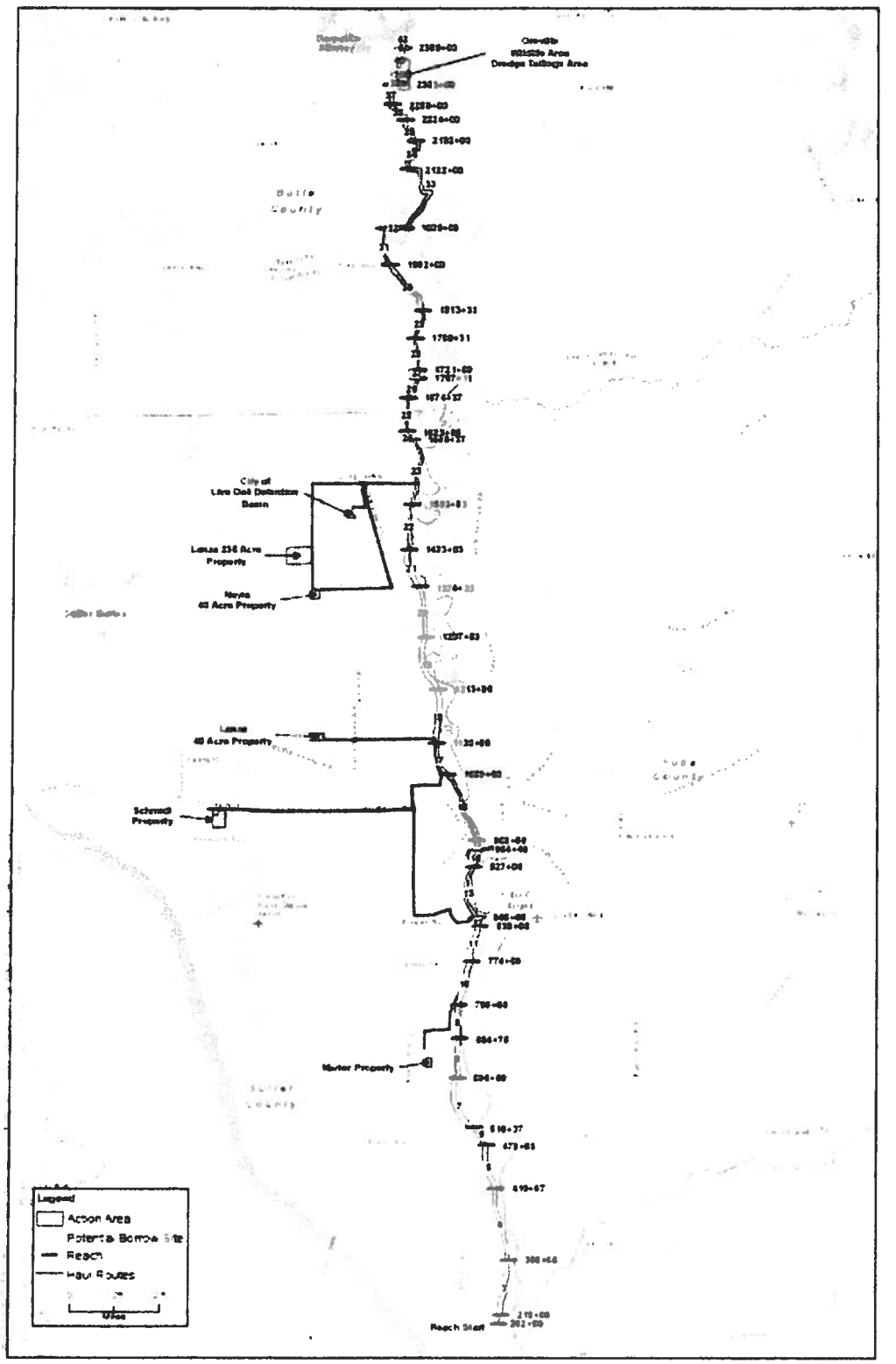

Figure 1. Proposed Project

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 very 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 scrapper. 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 polyethelene 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, SFBCA 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 (CNDDB) 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 $\geq$1 inch and $\leq$3 inches = 4.
- Number of stems >3 inches and <5 inches = 1.
- Number of stems $\geq$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 CNDDB (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 CNDDB 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 $\geq$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 reinitiate 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.

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

Literature Cited

California Natural Diversity Database (CNDDB). 2013. Natural Heritage Division, California Department of Fish and Game. Sacramento, California.

U.S. Fish and Wildlife Service (Service). 1999a. Conservation Guidelines for the Valley Elderberry Longhorn Beetle. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California.

_____. 1999b. Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. x + 192 pp.

_____. 2006. Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California.

_____. 2012. Giant Garter Snake *(Thamnophis gigas)* 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California. 46 pp.

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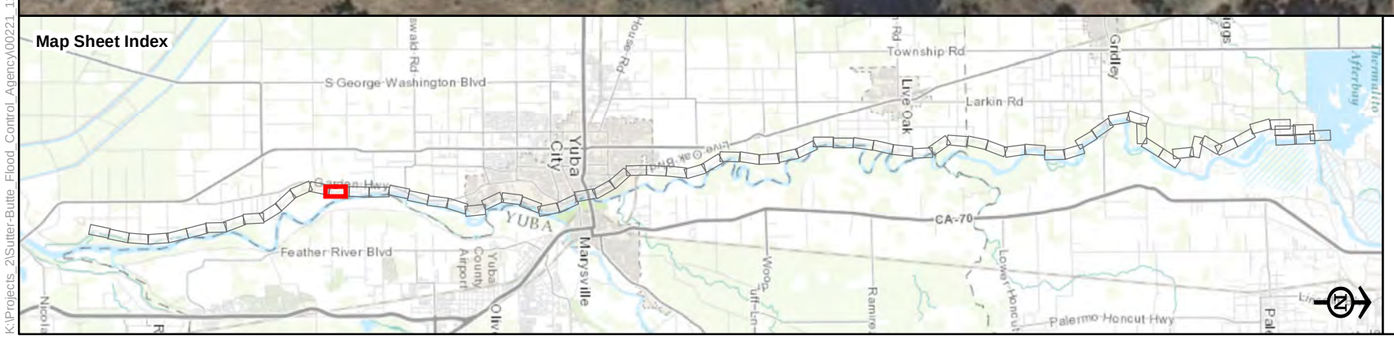

Legend

- Contract B Boundary
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract B

Sheet 4

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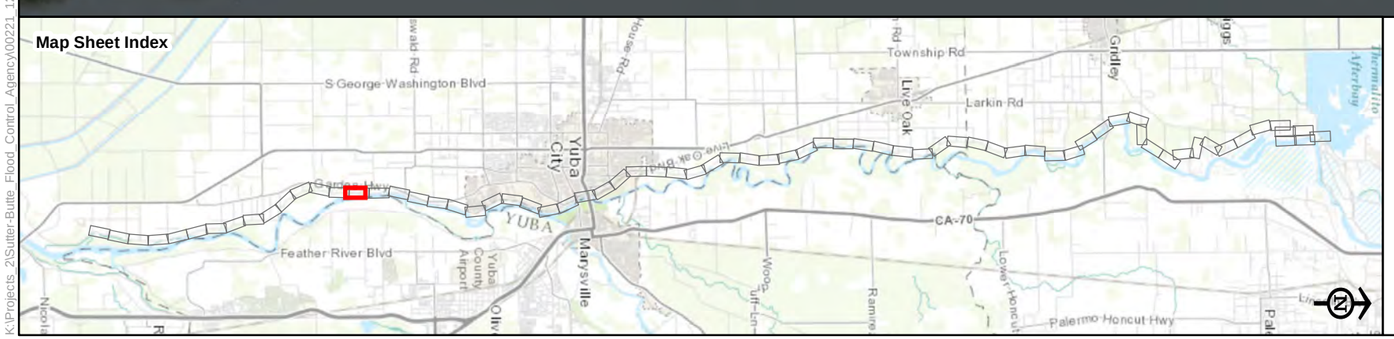

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- Contract B Boundary
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal
Location in Contract B

Sheet 5

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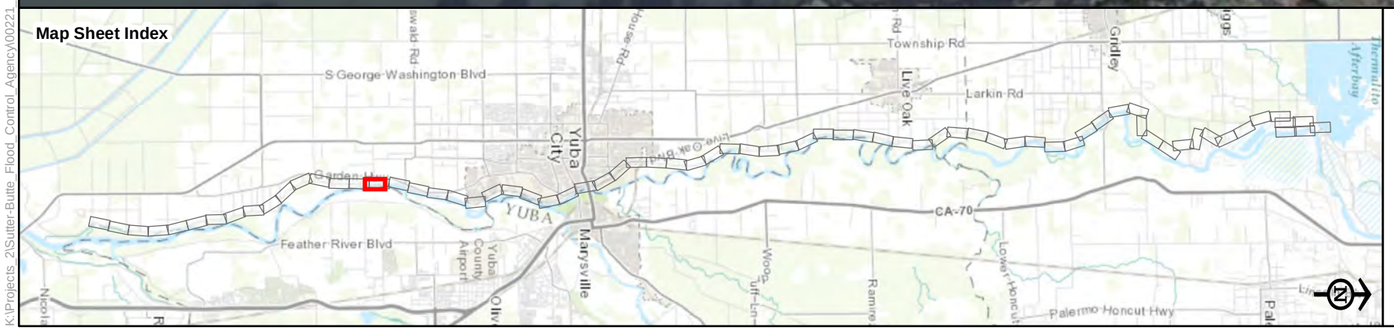

Legend

- Contract B Boundary
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract B

Sheet 6

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Contract B Boundary
Station Number
Reach
Elderberry Location (Action)
Removal
Figure X
Elderberry Removal
Location in Contract B
Sheet 11
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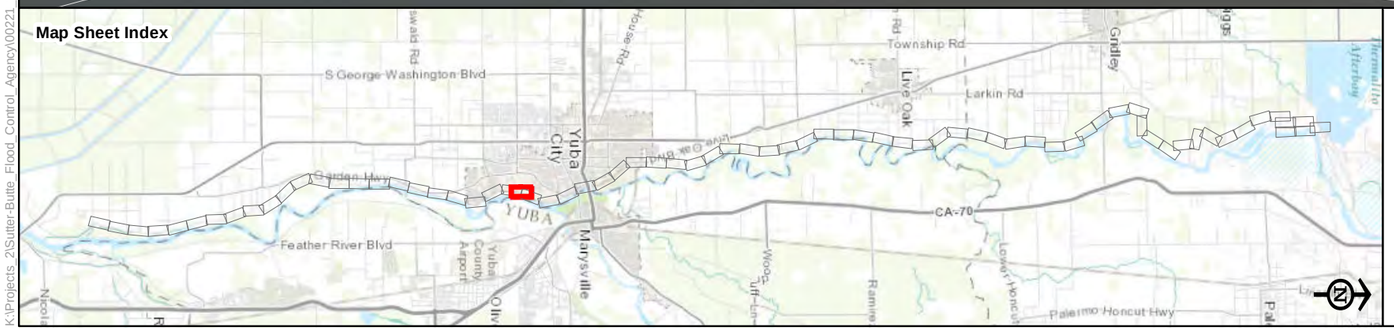

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 3

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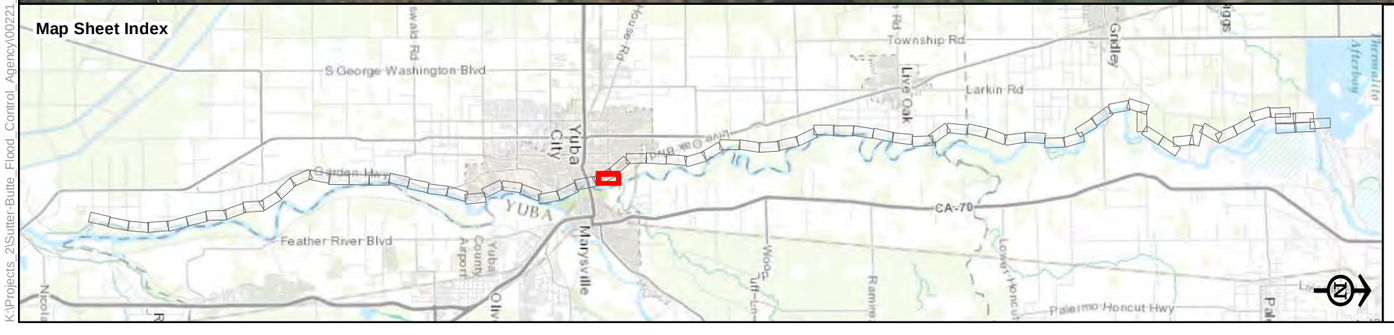

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 8

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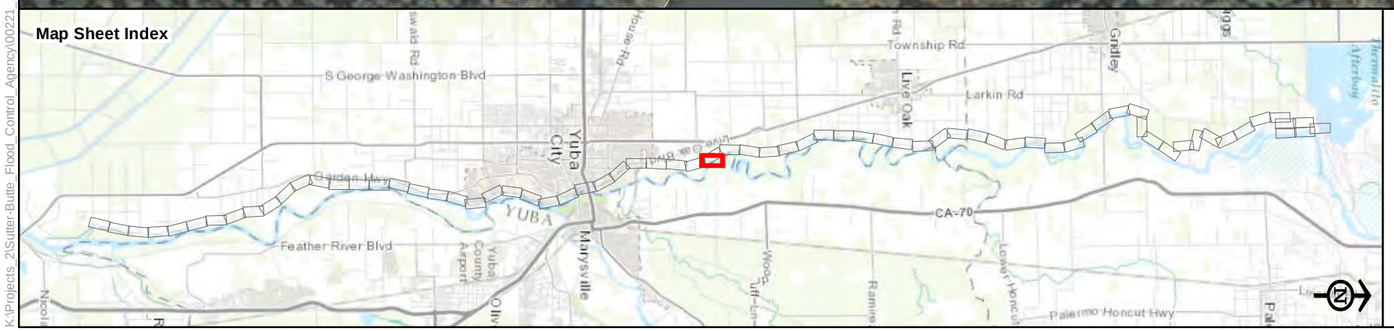

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 14

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 16

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 17

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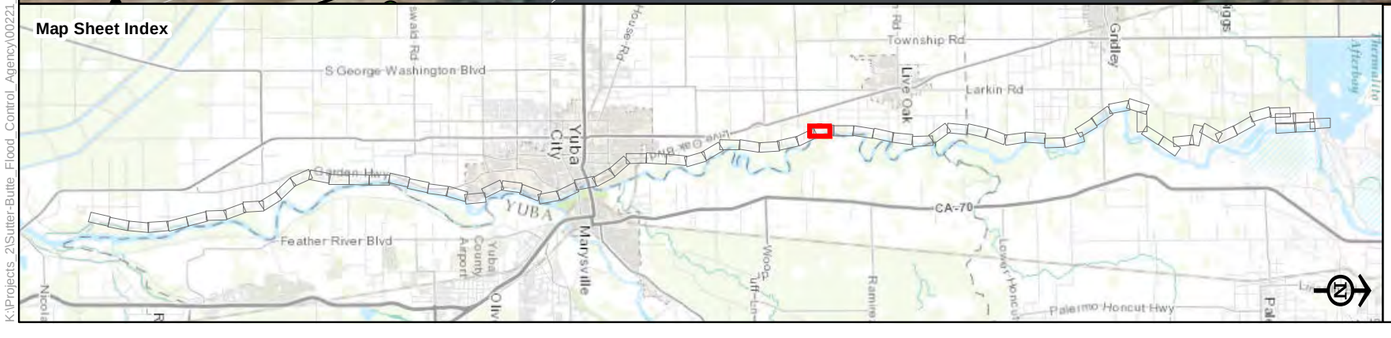

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 20

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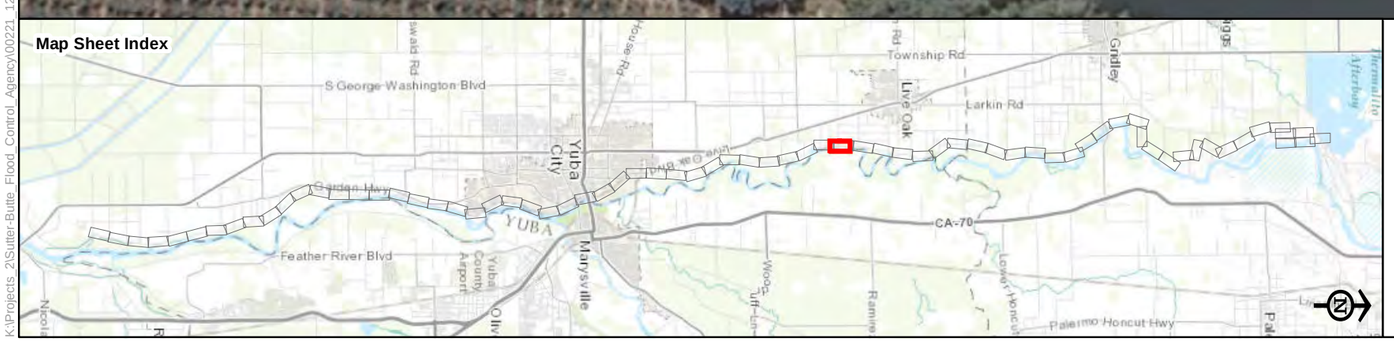

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 21

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Map Sheet Index

Legend

- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 23

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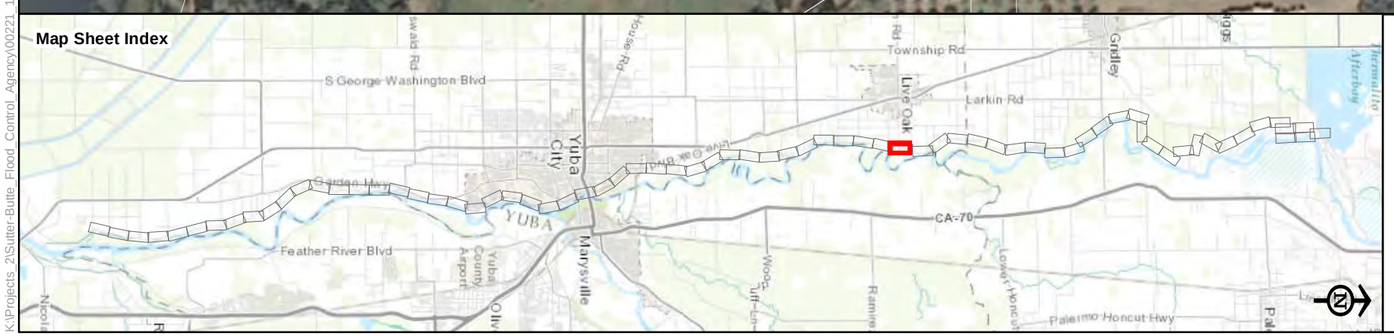

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 24

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 25

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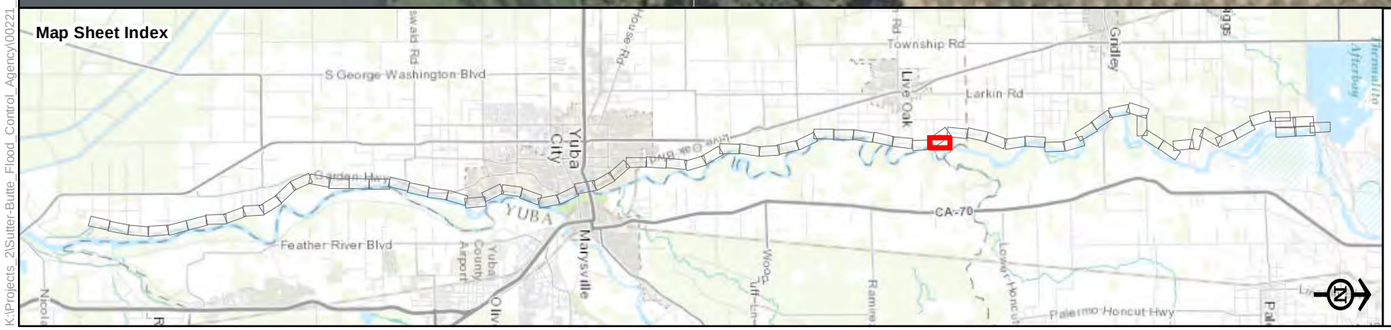

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- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 26

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Map Sheet Index

Legend

- Contract C Boundary
- Station Number
- Reach
- Sutter County Parcel

Elderberry Location (Action)

- Fencing
- Removal

Figure X
Elderberry Removal/Fencing Location in Contract C

Sheet 27

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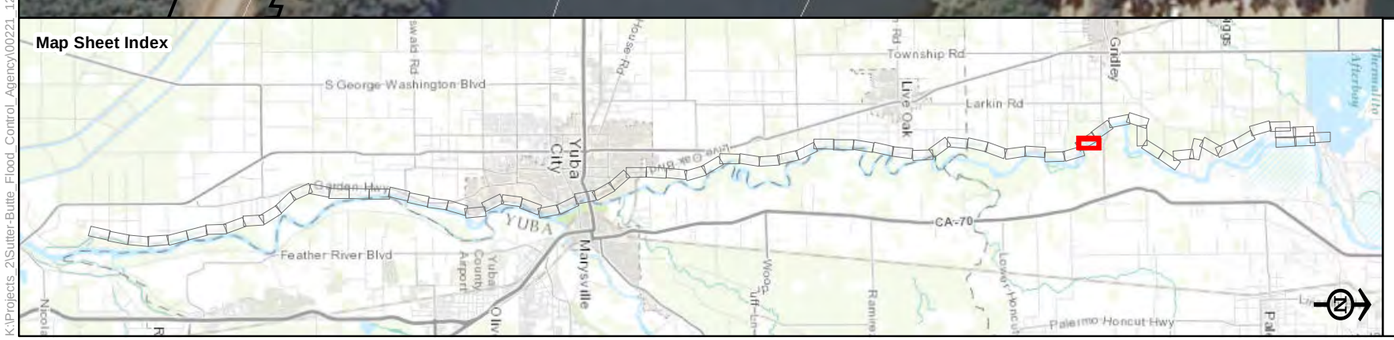

Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract D

Sheet 8

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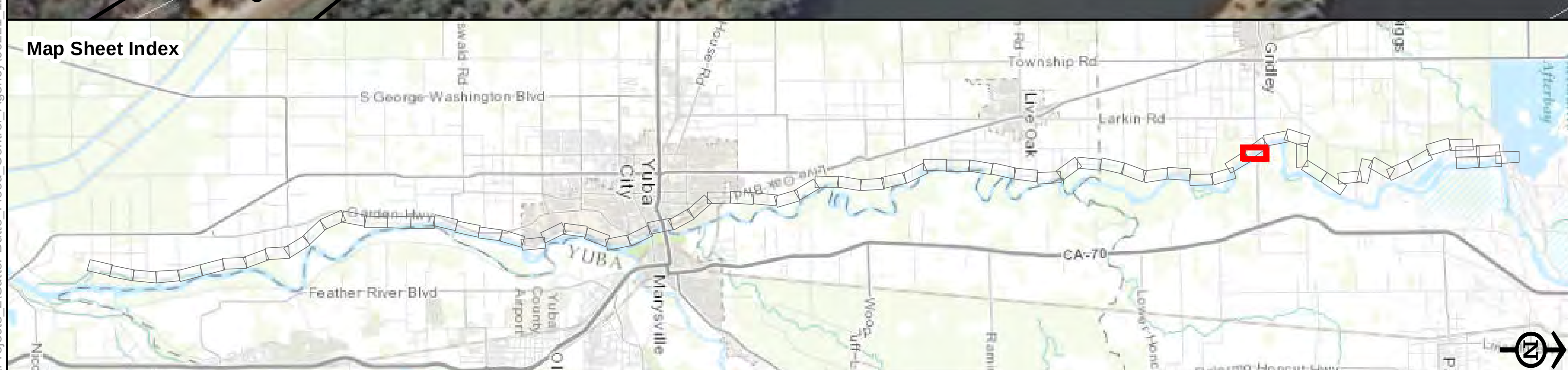
Map Sheet Index



Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal
Location in Contract D

Sheet 9

0 100 200
Feet

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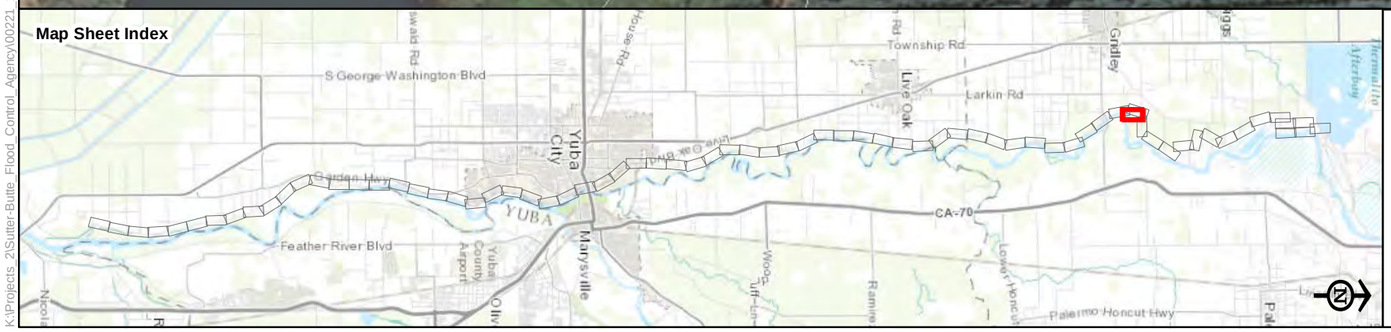

Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract D

Sheet 11

0 100 200
Feet

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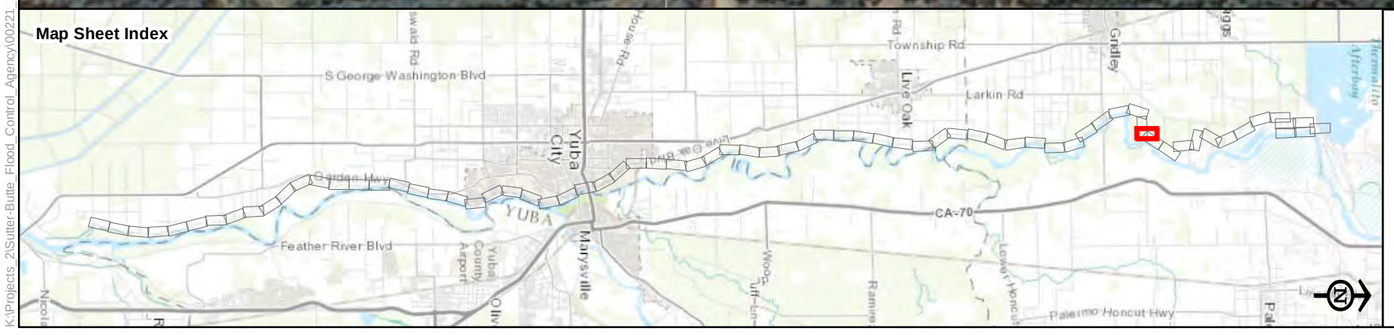
Map Sheet Index



Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal
Location in Contract D

Sheet 13

0 100 200
Feet

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Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract D

Sheet 16

0 100 200
Feet

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Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal
Location in Contract D

Sheet 20

0 100 200
Feet

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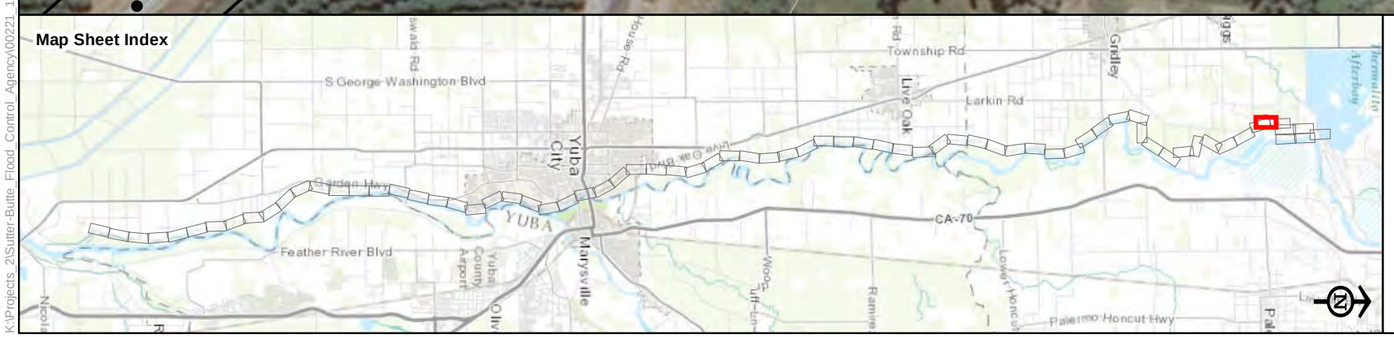


Legend

- Contract D
- Contract D No Work
- Butte County Parcel
- Station Number
- Reach

Elderberry Location (Action)

- Removal

Figure X
Elderberry Removal Location in Contract D

Sheet 21

0 100 200
Feet

K:\Projects_2\Sutter-Butte_Flood_Control_Agency\00221_12\mapdoc\Elderberry\Elderberry_Permit_ContractD_20131204.mxd 28266 Date: 12 Dec 2013/

LEVEE DISTRICT ONE OF SUTTER COUNTY

Since April 1868
243 Second Street ·Yuba City, CA 95991
Office: (530) 673-2454 · Fax: (530) 673-0109
E-Mail: ld1@syix.com
www.leveedistrict1.com

January 16, 2014

Mr. Len Marino
Chief Engineer
Central Valley Flood Protection Board
3310 El Camino Ave. # LL40
Sacramento, Ca. 95821

Dear Len:

On January 13, 2014, the Levee District Board met in session for a regular meeting. In this meeting they approved a right of entry for SBFCA to transplant elderberry trees on Levee District One's property.

An unapproved copy of Levee District One's Board minutes are attached.

Any questions, I can be reached at 530 673-2454.

Sincerely,

Bill Hampton
General Manager
Levee District One

LEVEE DISTRICT NO. 1 OF SUTTER COUNTY

Minutes of January 13, 2014, Regular Board of Directors Meeting

DIRECTORS PRESENT: Francis Silva, Barbara LeVake

DIRECTORS ABSENT: Al Montna

OTHERS PRESENT: Bill Hampton (District General Manager), Louinda Lacey (District Counsel), Sean Minard (District Engineer) Sharon James (Secretary)

The meeting was called to order by the Chairman at 8:07 a.m.

ROLL CALL:

Roll call was taken by the secretary at the direction of the Chairman. All directors were present with the exception of Al Montna.

APPROVAL OF MINUTES OF December 9, 2013:

The Chairman entertained a motion to approve the minutes of the December 9, 2013, Levee District One Board of Directors' Meeting as written. Barbara LeVake made a motion to approve the minutes as written. Francis Silva seconded the motion. A vote was taken and the motion carried to approve the minutes as written.

PUBLIC BUSINESS FROM THE FLOOR:

There was no public comment or business from the floor.

SUTTER BUTTE FLOOD CONTROL AGENCY (SBFCA):

The Chairman announced that the next SBFCA Board Meeting would be held on January 15, 2014.

The Board heard from Mike Inamine, Executive Director of the SBFCA, and Barry O'Regan concerning the two main issues that will be spoken about at the SBFCA Board meeting. Mike Inamine will give a briefing and Barry O'Regan, who handles all SBFCA's environmental and permitting, will be speaking regarding the two topics below:

- Two resolutions of necessity will be discussed. (Mike Inamine emphasized the need to have a full quorum at the meeting as a super majority is needed.)
- Barry O'Regan will discuss the Elderberry Beetle plantings

A discussion ensued with regard to the progress of obtaining the necessary land for the levee improvement/reconstruction project. Barbara LeVake emphasized the need to ensure the

public understands the difficulty that goes into the decision of purchasing or taking land through the imminent domain process and that it is not considered lightly—to which, Mike Inamine agreed.

With regard to the 90 shrubs that have to be replanted for mitigation, all of the plants are being removed at one time to be transplanted at Star Bend in this time frame due to their dormancy. SBFCA sought permission from the Board for right-of-entry to transplant the Elderberry shrubs on LD-1 property at Star Bend.

Barbara LeVake moved to approve SBFCA's proposed right of entry (for transplanting the Elderberry plants) contingent upon Counsel's review of the right-of-entry document. Francis Silva seconded the motion. A vote was taken and the motion carried.

STAR BEND SETBACK LEVEE:

The Board heard from Bill Hampton that the real estate is almost closed out. The Board also heard from Sean Minard that he and Dan Kelly had attended a Central Valley Flood Protection Board (CVFPB) Meeting before the holidays. At said CVFPB meeting, the Board officially handed over the levee to LD-1 for operations and maintenance. Levee District One is the first to have their levee turned over to the local LMA for operations and maintenance.

The Board also heard from Sean Minard that on the real estate, the last thing that needs to be done is getting the conservation easement completed. This is an issue that must be worked out between the Department of Water Resources and the California Department of Fish and Wildlife. With regard to the Interest issue, Dan Kelly has a meeting set up with Marilee Smith (of Smith and Newell, Certified Public Accountants) to discuss the States figures/calculations on interest. The Board heard that this matter had been agreed upon at a previous meeting to take Marilee Smith's calculations. They changed their mind and eventually, the matter may have to go to a legal issue. Further discussion briefly ensued.

PG&E PIPES AND PERMIT:

The Board heard from Sean Minard that he had reviewed their permit plans. They had a bit of a go-around. Sean Minard updated the Board concerning PG&E's original desire to leave the pipes in place by a means of abandoning the pipes in place, which LD-1 said was not in compliance with Title 23. LD-1 did not concur. A five-year removal time-frame was then requested by PG&E, but LD-1 stated that the pipes must be removed by the next construction time frame. Thus, the pipes should be removed within the 2015 construction period. This stringent adherence is due to the construction project SBFCA is currently undertaking and their having to remove abandoned pipelines—10 years down the road might pose a similar problem during a reconstruction of some area.

The Board heard that Sean Minard recommended an endorsement of PG&E's permit application based on them changing their criteria. PG&E had not given any signed plans.

Barbara LeVake made a motion based on the recommendation of LD-1 Engineer that the Board approve the Central Valley Flood Protection Board Encroachment Permit (application) for the PG&E Gas Pipeline Line 124A Replacement Project with the conditions attached. Francis Silva seconded the motion. A vote was taken and the motion carried.

The plans will not be sent off until the signed plans are received.

UNION PACIFIC RAILROAD:

The Board heard from Sean Minard regarding his review of Union Pacific Railroad's plans (for a new bridge, which encroaches on the levee). They want to replace the existing bridge and reduce its width by 300 feet. Sean Minard took a handbook and walked the Board through Union Pacific's specific plans. Sean Minard presented a considerable review of his opinion of their plans, and had drawn up an optional plan strictly adhering to Title 23 (Option A), if they are not given a variance by the State, thus giving two potential options (Options A and B).

Sean Minard would have no problem with Option A with Option B conditions. Option B is if they get the variance by the State, that they get the grant (i.e., LD-1 endorsement, but as a mitigation measure, they must put in a stop-wash structure (at the levee in the location in question) and that they keep the cross-sectional area the same. Under Option B the State would confer with SBFCA and LD-1. Considerable discussion ensued.

Barbara LeVake made a motion that the Board support the permit for the replacement of the bridge over the Feather River near Pease Road with the condition that Option B for mitigation of the lower bridge soffit be included in the permit conditions. Francis Silva seconded the motion. A vote was taken and the motion carried.

ENGINEER'S REPORT:

The Board heard from Sean Minard that he had nothing further to report than what he'd already reported on in the meeting. Sean Minard said that he is working with Bill Hampton for comments for the levee project (SBFCA's plan) for the 100 percent design plans.

CLAIMS FOR PAYMENT:

The Board reviewed the claims for payment for Levee District One and the R.V. Park.

Barbara LeVake moved to approve the claims in the amount of $22,775.28. Francis Silva seconded the motion. A vote was taken and the motion to approve the claims in the amount of $22,775.28 was carried.

MANAGER'S REPORT:

The Board heard from Bill Hampton that he is going into his third month (of his illness) and is getting better daily and taking on more duties.

CLOSED SESSION:

Due to the need to confer with legal counsel concerning the initiation of anticipated litigation (one potential case), the Chairman called for a closed session pursuant to Government Code 54956.9(B) with regard to benefit assessments that are not being paid by different State agencies.

After coming out of closed session, the Chairman announced that no action had been taken during the closed session.

OTHER BUSINESS, DISCUSS ONLY, NO ACTION:

The Board heard that there was no further business.

ADJOURN MEETING:

There being no further business, the Chairman adjourned the meeting at 9:02 a.m.

ATTACHMENT C1 – Exhibit E: Elderberry As-built Planting Details and Construction Docs

These documents have not been received by Board staff; however, it is expected to arrive prior to the Board Meeting on February 28, 2014

DRAFT

STATE OF CALIFORNIA
THE RESOURCES AGENCY

THE CENTRAL VALLEY FLOOD PROTECTION BOARD

PERMIT NO. 18793-3 BD

This Permit is issued to:

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, California 95991

This flood system improvement permit is granted to the Sutter Butte Flood Control Agency (SBFCA) to construct approximately 11.4 miles of levee improvements on the west levee of the Feather River (reaches 29 through 41) from Station 1765+00 to 2368+26. The proposed work includes: degrading of the levee by approximately one third of its overall height; construction of a cutoff wall ranging from 17 to 99 feet in depth along the centerline of the levee; reconstruction of the levee; construction of seepage berms from 100 to 170 feet in width; and correction of various encroachments which do not comply with California Code of Regulations, Title 23 (CCR 23). In addition to the project construction removal, relocation, and modification of several existing levee encroachments to bring them into compliance with federal and State standards through revised or new Board encroachment permits will also be necessary. Other existing encroachments will be relocated or removed in their entirety. These additional encroachment permits will be issued to the individual encroachment owners as required through the Project Area D construction schedule.

The project extends from East Evans Reimer Road to Thermalito Afterbay in Gridley, CA. (Sta 1765+00 to 2368+26) Reaches 29 through 41 (Section 2, T14N, R3E, MDB&M, Maintenance Area 7, Feather River, Butte County).

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

(SEAL)

Dated: _____ _____

Executive Officer

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL CONDITIONS FOR PERMIT NO. 18793-3 BD

LIABILITIES / IMDEMNIFICATION

THIRTEEN: The permittee is responsible for all personal liability and property damage which may arise out of failure on the permittee's part to perform the obligations under this permit. If any claim of liability is made against the Central Valley Flood Protection Board, the Department of Water Resources, the United States of America, a local district or other maintaining agencies and the officers, agents or employees thereof, arising out of failure on the permittee's part to perform the obligations under this permit, the permittee shall defend and shall hold each of them harmless from each claim. This condition shall supersede condition TEN.

FOURTEEN: The permittee shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California, including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe

and harmless, of and from all claims and damages related to the Central Valley Flood Protection Board's approval of this permit, including but not limited to claims filed pursuant to the California Environmental Quality Act. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

FIFTEEN: The permittee is responsible for all liability and shall defend, indemnify, and hold the Central Valley Flood Protection Board and the State of California; including its agencies, departments, boards, commissions, and their respective officers, agents, employees, successors and assigns (collectively, the "State"), safe and harmless, of and from all such claims and damages arising from construction of the project undertaken pursuant to this permit, all to the extent allowed by law. The State expressly reserves the right to supplement or take over its defense, in its sole discretion.

SIXTEEN: The Central Valley Flood Protection Board and Department of Water Resources shall not be held liable for damages to the permitted alterations resulting from releases of water from reservoirs, flood fight or emergency operations, maintenance, inspection, or repair.

EASEMENT, LICENSE, TEMPORARY ENTRY PERMIT, AND LAND ACQUISITION

SEVENTEEN: If the construction project extends onto land owned in fee and / or easement by the Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board (hereafter Board), the permittee should secure an easement, license, or temporary entry permit from the Board prior to commencement of work. Contact Angelica Aguilar at (916) 653-5782.

EIGHTEEN: Prior to construction, the permittee shall have obtained legal possession of all property where work to be performed under this permit is located.

BOARD CONTACTS

NINETEEN: The permittee shall contact the Board by telephone at (916) 574-0609, and the Board's Construction Supervisor at (916) 651-1299 to schedule a preconstruction conference. Failure to do so at least 20 working days prior to start of work may result in delay of the project.

PERMITTING AND AGENCY CONDITIONS

TWENTY: Project Area D of the Sutter Butte Flood Control Agency's Feather River West Levee Project (FRWLP) is permitted pursuant to 33 U.S.C. Section 408 authority of the U.S. Army Corps of Engineers. The Feather River west levee is a facility of the Sacramento River Flood Control Project and State Plan of Flood Control regulated by the Board. By acceptance of this permit, the permittee acknowledges the authority of the Board to regulate all future flood system improvement projects and encroachments along the project levee reach.

TWENTY-ONE: The permittee shall comply with all conditions set forth in the U.S. Army Corps of Engineers (USACE) Record of Decision dated September 13, 2013, which is attached to this permit as Exhibit A and is incorporated by reference.

TWENTY-TWO: The permittee shall comply with all conditions set forth in the USACE Letter of

Permission dated February XX, 2014, which is attached to the permit as Exhibit B and is incorporated by reference.

TWENTY-THREE: The permittee shall comply with all conditions set forth in the Depatment of Water Resources Maintenance Area 7 endorsement letter dated February 6, 2014, which is attached to the permit as Exhibit C and is incorporated by reference.

TWENTY-FOUR: The permittee should contact the U.S. Army Corps of Engineers, Sacramento District, Regulatory Branch, 1325 J Street, Sacramento, California 95814, telephone (916) 557-5250, as compliance with Section 10 of the Rivers and Harbors Act and/or Section 404 of the Clean Water Act may be required.

TWENTY-FIVE: The permittee agrees to incur all costs for compliance with local, State, and federal permitting and resolve conflicts between any of the terms and conditions that agencies might impose under the laws and regulations they administer and enforce.

TWENTY-SIX: The permittee shall cooperate with the Board such that any encroachment that must be relocated, modified or otherwise altered to accommodate construction of flood system improvements permitted herein is relocated, modified or otherwise altered in compliance with current applicable State and federal standards. If the affected encroachment has an existing Board permit or is subject to other Board authorization, the permittee shall cooperate with the Board such that the permit or other authorization is appropriately amended to reflect the changed condition as shown on as-built drawings for the encroachment and FRWLP. If the encroachment does not have a Board permit or other Board authorization the permittee shall cooperate with the Board to determine whether a Board permit is required. If required the permittee shall cooperate with the Board to ensure that the permit application is made and, if granted, the permit reflects the changed condition(s) as shown on as-built drawings for the encroachment and the FRWLP project.

TWENTY-SEVEN: If the permittee does not comply with the conditions of this permit and enforcement by the Board is required, the permittee shall be responsible for bearing all costs associated with the enforcement action, including reasonable attorney's fees.

TWENTY-EIGHT: Upon completion of this flood system improvement project, the permittee will cooperate with the Board to update the supplement to the standard Operations and Maintenance Manual covering the project area, and to cooperate with the Board to obtain federal acceptance of the project works into the Sacramento River Flood Control Project by the U.S. Army Corps of Engineers, followed by federal turnover to the State for Operations and Maintenance through existing assurance agreements.

TWENTY-NINE: The permittee may be required, at permittee's cost and expense, to remove, alter, relocate, or reconstruct all or any part of the permitted project works if removal, alteration, relocation, or reconstruction is necessary as part of or in conjunction with implementation of the Central Valley Flood Protection Plan or other future flood control plan or project, or if damaged by any cause. If the permittee does not comply, the Board may perform this work at the permittee's expense.

THIRTY: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee shall, if any cultural artifact or an unusual amount of bone, shell, or nonnative stone is uncovered during construction, halt work in that area so that a professionally qualified archaeologist approved by

the USACE can determine the significance of the find. If human bone is uncovered the coroner and California Native American Heritage Commission shall be contacted immediately. Refer to Exhibit B for complete requirements.

THIRTY-ONE: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee shall develop and submit a Floodplain Management Plan. Refer to Exhibit B for complete requirements.

THIRTY-TWO: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the USACE may reevaluate its decision to approve the work permitted herein at any time the circumstances warrant. Should field conditions or future investigations require a deviation from the Final Plans, this deviation must be approved by the USACE through a request from the Board. Refer to Exhibit B for complete requirements.

THIRTY-THREE: Pursuant to Exhibit B, USACE Letter of Permission, dated February XX, 2014, the permittee shall abide by all terms and conditions, and shall ensure that all conservation measures and long-term management and maintenance are implemented in perpetuity. Refer to Exhibt B for complete requirements.

THIRTY-FOUR: The permittee shall develop a Stormwater Water Pollution and Prevention Plan and shall make a copy readily available for review at the project site during construction.

PRE-CONSTRUCTION

THIRTY-FIVE: The permittee shall provide construction supervision and inspection services acceptable to the Board.

THIRTY-SIX: The permittee shall contact the U. S. Army Corps of Engineers regarding inspection of the project during construction as the proposed work is an alteration to an existing federal flood control project that will be incorporated into the Sacramento River Flood Control Project, a facility of the State Plan of Flood Control.

THIRTY-SEVEN: Prior to commencement of excavation, the permittee shall create a photo record, including associated descriptions, of the levee conditions. The photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 30 days of beginning the project.

THIRTY-EIGHT: No construction work of any kind shall be done during the flood season from November 1 to April 15 without prior written approval of the Board. This condition excludes the work authorized as described in Special Condition SEVENTY-THREE.

THIRTY-NINE: Thirty (30) calendar days prior to the start of any demolition and / or construction activities within the floodway or within the existing levee prism, the permittee shall submit to the Board's Chief Engineer two sets of detailed plans and specifications and supporting geotechnical and / or hydraulic impact analyses, for any and all temporary, in channel, or levee prism work that may have an impact during the flood season from November 1 through April 15. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or the local maintaining agency when necessary. The Board will provide written notification to the

permittee if the review period is likely to exceed thirty (30) working days.

FORTY: A profile of the existing levee crown roadway and access ramps that will be utilized for access to and from the borrow area shall be submitted to the Board prior to commencement of excavation.

FORTY-ONE: Keys shall be provided to local levee maintenance agencies and the Department of Water Resources for all locks on gates providing access to the floodway, levee ramp, levee toe, and along the levee crown.

CONSTRUCTION

FORTY-TWO: All work approved by this permit shall be in accordance with the approved plans and specifications, except as modified by special permit conditions herein. Any subsequent plans, specifications, and / or addenda shall be submitted immediately to the Board's Chief Engineer as outlined in Special Condition FORTY-THREE. No further work, other than that approved by this permit, shall be done in the area without prior approval of the Board.

FORTY-THREE: All addenda and contract change orders made to the approved plans and / or specifications by the permittee after Board approval of this permit shall be submitted to the Board's Chief Engineer for review and approval prior to incorporation into the permitted project. The submittal shall include all supplemental plans, specifications, and necessary supporting geotechnical, hydrology and hydraulics, or other technical analyses. The Board shall acknowledge receipt of the addendum or change submittal in writing within ten (10) working days of receipt, and shall work with the permittee to review and respond to the request as quickly as possible. Time is of the essence. The Board may request additional information as needed and will seek comment from the U.S. Army Corps of Engineers and / or local maintaining agencies when necessary. The Board will provide written notification to the permittee if the review period is likely to exceed forty five (45) calendar days. Upon approval of submitted documents the permit shall be revised, if needed, prior to construction related to the proposed changes.

FORTY-FOUR: Any additional project features proposed by the permittee in the floodway, on or in the levee section, and within the project right of way as shown on the approved plans (typically 20 feet in fee plus 10 feet in easement from the landward levee toe, but less in selected areas as described in the approved plans) will require either incorporation by amendment to this permit, or will require issuance of a separate encroachment permit to the encroachment owner from the Board.

