
REVIEW PLAN

**ORESTIMBA CREEK, CALIFORNIA
FLOOD RISK MANAGEMENT
FEASIBILITY STUDY**

SACRAMENTO DISTRICT



**US Army Corps
of Engineers** ®
Sacramento District

April 2010

Revision 1 – N/A
FRM-PCX Review

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FLOOD RISK MANAGEMENT
FEASIBILITY STUDY
SACRAMENTO DISTRICT**

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REVIEW PLAN

ORESTIMBA CREEK, CALIFONRIA FLOOD RISK MANAGEMENT FEASIBILITY STUDY SACRAMENTO DISTRICT

1. PURPOSE AND REQUIREMENTS

A. Purpose. This document outlines the Review Plan for the Orestimba Creek, California, Flood Risk Management Feasibility Study. This feasibility study process is anticipated to culminate in a decision document to Congress for potential authorization of a new project. Engineer Circular (EC) 1165-2-209, *Civil Works Review Policy*, dated 31 January 2010, defines the technical and overall quality control review processes for decision documents. It formally distinguishes between technical review performed by in-district (District Quality Control, DQC) and out-of-district resources (Agency Technical Review, ATR). It also reaffirms the requirement for Independent External Peer Review (IEPR); this is the most independent level of review and is applied in cases that meet certain criteria where the risk and magnitude of a proposed project are such that a critical examination by a qualified team outside of the U.S. Army Corps of Engineers (USACE) is warranted.

B. Requirements. EC 1165-2-209 outlines the requirement of the three review approaches (DQC, ATR, and IEPR). This document addresses review of the decision document as it pertains to both approaches and planning coordination with the appropriate PCX. The Orestimba Creek, California, Feasibility Study will investigate flood risk management (FRM) issues in the study area. Therefore, the FRM-PCX is the responsible PCX.

(1) District Quality Control. DQC is the review of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Orestimba Creek Feasibility Study Project Management Plan (PMP) for the study (to which this Review Plan will ultimately be appended). It is managed in the Sacramento District and may be conducted by in-house staff as long as the reviewers are not doing the work involved in the study, including contracted work that is being reviewed. Basic quality control tools include a Quality Management Plan (QMP) providing for seamless review, quality checks and reviews, supervisory reviews, Project Delivery Team (PDT) reviews, etc. Additionally, the PDT is responsible for a complete reading of the report to assure the overall integrity of the report, technical appendices and the recommendations before the approval by the District Commander. For the Orestimba Creek Feasibility Study, non-PDT members and/or supervisory staff will conduct this review for major draft and final products, including products provided by the non-Federal sponsors as in-kind services following review of those products by the PDT. The Flood Risk Manager within the Sacramento District will review the document to ensure compliance with EO 11988. The Major Subordinate Command (MSC)/District are directly responsible for the QM and QC respectively, and to conduct and document this fundamental level of review. A Quality Control Plan (QCP) is included in the PMP for the subject study and addresses DQC by the MSC/District; DQC is not addressed further in this Review Plan. DQC is required for this study.

(2) Agency Technical Review. EC 1165-2-209 re-characterized ATR (which replaces the level of review formerly known as Independent Technical Review) is an in-depth review, managed within USACE, and conducted by a qualified team outside of the home district that is

not involved in the day-to-day production of a project/product. The purpose of this review is to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. The ATR team reviews the various work products and assures that all the parts fit together in a coherent whole. ATR teams will be comprised of senior USACE personnel (Regional Technical Specialists (RTS), etc.) and may be supplemented by outside experts as appropriate. To assure independence, the leader of the ATR team shall be from outside the home MSC. EC 1165-2-209 requires that DrChecks <https://www.projnet.org/projnet/> be used to document all ATR comments, responses, and associated resolution accomplished. This Review Plan outlines the proposed approach to meeting this requirement for the Orestimba Creek, California, Feasibility Study. ATR is required for this study.

