



DEPARTMENT OF THE ARMY
CHIEF OF ENGINEERS
2600 ARMY PENTAGON
WASHINGTON, D.C. 20310-2600

SEP 25 2013

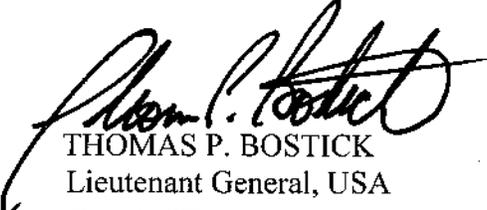
DAEN

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)
108 ARMY PENTAGON, WASHINGTON, DC 20310-0108

SUBJECT: Orestimba Creek Flood Risk Management Study, West Stanislaus County,
California – Final USACE Response to Independent External Peer Review

1. Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resources Development Act of 2007, EC 1165-2-214, and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review (2004).
2. The IEPR was conducted by Battelle Memorial Institute. The IEPR panel consisted of four members with technical expertise in Civil Works planning/economics, biology/ecology, geotechnical engineering, and hydrologic and hydraulic engineering.
3. The final written responses to the IEPR are hereby approved. The enclosed document contains the final written responses of the Chief of Engineers to the issues raised and the recommendations contained in the IEPR report. The IEPR Report and the USACE responses have been coordinated with the vertical team and will be posted on the Internet, as required in EC 1165-2-214.
4. If you have any questions on this matter, please contact me or have a member of your staff contact Mr. Bradd Schwichtenberg, Deputy Chief, South Pacific Division Regional Integration Team, at 202-761-1367.

Encl


THOMAS P. BOSTICK
Lieutenant General, USA
Chief of Engineers

ORESTIMBA CREEK, WEST STANISLAUS COUNTY, CALIFORNIA

FEASIBILITY STUDY AND ENVIRONMENTAL ASSESSMENT

FINAL

U.S. Army Corps of Engineers Response to Independent External Peer Review September 2013

Independent External Peer Review (IEPR) was conducted for the subject project in accordance with Section 2034 of the Water Resources Development Act of 2007, EC 1165-2-214, and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review (2004)*. The purpose of the Orestimba Creek Feasibility Study is to investigate plans that provide flood risk management for the City of Newman and surrounding agricultural areas. The goal of the U.S. Army Corps of Engineers (USACE) Civil Works program is to always provide the most scientifically sound, sustainable water resource solutions for the nation. The USACE review processes are essential to ensuring project safety and quality of products USACE provides to the American people.

Battelle Memorial Institute (Battelle), a non-profit science and technology organization with experience in establishing and administering peer review panels for USACE, was engaged to conduct the IEPR for the Orestimba Creek Feasibility Report and Environmental Assessment/Initial Statement (EA/IS). The Battelle IEPR panel reviewed the Draft Report and the Draft EA/IS, as well as the supporting documentation. The Final IEPR Battelle Report was issued on 10 October 2012.

Overall, fifteen comments were identified and documented. Of the fifteen comments, two were identified as Geotechnical, two were Hydrology-or Hydraulic-related; three were Risk Assessment related; and five were related to Biological issues. No comments were identified as having high significance, nine comments had medium significance, and six comments had low significance.

- 'High': Describes a fundamental problem with the project that could affect the recommendation, success, or justification of the project.
- 'Medium': Affects the completeness of the report in describing the project, but will not affect the recommendation or justification of the project.
- 'Low': Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project.

The following discussions present the USACE Final Response to the IEPR Comments.

1. IEPR Comment –Medium Significance: The use of geotechnical data from the initial western alignment introduces uncertainty regarding subsurface conditions, which is reflected throughout the seepage analyses.

USACE Response: Adopted

Action to be taken: During the Preconstruction Engineering & Design Phase (PED), subsurface data will be collected at closer intervals along the centerline, landside, and waterside of the final levee alignment, and the thickness of the canal liner will need to be verified in coordination with the Irrigation District and CCID Canal owners. At that time, blanket thickness, liner thickness, and soil properties will be confirmed and Blanket Theory Analysis (BTA) and Finite Element (FE) analysis will be completed. Alternative seepage mitigation approaches would be included in the analyses and most likely adopted. If there is a gap in the canal liner that prevents the canal from conveying as designed, the most cost effective approach would be to repair gaps in the canal liner rather than construct a seepage berm. Section 9.4 of the Feasibility report has been modified to include discussion of this additional work.

Boring 2F-11-01 was located on an embankment parallel to the Newman Waste Way. During the PED Phase of the project, it is expected that sand layers will be encountered and measures would be taken during modeling to mitigate for these layers. Additional modeling and seepage analysis will take place during the PED phase.