FORTY-FIVE: Existing or proposed utility poles and guy anchors shall be relocated or installed a minimum distance of 10 feet landward of the landward levee toe.

FORTY-SIX: All debris generated by this project shall be disposed of outside the floodway, levee prism and proposed right-of-way.

FORTY-SEVEN: No material stockpiles, temporary buildings, or equipment shall remain in the floodway during the flood season from November 1 to April 15 without prior approval from the Central Valley Flood Protection Board.

FORTY-EIGHT: During construction of the project, any and all anticipated or unanticipated conditions

encountered which may impact levee integrity or flood control shall be brought to the attention of the Board inspector immediately and prior to continuation of construction. Any encountered abandoned encroachments shall be completely removed or properly abandoned under the direction of the Board inspector.

FORTY-NINE: The stability of the levee shall be maintained at all times during construction.

FIFTY: Excavations below the design flood plain and within the project right of way owned in fee (as described in Special Condition FORTY-FOUR) shall have side slopes no steeper than 1 horizontal to 1 vertical. Flatter slopes may be required to ensure stability of the excavation. Authorized activities such as farming may occur in the portion of the project right of way obtained in easement (as described in Special Condition FORTY-FOUR).

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

FIFTY-TWO: Equipment used in the construction of the cutoff wall shall not exceed the live-load surcharge to a level that causes or contributes to the instability of the levee during construction operations.

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

FIFTY-FOUR: All existing fencing, gates and signs removed during construction of this project, which are shown on the approved plans to be replaced, shall be replaced in kind and at the locations indicated on the approved plans. If it is necessary to relocate any fence, gate or sign that is not shown on the approved plans or to a location different than shown on the approved plans, the permittee is required to obtain written authorization from the Board's Chief Engineer prior to installation at a new location. All fencing, gates, and sign locations shall be accurately shown on any submitted as-built plans.

FIFTY-FIVE: Any construction work by the permittee within the project right of way (as described in Special Condition FORTY-FOUR) shall meet California Code of Regulations, Title 23 (hereafter referred to as Title 23) standards or shall have an approved Board variance per Title 23, Sections 11(a) and (b). The permittee has requested specific construction variances to Title 23, Sections 108, 112, 120, and 123 that are described in Board Staff Report Section 7.7 and Attachment H.

FIFTY-SIX: Any pipeline or conduit which is to be abandoned by filling with concrete, must have a minimum cover of three (3) feet below the waterward levee slope and one (1) foot below the landward levee slope.

FIFTY-SEVEN: Fill on the levee slopes shall be keyed into the existing levee section with each lift or as specified in the approved contract plans and specifications.

FIFTY-EIGHT: The fill surface areas shall be graded to direct drainage away from the toe of the levee.

FIFTY-NINE: Some existing levee slopes are less than 2 horizontal to 1 vertical on the land side, or

less than 3 horizontal to 1 vertical on the water side, and will remain so after the work permitted herein. This permit approves these steeper slopes by a variance to Board standards.

CONSTRUCTION MATERIALS

SIXTY: All fill material shall be as stated in the Project Area D contract specifications and free of lumps or stones exceeding 8 inches in greatest dimension, vegetative matter, or other unsatisfactory material, with the exception of materials and locations approved under Board variance per Title 23, Sections 11(a) and (b), and materials used to construct berms in Reaches 38, 40, and 41.

SIXTY-ONE: Backfill material for excavations within the existing levee sections and within the project right of way (as described in Special Condition FORTY-FOUR) shall be placed in 12-inch layers, moisture conditioned ranging from 3 above to 1 below optimum moisture content, and compacted to a minimum of 95 percent relative compaction as measured by ASTM Method D698, or as provided for in the contract specifications, and utilizing a method specification (refer to Special Condition SIXTY-TWO) for newly defined Type 3 soils within the levee prism and imported top soil.

SIXTY-TWO: This permit allows for a method specification to be utilized for placement of Type 3 soils in the upper waterside surficial zone and the imported topsoil. To achieve desired relative density of levee backfill under the method specification the permittee shall make three passes with selected compaction equipment at specified speed and moisture content, excluding four (4) to six (6) inches of topsoil.

SIXTY-THREE: All cobbles greater than eight (8) inches in size shall be utilized in approved waterside slope protection areas, landside berms, or hauled off site.

SIXTY-FOUR: Placement of reconstructed levee fill shall be limited to the existing levee footprint and adjacent landside toe area and shall be done so as to not result in unstable outer levee slopes.

SIXTY-FIVE: Earthen material meeting the requirements designated in this permit and included Project Area D specifications shall be used when constructing or reconstructing the waterside levee slope and levee crown fill areas, and no cuts shall remain in the levee section upon completion.

SIXTY-SIX: Fill material shall be placed only within the area indicated in the approved plans and specifications. Placement of additional fill in excess of 1,500 cubic yards beyond what is specified in these plans shall require written authorization from the Board's Chief Engineer.

SIXTY-SEVEN: Density tests by a certified materials laboratory will be required to verify compaction of backfill within the project right of way (as described in Special Condition FORTY-FOUR, above). A method specification will be utilized in Type 3 zone fills for the upper waterside surficial zone. Density testing will not be required for seepage berm material, seepage berm platform fill, random fill - dredge tailing material, and for levee embankment fill (Soil Type 3).

SIXTY-EIGHT: The reconstructed levee crown roadway and access ramps shall be surfaced with a minimum of 3 inches of compacted, Class 2, aggregate base (Caltrans Specification 26-1.02A or equivalent) over three (3) inches of salvaged aggregate base.

SIXTY-NINE: Fluid pressures in the cutoff wall construction zone shall be monitored and controlled to

minimize the potential for hydrofracturing.

SEVENTY: Excess bentonite or other cutoff wall fluids shall be properly disposed of outside of the floodway. The bentonite or other cutoff wall fluids can be used as Type 1 or Type 2 backfill material for levee reconstruction if properly mixed within borrow or stockpile sites, and per the requirements within the contract specification for gradation, moisture and compaction.

SEVENTY-ONE: Aggregate base material shall be compacted to a relative compaction of not less than 95 percent per ASTM Method D1557 (2012) or equivalent, with a moisture content sufficient to obtain the required compaction, or per the Project Area D contract specifications for Exterior Improvements, Aggregate base course.

SEVENTY-TWO: Potholing may be required to determine whether the proposed levee degrade material meets current specifications. Potholes shall be performed perpendicular to the levee centerline at a minimal spacing of 2,500 linear-feet. If the investigation results reveal deviations in soil materials from the current specifications, the permittee shall notify the Board in writing, shall describe the nature and extent of the deviations, and shall propose a plan for Board consideration.

VEGETATION / ENVIRONMENTAL MITIGATION

SEVENTY-THREE: On January 16, 2014 the Board's Chief Engineer authorized advanced elderberry transplant work for Project Areas B, C, and D. The work is described in the Advanced Elderberry Transplant Authorization package and the Planting Details and Consultation Documents, which are attached to this permit as Exhibits D and E, respectively, and incorporated by reference.

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

SEVENTY-FIVE: The permittee shall replant or re-seed the levee slopes to restore sod, grass, or other non-woody ground covers if damaged during project work.

SEVENTY-SIX: The mitigation measures approved by the permittee and found in its Mitigation and Monitoring Reporting Program (MMRP) are made a condition of this permit. The permittee shall implement all such mitigation measures. The measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162(c). The permittee shall notify the Board's Environmental Section staff in advance of any proposed changes and shall submit supporting documentation for staff review and comment.

SEVENTY-SEVEN: In the event existing revetment on the channel bank or levee slope is disturbed or displaced, it shall be restored to its original condition upon completion of the proposed installation.

SEVENTY-EIGHT: In the event that levee or bank erosion injurious to facilities of the State Plan of Flood Control occurs at or adjacent to and as a result of the permitted flood system improvement project or related encroachment work, the permittee shall repair the eroded area and propose measures, to be approved by the Board, to prevent further erosion.

CONSTRUCTION COMPLETION

SEVENTY-NINE: All temporary fencing, gates and signs shall be removed upon completion of project.

EIGHTY: The project site including the levee section and access ramps shall be restored to at least the condition that existed prior to commencement of work.

EIGHTY-ONE: Upon completion of the project, the permittee shall perform a levee crown profile survey and create a photo record, including associated descriptions, of "as-built" levee conditions. The levee crown profile survey and photo record shall be certified (signed and stamped) by a licensed land surveyor or professional engineer registered in the State of California and submitted to the Board within 120 days of project completion.

EIGHTY-TWO: The permittee acknowledges that the levee improvements are designed to be constructed to match the existing levee crown profile and any settlement over time shall be addressed through future operations and maintenance or subsequent Board authorization. Per DWR's October 2013 Urban Level of Protection Criteria (ULOP), all findings determining an urban level of flood protection require a review every five (5) years including a written report and determination by a California licensed Professional Engineer. The report must either confirm that the urban level of flood protection for the specified project meets the guidelines pursuant to the ULOP or identify remediation measures to be completed over the subsequent five (5) years. The permittee or Maintenance Area 7, shall submit a comparison of the as-built survey to any subsequent surveys that may be required to confirm the urban level of flood protection and a copy of the written report to the Board's Chief Engineer within 30 days of its completion.

EIGHTY-THREE: When DWR releases the completed Central Valley Floodplain Evaluation and Delineation Program data the permittee will recalculate levee freeboard using only that data for both cross section and top of levee elevations. The permittee will develop and present a plan for Board approval to correct any freeboard deficiencies under this or a future phase of construction.

EIGHTY-FOUR: The potential for earthquake-induced levee damage and displacement along the Feather River West Levee Project will be incorporated into an Emergency Action Plan (EAP) in accordance with DWR Urban Levee Design Criteria (ULDC) requirements. The permittee shall submit the EAP to the Board staff for review and comment 180 days after completion of Project Area D construction.

EIGHTY-FIVE: Upon completion of the construction contract for Project Area D the permittee will conduct a Final Construction Walk-through for Board, Department of Water Resources, and U.S. Army Corps of Engineers staff. The walk-through is a condition for Board project acceptance, State funding, and as predecessor to U.S. Army Corps of Engineers system wide acceptance and eligibility for Public Law 84-99 rehabilitation and inspection program. This walk-through is critical to successful permit and project close-out.

POST-CONSTRUCTION

EIGHTY-SIX: Within 120 days of completion of the project, the permittee shall submit to the Board a certification report, stamped and signed by a professional civil engineer registered in the State of California, certifying the work was performed and inspected in accordance with Board permit

conditions and the permittee's submitted drawings and specifications, addenda and contract change orders.

EIGHTY-SEVEN: Within three years from completion of the construction of the work authorized under this permit, the permittee shall provide the Sacramento and San Joaquin Drainage District, acting by and through the Board, a permanent easement or joint use agreement granting all flood control rights upon, over and across the property to be occupied by the existing or to-be-reconstructed levee. The easement must include the project right of way (as described in Special Condition FORTY-FOUR) if the area is not presently encumbered by a Board easement. For information regarding Board easements please contact Angelica Aguilar at (916) 653-5782.

EIGHTY-EIGHT: If the project, or any portion thereof, is to be abandoned in the future, the permittee or Maintenance Area 7 shall abandon the project under direction of the Board and Department of Water Resources, at the permittee's cost and expense.

OPERATIONS AND MAINTENANCE

EIGHTY-NINE: The permittee shall maintain the permitted project works in the manner required by the approved Operations and Maintenance Manual, while under contract to do so. At which time maintenance responsibilities are transferred to the local maintaining agency (Maintenance Area 7), Maintenance Area 7 shall maintain the project works in the manner required by the supplement to the standard Operations and Maintenance Manual and any revisions thereto.

NINETY: Haul ramps and utilized levee crown roadway shall be maintained during construction in a manner prescribed by authorized representatives of the Board, Department of Water Resources, or any other agency responsible for maintenance.

NINETY-ONE: Within 180 days of completion of the project, the permittee shall submit to the Board proposed revisions to the U. S. Army Corps of Engineers, Supplement to Standard Operation and Maintenance Manual, Sacramento River Flood Control Project, and the associated "as-built" drawings for system alterations to be incorporated into the federal Sacramento River Flood Control Project.

NINETY-TWO: The improvements permitted herein are designed to manage flows from a storm with a probability of occurrence of .005 in any year (200-year protection). Permittee's design assumed that non-urban existing upstream levees will not be raised above the design for the Sacramento River Flood Control Project as shown on the 1957 profile. Permittee's design flow and calculations assumed no upstream levee overtopping where permittee's design storm water surface elevation exceeds the 1957 profile top of levee elevation. Permittee acknowledges that the adopted 2012 Central Valley Flood Protection Plan will be regularly updated by the State and that the plan and future updates could include improvements that would change the flow and water surface elevation associated with permittee's design storm, possibly reducing the level of protection provided by the permitted improvements. Permittee agrees to participate in future modifications to these levees as may be required by the Central Valley Flood Protection Plan and its subsequent updates. Permittee's level of participation shall be equivalent to the level required of other local jurisdictions by the Plan. Permittee further agrees that should the Plan include measures that reduce the level of protection provided by the permitted improvements, permittee shall have no basis for a claim of hydraulic impacts.

NINETY-THREE: Due to the limited performance data associated with the requested variances to Title 23 approved for this project, the permittee or Maintenance Area 7 shall provide the Board's Chief Engineer with the information described in Special Condition EIGHTY-TWO and an additional written determination to assure satisfactory levee performance and stability prior to each flood season and after each high water event. The written determination must be stamped and signed by a California licensed Professional Engineer stating that the levee is performing in the manner intended by the approved plans and specifications. The additional monitoring and reporting shall continue until three (3) consecutive high water events result in positive determinations. The method for making these determinations is the responsibility of the permittee, Maintenance Area 7, or agent thereof and shall be acceptable to the Board's Chief Engineer.

NINETY-FOUR: An irrigation canal owned and operated by Butte Water District, Sutter Extension Water District, and the Joint Water District (Irrigation Districts) is in close proximity to the federal levee and in some cases the east bank of the canal and the landside of the Feather River west levee are one and the same. The Sutter Butte Flood Control Agency has agreed to help coordinate and develop an agreement between the Department of Water Resources, levee districts(s), and the Irrigation Districts regarding the distinction and separation of maintenance responsibilities between the LMAs and the Irrigation Districts prior to the Board's acceptance of the Feather River West Levee Project Area D. The Board shall have up to 30 days after receipt of the agreement for comment. The Board and / or the Department of Water Resources may extend this review period up to 45 days by written notification.

END OF CONDITIONS

ATTACHMENT C2 – Exhibit A: USACE ROD

This documents has already been attached to this staff report package in Attachment C1, Exhibit A (removed for redundancy)

ATTACHMENT C2 – Exhibit B: USACE Letter of Permission

This letter has not yet been received by Board staff; however, it is expected to arrive prior to the Board Meeting on February 28, 2014

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
EDMUND G. BROWN JR., Governor

DEPARTMENT OF WATER RESOURCES
DIVISION OF FLOOD MANAGEMENT
P.O. BOX 219000
SACRAMENTO, CA 95821-9000

February 6, 2014

Mr. Michael W. Bessette, P.E.
Director of Engineering
Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991

State Maintenance Area 7 Endorsement for Feather River West Levee Project Area D

Dear Mr. Bessette:

The Department of Water Resources (DWR) Flood Maintenance Office (FMO) is responsible for maintaining Maintenance Area 7 (MA7) in Sutter County. The Sutter Butte Flood Control Agency (SBFCA) is anticipating beginning construction of a flood risk reduction project consisting primarily of a seepage cutoff wall in July 2014. MA7 boundaries within the Project Area D limits extend from approximately Station 1765+00 to Station 2294+00.

MA 7 has concerns regarding the extent to which the Project Area D will address known deficiencies. These concerns have been expressed in several plan reviews and in meetings with SBFCA and Central Valley Flood Control Board (CVFPB) staff. MA 7 acknowledges that SBFCA responded to the following concerns as part of Project Area D:

- Post-project maintenance on oversteepened levee slopes (greater than 2:1 (H:V) landside and 3:1 waterside) will continue to be difficult. It is understood that the levee slopes will be rebuilt to the pre-project geometry. The U.S. Army Corps of Engineers (USACE) Periodic Inspections along with PL84-99 eligibility require levee slopes to match as-constructed conditions. MA7 has been assured assured that the re-built slopes will not be any steeper than the original as-built drawings show.

- The Sutter Butte Main Canal routes parallel along the levee toe for a portion of the project. Because of the presence of the canal at the levee toe, the slope is more susceptible to slips and erosion. Maintenance of the levee slope and the canal needs to be clarified before the project is turned back over for operations and maintenance.

Provided these concerns are addressed by SBFCA, I hereby endorse the Feather River West Levee Project Area D.

If you have any questions or need additional information, please contact me at (530) 755-0071 or email at karen.hull@water.ca.gov.

Sincerely,

Karen Hull

Karen Hull, Superintendent
Sutter Maintenance Yard

cc: Jennifer Fasani (DWR)
David Williams (CVFPB)
David Pesavento (DWR)

ATTACHMENT C2 – Exhibit D: Elderberry Transplant Authorization

This document has already been attached to this staff report package in Attachment C1, Exhibit D (removed for redundancy)

ATTACHMENT C2 – Exhibit E: Elderberry As-built Planting Details and Construction Docs

This document has not been received by Board staff; however, it is expected to arrive prior to the Board Meeting on February 28, 2014

STATE OF CALIFORNIA – THE RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

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

October 30, 2012

Colonel William J. Leady
District Engineer
U.S. Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, California 95814

Subject: Feather River West Levee Project, Sutter Butte Flood Control Agency

Dear Colonel Leady:

Based on the Policy and Procedural Guidance for the Approval of Modification and Alteration of U.S. Army Corps of Engineers (USACE) Projects dated October 23, 2006, and the Clarification Guidance dated November 17, 2008, and on behalf of Sutter Butte Flood Control Agency (SBFCA) of Sutter and Butte Counties, the Central Valley Flood Protection Board (Board) is requesting permission from the USACE to alter a portion of the Sacramento River Flood Control Project (SRFCP). The Board is making this request pursuant to 33 U.S.C. Section 408.

The Board has conducted a preliminary review of the 65% project plans and specifications, geotechnical and hydraulic analyses, and other reports submitted by SBFCA for the alteration of 41 miles of federal flood control project levee located on the west side (right bank) of the Feather River from Thermalito Afterbay in Butte County, at the northern end of the project (Station 2368+00), to a point approximately four (4) miles north of the Feather River's confluence with Sutter Bypass in Sutter County, at the southern end of the project (Station 202+50). The Board has determined that SBFCA will accomplish this alteration in a manner that will not be injurious to the public interest and will not impair the usefulness of the SRFCP. Attached is the information you require to accompany this request, as outlined in your October 23, 2006 and November 17, 2008 guidance documents.

If the proposed project, upon completion, 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 constructed works.

Within 180 days of completion of the project alteration, the Board will provide both information to the USACE for the purposes of preparing a revised Operation and Maintenance Manual for this portion of the SRFCP, and as-built Plans and Specifications for the alteration.

In order to achieve the flood control benefits of this work, beginning with the 2013-2014 flood season, the Board is requesting that the USACE make any necessary determination so that SBFCA may proceed with this alteration by June 2013.

If you have any questions, please feel free to contact me at (916) 574-0609, or your staff may contact David R. Williams, Senior Engineer of the Board Projects Section, at (916) 574-2379.

Sincerely,

Jay S. Punia

Jay S. Punia
Executive Officer

Enclosure

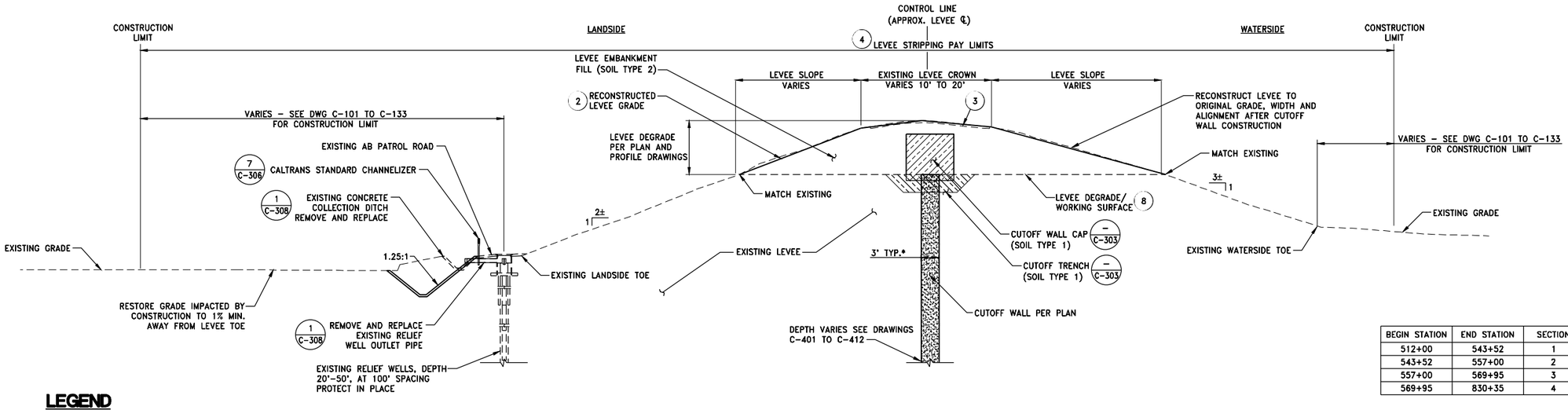
cc: Mr. Michael Inamine
Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, California 95991

Mr. Bill Hampton, General Manager
Levee District No. 1 of Sutter County
243 Second Street
Yuba City, California 95991

Mr. David Lamon, Chairman
Levee District No. 9 of Sutter County
1471 Coats Drive
Yuba City, California 95993

Mr. Mark List, Chief
Maintenance Support Branch
Department of Water Resources
Maintenance Areas 3, 7, & 16
3310 El Camino Ave.
Sacramento, California 95821

Ms. Karen Hull, Superintendent
Sutter maintenance Yard
Department of Water Resources
PO Box 40, State Hwy 20
Sutter, California 95982



BEGIN STATION	END STATION	SECTION	SHEET	REHABILITATION MEASURE
512+00	543+52	1	C-301	CUTOFF WALL WITH EXISTING RELIEF WELLS
543+52	557+00	2	C-301	CUTOFF WALL AND RELIEF WELLS
557+00	569+95	3	C-302	CUTOFF WALL AND RELIEF WELLS
569+95	830+35	4	C-302	CUTOFF WALL

LEGEND

- CUTOFF WALL CAP (SOIL TYPE 1)
- CUTOFF TRENCH (SOIL TYPE 1)
- CUTOFF WALL

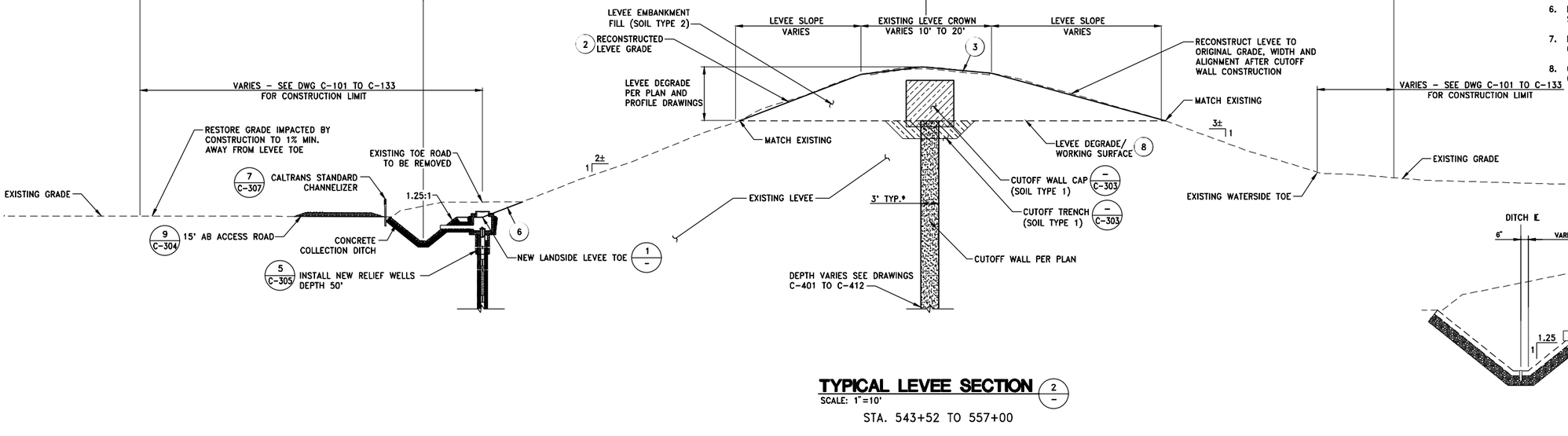
TYPICAL LEVEE SECTION 1/–

SCALE: 1"=10'

STA. 512+00 TO 543+52

NOTES:

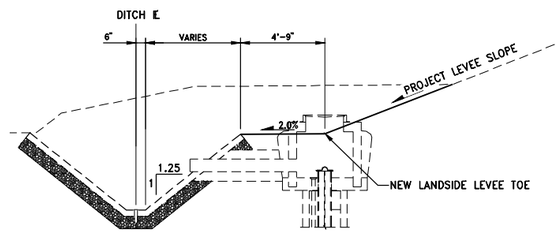
1. LEVEE EMBANKMENT FILL MATERIALS SHALL CONSIST OF IMPORT MATERIAL AND EXCAVATED LEVEE MATERIAL BLENDED AS REQUIRED TO MEET THE REQUIREMENTS OF SPECIFICATION 31 00 00.
2. RECONSTRUCTED LEVEE GRADE LINES SHOWN ARE EXCLUSIVE OF TOPSOIL PLACEMENT AND THE LEVEE CROWN ROADWAY.
3. SALVAGE EXISTING AGGREGATE BASE. RECONSTRUCT LEVEE CROWN ROADWAY IN ACCORDANCE WITH DETAIL ON DRAWING C-304.
4. STRIP LEVEE IN ACCORDANCE WITH SPECIFICATION 31 11 00.
5. LEVEE RAMPS ARE CONSIDERED LEVEE EMBANKMENT FILL AND SHALL BE CONSTRUCTED USING LEVEE EMBANKMENT FILL MATERIAL (SOIL TYPE 2).
6. REMOVE TOE ROAD FROM STA 543+60 TO STA 557+00. PROJECT LEVEE SLOPE TO THE NEW LANDSIDE LEVEE TOE.
7. MAINTAIN 90' OFFSET FROM CONTROL LINE OF LEVEE TO RELIEF WELL CONCRETE DITCH FLOW LINE UNLESS OTHERWISE NOTED ON THE PLANS.
8. CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.