(3) Independent External Peer Review. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. Type I IEPR is conducted on project studies. IEPR is managed by an outside eligible organization (OEO) that is described in the Internal Review Code Section 501(c)(3), is exempted from Federal tax under Section 501(a), of the Internal Revenue Code of 1986; is independent; is free from conflicts of interest; does not carry out or advocate for or against Federal water resources projects; and has experience in establishing and administering IEPR panels. The scope of review will address all the underlying planning, engineering, including safety assurance, economics, and environmental analyses performed, not just one aspect of the project. The IEPR will be on the technical aspects of the project while the ATR will be responsible for the agency and administration's policy review. This Review Plan outlines the planned approach to meeting this requirement for the Study. Type I IEPR is required for this study.

(4) Policy and Legal Compliance Review. In addition to the technical reviews, decision documents will be reviewed throughout the study process for their compliance with law and policy. These reviews culminate in Washington-level determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the Chief of Engineers. Guidance for policy and legal compliance reviews is addressed further in Appendix H, ER 1105-2-100. Technical review described in EC 1165-2-209 are to augment and complement the policy review processes by addressing compliance with published Army polices pertinent to planning products, particularly polices on analytical methods and the presentation of findings in decision documents. DQC and ATR efforts are to include the necessary expertise to address compliance with published planning policy. Counsel will generally not participate on ATR teams, but may at the discretion of the district or as directed by higher authority. When policy and/or legal concerns arise during DQC or ATR efforts that are not readily and mutually resolved by the PDT and the reviewers, the District will seek issue resolution support from the MSC and HQUSACE in accordance with the procedures outlined in Appendix H ER 1105-2-100. Legal reviews will be conducted concurrent with ATR of the preliminary, draft and final feasibility report and environmental impact statement.

(5) Planning Center of Expertise (PCX) Coordination. EC 1165-2-209 outline PCX coordination in conjunction with preparation of the Review Plan. This Review Plan is being coordinated with the PCX for Flood Risk Management (FRM), who in turn will coordinate with the PCX for Ecosystem Restoration (ER) as appropriate. The PCX for FRM is responsible for the accomplishment and quality of ATR for the Orestimba Creek, California, Feasibility Study. The DQC is the responsibility of the MSC/District. The PCX for FRM may conduct the review or manage the ATR and IEPR reviews to be conducted by others.

(6) Review Plan Approval and Posting. In order to ensure the Review Plan is in compliance with the principles of EC 1165-2-209 and the MSC's QMP, the Review Plan must be approved by the applicable MSC, in this case the Commander, South Pacific Division (SPD). Once the Review Plan is approved, the Sacramento District will post it to its district public website and notify SPD and the PCX for FRM.

(7) Safety Assurance Review. In accordance with Sections 2034 and 2035 of WRDA 2007, and EC 1165-2-209 all projects addressing flooding or storm damage reduction must undergo a SAR (Type II IEPR) during design and construction. Safety assurance factors (significant threat to human life, project cost thresholds, etc.) must be considered in the planning studies phase and in all reviews for those studies. This study will address safety assurance factors, which at a minimum will be included in the draft report and appendixes for public and agency review. Prior to preconstruction engineering and design (PED) of the project identified for construction, a PMP will be developed that will include SARs (Type II IEPRs) during design and construction.

2. STUDY INFORMATION

A. Decision Document. The purpose of the Orestimba Creek Feasibility Study is to identify flood-related issues in the Orestimba Creek study area. The decision document will present planning, engineering, and implementation details of the recommended plan to allow final design and construction to proceed subsequent to approval of the recommended plan. The project is a General Investigations study undertaken to evaluate structural and non-structural FRM measures including channel modifications, construction of new levees, and construction of an interceptor canal. The feasibility phase of this project is cost shared 50 percent Federal, 50 percent non-Federal with the project sponsors, Stanislaus County.