As suggested by the reviewer, In the PED Phase subsurface data will be collected for the canal liner and at more frequent intervals along the final levee alignment. Alternative seepage mitigation approaches would be included in the analyses, and any gaps in the canal liner would most likely be repaired rather than constructing a seepage berm.

2. IEPR Comment - Medium Significance: Model testing and validation with respect to the influence of topographic features on the FLO-2D output are not clearly documented in quantitative terms.

USACE Response: Adopted

Actions taken: The Model was validated by simulating 1995 and 1998 Orestimba creek flood hydrographs. Modeled 1998 flood inundation was compared to aerial oblique photos taken during the flood and added as plates in the hydraulic appendix. The comparison showed the model reasonably simulated the aerial extents of the observed flooding. Modeled inundation was also compared to photographs of street flooding during the 1995 event and added as plates in the report. This comparison showed the model simulated flood depths within +/- 1 foot. The

change, which resulted in an improved description of the flood calibration, was incorporated into section 3.2f of the final version of the Hydraulic Appendix.

The accuracy of the model was estimated from model validation. Refined evaluation of localized areas including the northern levee tie in to the railroad and the southern levee tie in to the Newman waste way would not impact plan selection and is recommended during PED. Section 5.5 of the report was modified to indicate that refined evaluation of the floodplain will occur during PED.

Additional topographic data and model validation at the northern levee tie in to the railroad and the southern levee tie in to the Newman waste way will be obtained and conducted during PED. A statement has been added to Section 9.4 of the Feasibility Study which states that topographic and ground surveys will be conducted during PED for project design.

3. IEPR Comment – Medium Significance: Stage error used in the uncertainty analysis reflects error in the topographic data, but the analysis appears to overlook other potential sources of modeling error.

USACE Response: Adopted

Actions taken: Flood extents and depth were found to be highly influenced by the crest elevation of the CCID canal berm and CNRR railroad embankments which act as long weirs during flood events. The uncertainty in the crest elevation of these features is related to the topographic uncertainty. Therefore, the hydraulic uncertainty was based on 0.6 foot Root Mean Square Error (RMSE) of the Lidar based topographic data. Comparisons of model validation runs of the 1995 and 1998 flood were also used to assess the overall uncertainty of all model parameters. This comparison showed the model simulated flood depths within +/- 1 foot. Section 3.5 of the Hydraulic Appendix was modified to reflect this.

Comparisons of model validation runs of the 1995 and 1998 flood were used to assess the overall uncertainty of all model parameters. This comparison showed the model simulated flood depths within +/- 1 foot. Additional sensitivity runs were conducted for the NED and LPP alternatives assuming changes in CCID crest elevation. A table comparing the model sensitivity runs at several index points has been added to the hydraulic appendix. Sensitivity runs were conducted for Manning's roughness values and changes in key topographic features. The above text has been incorporated into section 5.5 and Table 11 of final hydraulic appendix.

The combined peak modeled flow of all culverts which pass water through the CNRR embankment was found to be approximately 5% of the Orestimba Creek inflow. If the culverts had a 50% reduction in capacity, this would reduce the percentage to 2.5%. A portion of these

restricted floodwaters would overtop the embankment rather than increase flooding upstream of the culvert. Therefore, the estimated culvert capacity is not a significant factor in the calculation of flood damages in Newman. Sensitivity runs were conducted for Manning's roughness values and changes in key topographic features. The above text has been incorporated into Section 3.2e (7) of the final hydraulic report.

The sources of uncertainty with both the modeling and future conditions have been presented in the Economics Appendix, Hydraulic Appendix, and Main Report as appropriate. The Economic Appendix, Hydraulic Appendix and in Section 2.3 (Inventory and Forecast of Future without Project Conditions), Section 9.1.5 (Risk and Uncertainty) and Section 9.1.6 (Residual Risk) of the Main Report has been revised to describe the sources of uncertainty.

4. IEPR Comment – Medium Significance: A risk analysis associated with the operation of the railroad floodgate and roadway stoplogs was not included in the Draft Interim Feasibility Study and Draft EA/IS, resulting in unknown impacts associated with the operation of the structures.

USACE Response: Adopted

Actions Taken: A qualitative description of the effects of improper operation of the floodgate and stoplog structures was added to the hydraulic appendix and Section 9.1.1 main report. Section 9.1.1 of the Feasibility Report which discusses the project features and accomplishments as well as the hydraulic appendix and civil appendix have been modified to include the descriptions of the potential consequences and residual risks if these project features are not operated correctly. The report also notes that these locations are to be designed to be more resistant to overtopping.