TYPICAL LEVEE SECTION 2/–

SCALE: 1"=10'

STA. 543+52 TO 557+00



DETAIL 1/–

N.T.S.

* 3' WIDTH IS FOR CUTOFF WALLS CONSTRUCTED UTILIZING LONG-REACH EXCAVATORS. SEE THE TECHNICAL SPECIFICATIONS FOR THE REQUIRED WIDTH OF CUTOFF WALLS CONSTRUCTED BY ALTERNATIVE METHODS.

FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: C. CONTRERAS, P. BLUM
DRAWN BY: J. PRIEST
CHECKED BY: P. TOBIA
IN CHARGE: J. KORS
DATE: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER JONATHAN L. KORS No. C59538 Exp. 12/31/13 CIVIL STATE OF CALIFORNIA

WOOD RODGERS
DEVELOPING • INNOVATIVE • DESIGN • SOLUTIONS
3301 C STREET, BLDG. 100-B, SACRAMENTO, CA 95816
PHONE: (916) 341-7760 FAX: (916) 341-7767

SUBMITTED | APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 3: FRWL IMPROVEMENT PLANS (PROJECT B)

TYPICAL LEVEE SECTIONS

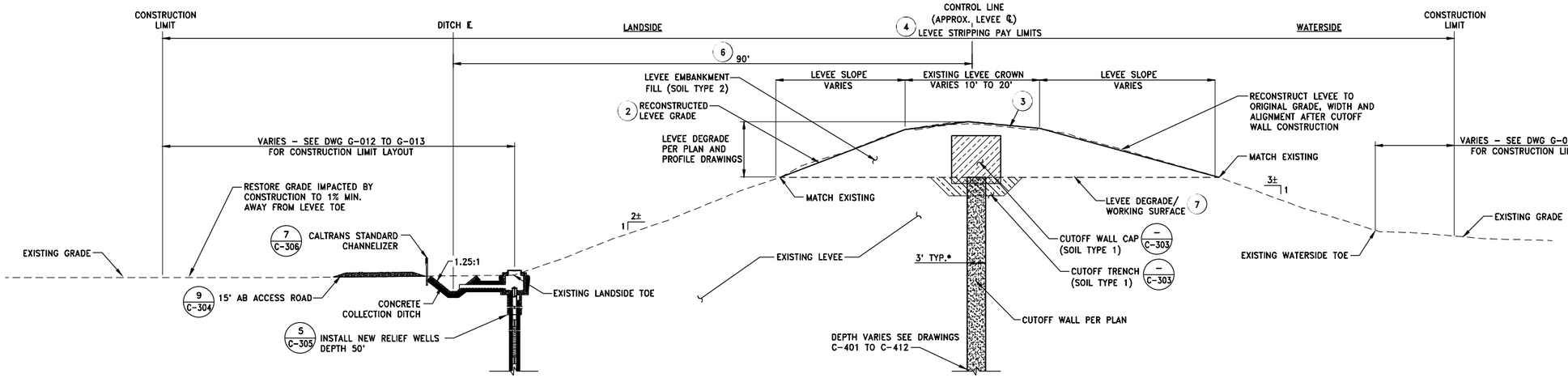
1 OF 2

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

DRAWING NO. C-301 | SHEET 59

J:\Jobs\8455_HDR_Sutter_Butte_FCA\FRWL_TO10_PROJ_B\Civil\Dwg\Levee_Plans\C_301_D11-01_FRWL_TO10_B-L.dwg 1/31/2014 6:53 AM Peter Blum

Attachment E1 - Typical Cross Sections (Area B)



TYPICAL LEVEE SECTION 3/–

SCALE: 1"=10'

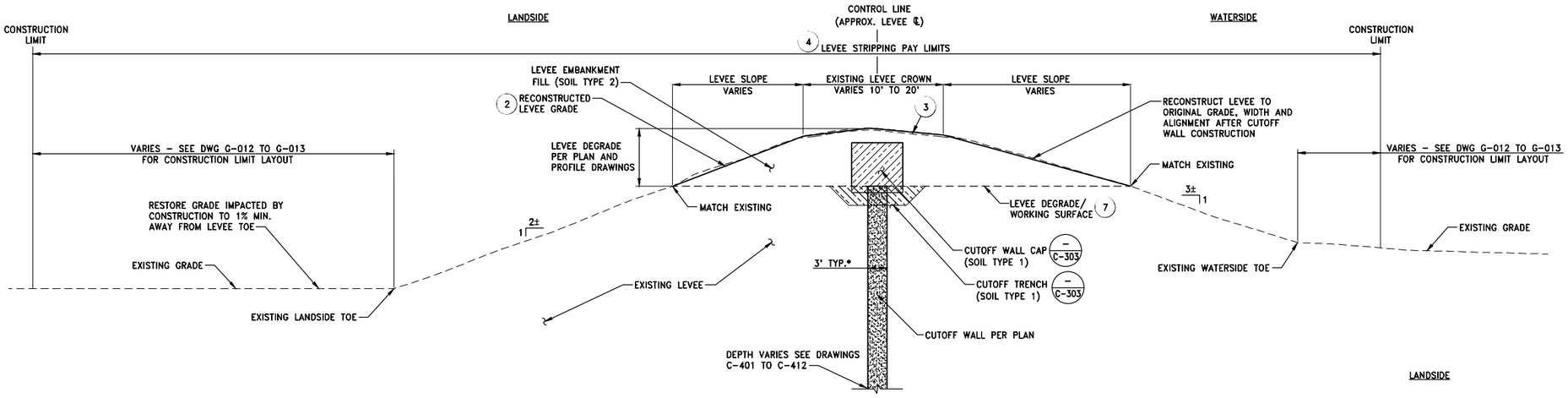
STA. 557+00 TO 569+95

LEGEND

- CUTOFF WALL CAP (SOIL TYPE 1)
- CUTOFF TRENCH (SOIL TYPE 1)
- CUTOFF WALL

NOTES:

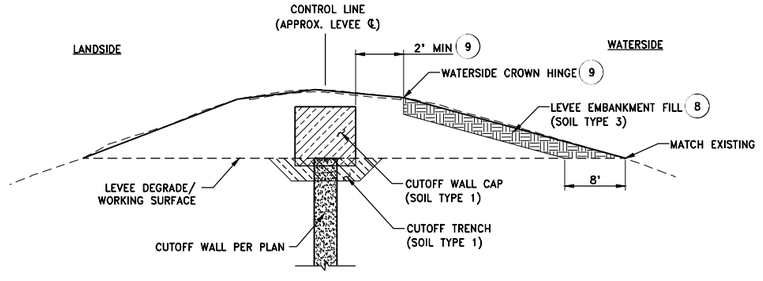
1. LEVEE EMBANKMENT FILL MATERIALS SHALL CONSIST OF IMPORT MATERIAL AND EXCAVATED LEVEE MATERIAL BLENDED AS REQUIRED TO MEET THE REQUIREMENTS OF SPECIFICATION 31 00 00.
2. RECONSTRUCTED LEVEE GRADE LINES SHOWN ARE EXCLUSIVE OF TOPSOIL PLACEMENT AND THE LEVEE CROWN ROADWAY.
3. SALVAGE EXISTING AGGREGATE BASE. RECONSTRUCT LEVEE CROWN ROADWAY IN ACCORDANCE WITH DETAIL ON DRAWING C-304.
4. STRIP LEVEE IN ACCORDANCE WITH SPECIFICATION 31 11 00.
5. LEVEE RAMPS ARE CONSIDERED LEVEE EMBANKMENT FILL AND SHALL BE CONSTRUCTED USING LEVEE EMBANKMENT FILL MATERIAL (SOIL TYPE 2).
6. MAINTAIN 90' OFFSET FROM CONTROL LINE OF LEVEE TO RELIEF WELL CONCRETE DITCH ℄ UNLESS OTHERWISE NOTED ON THE PLANS.
7. CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.
8. TOPSOIL SHALL NOT BE PLACED OVER SOIL TYPE 3 MATERIAL. THE FINAL GRADES OF SOIL TYPE 3 ZONE SHALL CORRESPOND TO THE PRE-STRIPPING SURVEYED LIMITS.
9. LEVEE EMBANKMENT FILL (SOIL TYPE 3) MAY BE PLACED UP TO THE WATERSIDE CROWN HINGE. SOIL TYPE 3 MATERIAL MAY NOT BE PLACED WITHIN THE LEVEE CROWN AREA OR WITHIN 2-FT OF LEVEE EMBANKMENT FILL (SOIL TYPE 1).



TYPICAL LEVEE SECTION 4/–

SCALE: 1"=10'

STA. 569+95 TO 830+35



TYPICAL LEVEE EMBANKMENT SOIL TYPE 3 FILL 5/–

N.T.S.

* 3' WIDTH IS FOR CUTOFF WALLS CONSTRUCTED UTILIZING LONG-REACH EXCAVATORS. SEE THE TECHNICAL SPECIFICATIONS FOR THE REQUIRED WIDTH OF CUTOFF WALLS CONSTRUCTED BY ALTERNATIVE METHODS.

FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: C. CONTRERAS, P. BLUM
DRAWN BY: J. PRIEST
CHECKED BY: P. TOBIA
IN CHARGE: J. KORS
DATE: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER JONATHAN L. KORS No. C59538 Exp. 12/31/13 CIVIL STATE OF CALIFORNIA

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SUBMITTED | APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 3: FRWL IMPROVEMENT PLANS (PROJECT B)

TYPICAL LEVEE SECTIONS

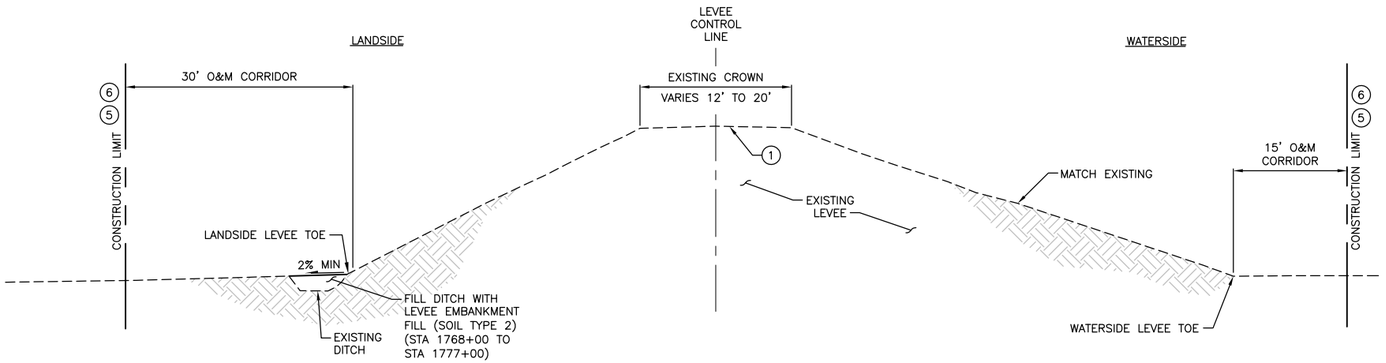
2 OF 2

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

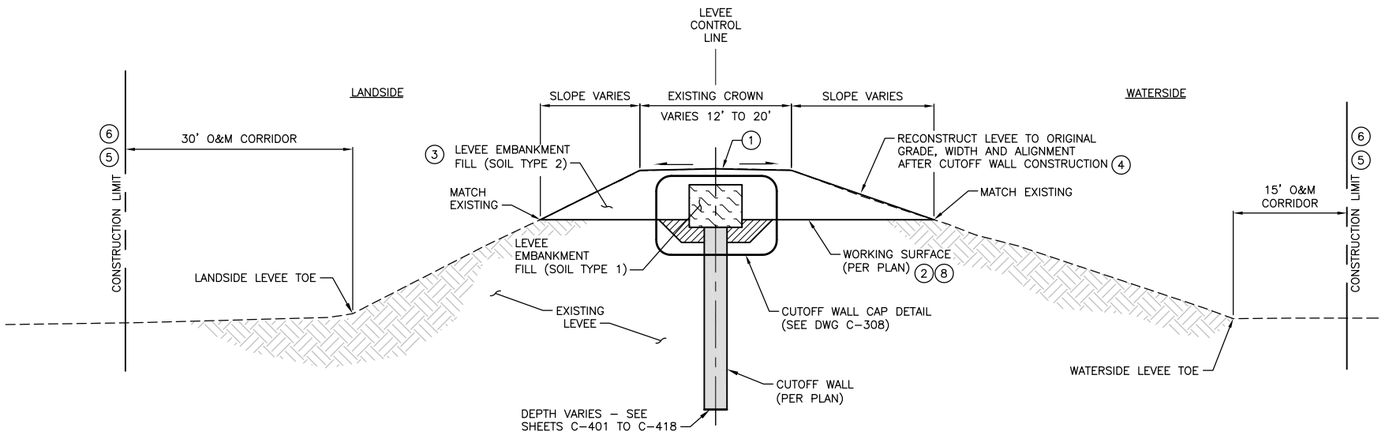
DRAWING NO. C-302 | SHEET 60

J:\Jobs\8455_HDR_Sutter_Butte_FCA\FRWL_T010_PROJ_B\Civil\Dwg\Levee_Plans\C_302_D11-02_FRWL_T010_B-L.dwg 1/31/2014 6:54 AM Peter Blum

Attachment E1 - Typical Cross Sections (Area B)



① LANDSIDE DITCH FILL
NTS



② TYPICAL CUTOFF WALL
NTS

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–306.
2. SEE LEVEE DEGRADE DETAIL ON SHEET C–306.
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–013 TO G–017 FOR CONSTRUCTION LIMIT LAYOUT.
7. RAMPS SHALL BE CONSTRUCTED WITH LEVEE EMBANKMENT FILL (SOIL TYPE 2) MATERIAL AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (RAMPS NOT SHOWN IN TYPICAL DETAILS).
8. CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.

LEVEE SECTION SCHEDULE

BEGIN	END	SECTION DESIGNATION	REHABILITATION MEASURE	DRAWING NO.
1765+00	1813+33	1	NONE	C–301
1813+33	1888+50	2	CUTOFF WALL	C–301
1888+50	1903+50	3	CUTOFF WALL	C–302
1903+50	1957+00	4	CUTOFF WALL	C–302
1957+00	2292+00	2	CUTOFF WALL	C–301
2291+00	2303+00	5	170 FT WIDE SEEPAGE BERM WITH PLATFORM FILL	C–303
2303+00	2331+00	–	NONE	–
2331+00	2335+00	6	120 FT WIDE SEEPAGE BERM WITH PLATFORM FILL	C–303
2335+00	2360+00	7	100 FT WIDE SEEPAGE BERM WITH PLATFORM FILL	C–304
2360+00	2368+26	8	100 FT SEEPAGE BERM	C–304

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: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER — DANIEL M. JABBOUR — C 63110 Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA — 2/5/2014

HDR Engineering Inc.
2365 Iron Point Rd. Suite 300
Folsom, CA 95630

SUBMITTED

APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 4: FRWL IMPROVEMENTS PLANS (PROJECT D)

TYPICAL LEVEE SECTIONS

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

DRAWING NO. C–301
SHEET 117

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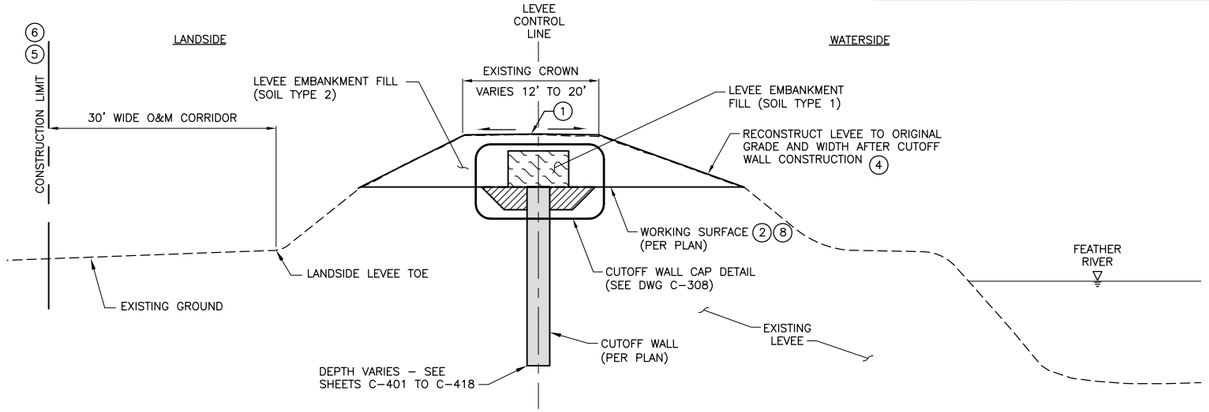
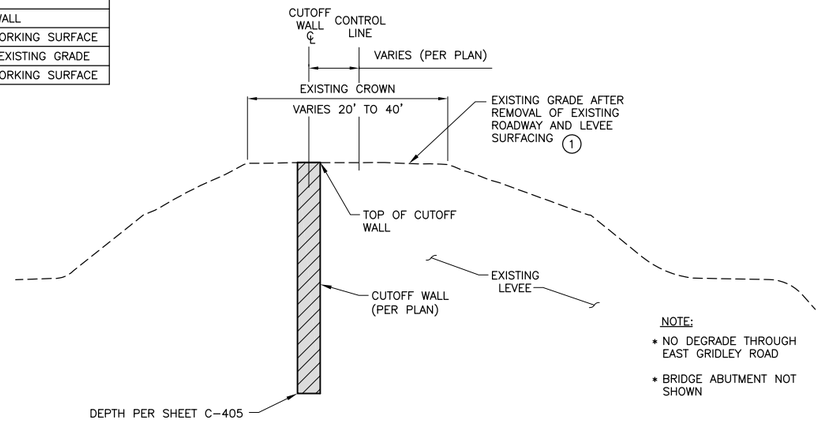
Attachment E2 - Typical Cross Sections (Area D)

CUTOFF WALL SCHEDULE		
FROM STA	TO STA	CUTOFF WALL
1888+50	1900+96	CUTOFF WALL FROM WORKING SURFACE
1900+46	1903+60	CUTOFF WALL FROM EXISTING GRADE
1903+10	1903+50	CUTOFF WALL FROM WORKING SURFACE



3 TYPICAL CUTOFF WALL
NTS

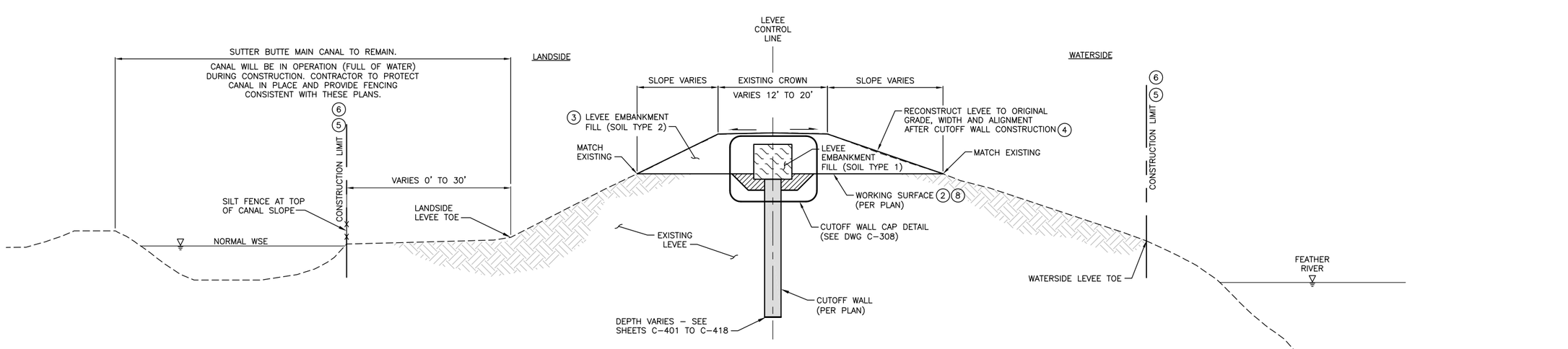


NOTE:
* NO DEGRADE THROUGH EAST GRIDLEY ROAD
* BRIDGE ABUTMENT NOT SHOWN

CUTOFF WALL FROM EXISTING GRADE
NTS STA 1900+46 TO 1903+60

NOTES:
1. CONTRACTOR SHALL SALVAGE EXISTING AGGREGATE BASE IN ACCORDANCE WITH THE SPECIFICATIONS. CROWN RESURFACING PER DETAIL ON SHEET C-306.
2. SEE LEVEE DEGRADE DETAIL ON SHEET C-306.
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). TOPSOIL SHALL NOT BE PLACED ON DREDGE TAILING MATERIAL.
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-013 TO G-017 FOR CONSTRUCTION LIMIT LAYOUT.
7. RAMPS SHALL BE CONSTRUCTED WITH LEVEE EMBANKMENT FILL (SOIL TYPE 2) MATERIAL AND IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (RAMPS NOT SHOWN IN TYPICAL DETAILS).
8. CONTRACTOR MAY ADJUST THE WORKING SURFACE ELEVATIONS INDICATED ON THE PLANS AS OUTLINED IN THE SPECIFICATIONS.