B. General Site Description. The study area is primarily located on the west side of the San Joaquin River in Stanislaus County, California. It encompasses approximately 186 square miles of rangeland and very productive irrigated cropland. The largest community in the study area is the city of Newman, which is located along State Highway 33. Orestimba Creek is a "west side tributary" to the San Joaquin River, and originates from the eastern slopes of the Diablo Range a section of the larger Coast Range of California. Orestimba Creek is traversed by US Interstate Highway 5, the California Aqueduct, the Delta-Mendota Canal, State Highway 33, the Northern California Railroad (NCR), and the Central California Irrigation District (CCID) Main Canal. The creek is ephemeral, with high flows normally occurring in late winter, and irrigation drainage accounting for low flows during the summer months. The creek flows in a northeasterly direction through steep mountain canyons until it emerges at the edge of the foothills. Here on the gently sloping valley floor, the decreased slope and size of the streambed reduces the creek's channel capacity. Flood flows spread over a wide undefined alluvial fan. Most west side tributary streambeds disappear in the area, join other creeks, or are confined to man made structures due to farming. Orestimba Creek is one of the few remaining tributaries to maintain a definite open channel from the foothills to the San Joaquin River.

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C. Study Scope. The purpose of this study is to investigate plans that reduce flood damages in the town of Newman and surrounding agricultural areas. In the course of identifying these plans, opportunities to address some of the environmental degradation along portions of Orestimba Creek may be identified. At this time, a sponsor has not been identified for the potential ecosystem restoration portion of this project, so the study will progress as a single purpose project. It is envisioned that this FRM feasibility study, when constructed, would provide the

opportunity for future ecosystem restoration along Orestimba Creek by other interested parties.

D. Problems and Opportunities. Flood overflows from Orestimba Creek cause flooding in the town of Newman. Although Newman is situated some distance from the channel, flood overflows are diverted along road and railroad embankments and along a canal into town. Flows eventually overtop these impediments and continue down slope across fields and farm roads until reaching the San Joaquin River. Newman has experienced 13 floods in the past 41 years (1954, 1955, 1957, 1958, 1959, 1963, 1968, 1969, 1978, 1980, 1983, 1986, and 1995). Floods have required extensive emergency operations, including levee construction, evacuation, and road closure.

The Orestimba Creek channel is not able to convey a flood event larger than a 10-year magnitude, so therefore the creek does not currently play a major role in conveying flood flows. The existing channel conveys less than 20% of the 100-year discharge. The remainder of the flow runs overland through agricultural and residential properties on its way to the San Joaquin River. Nine bridges restrict the flow of the creek along with additional obstructions caused by embankments of the California Northern Railroad, the Main Canal, and other local roads.

The upper portion of Orestimba Creek at the apex of the alluvial fan is made up of a 250-acre sycamore alluvial woodland. These acres represent about 10 percent of the total of Sycamore Alluvial Woodland in the State of California. Although the Western Sycamore is not a rare species, it is uncommon to find these woodlands where sycamores are the dominant trees. These woodlands tend to be found in areas with fine-grained alluvial terraces on relatively low gradient braided streams (Keeler-Wolf, 1997). The sycamore alluvial woodland at Orestimba creek has been negatively affected by grazing and other agricultural uses, gravel mining, and stream flow diversions.

E. Potential Methods. As the Orestimba Creek Feasibility Study progressed and the preliminary array of alternatives was evaluated, it became apparent that the alternative which the local land owners supported, an Upstream Dry Dam, was not economically justified. This alternative also has environmental and safety concerns that would be highly controversial if this alternative were carried forward. At this time, the study team does not anticipate that the Upstream Dry Dam would be included in the final array of alternatives. The remaining alternatives are much smaller in scale, would not have significant environmental effects, and are not seen as controversial. These remaining alternatives are downstream and include channel modifications within Orestimba Creek, a short chevron levee and an interceptor channel. Because no significant environmental effects are anticipated with the remaining alternatives, the study is proceeding with an EA rather than an EIS. Risk associated with failure of any of these alternatives is relatively low because none of the project features would impound water to a depth greater than 3 feet.