5. IEPR Comment – Medium Significance: Baseline conditions of biological resources specifically affected by project implementation are not clearly described and do not directly support the effects analysis and conclusions.

USACE Response: Adopted

Actions Taken: The specific project area has been addressed in greater detail, especially in regards to the direct and indirect effects. Areas along the Orestimba Creek previously described in detail have been removed from the main document for clarification purposes. An "Extracted Channel Modification Analysis" section has been placed in Appendix B.3. Sections removed or altered within the Affected Environment portion of the document include Geomorphology,

Hydrology, Waters of the U.S. and Wetlands, Vegetation Communities, Wildlife and Fisheries, and Special Status Species. Sections removed or altered within the Effects Assessment portion of the document include Seismicity, Geology, Soils, Geomorphology, Hydrology, Water Quality; Groundwater; Waters of the U.S. and Wetlands; Air Quality; Vegetation Communities; Wildlife and Fisheries; Special Status Species; Invasive Plants and Noxious Weeds; Socioeconomics; Land Use; Transportation; Utilities and Public Services; Recreation; Aesthetics; Noise; Hazardous, Toxic, and Radiological Materials and Wastes; Cultural Resources; Cumulative Effects; and Irreversible and Irrecoverable Commitment of Resources.

Certain special status species and their habitats are protected by Federal, State, or local laws and agency regulations. The Federal Endangered Species Act (ESA) of 1973 (50 CFR 17) provides legal protection for plant and animal species in danger of extinction. This act is administered by USFWS and NMFS. The California Endangered Species Act (CESA) of 1977 parallels the Federal ESA and is administered by the California Department of Fish and Wildlife (CDFW). CDFW also designates species of special concern, which have been considered as well. Other special status species lack legal protection, but have been characterized as "sensitive" based on policies and expertise of agencies or private organizations, or policies adopted by local government. Section 4.2.11 (Special Status Species) in the Feasibility Report EA/IS has been modified to reflect this clarification of the definition of special status species.

A section describing the agricultural nature of the project area has been added to the Vegetation Communities section, and the description of the other vegetation communities has been clarified and described as part of the larger study area. Language has been added to Section 4.2.9, Vegetation Communities of the Feasibility Report EA/IS to further describe the vegetation communities that would be directly impacted by the project.

Additional observational surveys were conducted by USFWS personnel in April 2012. The purpose of these surveys was to characterize general biological resources and to determine if sensitive biological resources occur. Other wildlife species were also noted during these surveys and their occurrence within each vegetation community is described. Language has been added to Section 4.2.10, Wildlife and Fisheries describing the surveys conducted in 2012.

Section 4.2.12 (now 4.2.11) has been revised to more accurately reflect the potential of special status species to occur in the project area. Species that are unlikely to occur in the project area have been listed in Tables 4-5 and 4-6; however, only those species likely to occur within the project area have been described in full detail. Species with "low" or "moderate" potential to occur have been further described in the document. Informal consultation was initiated with USFWS to request their concurrence that the project is not likely to adversely affect the endangered San Joaquin Kit Fox; their concurrence was received March 4, 2013. Section 4.2.11, Special Status Species and Table 4-5, Correspondence with USFWS was added to Appendix B.1.

Additional discussion of potential use of the affected habitats in the project area has been further described along with the more detailed explanation of the special status species most likely to utilize them. Additional language has been added Section 4.2.11, Special Status Species to the document describes foraging, breeding, and seasonal use habitats, including but not limited to describing the potential use of the CCID canal as a migration corridor.

The title of Figure 4-15 (now Figure 4-8) as well as other figures referring to "Channel Modifications" has been changed to "Study Area." All references to "Channel Modifications" have been removed from the main document, except when describing the decision process explaining why the Channel Modification portion of the project was removed. Section 4.2.11, Figure 4-8; other references to Channel Modifications have been removed from the main document. "Extracted Channel Modification Analysis" section has been placed in Appendix B.3.

6. IEPR Comment – Medium Significance: Baseline conditions for invasive plants/noxious weeds specific to the area affected by the TRP, and a risk analysis for weed spread as a result of project construction, have not been presented.

USACE Response: Adopted

Actions Taken: Recent surveys conducted by USFWS are described in the Planning Aid Letter; language describing invasive plant/noxious weed conditions in the project area has been incorporated into the main report. Clarification of the project area as defined by the proposed Chevron levee has been added to the document. Additional evaluation of invasive plants/noxious weeds has been added to section 4.2.13.