LEGEND:
- LEVEE EMBANKMENT FILL (SOIL TYPE 1)
- CUTOFF TRENCH (SOIL TYPE 1)
- CUTOFF WALL
- CUTOFF WALL FROM EXISTING GRADE



4 TYPICAL CUTOFF WALL DETAIL WITH CANAL AT LANDSIDE
NTS

FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: J. NETTLETON
DRAWN BY: A. JACKSON
IN CHARGE: D. JABBOUR
PROJECT MANAGER: C. KRIVANEC
DATE: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER — RAMZI M. JABBOUR — C 63110 — Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA — 2/3/2014

HDR Engineering Inc.
2365 Iron Point Rd. Suite 300
Folsom, CA 95630

SUBMITTED | APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 4: FRWL IMPROVEMENTS PLANS (PROJECT D)
TYPICAL LEVEE SECTIONS

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

DRAWING NO. C-302 | SHEET 118

Attachment E2 - Typical Cross Sections (Area D)

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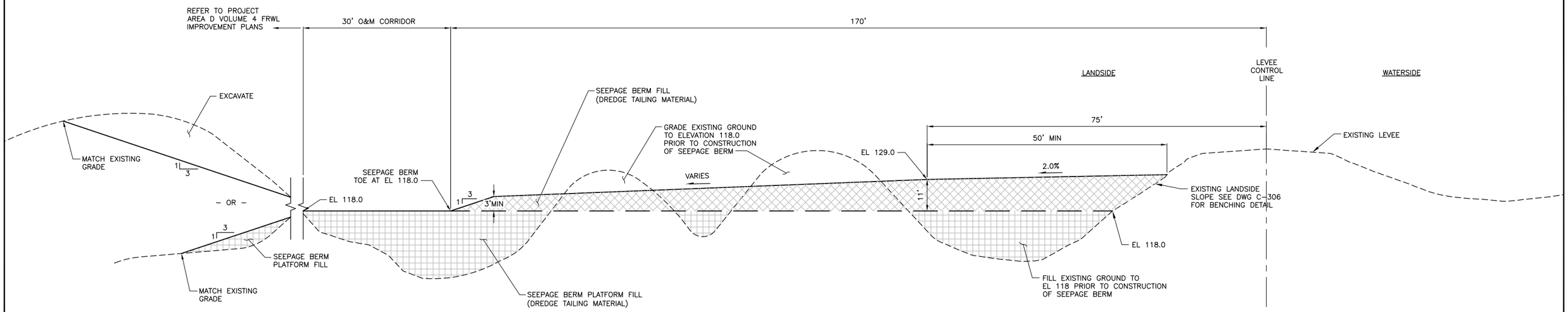
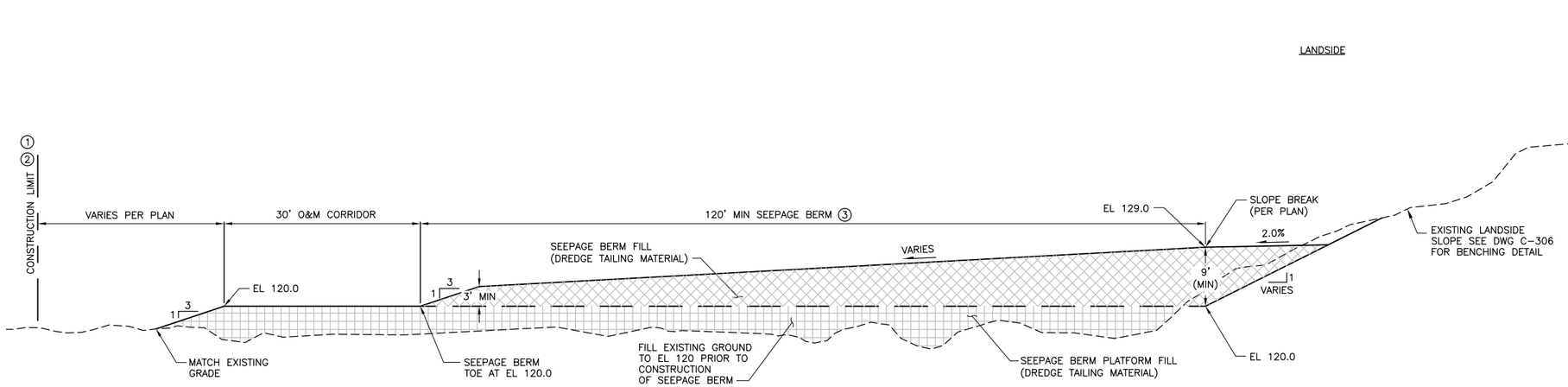


⑤ SEEPAGE BERM
NTS



⑥ 120–FT WIDE SEEPAGE BERM
NTS

NOTES:

1. CONSTRUCTION LIMIT SHOWN IS TYPICAL. VARIATIONS ARE SHOWN ON THE PLANS. SEE SHEET G–013 TO G–017 FOR CONSTRUCTION LIMIT LAYOUT.
2. CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE OF THE CONSTRUCTION LIMIT SHOWN ON THESE PLANS.
3. FILL MATERIAL SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

LEGEND:

- SEEPAGE BERM PLATFORM FILL (DREDGE TAILING MATERIAL)
- SEEPAGE BERM FILL (DREDGE TAILING MATERIAL)

FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: J. NETTLETON
DRAWN BY: A. JACKSON
IN CHARGE: D. JABBOUR
PROJECT MANAGER: C. KRIVANEC
DATE: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER — DANIEL M. JABBOUR — C 63110 Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA — 2/5/2014

HDR Engineering Inc.
2365 Iron Point Rd. Suite 300
Folsom, CA 95630

SUBMITTED

APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY

VOL 4: FRWL IMPROVEMENTS PLANS (PROJECT D)

TYPICAL LEVEE SECTIONS

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

DRAWING NO. C–303
SHEET 119

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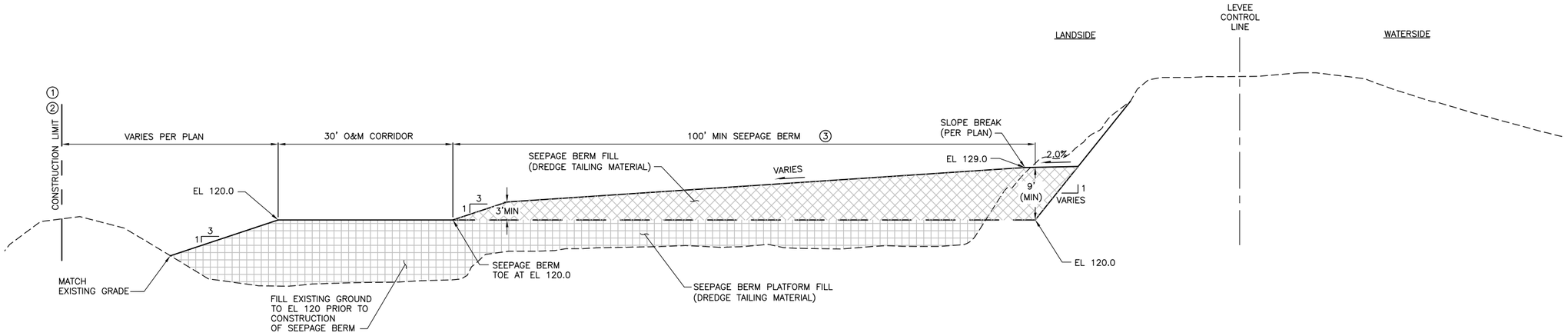
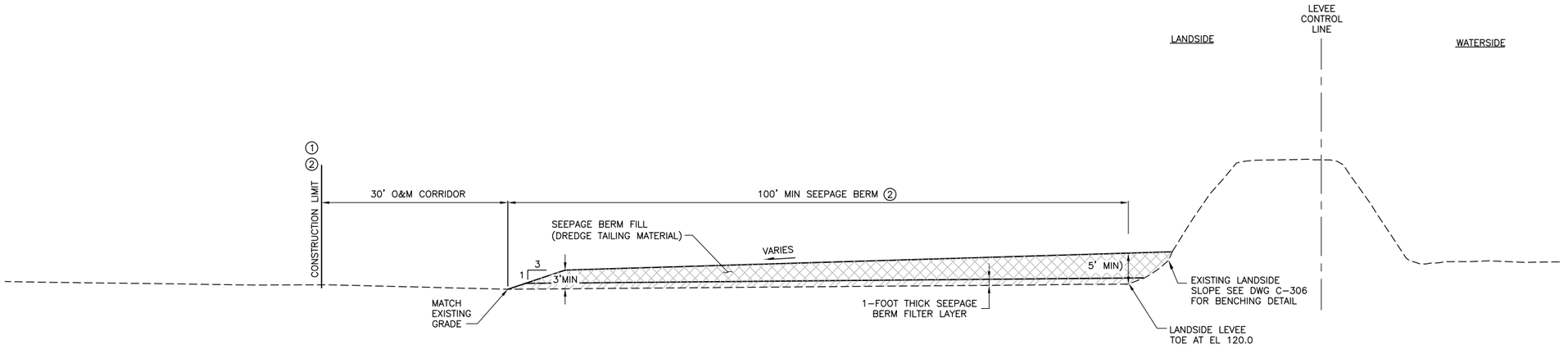
Attachment E2 - Typical Cross Sections (Area D)



⑦ 100–FT WIDE SEEPAGE BERM
NTS



⑧ 100–FT WIDE SEEPAGE BERM WITH FILTER DRAIN
NTS

NOTES:

① CONSTRUCTION LIMIT SHOWN IS TYPICAL. VARIATIONS ARE SHOWN ON THE PLANS. SEE SHEET G–013 TO G–017 FOR CONSTRUCTION LIMIT LAYOUT.

② CONTRACTOR SHALL NOT DISTURB AREAS OUT OF THE CONSTRUCTION LIMIT SHOWN ON THESE PLANS.

③ FINISH GRADE LINES SHOWN DO NOT INCLUDE PLACEMENT OF TOPSOIL. PLACEMENT SHALL BE PER PROJECT SPECIFICATIONS (4" MIN). TOPSOIL SHALL NOT BE PLACED ON DREDGE TAILING MATERIAL.

LEGEND:

- SEEPAGE BERM PLATFORM FILL (DREDGE TAILING MATERIAL)
- FILTER DRAIN
- SEEPAGE BERM FILL (DREDGE TAILING MATERIAL)
- RANDOM FILL (DREDGE TAILING MATERIAL)

FOR BID

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

REV.	DATE	BY	CHK.	APPR.	DESCRIPTION

DESIGNED BY: J. NETTLETON
DRAWN BY: A. JACKSON
IN CHARGE: D. JABBOUR
PROJECT MANAGER: C. KRIVANEC
DATE: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER — DANIEL M. JABBOUR — C 63110 — Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA — 2/5/2014

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Folsom, CA 95630

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SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 4: FRWL IMPROVEMENTS PLANS (PROJECT D)
TYPICAL LEVEE SECTIONS

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

DRAWING NO. C–304 | SHEET 120

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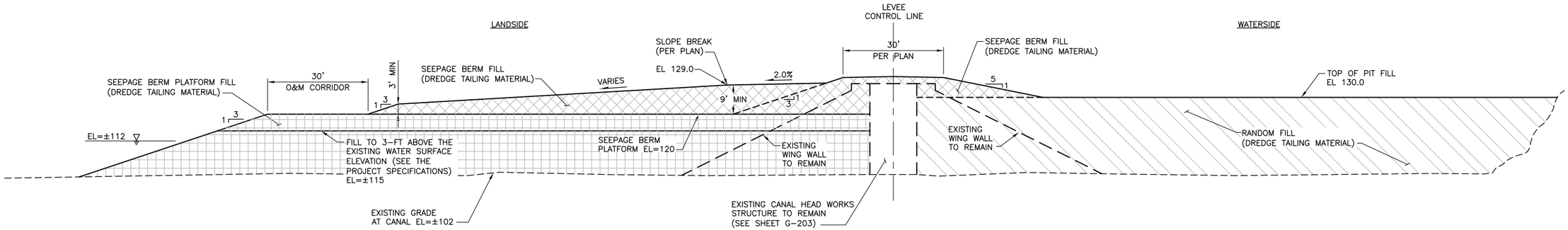
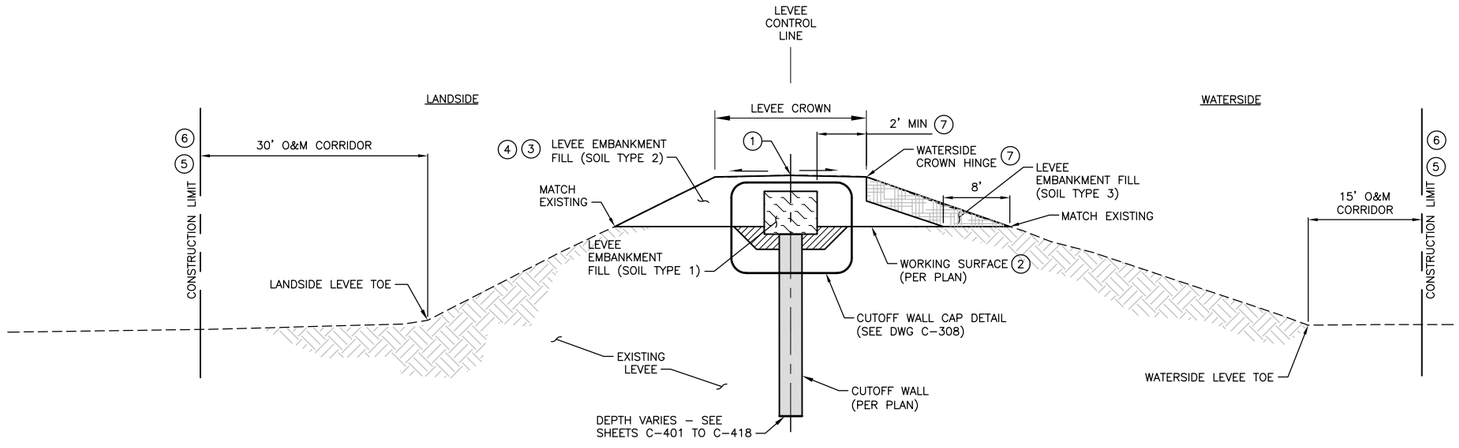
Attachment E2 - Typical Cross Sections (Area D)



⑨ LEVEE & SEEPAGE BERM AT CANAL HEAD WORKS STRUCTURE
NTS



TYPICAL LEVEE EMBANKMENT SOIL TYPE 3 FILL
NTS

NOTES:

1. CONTRACTOR SHALL SALVAGE EXISTING AGGREGATE BASE IN ACCORDANCE WITH THE SPECIFICATIONS. CROWN RESURFACING PER DETAIL ON SHEET C-306.
2. SEE LEVEE DEGRADE DETAIL ON SHEET C-306.
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-013 TO G-017 FOR CONSTRUCTION LIMIT LAYOUT.
7. LEVEE EMBANKMENT FILL (SOIL TYPE 3) MAY BE PLACED UP TO THE WATERSIDE CROWN HINGE. SOIL TYPE 3 MATERIAL MAY NOT BE PLACED WITHIN THE LEVEE CROWN AREA OR WITHIN 2-FT OF LEVEE EMBANKMENT FILL (SOIL TYPE 1).

LEGEND:

- SEEPAGE BERM PLATFORM FILL (DREDGE TAILING MATERIAL)
- SEEPAGE BERM FILL (DREDGE TAILING MATERIAL)
- RANDOM FILL (DREDGE TAILING MATERIAL)
- SOIL TYPE 3

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: 2/3/2014

REGISTERED PROFESSIONAL ENGINEER — DANIEL M. JABBOUR — C 63110 — Exp. 6/30/14 — CIVIL — STATE OF CALIFORNIA — 2/5/2014

HDR Engineering Inc.
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SUBMITTED | APPROVED

SUTTER BUTTE FLOOD CONTROL AGENCY
VOL 4: FRWL IMPROVEMENTS PLANS (PROJECT D)
TYPICAL LEVEE SECTIONS

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

DRAWING NO. C-305 | SHEET 121

Attachment E2 - Typical Cross Sections (Area D)

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Feather River West Levee Project
Water Surface Profiles

NAVD88-ft

150.00
140.00
130.00
120.00
110.00
100.00
90.00
80.00
70.00
60.00
50.00
40.00

Project Area B Downstream Extent STA 510+37

Project Area B Upstream Extent STA 830+00

Project Area D Downstream Extent STA 1674+37

Project Area D Upstream Extent STA 2368+00

100yr Max WSE
200yr Max WSE
500yr Max WSE
Top of Levee
100yr Max WSE +3'
200yr Max WSE +3'
1957 Profile

PETERSON . BRUSTAD . INC
ENGINEERING . CONSULTING

STA 250+00
STA 500+00
STA 750+00
STA 1000+00
STA 1250+00
STA 1500+00
STA 1750+00
STA 2000+00
STA 2250+00
STA 2500+00

Sutter Bypass Confluence STA 12+75
Star Bend STA 518+90
Shanghai Bend STA 830+00
HWY 20 STA 1026+16
Gridley Bridge STA 1902+19
Afterbay STA 2368+00

Wood Rodgers Levee Design STA

FIGURE 1
January 22, 2014

Attachment F - WS Profile (Overall FRWLP)

Feather River West Levee Project
Water Surface Profiles
Project Area B

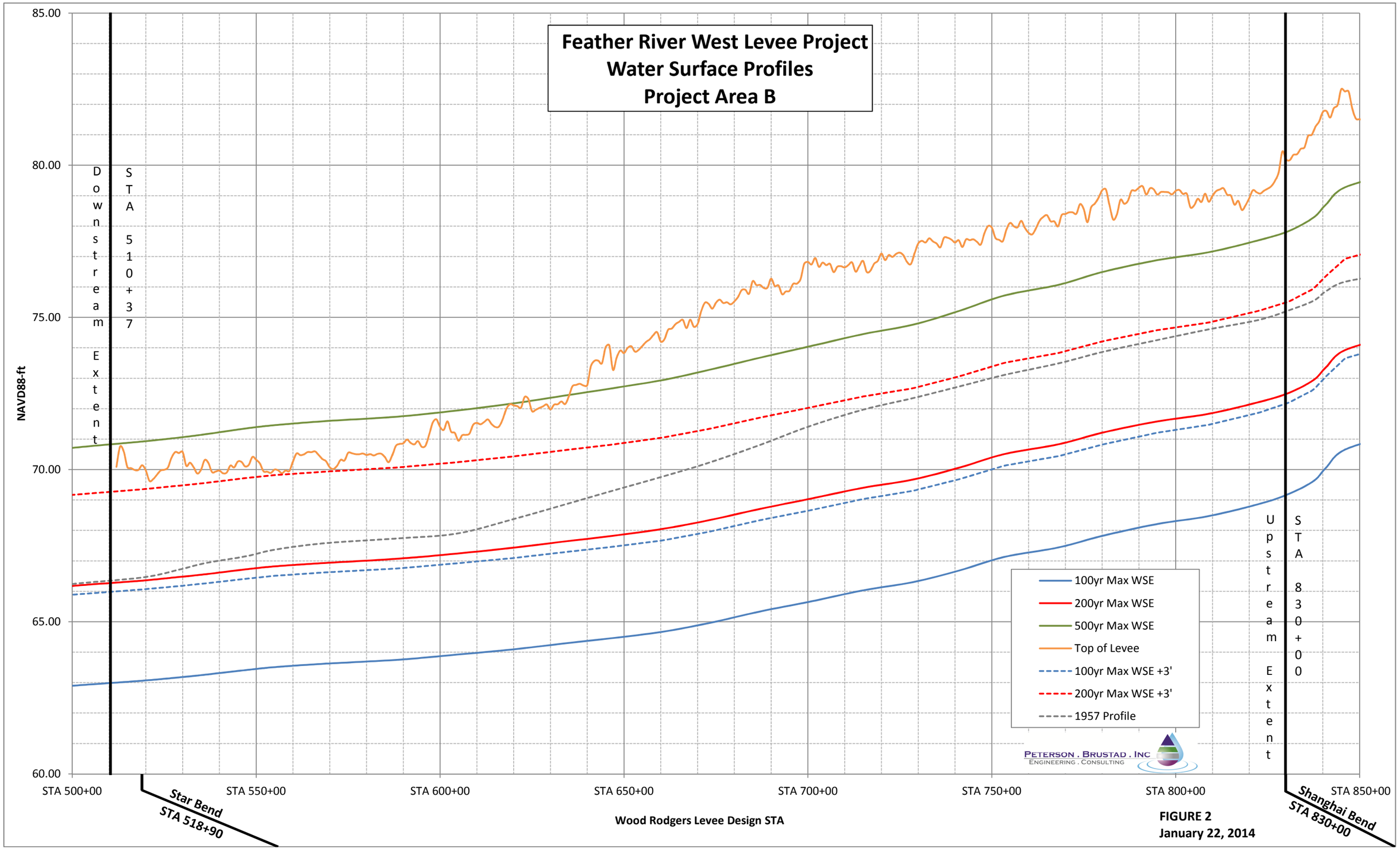

FIGURE 2
January 22, 2014

Attachment F1 - WS Profile (Area B)

Feather River West Levee Project
Water Surface Profiles
Project Area D

NAVD88-ft

145.00
140.00
135.00
130.00
125.00
120.00
115.00
110.00
105.00
100.00
95.00
90.00
85.00

Downstream Extent STA 1674+37

Upstream Extent STA 2368+00

STA 1650+00
STA 1750+00
STA 1850+00
Gridley Bridge STA 1902+19
STA 1950+00
STA 2050+00
STA 2150+00
STA 2250+00
STA 2350+00
Afterbay STA 2368+00
STA 2450+00

Wood Rodgers Levee Design STA

- 100yr Max WSE
- 200yr Max WSE
- 500yr Max WSE
- Top of Levee
- 100yr Max WSE +3'
- 200yr Max WSE +3'
- 1957 Profile

PETERSON . BRUSTAD . INC
ENGINEERING . CONSULTING

FIGURE 3
January 22, 2014

Attachment F2 - WS Profile (Area D)

Summary of Levee Deficiencies by Reach

Study Reach	Through-Seepage[a]	Under-Seepage[b]	Slope Stability[c]	Erosion	Encroachments
Project Area B					
7	X	X	*		X
8	X	X	*		X
9	X	X	*		X
10	X	X	*		
11	X	X	*		X
12					
Project Area D					
29					X
30	X	X	*		X
31		X	X		X
32	X	X	*		X
33	X	X	*		X
34	X	X	*		X
35	X	X	*		X
36	X	X	*		X
37	X	X	*		X
38	X	X	*		X
39					
40	X	X	*		X
41	X	X	*		X

Notes: An X signifies the levee deficiency applies to the levee reach.

[a] Through-seepage issues based on phreatic surface existing on the landside slope.

[b] Under-seepage issues based on exit gradient greater than 0.5 at the landside levee toe.

[c] A * signifies areas where through- and under-seepage issues exist and slope stability was not independently verified.