This study is not expected to contain influential scientific information nor be a highly influential scientific assessment. This study area is mostly rural with a small town (Newman, population 12,000) which lies at the edge of the floodplain. There are potential public safety concerns; however, flooding in the study area is expected to only reach depths of 2-3 feet and the velocity of the flood flow would remain low since the water would have a wide area in which to spread out. There is a population at risk (a convalescent hospital) which has flooded in the past and which required an emergency evacuation. The proposed project would implement multiple features to reduce the risk of flooding in and around the City of Newman. The chance of multiple failures is extremely low. The consequence of catastrophic failure would remain lower than if the project was not constructed.

There are no existing project levees. The study area is relatively small and while flooding on an alluvial fan can be complex, the flooding is sheet flow and therefore relatively shallow. This project is not expected to be controversial now that the Upstream Dry Dam will not be in the Final Array of Alternatives. Agency representatives have indicated support for the downstream options. Support for the downstream options among local land owners is growing, mostly sparked by refinements to the alternatives which reduce flood risk for the agricultural area. Non-structural measures will also be examined to reduce flood risk in the area. Since flooding in the study area is relatively shallow, with large areas of the floodplain subject to flooding of less than 1 foot, new and existing homes could be elevated or otherwise flood-proofed to reduce flood damages and flood risk. The total project cost for the downstream options most likely will optimize around \$20 million.

Public and agency input will be sought in order to minimize the potential for controversy. Uncertainty of success of the project ultimately will be low to moderate – if the proposed review processes are implemented - because the methods used for evaluating the project are standard and the concept of implementing proposed project features is not innovative.

F. Product Delivery Team. The PDT is comprised of those individuals directly involved in the development of the decision document. Individual contact information and disciplines are presented in appendix B. In accordance with the PMP, it is planned that the non-Federal sponsors will contribute in-kind services for project management; public involvement, coordination and outreach and participating in reviews. All in-kind work products will undergo review by the PDT for a determination of adequacy; products will ultimately undergo DQC. However, the types of in-kind contributions for this study do not include a specific work product and it is not anticipated that these tasks would be subject to a formal review.

G. Vertical Team. The Vertical Team includes District management, District Support Team (DST) and Regional Integration Team (RIT) staff as well as members of the Planning of Community of Practice (PCoP). Specific points of contact for the Vertical Team can be found in Appendix B.

3. AGENCY TECHNICAL REVIEW PLAN

For feasibility studies, ATR is managed by the PCX. For this feasibility study, due to the emphasis on flood risk management, the PCX for FRM will identify individuals to perform ATR. Sacramento District can provide suggestions on possible reviewers.

A. General. An ATR Manager shall be designated for the ATR process. The proposed ATR Manager for this project is to be determined, but will have expertise in project planning. The ATR Manager is responsible for providing information necessary for setting up the review, communicating with the Lead Planner, providing a summary of critical review comments, collecting grammatical and editorial comments from the ATR team (ATRT), ensuring that the ATRT has adequate funding to perform the review, facilitating the resolution of the comments, and certifying that the ATR has been conducted and resolved in accordance with policy. ATR will be conducted for project planning, environmental compliance, economics, hydrology and reservoir operations, hydraulic design, civil design, geotechnical engineering, cost engineering, real estate, cultural resources; reviews of more specific disciplines maybe identified if necessary.

B. Agency Technical Review Team (ATRT). The ATRT will be comprised of individuals that have not been involved in the development of the decision document and will be chosen based on

expertise, experience, and/or skills. The members will roughly mirror the composition of the PDT and wherever possible, reside outside of the South Pacific Division region. The ATR Manager (team leader) will be selected from outside of South Pacific Division. It is anticipated that the team will consist of about 10 reviewers. The ATRT members will be identified at the time the review is conducted and will be presented in appendix B.