Best management practices would reduce the spread of invasive plants and noxious weeds. This language has been added to Section 5.2.13 of the Feasibility Report and EA/IS. In order to ensure these best management practices are followed during and after construction, these requirements would be added to the language of the Specs during PED. Language would include an approved seed mix based on local native vegetation species.

7. IEPR Comment - Medium Significance: Potential impacts to three special-status species associated with agricultural and/or grassland habitats – tricolored blackbird, loggerhead shrike, and California horned lark – are not addressed in the effects analysis.

USACE Response: Adopted

Actions Taken: Clarification has been added to describe the probability of the Tri-colored Blackbird to occur within the project footprint. Additional information regarding these special status species has been added to Section 5.2.12 of the main report.

Further coordination with USFWS has been conducted to ensure identification of special status species within the project area. Results of the coordination with USFWS have been included in the main report. Additional information relating to the biological resources considered and eliminated from further analysis has been added to Section 4.2.11, Special Status Species.

8. IEPR Comment - Medium Significance: The effects analysis, conclusions, and proposed mitigation for biological resources do not include the appropriate rationale and supporting evidence required for CEQA and NEPA review.

USACE Response: Adopted

Actions Taken: Significance criteria as adopted from the CEQA checklist have been added to the effects sections of the document. Further analysis relating to the CEQA Statute and Guidelines criteria has been addressed. CEQA Statute and Guidelines criteria have been added to all sections within Chapter 5 - Effects Assessment. The CEQA Statute and Guidelines document has been added to Chapter 12 - References.

Construction-related impacts, such as dust and runoff into the CCID canal, would have short-term and less than significant water quality impacts on local fish populations. All water quality impacts would be mitigated as described in Section 5.2.6, Water Quality. Mitigation measures would include an NPDES general construction permit from CVRWQCB and the development of a SWPPP. The SWPPP would identify measures to reduce runoff due to construction, and dust would be reduced as described in Section 5.2.9, Air Quality. By minimizing effects on Water Quality and Air Quality, effects on wildlife and fisheries would be less than significant. Clarification has been added to Section 5.2.11, Alternative 2 and 5.2.6, Water Quality to facilitate greater understanding of short term effects.

The discussions of project related impacts have been expanded to include temporary habitat loss and disturbance from vibration and lights, as well as effects due to air and water quality impacts. Clarification has been added to Chapter 5, Section 5.2.11, Alternative 2.

There would be no direct effects to the Valley Elderberry Longhorn Beetle (VELB) due to removal or damage to elderberry shrubs during site preparation and construction activities. Indirect impacts could include physical vibration and an increase in dust during operation of equipment and trucks during construction activities. Potential impacts on VELB would be reduced to less than significant through avoidance. A pedestrian survey of the construction

footprint for blue elderberry shrubs would be conducted prior to any ground disturbing activities. Chapter 5, Section 5.2.11, Mitigation.

Section 5.2.22, Cumulative Effects, has been updated with additional information, including brief discussions regarding seismicity; geology; soils; hydrology; water quality; groundwater; waters of the U.S. and wetlands; air quality; vegetation; wildlife and fisheries; special status species; invasive plants and noxious weeds; socioeconomics; land use; transportation; utilities and public services; recreation; aesthetics; noise; hazardous, toxic and radioactive waste; and cultural resources.

9. IEPR Comment - Medium Significance: The presence of and potential impacts to waters of the U.S., including wetlands, specifically in areas affected by the TRP have not been described.

USACE Response: Adopted

Actions Taken: The wetland delineation covers the entire study area as described prior to the removal of the Channel Modifications segment of the project. Clarification has been added to define the areas in the current project footprint as well as the channel modifications remnant. References to the Channel Modifications segment of the project have been removed to Appendix B.1, "Extracted Channel Modification Analysis." Other report refinements were made to Chapter 4, Section 4.2.7 and Chapter 5, Section 5.2.7.

Further clarification has been added to describe the current project area, and the channel modification segment has been de-emphasized. The four potential jurisdictional wetlands in the upper reach of the study area would not be impacted. NWI maps and aerial maps were used to identify known wetlands in the project area. During PED phase, ground surveys would be conducted to confirm previous assessments. Chapter 5, Section 5.2.7, page 5-10 has been revised to reflect that the National Wetlands Inventory (NWI) was used to determine if there are known wetlands in the project area, and general assessments of the area were made using aerial maps. No wetlands were identified within this project area. During PED, additional ground surveys would be conducted to confirm previous assessments.

The reference is currently included in Chapter 12, section 12.2, U.S. Army Corps of Engineers, fifth reference: "Sacramento and San Joaquin River Basins Comprehensive Study, California, Technical Studies Documentation, December 2002."