Levee Rehabilitation Measures by Reach

Study Reach	Length (ft)	Proposed Modification / Flood Control Measure
Project Area B		
7	8,563	510+37 to 513+95: No proposed rehabilitation measure as existing conditions meet criteria
		513+95 to 526+00: cutoff wall tip elevation +15 feet
		526+00 to 543+60: cutoff wall tip elevation -5 feet
		543+60 to 568+30: cutoff wall tip elevation -5 feet; 50-foot deep relief wells with spacing from 70 feet to 140 feet
		575+00 to 595+00: cutoff wall tip elevation -10 feet
		595+00 to 596+00: cutoff wall tip elevation +15 feet
8	5,875	596+00 to 654+75: cutoff wall tip elevation +15 feet
9	5,175	654+75 to 670+00: cutoff wall tip elevation +15 feet
		670+00 to 697+00: cutoff wall tip elevation +20 feet
		697+00 to 706+50: cutoff wall tip elevation -10 feet
10	6,750	706+50 to 726+00: cutoff wall tip elevation -10 feet
		726+00 to 746+00: cutoff wall tip elevation -5 feet
		746+00 to 754+50: cutoff wall tip elevation +5 feet
		754+50 to 774+00: cutoff wall tip elevation +25 feet
11	5,600	774+00 to 784+50: cutoff wall tip elevation +25 feet
		784+50 to 827+50: cutoff wall tip elevation -5 feet
		827+50 to 830+00: cutoff wall tip elevation +25 feet
12	1,500	830+00 to 830+35: cutoff wall tip elevation +25 feet
		830+35 to 845+00: No proposed rehabilitation measure as existing conditions meet criteria
Project Area D		
29	4,402	No proposed rehabilitation measure as existing conditions meet criteria
30	8,867	1813+33 to 1816+50: cutoff wall tip elevation +80 feet, with full levee degrade and reconstruction
		1816+50 to 1848+25: cutoff wall tip elevation +30 feet
		1848+25 to 1866+00: cutoff wall tip elevation +70 feet
		1866+00 to 1877+75: cutoff wall tip elevation +47 feet
		1877+75 to 1883+00: cutoff wall tip elevation +40 feet
		1883+00 to 1902+00: cutoff wall tip elevation +27 feet
31	5,600	1902+00 to 1907+50: cutoff wall tip elevation +27 feet
		1907+50 to 1917+50: cutoff wall tip elevation +44 feet 1903+00 to 1910+00: waterside slope flattening or other appropriate measures
		1917+50 to 1927+50: cutoff wall tip elevation +75 feet
		1927+50 to 1937+00: cutoff wall tip elevation +50 feet
		1937+00 to 1958+00: cutoff wall tip elevation +40 feet
32	3,100	1958+00 to 1971+00: cutoff wall tip elevation +40 feet
		1971+00 to 1987+25: cutoff wall tip elevation +48 feet
		1987+25 to 1989+00: cutoff wall tip elevation +10 feet
33	13,300	1989+00 to 2002+00: cutoff wall tip elevation +10 feet
		2002+00 to 2016+75: cutoff wall tip elevation +90 feet
		2016+75 to 2036+75: cutoff wall tip elevation +20 feet

		2036+75 to 2041+00: cutoff wall tip elevation +53 feet 2041+00 to 2067+00: cutoff wall tip elevation +38 feet 2067+00 to 2088+00: cutoff wall tip elevation +33 feet 2088+00 to 2122+00: cutoff wall tip elevation +90 feet Landside Slope Flattening from Station 2106+00 to 2113+00 to 2.3H:1V or flatter
34	6,000	2122+00 to 2137+00: cutoff wall tip elevation +90 feet 2137+00 to 2148+00: cutoff wall tip elevation +20 feet 2148+00 to 2164+00: cutoff wall tip elevation +90 feet 2164+00 to 2182+00: cutoff wall tip elevation +50 feet
35	4,200	2182+00 to 2196+50: cutoff wall tip elevation +40 feet 2196+50 to 2212+00: cutoff wall tip elevation +45 feet 2212+00 to 2218+25: cutoff wall tip elevation +50 feet 2218+25 to 2224+00: cutoff wall tip elevation +55 feet
36		2224+00 to 2233+50: cutoff wall tip elevation +55 feet 2233+50 to 2258+25: cutoff wall tip elevation +70 feet 2258+25 to 2259+00: cutoff wall tip elevation +42 feet
37	3,100	2259+00 to 2277+00: cutoff wall tip elevation +42 feet 2277+00 to 2290+00: cutoff wall tip elevation +45 feet
38	1,300	2290+00 to 2303+00: up to 11 foot high seepage berm that extends horizontally at elevation 200 year + 4 feet for a distance of 50 feet from the landside slope of the levee before tapering to a height of 3 feet at the berm toe at a distance of 170 feet from the centerline of the existing levee.
39	1,600	No proposed rehabilitation measure as existing conditions meet criteria
40	4,000	2319+00 to 2331+00: no mitigation measure 2331+00 to 2335+00: seepage berm 120 feet wide, 9 feet thick at the levee toe and 3 feet at the berm toe 2335+00 to 2359+00: seepage berm 100 feet wide, 9 feet thick at the levee toe and 3 feet at the berm toe
41	900	2359+00 to 2368+00: Seepage berm 100 feet wide, 5 feet thick at levee toe with a 1 foot thick filter layer (ASTM C33 fine aggregate) at bottom and across seepage berm. Seepage berm thickness of 5 feet includes 1 foot of filter layer and 4 feet of seepage berm material at levee toe. A geotextile separator, compatible with ASTM C33 fine aggregate, should be placed on top of the ASTM C33 fine aggregate layer.

Sutter Butte Flood Control Agency
1227 Bridge Street, Suite C
Yuba City, CA 95991
(530) 870-4425
sutterbutteflood.org

Counties
Butte County
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Cities
City of Biggs
City of Gridley
City of Live Oak
City of Yuba City

Levee Districts
Levee District 1
Levee District 9

February 3, 2014

Mr. Len Marino
Chief Engineer
Central Valley Flood Protection Board
3310 El Camino Avenue, Ste LL40
Sacramento, California 95821

Subject: **Feather River West Levee Project - Project Areas B & D Variance Requests**

Dear Mr. Marino:

As you know, the Sutter Butte Flood Control Agency (SBFCA) is already under construction with Project Area C (Shanghai Bend to Live Oak) of the Feather River West Levee Project (FRWLP), and plans to go to bid with Project Area B (Star Bend to Shanghai Bend), and Project Area D (Live Oak to Thermalito) in early 2014.

The FRWLP comprises the work necessary to partially rehabilitate the level of flood protection along the western levee of the Feather River in Sutter and Butte Counties. The target level of flood protection is a 200-year (0.5 percent annual chance) level of protection. The major deficiencies that currently exist along the levee system involve underseepage and slope stability and will be addressed through the construction of a combination of cutoff walls (soil-bentonite or soil-cement-bentonite), seepage berms, and relief well systems. In addition to remediating underseepage and slope stability deficiencies, the FRWLP will also upgrade existing pipe penetrations and will resolve many of the levee encroachment issues that currently exist along the levee system.

We have submitted encroachment permits to the Central Valley Flood Protection Board (CVFPB) for Project Area B and Project Area D, and we are currently working with your staff to address comments raised during their review of our application requests. Our shared goal is that your Board will consider our encroachment applications at their February 28, 2014 Board meeting.

CVFPB staff review has indicated that Project Area B and Project Area D will require variances to the California Code of Regulations, Title 23 (CCR 23), Waters, Division 1, Article 8 Standards under the following sections:

- CCR 23, § 108, Existing Encroachments within an Adopted Plan of Flood Control
- CCR 23, § 120, Levees
- CCR 23, § 123, Pipelines, Conduits and Utility Lines

In accordance with CCR 23, § 11 (b), please accept this letter as SBFCA's formal request for approval of the variances listed in the enclosed attachments.

Compliance with the Board's standards for these items is infeasible as detailed in the attachments.

If you have any questions, please contact me at (916) 679-8861.

Sincerely,
Sutter Butte Flood Control Agency

Michael W. Bessette, P.E.
Director of Engineering

cc: Eric Butler, CVFPB
Nancy Moricz, CVFPB

Attachments

Attachment 1

Variances Common to Project Area B & Project Area D

Attachment 1 – List of Variances Common to Project Areas B & D

Below are listed the variances being requested by SBFCA which are common to Project Areas B & D.

A. CCR 23, § 120, Levees

1. Use of Cohesionless Soil in Outer Shells for Reconstructed Zoned Levee

The major deficiencies that currently exist along the FRWLP involve underseepage and slope stability. The principal approach for addressing these deficiencies is to construct a cutoff wall (soil-bentonite or soil-cement-bentonite) through the levee and into the foundation. The depth of the slurry wall will commonly range from 30 feet to 80 feet, but will extend up to 110 feet in some locations, depending on the aquifers and aquacludes present beneath the levee. The slurry wall will provide an impervious element that will greatly reduce seepage and underseepage during flood events and will also improve the stability of the levee.

The United State Army Corps of Engineers (USACE) requires that the levee be degraded by approximately one-third its height for the construction of a cutoff wall. This is to preclude hydraulic fracturing of the levee during cutoff wall construction, leaving behind a soft element in the upper one-third of the levee embankment that might affect slope stability, and to provide an adequate working width and surface for the construction of the cutoff wall. Following the construction of the cutoff wall, the levee will be constructed back to its previous geometry by reusing the excavated soils from the degrading of the levee. To provide an impervious element in the upper one-third of the levee above the cutoff wall, an 8-foot-wide clay core zone will be constructed above and connected to the cutoff wall. The sequence of cutoff wall construction and levee rebuilt is illustrated in Figure 1.

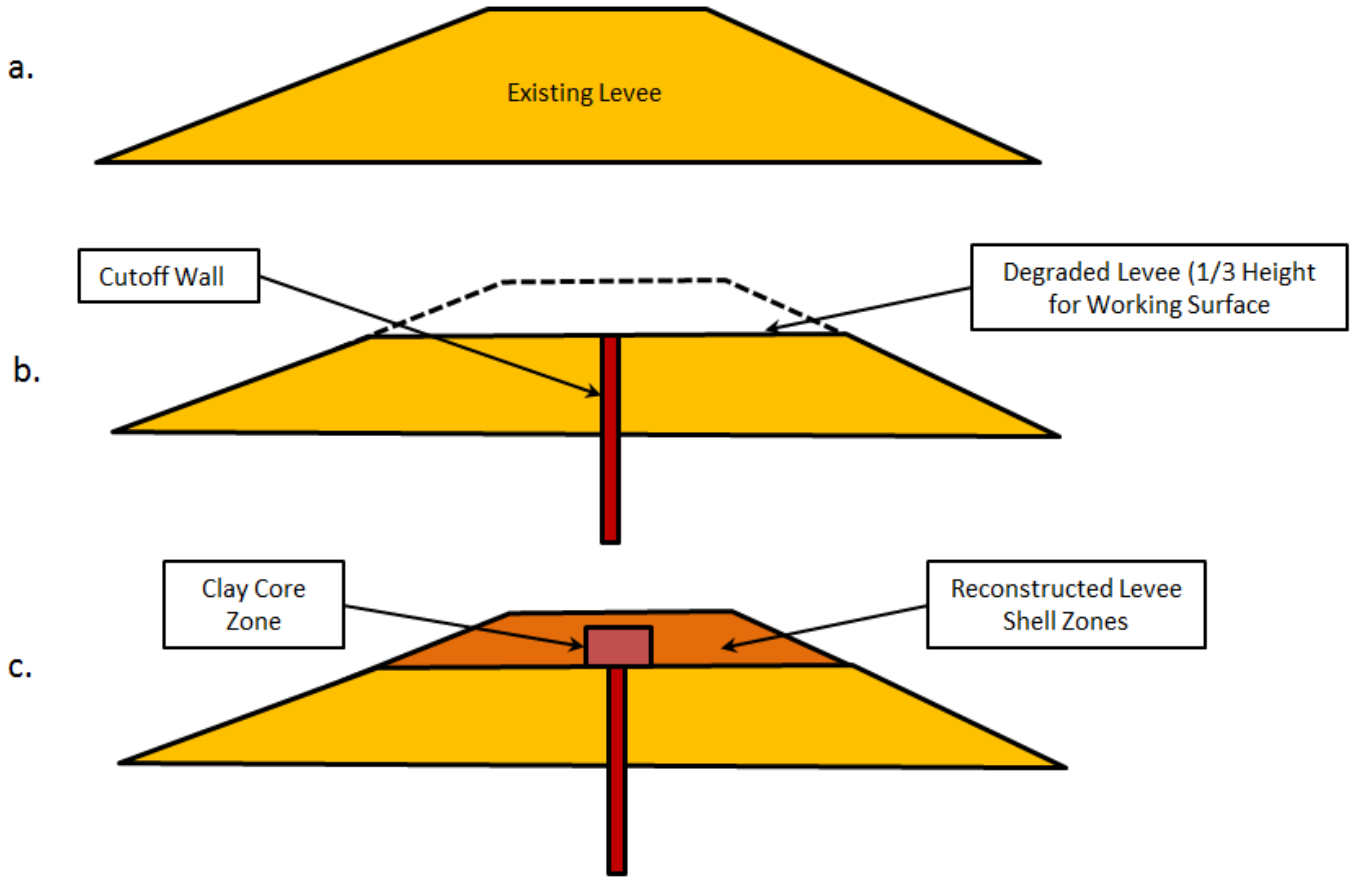

Figure 1: Schematic Sequence of Cutoff Wall Construction and Levee Reconstruction

The slurry wall construction approach is to degrade the levee, stockpile the degraded levee soil for reuse, construct the cutoff wall, and then reconstruct the levee back to its original geometry using the stockpiled material, together with the construction of the clay core. However, the existing levee material sometimes does not meet the minimum fines content of 20 percent or the minimum plasticity index of 8 specified for impervious levee embankment material by Title 23. Title 23 states:

> (12) Impervious material, with twenty (20) percent or more of its passing the No. 200 sieve, and having a plasticity index of eight (8) or more, and having a liquid limit of less than (50), must be used for construction of new levees and the reconstruction of existing levees. Special construction details (e.g., 4:1 slopes) may be substituted where these soil properties are not readily attainable. Where the design of a new levee structure utilizes zones of various materials or soil types, the requirements of this subdivision do not apply.

Much of the existing levee along the FRWLP contains sandy fill that would not meet the impervious material requirement above if it was to be reused in the levee. However, it is

clear that the intent of these requirements is for a *homogeneous* levee fill. For a zoned levee structure, as is the reconstructed portions of the FRWL with a clay core, these requirements are not necessary as the clay core provides the seepage protection that is needed for levee integrity. As the last sentence in the Title 23 subsection states, ***"Where the design of a new levee structure utilizes zones of various materials or soil types, the requirement of this subdivision do not apply."***

Because there may be some uncertainties and lack of clarity with regard to the use of a zoned levee, this variance is being requested. Specifically, the request is to allow reuse of the existing levee material, including sandy soils, in the outer portions of a zoned levee section for the reconstructed upper portion of the levee. This would be for the upper one-third of the levee after completing the slurry wall construction and would be in lieu of meeting the Title 23 impervious material requirements for an overall levee section. Support for this request includes the following:

i. Since the reconstruction of the levee includes the use of a central clay core, it is not subject to the impervious material requirements as it is a new levee structure which utilizes zones of various materials and soil types. Actually, the entire levee section would become a newly zoned levee as the lower two-thirds would have an impervious cutoff wall in it as well.

ii. The design of the reconstructed levee section with a central clay core and potentially sandy shell zones outside of the core has been analyzed and it meets all state and federal seepage and slope stability criteria. The clay core zone provides the impervious element in the design.

iii. The zoned levee that is proposed for the FRWL Project, including sandy shells, has been accepted by the Soil Design Section of the Sacramento District of the United States Army Corps of Engineers and by an Independent Board of Consultants.

iv. The USACE allow sandy shell zones to exist in levees if there is an impervious element such as a cutoff wall. Examples include levees in Marysville, Natomas, the Pocket Area along the Sacramento River, and along the American River.

v. If the existing levee material is not allowed to be used to rebuild the outer portions of the levee embankment, hundreds of thousands of cubic yards of levee material would have to be spoiled and a similar amount of new impervious material will have to be excavated elsewhere and hauled in. This would needlessly cost the State and local agencies many millions of dollars. It would also create additional impacts to the community with regard to traffic, noise, and dust impacts. It would also potentially create additional environmental impacts that would have to be mitigated at the borrow sites for this material.

vi. The potentially sandy material that would be reused in the outside shell zones is the same material that is already in place. However, it will better than it is today because after excavation, stockpiling, and recompaction, it will be more blended and compacted.

vii. Existing topsoil will be removed prior to degrading the levee and stockpiled. Following reconstruction of the levee embankment, the topsoil will be placed on top of the rebuilt section and seeded to provide erosion protection.

This variance request is consistent with the earthwork variance requested for Project Area C (CVFPB Permit 18793-1).

2. Request for Earthwork Variance 2: Compaction Requirements for Cohesionless Soils

Title 23 requires levee material to be compacted to meet either 90 percent relative compaction per ASTM D1557 compaction efforts or 97 percent relative compaction per ASTM D698 compaction requirements. For most of the FRWL Project where cohesive soils will be used, we will adhere to Title 23 and require 97 percent relative compaction per ASTM D698. However, for the outside shell zones discussed above, there will be cases where the soil is sandy and has relatively few fines. Accordingly, ASTM D698 is not an appropriate compaction standard for such material, and there is no specific guidance in Title 23 for the compaction of such materials. Therefore, we propose using relative density rather than relative compaction for cohesionless material with less than 15 percent fines contents and to require a minimum of 60% relative density per ASTM D4253/D4254 methods. This approach has been approved by both the Soil Design Section of the Sacramento District of the Corps of Engineers and by an Independent Board of Consultants.

This variance request is consistent with the earthwork variance requested for Project Area C (CVFPB Permit 18793-1).

3. Moisture Content Requirements for Cohesionless Soils Tested in Compliance with Test Methods for Cohesive Soils

Cohesionless soils used to construct the outside shell zones discussed above may be tested in compliance with the test methods provided for cohesive soils if the Contractor can demonstrate a well-defined maximum dry density prior to placement at the fill site. The Moisture Content specified for Cohesive Soils is not appropriate and there is no specific guidance in Title 23 for the Moisture Content of such material. Therefore, we propose using a Moisture Content within the limits of 3 percentage points above optimum to 3 percentage points below optimum for this material.

4. Use of Type 3 Material in Upper Waterside Slope of the Levee

Cobble zones of slope protection have been identified on the surface of both the land and water sides of the levee. This material is identified as Levee Embankment Fill (Soil Type 3) in the project specifications and on the improvement plans. Soil Type 3 material is well graded with a maximum particle size of 8-inches and contains no organic content. It is proposed that this material, where encountered, be placed in the rebuilt upper levee areas outside of the clay core and on the waterside slope of the levee consistent with the detail on the improvement plans. Soil Type 3 Material would be placed in 12-inches of uncompact thickness then compacted by three complete passes of a vibratory roller.

This variance request is consistent with the earthwork variance requested for Project Area C (CVFPB Permit 18793-1).

5. Use of Impervious Material with a Liquid Limit Equal to or Less Than 65

Title 23 requires that impervious materials used in levee construction have a liquid limit of less than 50. Title 23 also indicates that "***Where the design of a new levee structure utilizes zones of various materials or soil types, the requirements of this subdivision do not apply***" but provides no guidance regarding the liquid limit to be used for a zoned embankment. Therefore, we propose using a liquid limit of 65 or less for impervious fill (Soil Type 1 Material). This material is readily available from the borrow source designated for Project Area D and would allow the Contractor to maximize the use of borrow material.

The project specifications and the improvement plans limit impervious fill (Soil Type 1 Material) placed within the top 1.5-feet of the levee embankment or within 5-feet of structures to a liquid limit equal to or less than 45. This requirement would not be modified as a part of this variance.

B. CCR 23, § 123, Pipelines, Conduits and Utility Lines

(See Table A1.1 below)

TABLE A1-1 - PIPE RELATED VARIANCES FOR PROJECT AREAS B & D

Title 23 Standard	Title 23 Variance Request	No. of Occurances in Project B	No. of Occurances in Project D
123(d)(1). The installation of a fluid or gas carrying pipeline in a levee section or within ten (10) feet of the toe parallel to the centerline is not permitted. -Allow the pipeline to be located within the theoretical levee section but above the 200 year water surface and 1957 WSEL.	123(d)(1). To install the pipeline out of the theortical levee prism, which is defined by the 200 year WSEL plus 3 foot of freeboard, the center line of the levee would need to be raised about 1 foot. The pipeline as designed would be located about the 200 year and 1957 WSEL but would be located within the theortical levee prism.	4	0
123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB	11	26
123(d)(7). Pipelines carrying gas or fluids under pressure must have a readily accessible rapid closure device located within ten (10) of the landside levee toe - All readily accessible rapid closure device to be located at waterside hinge of levee.	123(d)(7). The Design includes a positive closure device located on the waterside edge of levee crown. DWR ULDC requires a closure device to be located at the waterside hinge. The variance shall allow our project to meet DWR ULDC criteria without having two gate/butterfly valves on the pipeline resulting in increased head and O&M.	0	1
123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipeline	123(e)(1). The current owner is not a public agency.	0	10
123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth.	123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern.	0	10
123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.	6	9
123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe.	123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings.	0	13

Attachment 2

Project Area B List of Variances

Attachment 2 – Project Area B List of Variances

Below are listed the variances being requested by SBFCA for Project Area B.

A. CCR 23, § 120, Levees

1. Shared Farm Access Road at the Landside Levee Toe from Station 532+00 to 674+50

The Sierra Gold Nursery operates a tree nursery on agricultural lands located adjacent to the Feather River West levee. As part of the nursery operations, an all-weather access road was constructed at the landside levee toe. This access road provides an ideal surface for Levee District 1 access during winter months. Relocating this access road outside of the levee right of way would require acquisition of additional private lands and relocating the access onto private lands, making it unavailable for use by Levee District 1. Therefore SBFCA is proposing to leave the access road in its current location to allow for continued use by the nursery and by Levee District 1. Because Sierra Gold Nursery requires access throughout the year, the road would be constructed with all-weather surfacing. CCR 23, § 120, (c) allows pavement for roadways or similar uses within ten (10) feet of the levee toe. This farm access road may not be considered a “roadway” so this variance request in intended to eliminate any interpretation issue.

Attachment 3

Project Area D List of Variances

Attachment 3 – Project Area D List of Variances

Below are listed the variances being requested by SBFCA for Project Area D.

A. CCR 23, § 108, Existing Encroachments within an Adopted Plan of Flood Control

1. Existing Structure Encroachment into the Waterside of the Levee near Station 2282+00 to Remain

Title 23 allows for an encroachment to continue so long as the encroachment does not have a major detrimental impact. An existing structure located near station 2282+00 currently encroaches in the waterside slope of the levee by approximately 2 to 3-ft. The structure has been found to have to no impact on levee slope stability and rip rap will be placed along the waterside slope near the structure for the purposes of erosion control.

B. CCR 23, § 120, Levees

1. Use of Dredge Tailing Material for Seepage Berm Construction

The levee between approximate stations 2290+00 and 2368+23 is generally founded on and constructed of coarse grained dredge tailing material. Seepage berms constructed using the same coarse grained dredge tailing material was selected as the preferred remediation measure through this area. Title 23 does not offer any guidance regarding the construction of seepage berms. Therefore, we propose to use dredge tailing material up to 12-inches in diameter to construct the seepage berms and other fills as shown on the plans from approximate station 2290+00 to approximate station 2368+23. This material is currently located along the landside of the levee and in sufficient quantities to construct the seepage berms and other fills as identified on the plans. Dredge tailing material would be placed and compacted in layers not more than 24-inches in uncompacted thickness and would have moisture content sufficient to ensure proper compaction.

2. Existing Head Works Structure Near Station 2359+50 to Remain

The existing Hazelbush head works structure acted as the Feather River intake for the Old Sutter Butte Main Canal. The structure and adjacent portion of the canal were abandoned in the 1950s at the time the Thermalito Afterbay outfall was constructed. The canal and structure were later quitclaimed to the Department of Water Sources in 1967. Today, the head works structure and canal remain in place with approximately 10 to 12-ft of stagnant water land and water ward of the structure. A seepage berm was selected as the preferred remediation measure through this area.

A 100-ft wide seepage berm would be constructed along the land side of the structure using the same coarse grained dredge tailing material outlined above. The area water ward of the structure would also be filled using the same material. We propose to leave the structure in place as demolition and removal of the structure would require dewatering of the canal. Due to the proximity of the Thermalito Afterbay and the Feather River, as well as the subsurface

coarse grained layers, it is not practical to dewater the canal. The same coarse grained dredge tailing material discussed above would be used to backfill over the structure. Fill would be placed to approximately 4-ft above the top of the structure, to match existing levee grades on either side of the structure, and as shown on the improvement plans.

CCR 23, § 112, Streams Regulated and Nonpermissible Work Periods.