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/sjrf_sprtrinfo/usace_2002.pdf Citation was added to Chapter 12, section 12.2, U.S. Fish and Wildlife Service: "National Wetlands Inventory. 2012. Available online: <http://www.fws.gov/wetlands>."

10. IEPR Comment - Low Significance: The seepage analyses, which relied solely on Finite Element (FE) methods, did not verify the analysis using blanket theory in accordance with USACE guidance.

USACE Response: Adopted

Actions to be taken: Blanket Theory Analysis will be completed as part of the procedural analysis in the PED phase of the project when additional subsurface data is obtained along the centerline of the final levee alignment. Section 9.4, Further Studies, states that additional geotechnical analysis will be conducted.

11. IEPR Comment- Low Significance: Mechanisms and pathways of urban flooding are not clearly described for with- and without-project conditions.

USACE Response: Adopted

Actions taken: A detailed topographic map has been added to the report which indicates the direction of floodwaters. Arrows depicting flow direction has been added to the 1995 and 1998 validation maps. Text describing flooding has been modified to refer to these maps. Plates 11 and 18 of the Hydraulic Appendix were revised in the final report.

The source of flooding in the without project condition is highly uncertain in comparison to the alternative condition. In the without project condition, the town is at risk from floodwaters overtopping or breaching the CCID canal or being conveyed into town by the CNRR railroad berm. The probability of these floodwaters entering the town of Newman is substantially reduced by the proposed project. This is discussed in Section 2.1.1 (Flooding Problems), Section 9.1.5 (Risk and Uncertainty) and Section 9.1.6 (Residual Risk) of the Main Report.

Information about the existing stormwater infrastructure has been obtained from the City of Newman. The assessment was based on the past performance of the system during localized storm events that did not include flooding from Orestimba Creek. Section 3.4 of the Hydraulic Appendix was modified in the final report.

The cause and extent of residual flooding after construction of the alternative will be from local storm runoff within the city. This residual flooding was simulated in the floodplain maps for the alternative condition. No change to the Hydraulic Appendix was required.

12. IEPR Comment- Low Significance: The uncertainty and risk analysis does not acknowledge the potential effects of climate change.

USACE Response: Adopted

Actions taken: The discussion compares the without and with project condition. As indicated by the stage-frequency curves, the with-project condition is relatively insensitive to flow (climate change). Climate change is just one of the sources of uncertainty but affect the model results less than other sources of uncertainty. A qualitative discussion has been added to the Main Report in Section 9.1.6. The sources of uncertainty are in the Main report (Section 9.1.5), Economic appendix (page 20) and Hydraulic Appendix.

13. IEPR Comment-Low Significance: The summary of biological effects in Table 3-12 is inconsistent with the effects described in the impact analysis.

USACE Response: Adopted

Actions taken: Table 3-12 has been updated to summarize and correspond with the main conclusions of the revised effects analysis for biological resources.

14. IEPR Comment - Low Significance: The potential for erosion of farmland to the east of the railroad is not fully addressed for the TRP.

USACE Response: Adopted

Actions taken: Several index points have been added to the hydraulic appendix which compares stage and velocity on the east side of the railroad embankment at locations where there would be potential increases in flood depth. The risk of erosion and degradation of cropland has been assessed and the conclusion is that erosion and degradation of cropland is unlikely. Section 5.3 of the Hydraulic Appendix has been updated to the velocities at Villa Manucha Road and Freitas Road in Table 10 and were found to be less than 1.5 feet per second. Additional analysis will take place during PED.

The potential for farmland degradation was assessed qualitatively based on the comparison of stage and velocity on the east side of the railroad embankment and was determined to have low risk. Additional analysis will take place during PED.

15. IEPR Comment - Low Significance: A plan for communicating residual risk to the affected population has not been described.

USACE Response: Adopted

Actions taken: An additional description of the communication of residual risk has been added to Chapter 6 which describes public involvement. Residual risk will be communicated to the public via the flood awareness mailers that are part of the non-structural measures within the tentatively recommended plan. This clarifying language has been added to Chapter 3 of the report which describes the NED and LPP plans. While the recommended plan would greatly reduce the flood risk within the City of Newman, risks associated with flooding remain in the rural areas. Specifically, this risk remains high on the three low water crossings of the creek where the roadways dip down in to the creek and flood waters spill across the road. Two fatalities have occurred in these locations in recent years. Additional public information and signage is critical to reduce this residual risk. Section 3.6 and Section 9.1.6 of the feasibility report have been modified to include a discussion of residual risk.