1. Time Variance

The Sutter Butte Main Canal is operational from April 1 through January 15, therefore the only available construction window occurs within the designated flood season. The scope of work shall be excavation of the levee to complete the replacement of the pipeline connection. The work will occur on the landside and waterside of the sheet pile cutoff wall. The backfill around pipe shall be CLSM. The variance shall be for work during the month of January 15 through April 15.

Attachment 4

Detailed Tables for Pipe Related Variances

Table A4.1 - Detail for Project Area B Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
832+20	City of Yuba City Sewer 24 inch welded steel pipe mortar lined and coated pipe discharge pipe.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
689+09	18 inch epoxy coated mortar lined steel pipe through existing 24 inch concrete pipe crossing of levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
664+07	8 inch steel pipe through the right bank levee of the Feather River.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
647+74	26 inch diameter discharge lines through the berm and levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would imply soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.

Table A4.1 - Detail for Project Area B Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
647+70	26 inch diameter discharge lines through the berm and levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
647+66	26 inch diameter discharge lines through the berm and levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
647+61	26 inch diameter discharge lines through the berm and levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
545+41	8 inch steel pipe.	123(d)(1). The installation of a fluid or gas carrying pipeline in a levee section or within ten (10) feet of the toe parallel to the centerline is not permitted. - Allow the pipeline to be located within the theoretical levee section but above the 200 year water surface and 1957 WSEL. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(1). To install the pipeline out of the theortical levee prism, which is defined by the 200 year WSEL plus 3 foot of freeboard, the center line of the levee would need to be raised about 1 foot. The pipeline as designed would be located about the 200 year and 1957 WSEL but would be located within the theortical levee prism. We feel the cost justification is not warrented since the pipe is above the 1957 WSEL. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.

Table A4.1 - Detail for Project Area B Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
536+64	5 inch steel drainage pipe	123(d)(1). The installation of a fluid or gas carrying pipeline in a levee section or within ten (10) feet of the toe parallel to the centerline is not permitted. - Allow the pipeline to be located within the theoretical levee section but above the 200 year water surface and 1957 WSEL. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(1). To install the pipeline out of the theortical levee prism, which is defined by the 200 year WSEL plus 3 foot of freeboard, the center line of the levee would need to be raised about 1 foot. The pipeline as designed would be located about the 200 year and 1957 WSEL but would be located within the theortical levee prism. We feel the cost justification is not warrented since the pipe is above the 1957 WSEL. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
512+08	Corp of Engineers Star Bend Road Relief Well Pump Station north 15" Steel Discharge Pipe Crossings	123(d)(1). The installation of a fluid or gas carrying pipeline in a levee section or within ten (10) feet of the toe parallel to the centerline is not permitted. - Allow the pipeline to be located within the theoretical levee section below both the 200 year water surface and 1957 WSEL. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(1). The pipeline was installed in 2009 as part of the Star Bend Setback levee project to the same lines and grades of the existing pipeline. The existing pipeline was installed by the USACE in 1998 as part of the relief well field located just upstream of Star Bend Road. The pipeline invert is 65.9 while the 1957 WSEL is 66.37 and the 200 year WSEL is 66.29. SBFCA feels that the cost to raise the pipeline approximately 6 inches is not justified since the pipeline is only 4 years old. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.

Table A4.1 - Detail for Project Area B Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
512+04	Corp of Engineers Star Bend Road Relief Well Pump Station south 15" Steel Discharge Pipe Crossings	123(d)(1). The installation of a fluid or gas carrying pipeline in a levee section or within ten (10) feet of the toe parallel to the centerline is not permitted. - Allow the pipeline to be located within the theoretical levee section below both the 200 year water surface and 1957 WSEL. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which would implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(1). The pipeline was installed in 2009 as part of the Star Bend Setback levee project to the same lines and grades of the existing pipeline. The existing pipeline was installed by the USACE in 1998 as part of the relief well field located just upstream of Star Bend Road. The pipeline invert is 65.9 while the 1957 WSEL is 66.37 and the 200 year WSEL is 66.29. SBFCA feels that the cost to raise the pipeline approximately 6 inches is not justified since the pipeline is only 4 years old. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
2283+95	24 Inch CM pipe through levee with concrete headwall at landside and waterside toe. Concrete saddle and apron with Calico automatic drainage gate.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
2283+20	8 inch Irrigation pipe sleeved through existing 24 inch CM drainage pipe.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
2281+52	1 Inch Domestic Water Line. Information Provided by Owner. Supplies water to the Hauler.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
2274+95	24 Inch CM pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
2262+69	24 Inch CM drain pipe through levee with landside headwall.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
2256+71	10 inch pressurized irrigation pipe within an existing 24 Inch reinforced concrete encased CM irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
2201+87	10 inch reinforced concrete encased steel irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
2178+15	16 inch steel irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
2127+33	2 inch irrigation pipeline.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
2109+57	2 Inch Irrigation Pipe Crossing.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits.
2084+03	5" x 0.25" wall steel irrigation pipe through the levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
2033+35	12 inch reinforced concrete encased steel irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue
2026+29	12 inch reinforced concrete encased steel irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
2017+70	22 inch reinforced concrete encased steel irrigation pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
2004+86	7 inch steel pipe sleeved through the existing 12 inch steel pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
1961+03	Double 60 Inch Storm Drainage Pipes through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
1956+20	24 inch CM irrigation pipe through levee.	112(b)(2). The flood season for work shall be November 1 through April 15. The variance shall be for work during the month of January 15 through April 15 on landside and waterside of sheet pile cutoff wall. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipeline.	112(b)(2). The Sutter Butte Main Canal is operational from April 1 through January 15, therefore the only available construction window occurs within the designated flood season. The scope of work shall be excavation of the levee to complete the replacement of the pipeline connection. The work will occur on the landside and waterside of the sheet pile cutoff wall. The backfill around pipe shall be CLSM. The variance shall be for work during the month of January 15 through April 15. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
1934+54	24 inch steel pipe through levee. Slide gate in concrete box on the water side slope. (Corps list pipe as 36 inch CMP on periodic inspection report)	112(b)(2). The flood season for work shall be November 1 through April 15. The variance shall be for work during the month of January 15 through April 15 on landside and waterside of sheet pile cutoff wall. 123(d)(7). Pipelines carrying gas or fluids under pressure must have a readily accessible rapid closure device located within ten (10) of the landside levee toe - All readily accessible rapid closure device to be located at waterside hinge of levee. 123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe.	112(b)(2). The Sutter Butte Main Canal is operational from April 1 through January 15, therefore the only available construction window occurs within the designated flood season. The scope of work shall be excavation of the levee to complete the replacement of the pipeline connection. The work will occur on the landside and waterside of the sheet pile cutoff wall. The backfill around pipe shall be CLSM. The variance shall be for work during the month of January 15 through April 15. 123(d)(7). The Design includes a positive closure device located on the waterside edge of levee crown. DWR ULDC requires a closure device to be located at the waterside hinge. The variance shall allow our project to meet DWR ULDC criteria without having two gate/butterfly valves on the pipeline resulting in increased head and O&M. 123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
1849+74	18 inch cast iron sewer pipe through levee. shoulder. According to the City of Gridley this pipe is no longer used since they are not allowed to use the sewer pond on the waterside of levee. They also thought the PL84-99 work after the 1997 flood made the pipe non-operational.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings.
1834+42	12 inch pipe sleeved through existing 24 inch storm drain pipe.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
1818+72	24 Inch CM pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
1809+65	24 Inch CM pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings.
1799+44	8"x .25" thick wall irrigation pipeline through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7)(D). Unless a continuous internal lining of cement, mortar, or equivalent is provided, as appropriate for the fluid to be conveyed, new steel pipe installations may convey only non-corrosive material, and water is considered corrosive. We propose to allow in addition to cement or mortar lined pipes, the use of epoxy lined pipe for pipes less than 18 inches.	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7)(D). The use of cement or mortar lined pipe is problematic on smaller diameter pipes. Epoxy lined pipe is used on domestic water lines and feel it meets the goal of protective liner for corrosive material. We understand some may feel that epoxy is an equivalent product but other have stated it is not equivalent. This variance eliminates this interpretation issue.
1792+96	24 inch CM drainage pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipe	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.

Table A4.2 - Detail for Project Area D Pipe Related Variances

SBFCA STA	Encroachment	Title 23 Variances	Title 23 Variances - Justification
1785+24	24 Inch CM drain pipe through levee. Automatic Drainage Gate on waterside with splash pad.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(e)(3). Seepage along pipelines, conduits, and utility lines must be prevented by either of the following methods. The methods include reinforced concrete backfill and undisturbed earth or reinforced concrete battered walls at 4:1 against undisturbed earth. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipe	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(e)(3). We discussed this during the IPE meeting with IPE, CVFPB, DWR, and USACE, all parties concurred that they did not want reinforced concrete backfill and that the CLSM backfill will address the seepage concern. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.
1777+00	24 Inch CM drain pipe through levee.	123(d)(20). The material shall be compacted to ninety (90) percent per ASTM 1557 which implies soil. We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. 123(g)(7). Title 23 states that steel pipe shall be used for installations above the DWSE only. - We propose to allow the contractor to use reinforce concrete cylinder pipe (which is allowed in 123(g)(6)) along with concrete bar-wrapped cylinder pipe, cement mortar lined and coated steel pipe, coal-tar lined and coated steel pipe, and fusion bonded epoxy lined and coated steel pipe. 123(e)(1). The pipeline is not owned by public agency and levee height is greater than 15 feet. - This will require a variance unless a public agency accept ownership, operation, and maintenance of the pipeline	123(d)(20). We propose to use CLSM backfill from invert of pipe to six (6) inches above pipe. - CLSM has been approved and in some cases required on pervious projects. The variance will clarify that CLSM is an acceptable backfill and no compaction shall be required. CLSM is the standard of practice and has been a requirement on some CVFPB permits. 123(g)(7). Cement mortar lined and coated steel pipe with the CLSM backfill will be the most cost effective and provide a design life greater than 50 years. The use of precast reinforced concrete pipe and reinforced cast-in- place concrete is not feasible and would substantially increase the cost of the pipe crossings. 123(e)(1). The current owner is not a public agency.

To: Central Valley Flood Protection Board,

PROTEST the acquisition of property at 3528 Garden Hwy, Yuba City, Ca 95991, APN 23-040-019

The area in which you need to acquire for said levee construction will cause our family financial hardship. The 30' strip of land along the levee includes our ranch's best seed trees, 40% of our tree seed income comes from those trees. We do not see the need for them to be removed and feel you can work around the trees.

Also there is a boundary dispute on the south side of our property. The area includes our county approved septic lines and a building that we have had on our property for over 60 years. We are insisting a survey conducted to accurately delineate the property lines before we will permit anything to be done.

The said project will prevent our ranch from making enough income to pay for the expenses needed to keep the ranch going. This land heist will cause our ranch to run at a loss. It is a small farm and this will make our operation unprofitable.

We are protesting the removal of our trees and would like the opportunity to mediate other options or exceptions for our seed trees.

Thank you for your consideration in these matters.

Terry McFeely
Executor, George R. McFeely estate

Please forward all mail, email and calls to:
Terry McFeely
[redacted]

PEEKEMA RANCH, LLC
905 Alexander Ave.
Gridley, CA 95948
(530) 846 3217

February 2, 2014

Central Valley Flood Protection Board
3310 El Camino Ave., Rm. 151
Sacramento, CA 95821

Subject: PROTEST to Application No. 18793-3 BD

This letter is to notify you that the above named land owner of Butte County property does herewith PROTEST the Application No. 18793-3 describing work to be performed at a property adjacent to our parcels 024-130-046 & 047.

In compliance with your notice of January 16, 2014 informing us of the work planned by the Sutter Butte Flood Control Agency (SBFCA), we submit the following information:

1. Protestant's name, address, and telephone number
Peekema Ranch, LLC
[redacted]

2. Statement of protestant's objections
We object to the CVFPB granting broad construction permission to the SBFCA to pursue laudable goals without a detailed description of the specific activities to be performed on a particular parcel. We object to the Board allowing an Agency to ignore the impact of its activities on potential river bank erosion in close proximity to the levee they propose to improve. We object to having our property and operations thereon detrimentally affected by allowing permission to construct a cut-off wall where an adequate one already exists.

3. Adverse effects of the proposed project on protestant
The effect of the proposed project depends greatly on the specific nature of the work to be undertaken on, and adjacent to our property. The SBFCA has been explicit about taking, in fee, a strip of our land surrounding the levee and has provided a detailed map of the parcel dimensions to be acquired. The acquisition map contained no details of the planned construction work. The intended work was only described orally to us – there is no written record of those details.

They (SBFCA) said they planned to shave down the levee surface on our parcel for construction access to the levee north of our parcels where they planned to install a cut-off wall in the center of the levee. They appeared unaware that sometime around 1995 a slurry cut-off wall had been installed in the Gridley sewer pond east of the levee. That wall was some 20 feet east of the levee at the pond's bottom some 20 feet below the levee top. That wall was 3 feet wide and 65 feet deep running north to south for the length of the pond. The verbally described SBCFA cut-off wall is unnecessary.

The SBFCA taking a strip of property will bifurcate our parcel 046 making access and control of that part east of the levee more difficult if not impossible. We have been growing and harvesting walnuts for more than 20 years on that part of our riverside property. The river bank along that piece of our property is very steep and has been consistently eroding, and is much closer to the levee than anywhere in the vicinity. Our attempts to mitigate that erosion by installing some rip-rap were thwarted when we were forced to remove that bank protection by another state entity citing environmental and appearance concerns.

The permitting entity should look at the detailed plans as well as the goals of its applicants. We request the Board to require and scrutinize specific details of the application to ascertain that the planned construction is indeed necessary and does not exacerbate bank erosion by the major river channel very near the levee.

Respectfully,

Richard M. Peekema

Richard M. Peekema
[redacted]

February 3, 2014

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

FEB 2014
BY:

RE: Application # 18793-3 BD PROTEST

Dear Mrs. Moricz

I'm writing this letter to comment and protest the proposed work adjacent to my property location at 902 Vance Ave in Biggs, CA. I'm not in protest of the project as a whole as I see the need for levee improvement and flood protection in the Sacramento Valley, but I don't see the need for the proposed improvements on my property.

I have at first hand seen the effects of a 100 year flood during the flood of 1997. And the effects of the flood of 1997 adjacent to my property was very insignificant, regardless what the engineers models show. In fact the water level did not get any higher than the toe of the levee. In addition to this fact, I understand the levee is built 4 to 5 feet higher than what is required in my area which provides even more protection that is not needed.

I have buildings on both side of the levee. The proposed slurry cut-off wall in my opinion will create flooding (flooding I did not have in the 1997 storm) on the water side of the levee as it will hinder the natural ground water flow of water traveling away from the river.

I also have underground wells on both sides of the levee and I have not heard one good thing about slurry cut-off walls and water wells. The only thing I have heard with installation of slurry cut-off walls near wells is negative, from contamination to drying up.

I also don't see the need to take as much land from me as proposed or the issue or problem with re-planting my orchard that is being removed. The only thing I have been told is that the orchard can't be replanted as the levee needs to be inspected from time to time (especially during a flood event) and they will need access. My rebuttal to this is, you can see the ground for inspections now with the orchard existing and they have always had access to the levee thru my orchard.

In summary, I see the need for levee improvements and flood protection further south on the levee. But at my location, as the water has never gone higher than the toe of the levee I don't see the need for these drastic and expensive measures. I propose (at my location) to remove the trees and vegetation, clean up the levee, re-compact the existing levee to its current condition if needed and maintain it as it should have been maintained when it was originally built.

Jeff Fredericks

DESMOND, NOLAN, LIVAICH & CUNNINGHAM
Attorneys At Law

February 5, 2014

Via Facsimile & U.S. Mail

Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, California 95821

RE: Comment on Sutter Butte Flood Control Agency (SBFCA) Application, No. 18793-3 BD

Dear Board Members:

The CVFPB has been presented with an application by the Sutter Butte Flood Control Agency ("SBFCA") in conjunction with SBFCA's Feather River West Levee Project ("FRWLP"). This letter is respectfully submitted on behalf of Stuke Nursery Co. Inc. located in Gridley, California, which is in its 90th year growing walnut trees for commercial plantings, as well as farming its own walnut acreage, and property owner JoAnn Stuke Diethrich to provide the Board with comment on the detrimental impacts of the project to valuable agricultural resources in the project's vicinity. We request the Board consider rejecting the pending application, which calls for a 30 foot wide corridor from the toe of the levee, and require the corridor be reduced to 15 feet. This reduction will greatly reduce the detrimental impact of the project on affected landowners, yet still meet all safety concerns.

Loss of Productive Agricultural Land and Orchard Trees, and Impact on Landowners

SBFCA's project as proposed will result in a permanent loss of valuable agricultural land. A 30-foot wide right of way acquisition is proposed in "undeveloped" reaches of the project, which includes properties improved with mature, producing orchard trees. (*Feather River West Levee Project Draft EIS/EIR*, December 2012, 2-17.) Orchards represent economic units of production. The real impact of such a taking, which might appear minimal on paper, will be substantial to the landowners that operate on the ground; and it will hurt both orchard owners, as well as the public at large.

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1830 15th Street
Sacramento, California 95811-6649
Telephone: 916/443-2051
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E-mail: bmanning@dnlc.net

Earl D. Desmond
(1895-1958)
E. Vayne Miller
(1904-1965)
Richard F. Desmond
(1923-2004)
William C. Livaich
(1950-2007)

William W. Nolan
(Of Counsel)
Gary Livaich
(Of Counsel)
Edward K. Dunn
(Of Counsel)

J. Russell Cunningham
Brian Manning
Kristen Ditlevsen Renfro
J. Luke Hendrix*
Gabriel Herrera
Lauren Manning
Nabeel M. Zuberi

* Licensed to Practice in the State of Utah

The majority of the acreage affected by SBFCA's project is agricultural land. More than 1,200 acres of orchard lands were identified in SBFCA's environmental review as being subject to direct or indirect impacts from its project, and the project will necessitate removal of a large number of valuable trees from local orchards. Roughly 2000 trees in total, including many productive orchard trees, are proposed to be removed as part of the project. (*EIS/EIR*, 3.8-18.) The project will permanently convert to non-agricultural use 85.03 acres of prime farmland, 4.37 acres of unique farmland, and 13.83 acres of farmland of statewide importance in Sutter County and 41.38 acres of prime farmland and 4.65 acres of unique farmland in Butte County. (*EIS/EIR*, 3.11-24.) In total, 430.38 acres of productive agricultural land will be lost forever, with associated annual losses in agricultural production. (*EIS/EIR*, 3.11-26.)

Not only is the loss of acreage significant, but by taking the outside row trees, the project will destroy the very best producing trees in many orchards, resulting in a huge economic hit to landowners. Further, landowners will be faced with additional burdens that accompany a large open corridor, such as increased instances of trespassing and theft – in particular metal theft, and crop theft, and theft of pump components that result in costly damages. Additionally, open corridors invite damage to the slope of the levee by ATV and motorcycle riders, who race up and down the levees.

All of these problems could be mitigated to some degree by reduction of the corridor proposed from 30 feet to 15 feet.

Importance to Both Landowners and the Public of Preserving Agricultural Land

Preservation of agricultural ground is a critical issue. Orchards and farms are local businesses, who in turn support other local businesses. They support the economy through sales of goods, job creation, support services and businesses, and by creating secondary markets such as food processing and distribution. Farmers hire CPAs. Farmers purchase equipment, vehicles, and fuel. Agricultural lands generate more in local and state revenues than they demand in community services, and there is growing demand for locally-grown food. If farmers don't have a good year, nobody does.

To put into perspective the importance of agriculture in the local area, last year's annual Butte County crop report listed the estimated gross value of agricultural production in the County for 2012 at $721,434,000, with walnuts representing the highest valued crop at $234,540,000. Agriculture is the number one industry in Butte County. But production depends on the availability of land, and despite its importance, agricultural land here and across the state is at

constant risk. According to American Farmland Trust, development is now consuming an average of roughly 40,000 acres of agricultural land per year in California. Destroying orchard acreage that yields our predominant source of revenue makes no sense.

The Williamson Act was implemented in the 1960s because of public recognition that preserving agricultural land and supporting agricultural operations must be a priority in land use considerations. Legislative findings that supported the Act's implementation then hold more true today than ever: namely, that preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the state's economic resources; that the agricultural work force is vital to sustaining agricultural productivity; and that the discouragement of premature and unnecessary conversion of agricultural land is a matter of public interest.

No Mitigation Feasible, Nor Even Contemplated, By SBFCA

It is not possible to mitigate for the loss of agricultural acreage without bringing non-farmed land into production – and this is rarely, if ever, feasible. Although SBFCA's EIR/EIS acknowledges the value of local agricultural resources and recognizes that its project will destroy important orchard land, ***SBFCA gives short shrift to the impacts the project will have on orchard land and operations, finding all impacts to be "less than significant," and so planning not a single mitigation measure for its permanent conversion of agricultural land or the anticipated losses of agricultural production***. This view is based solely on SBFCA's determination that a large enough percentage of productive land is not affected. Such a narrow and short-sighted perspective and failure to appreciate the toll a project like this takes on the individuals who keep agriculture alive and thriving throughout our region is deeply concerning.

A mitigation measure that could lessen the negative impacts of the project to some degree would be reduction of the corridor proposed from 30 feet to 15 feet.

Final Comment

The Board provides in its Strategic Plan that its mission is intended to be served by providing a forum for public participation and by employing an integrated approach to further economic stability and environmental stewardship. "Flood control issues" at their core concern protection of lives and economic interests of every member of the community, making the concerns outlined in this letter not only relevant, but vitally important to the Board's consideration of SBFCA's application. This letter is intended to ensure that the concerns of landowners are not swept entirely aside, without due recognition that landowners and local agricultural operations

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will suffer as a result of SBFCA's project. We encourage the Board to seriously consider rejecting SBFCA's application on the basis that its 30 foot corridor can and should be reduced to 15 feet. Your due attention to these concerns is requested.

Sincerely,

Brian Manning
BTM:kms

cc: Client
Jeff Draper, Mayor of Gridley
Steve Lambert, Supervisor 4th District
Senator Jim Nielsen
Congressman Doug LaMalfa

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PRELIMINARY

SUTTER BUTTE FLOOD CONTROL AGENCY
FEATHER RIVER WEST LEVEE PROJECT
PG&E ENCROACHMENTS COORDINATION LIST

PROJECT B (STATION 510+37 TO 845+00)
LEVEE CONSTRUCTION TO BEGIN IN 2014

PROJECT NUMBER	STATION	DESCRIPTION	WORK REQUIRED
B-1	592+50	Overhead power line crossing the levee.	Temporary de-energizing and removal of the power line to support levee construction required.
B-2	622+79	Service pole for irrigation well located at the landside levee toe.	Service pole shall be removed.
B-3	638+20	Service pole for irrigation well located near the landside levee toe.	Service pole shall be removed.
B-4	649+11	Utility pole located at landside levee toe. Overhead power line crossing the levee.	Utility pole on landside of levee shall be relocated 30' from levee toe. Possible replacement of utility pole on waterside of levee. Temporary de-energizing and removal of the power line to support levee construction required.
B-5	655+50	Service pole for irrigation well located near the landside levee toe.	Service pole shall be removed.
B-6		NOT USED.	
B-7		NOT USED.	
B-8	688+90 to 689+40	Utility poles located at the landside and waterside levee toe. Overhead power line crossing the levee.	Utility poles on the landside of the levee shall be relocated 30' from landside toe. Utility poles on the waterside of the levee that are not in use shall be removed. Temporary de-energizing and removal of the power line to support levee construction required.
B-9	749+75 to 762+00	Utility poles running parallel to levee at landside toe.	Utility poles shall be relocated a minimum of 30' from levee toe. The Garden Highway is located at the levee toe. The utility poles shall be relocated to the west side of the Garden Highway.
B-10	750+10	Overhead power line crossing the levee.	Temporary de-energizing and removal of the power line to support levee construction required.
B-11	750+50	Transmission lines crossing the levee.	For information only. Transmission lines will not be disturbed during construction.

NOTE: The existing utilities shown are based on topographic surveys and review of existing encroachment permits provided for the FRWL Project. Additional utilities may exist that have not been identified by these sources. PG&E shall review the appropriate electrical and gas maps to determine if additional utilities are located within the project area.

Attachment J - Utility Encroachment Table (under separate permits)

PRELIMINARY

SUTTER BUTTE FLOOD CONTROL AGENCY
FEATHER RIVER WEST LEVEE PROJECT
ENCROACHMENTS COORDINATION LIST - PROJECT D (STATION 1623+86 TO 2368+00)

PROJECT D1 (STATION 2290+00 TO 2368+00)
LEVEE CONSTRUCTION TO BEGIN IN 2014

PROJECT NUMBER	STATION	DESCRIPTION	WORK REQUIRED
D1-1	2331+60 to 2351+70	Utility poles running parallel to levee within the proposed seepage berm footprint or the landside levee slope.	Utility poles shall be relocated 30' from the toe of proposed seepage berm.
D1-2	2353+10	Overhead power line crossing levee.	Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D1-3	2360+15 to 2367+90	Utility poles running parallel to levee at the waterside levee toe or within the levee prism.	Utility poles shall be relocated 1' outside of the waterside construction limit line.

PROJECT D2 (STATION 1813+33 TO 2290+00)
LEVEE CONSTRUCTION TO BEGIN IN 2014

PROJECT NUMBER	STATION	DESCRIPTION	WORK REQUIRED
D2-1	1887+10	Overhead power line crossing levee.	Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-2	1888+60 to 1895+10	Utility poles running parallel to the levee at the landside toe.	Utility poles shall be relocated 30' from the landside levee toe. Overhead power lines continue parallel to the levee from Station 1895+10 to 1906+60. A structure is located at Station 1897+00, between the pole to be relocated at Station 1895+10 and the pole to remain at Station 1898+20.
D2-3	1901+50 to 1906+60	Utility poles running parallel to the levee at the landside toe. Guy wire crossing over levee at Station 1903+96. Overhead power lines crossing levee at Station 1906+60.	Utility poles shall be relcoated 30' from the landside levee toe. Guy wire shall be removed during levee construction. Temporary removal, de-energizing, raising, or relocation of the overhead power line to support levee construction required.
D2-4	1947+33	Utility pole at waterside levee toe. Underground electrical crossing through levee.	Utility pole shall be relocated 1' outside of the waterside construction limit line. The underground electrical shall be removed and disposed. Unknown if this service is still required.

Attachment J - Utility Encroachment Table (under separate permits)

D2-5	1957+00	Utility pole located at the waterside levee toe. Overhead power line crossing the levee.	Utility pole shall be relocated 1' outside of the waterside construction limit line. Overhead power line shall be lowered during levee construction.
D2-6	1957+10	Utility pole located in the levee crown.	Utility pole shall be relocated 30' from the landside levee toe. Facilities served by utility pole are being removed.
D2-7	2006+50	Utility pole located at landside levee toe.	Utility poles shall be relocated 30' from the landside levee toe. Utility poles serve an irrigation well that will be relocated.
D2-8	2037+15	Overhead power line crossing levee.	Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-9	2092+20	Overhead power line crossing levee.	Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-10	2138+00	Utility pole located at the landside levee toe. Overhead power line crosses levee to utility pole located at Station 2142+00.	Utility pole shall be relocated 30' from the landside levee toe. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-11	2142+00	Utility pole located at waterside levee toe.	Utility pole shall be relocated 1' outside of the waterside construction limit line.
D2-12	2178+20 to 2185+50	Utility pole at Station 2178+20 located at the waterside levee toe. Overhead power line crosses levee to utility poles located at the landside levee toe. Power lines continue parallel to the levee.	Utility poles on the waterside of the levee shall be relocated 1' outside of the waterside construction limit line. Utility poles on the landside of the levee shall be relocated 30' from the landside levee toe. Existing structures located at the landside levee toe starting at Station 2184+50 conflict with utility pole relocations on the landside of the levee.
D2-13	2209+00 to 2214+50	Utility poles running parallel to the landside levee toe.	Utility poles shall be relocated 30' from the landside levee toe.
D2-14	2216+70	Utility pole located in the waterside slope at the levee crown. Overhead power line crossing the levee.	Utility pole shall be relocated 1' outside of the waterside construction limit line. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-15	2249+00	Utility pole located at the landside levee toe. Overhead power line crossing the levee.	Utility pole shall be relocated 30' from the landside levee toe. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-16	2264+70 to 2268+45	Utility poles running parallel to the levee at the landside toe. Overhead power line crosses levee at Station 2265+50 to utility pole located on waterside of the levee.	Utility poles on landside of the levee shall be relocated 30' from the landside levee toe. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-17	2282+80	Utility pole located near the waterside levee toe adjacent to a structure. Overhead power line crossing the levee.	Utility pole shall be relocated 1' outside of the waterside construction limit line. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D2-18	2286+00 to 2289+60	Utility poles running parallel to the levee at the landside toe.	Utility poles shall be relocated 30' from the landside levee toe.

PROJECT D3 (STATION 1623+86 TO 1813+33)
LEVEE CONSTRUCTION TO BEGIN IN 2014

PROJECT NUMBER	STATION	DESCRIPTION	WORK REQUIRED
D3-1	1635+50 to 1638+70	Utility poles running parallel to the levee at the waterside levee toe. Overhead power line crossing the levee at Station 1638+70.	Utility poles shall be relocated 1' outside of the waterside construction limit line. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D3-2	1651+80	Utility pole located in the waterside levee slope. Overhead power line crosses the levee at Station 1653+15.	Utility pole shall be relocated 1' outside of the waterside construction limit line. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D3-3	1654+20	Utility pole located at the landside levee toe.	Utility pole shall be relocated 30' from the landside levee toe.
D3-4	1665+30 to 1674+50	Utility poles running parallel to the levee at the landside levee toe. Overhead power line crossing the levee at Station 1665+30.	Utility poles shall be relocated 30' from the landside levee toe. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.
D3-5	1675+96	Utility pole located in the waterside levee slope. Overhead power line crosses the levee.	Utility pole shall be relocated 1' outside of the waterside construction limit line. Temporary removal, de-energizing, raising, or relocation of the power line to support levee construction required.

NOTE: The existing utilities shown are based on topographic surveys and review of existing encroachment permits provided for the FRWL Project. Additional utilities may exist that have not been identified by these sources. PG&E shall review the appropriate electrical and gas maps to determine if additional utilities are located within the project area.

Moricz, Nancy@DWR

From: Barry ORegan [boregan@ksninc.com]
Sent: Tuesday, February 04, 2014 5:54 PM
To: Moricz, Nancy@DWR
Cc: Michael Bessette (m.bessette@sutterbutteflood.org)
Subject: PG&E Relocations for SBFCA Projects B & D
Attachments: Project_B_PG&E_Encroachments_PG&E Coordination_20140204.pdf; Project_D_PG&E_Encroachments_PG&E Coordination_20140204.pdf

Nancy,
PG&E and AT&T relocations will be covered under a separate permit. Please see attached tables listing PG&E relocations. There are no AT&T facilities to be relocated in Project B. Within Project D, AT&T has three underground crossings and one overhead crossing that are not associated with PG&E work. The underground crossings are located at approximate Station 1901+80 (East Gridley Road), Station 2092+90 (Almond Ave.) and Station 2248+30. These crossings will be modified to conform to Title 23 requirements and facilitate construction. The overhead line is at approximate Station 2216+70 (Walnut Avenue). We are working with AT&T to have this crossing removed.

Cell 209-323-9864

Please see my new contact information below.

KJELDSEN SINNOCK NEUDECK INC. Civil Engineers and Land Surveyors
Barry O'Regan, P.E. CFM
Associate Civil Engineer

1355 Halyard Drive, Suite 180 West Sacramento CA 95691
916 403-5900 | fax: 916 403-5901
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STATE OF CALIFORNIA
THE RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD

RESOLUTION NO. 2013-07

FINDINGS AND DECISION AUTHORIZING ISSUANCE OF
FLOOD SYSTEM IMPROVEMENT PROJECT
PERMIT APPLICATION NO. 18793-1

SUTTER BUTTE FLOOD CONTROL AGENCY
FEATHER RIVER WEST LEVEE PROJECT
PROJECT AREA C (REACHES 13 THROUGH 24) CONSTRUCTION PERMIT
SUTTER COUNTY

WHEREAS, the Central Valley Flood Protection Board (Board), in support of the Sutter Butte Flood Control Agency (SBFCA), approved on October 26, 2012 a request to the U.S. Army Corps of Engineers (USACE) for 33 U.S.C. Section 408 (Section 408) approval to alter of 41 miles of federal flood control project levee, the Feather River West Levee Project (FRWLP), located on the west side (right bank) of the Feather River from Thermalito Afterbay in Butte County downstream to approximately 3.5 miles north of the Feather River's confluence with Sutter Bypass in Sutter County; and

WHEREAS, the SBFCA submitted an application and supporting documentation to the Board in March 2013 to construct Project Area C, the first phase of the FRWLP, including approximately 14.78 miles of levee improvements in Reaches 13 to 24 within Sutter County; and

WHEREAS, SBFCA released a Notice of Preparation initiating a 30-day public comment period on May 20, 2011 and extended the comment period to July 8, 2011; and

WHEREAS, SBFCA as lead agency under the California Environmental Quality Act, Public Resources Code sections 21000 *et seq.* ("CEQA") prepared a Draft Environmental Impact Report (DEIR) (SCH No. 2011052062, December 2012), and Final Environmental Impact Report (FEIR) (SCH No. 2011052062, April 2013), and Mitigation Monitoring and Reporting Plan (MMRP) for the FRWLP (incorporated herein by reference and available at Board or SBFCA offices); and

WHEREAS, the SBFCA Board approved the FRWLP (SBFCA Resolutions 2013-05 and 2013-06), the FEIR, and MMRP, and approved findings and a Statement of Overriding Considerations pursuant to the CEQA Guidelines (incorporated herein by reference), and filed a Notice of Determination with the State Clearinghouse on April 12, 2013; and

WHEREAS, the Boards of Levee District 1 (Sutter) and Levee District 9 (Sutter) endorsed the Project Area C application on April 16, 2013 without conditions; and

WHEREAS, the Department of Water Resources (DWR) Flood Maintenance Office conditionally endorsed the Project Area C application on May 16, 2013; and

WHEREAS, the USACE Washington DC headquarters Section 408 Record of Decision (ROD) and USACE Sacramento District Letter of Permission (LOP) are anticipated in late July 2013; and

WHEREAS, if the Section 408 request is approved by USACE, staff will review and incorporate any USACE conditions into the final permit; and

WHEREAS, Board staff completed a comprehensive technical review of SBFCA's Project Area C Permit Application No. 18793-1 including the following documents:

- Hydraulic analysis and geotechnical reports and data
- 100% Plans and Specifications
- 100% "Issued for Bid" Plans and Specifications:
- 100% Design Documentation Report
- 100% Technical Specifications
- 100% "Issued for Bid" Technical Specifications
- Addenda 1 and 2
- Draft and Final Environmental Impact Reports pursuant to the California Environmental Quality Act
- Project bid schedules; and

WHEREAS, in accordance with California Code of Regulations, Title 23 (CCR 23), § 11, the Board may grant variances to its standards for uses that are not consistent with the Board's standards. When approval of a permit requires variances, the applicant must clearly state in its application why compliance with the Board's standards is infeasible or not appropriate; and

WHEREAS, SBFCA has requested the Board to grant variances from CCR 23, pursuant to the requirements of CCR 23 § 11, and as summarized in Staff Report Section 8.5 and further detailed in Staff Report Attachments J, K, and L; and

WHEREAS, Board, SBFCA, DWR, and USACE staffs have developed a strategy to (1) update existing encroachment pipeline crossing permits to ensure that they conform to current CCR 23 regulations and USACE policies, and (2) issue encroachment permits to owners of currently unpermitted encroachments to ensure that all regulatory parties, levee maintainers, and owners will be able to accurately and efficiently track and inspect future operations and maintenance of these encroachments; and

WHEREAS, SBFCA has agreed to act on each owner's behalf to prepare all required encroachment permit application documents, obtain owner signatures, and support the Board staff's application review and permitting activities; and

WHEREAS, the SBFCA Area C construction project will:

- address major geotechnical concerns such as through- and under-seepage and related slope stability, and condition and impact of existing encroachments,
- reduce the risk of flooding for existing urban areas, agricultural commodities, infrastructure, and other properties,
- increase the level of flood protection to a targeted 200-year level for Yuba City and Live Oak consistent with the adopted CVFPP, and Senate Bill 5 (Statutes of 2008) to provide 200-year flood protection for urban and urbanizing areas,
- preserve riparian and other native habitats,
- bring encroachments surveyed by SBFCA into CCR 23 compliance while addressing 100 percent of the encroachment issues categorized by the USACE in their 2010 periodic inspections as "Unacceptable – likely to prevent performance in the next flood event."; and

WHEREAS, The Board has conducted a public hearing on Permit Application No. 18793-1 and has reviewed the Staff Report and Attachments, the documents and correspondence in its file, and the environmental documents prepared by the SBFCA.

NOW, THEREFORE, BE IT RESOLVED THAT.

Findings of Fact.

1. The Board hereby adopts as findings the facts set forth in the Staff Report.

2. The Board has reviewed all Attachments, Exhibits, Figures, and References listed in the Staff Report.

CEQA Findings.

3. The Board, as a responsible agency, has independently reviewed the analyses in the DEIR (SCH No. 2011052062, December 2012) and the FEIR (April 2013) for the FRWLP which includes the SBFCA Lead Agency findings, Statement of Overriding Considerations, MMRP, and has reached its own conclusions regarding them.

4. The Board, after consideration of the DEIR (SCH No. 2011052062, December 2012) and the FEIR (April 2013) on the FRWLP, and the SBFCA Lead Agency findings, adopts the project description, analysis and findings which are relevant to the project.

5. **Findings regarding Significant Impacts.** Pursuant to CEQA Guidelines sections 15096(h) and 15091, the Board determines that the SBFCA findings, incorporated herein by reference, summarize the FEIR determinations regarding impacts of the FRWLP,

before and after mitigation. Having reviewed the FEIR and the SBFCA findings, the Board makes its findings as follows:

a. **Findings Regarding Significant and Unavoidable Impacts.**

The Board finds that the FRWLP may have the following significant, unavoidable impacts, as more fully described in the SBFCA findings. Mitigation has been adopted for each of these impacts although it does not reduce the impacts to less than significant. The impacts and mitigation measures are set forth in more detail in the SBFCA findings.

A. Air quality - The project could exceed applicable thresholds for construction emissions. SBFCA will provide an Advance Notification of Construction Schedule and a 24-Hour Hotline to Residents; implement a Fugitive Dust Control Plan and measures to reduce emissions. Fees will be paid to offset annual construction emissions to net zero.

B. Noise - The project could result in temporary construction-related noise up to 24 hours per day. To the extent feasible construction contractors shall control noise from construction activity such that noise does not exceed applicable noise standards.

C. Vegetation and wetlands - The project would result in loss of wetlands and vegetation. For direct effects on woody riparian trees that cannot be avoided, SBFCA will compensate for the loss of riparian habitat to ensure no net loss of habitat functions and values. Compensation ratios will be based on site specific information and determined through coordination with the appropriate State and federal agencies during the permitting process.

D. Visual resources - The project could result in impacts to visual resources. Viewers would experience construction in both rural and urban reaches during more than one construction season (typically April 15 to November 30, subject to conditions). In general, construction operations along the levee and at borrow sites, construction traffic, haul trucks, and staging areas would be visible in the foreground and middleground to residents, businesses, roadway users, and recreationists.

E. Cultural resources - The project could result in cumulative impacts to cultural resources. The project may result in the demolition of individual structures and residences that contribute to rural historic landscapes. Other projects that form the cumulative context may contribute to these effects through plan build-out, levee repair, or other actions requiring demolition of structures forming portions of rural historic landscapes also affected by the FRWLP. For these reasons the FRWLP may contribute to cumulatively significant and unavoidable effects on rural historic landscapes. SBFCA will develop and implement treatment for avoidance and preservation in place or relocation of individual California Register of Historic Resources that are eligible buildings (noncontributing or unaffected

buildings would remain in place). Where avoidance or relocation is not feasible standard treatment such as documentation through the Historic American Buildings Survey, Historic American Landscape Survey, Historic American Engineering Record, or district documentation will be completed. Interpretive displays, online resource, and historic contexts or walking tours may also be used, as appropriate.

Finding: The Board finds that changes or alterations have been required in, or incorporated into, the project which substantially lessen such impacts, as set forth more fully in the SBFCA findings, but that each of the above impacts remains significant after mitigation. Such mitigation measures are within the responsibility of another agency (SBFCA), and should be implemented as described. Specific economic, legal, social, technological or other considerations have rendered infeasible mitigation or alternatives that would have reduced these impacts to less than significant.

b. **Findings regarding Significant Impacts that can be Reduced to Less Than Significant.**

The significant impacts and the mitigation measures to reduce them to less than significant are described in the FEIR and SBFCA's Adopted Resolution 2013-06 dated April 10, 2013. This Resolution includes a Statement of Facts, Findings, Impacts and Mitigation Measures, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program. Based on its independent review of the FEIR and SBFCA Resolution 2013-06, the Board finds that for each of the significant impacts described, changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects as identified in the FEIR. Moreover, such changes or alterations are within the responsibility and jurisdiction of another public agency (SBFCA) and such changes have been adopted by that agency. It is hereby determined that the impacts addressed by these mitigation measures will be mitigated to a less-than-significant level or avoided by incorporation of these mitigation measures into the project.

As a responsible agency, the Board has responsibility for mitigating or avoiding only the direct or indirect environmental effects of those parts of the Project which it decides to carry out, finance, or approve. The Board confirms that it has reviewed the MMRP, and confirmed that SBFCA has adopted and committed to implementation of the measures identified therein. The Board agrees with the analysis in the MMRP and confirms that there are no feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment. None of the mitigation measures in the MMRP require implementation by the Board directly, although continued implementation of the MMRP shall be made a condition of issuance of the Permit. However, the measures in the MMRP may be modified without triggering the need for subsequent or supplemental analysis under CEQA Guidelines section 15162(c).

6. **Statement of Overriding Considerations.** Pursuant to CEQA Guidelines sections 15096(h) and 15093, the Board has balanced the economic, social, technological and other benefits of the Project described in Permit Application No. 18793-1 against its significant and unavoidable impacts listed in paragraph 5(a) above, and finds that the benefits of the Project outweigh these impacts and they may, therefore, be considered "acceptable".

   The Board finds the project will enhance public safety in the Sutter Basin by addressing known levee and encroachment deficiencies on the west bank of the Feather River. The Feather River west levee suffers from risks of levee failure mechanisms including through- and under-seepage and related slope stability and geometry, erosion, and levee encroachments result in the immediate need for repairs to protect the people and property at risk within the project area. The health and safety benefits of the project, which would significantly reduce the risk of an uncontrolled flood that would result in a catastrophic loss of property and threat to residents of the area, outweigh the remaining unavoidable environmental impacts.

7. **Custodian of Record.** The custodian of the CEQA record for the Board is its Executive Officer, Jay Punia, at the Board offices at 3310 El Camino Avenue, Room 151, Sacramento, California 95821.

Considerations pursuant to Water Code section 8610.5.

8. **Evidence Admitted into the Record**. The Board has considered all the evidence presented in this matter, including the original application for Permit No. 18793-1 and technical documentation provided by SBFCA on the FRWLP past and present Staff Reports and attachments, the Environmental Impact Report on the FRWLP (Draft and Final Versions), SBFCA Board Resolutions 2013-05 and 2013-06 including findings, Statement of Overriding Considerations, and the MMRP.

9. **Best Available Science**. In making its findings, the Board has used the best available science relating to the issues presented by all parties. On the important issue of hydraulic impacts and the computed water surface profiles, SBFCA used a HEC-RAS one-dimensional unsteady flow model that was also utilized by the USACE for the on-going Sutter Basin Feasibility Study. The model is considered by many experts as the best available scientific tool for the purpose of modeling river hydraulics for the Feather River. Geotechnical and overall standards for levee design including those of the USACE, DWR ULDC, and Board have been taken into consideration and the design is in compliance with these standards.

10. **Effects on State Plan of Flood Control**. This project has positive effects on the State Plan of Flood Control as it includes features that will provide 200-year protection to urban and urbanizing areas of the Sutter Basin. The Board finds that the 65 percent projects designs used to support the program-level Section 408 request, and none of the changes in project design made subsequent to 65 percent design up to and including the

100 percent issued for bid design and Addenda A and B result in adverse hydraulic impacts on the entire State Plan of Flood Control.

The Board further finds that the proposed Area C construction phase of the FRWLP, to be constructed as described in SBFCA's 100 percent "Issued For Bid Set", dated March 13, 2013, and in Addenda Nos. 1 and 2, will result in an overall betterment to the SRFCP and State Plan of Flood Control, and will be consistent with the adopted 2012 Central Valley Flood Protection Plan.

The Board further finds that the proposed project alterations can be constructed in a manner not injurious to the public interest, and that will not impair the usefulness of the SRFCP.

In California Statutes of 2007, Chapter 641 (SB276), the Legislature found and declared that "The projects authorized in Section 12670.14 of the Water Code will increase the ability of the existing flood control system in the Sacramento Valley to protect urbanized areas within Sutter County against very rare floods without altering the design flows and water surface elevations prescribed as part of the SRFCP or impairing the capacity of other segments of the SRFCP to contain these design flows and to maintain water surface elevations. Accordingly, the projects authorized in that section will not result in significant adverse hydraulic impacts to the lands protected by the SRFCP and neither the Board nor any other State agency shall require the authorized projects to include hydraulic mitigation for these protected lands."

11. **Effects of Reasonably Projected Future Events**. The project would have no net increases in operational greenhouse gas (GHG) emissions impacting climate change. Emissions associated with the project would occur over a finite period of time (2 year) as opposed to operational emissions, which would occur over the lifetime of a project. There are no other foreseeable projected future events that would impact this project.

Other Findings/Conclusions regarding Issuance of the Permit.

12. This resolution shall constitute the written decision of the Board in the matter of Permit No. 18793-1.

Approval of Encroachment Permit No. 18793-1.

13. The Board adopts the CEQA findings and Resolution 2013-07, and

14. The Board approves, pursuant to CCR 23, § 11(a) and (b) with regard to Variances to Board Standards, the requested construction variances summarized in Staff Report Section 8.5 and further detailed Staff Report Attachments J, K, and L, and

15. Based on the foregoing, the Board hereby conditionally approves issuance of Permit No. 18793-1 in substantially the form provided by the Board Staff at the May 24, 2013 meeting of the Board, subject to receipt, review and incorporation of conditions required

by the USACE in their Record of Decision and Letter of Permission anticipated to be received by late July 2013, and

16. The Board delegates authority to the Executive Officer to make non-substantive changes to the draft permit as needed to incorporate additional design changes submitted by SBFCA prior to receipt of the USACE ROD and LOP, and that if substantive changes to the draft permit are required, the Board staff will bring the permit back to the Board at a future meeting to seek approval for substantive changes, and

17. The Board directs the Executive Officer to take the necessary actions to prepare and execute Permit No. 18793-1 and all related documents and to prepare and file a Notice of Determination pursuant to the California Environmental Quality Act for the Feather River West Levee, Project Area C construction project, and

18. The Board directs the Executive Officer to consider applications to amend existing or issue new encroachment permits to owners of pipeline crossings within Project Area C that will be reconstructed as part of the Area C project, and as detailed in Staff Report Section 8.5.5. Board staff will evaluate the proposal(s) for potential approval by direct Board action or by delegation to the Executive Officer as appropriate, and

19. The Board directs the Executive Officer that if, during construction, additional non-conforming encroachments or constructability issues are discovered by any party SBFCA will consider whether or not they can be brought into compliance during construction. Board staff will evaluate the proposal(s) for potential approval by direct Board action or by delegation to the Executive Officer as appropriate.

PASSED AND ADOPTED by vote of the Board on July 24, 2013, 2013

William H. Edgar
President

Jane Dolan
Secretary