C. Communication. The communication plan for the ATR is as follows:

(1) The team will use DrChecks to document the ATR process. The Lead Planner will facilitate the creation of a project portfolio in the system to allow access by all PDT and ATRT members. An electronic version of the document, appendices, and any significant and relevant public comments shall be posted in Word format at: <ftp://ftp.usace.army.mil/pub/> at least one business day prior to the start of the comment period.

(2) The PDT shall send the ATR manager and members shall download and print individual documents and appendices as necessary.

(3) The PDT shall host an ATR kick-off meeting virtually to orient the ATRT during the first week of the comment period. If funds are not available for an on-site meeting, the PDT shall provide a presentation about the project, including photos of the site, for the team.

(4) The Lead Planner shall inform the ATR manager when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

(5) A revised electronic version of the report and appendices with comments incorporated shall be posted at <ftp://ftp.usace.army.mil/pub/> for use during back checking of the comments.

(6) Team members shall contact ATRT members or leader as appropriate to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.

(7) Reviewers will be encouraged to contact PDT members directly via email or phone to clarify any confusion. DrChecks shall not be used to post questions needed for clarification.

(8) The ATRT, the PDT, and the vertical team shall conduct an after action review (AAR) no later than 2 weeks after the policy guidance memo is received from HQUSACE for the for the AFB and draft reports.

D. Funding

(1) The PDT district shall provide labor funding by cross charge labor codes. Funding for travel will be provided through government order. The Lead Planner will work with the ATR manager to ensure that adequate funding is available and is commensurate with the level of review needed. The current cost estimate for this review is \$50,000. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring.

(2) The team leader shall provide organization codes for each team members and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes.

(3) Reviewers shall monitor individual labor code balances and alert the ATRT Lead Planner to any possible funding shortages.

E. Timing and Schedule

(1) Throughout the development of this document, the team will conduct seamless review to ensure planning quality.

(2) The ATR will be convened early in the study and will participate in the Technical Review Strategy Session (TRSS) with the PDT and DST. The TRSS is to verify the basic plan of study and the rationale for key planning assumptions.

(3) The ATR will be conducted on the Feasibility Scoping Meeting documentation and assumptions; the Alternative Formulation Briefing documentation; the draft Feasibility Report; and if changes are made to the draft report, those changes will be reviewed in the Final Feasibility Report.

(4) The PDT will hold a “page-turn” session to review the draft report to ensure consistency across the disciplines and resolve any issues prior to the start of ITR. Writer/editor services will be performed on the draft prior to ITR as well.

(5) The ATR process for this document will follow the following timeline. Actual dates will be scheduled once the period draws closer. All products produced for these milestones will be reviewed, including those produced as in-kind services by the non-Federal sponsors.

ATR Timeline

Task	Date
Participation in TRSS	Prior to F2
ATR Feasibility Scoping Meeting material	September 2001
ATR Alternatives Review Conference material ¹	July 2009
ATR of Alternative Review Comment Period	October 2009
Kickoff meeting	During 1 st week
ATR Comments	End 2 rd week
PDT Responses	End 3 rd week
Responses Back check	End 4 th week
Alternative Formulation Briefing (AFB)	September 2010
AFB Policy Memo Issued	October 2010
ATR Certification Draft Report	January 2011
Public Review of Draft Report	February 2011
ATR Certification Final Report	April 2011
ATR After Action	May 2011
Final District Report Review	June 2011

¹Required by the Major Subordinate Command.

F. Review

(1) ATRT responsibilities are as follows:

(a) Reviewers shall review conference material and the draft report to confirm that

work was done in accordance with established professional principles, practices, codes, and criteria and for compliance with laws and policy. Comments on the report shall be submitted into DrChecks.

(b) Reviewers shall pay particular attention to one's discipline but may also comment on other aspects as appropriate. Reviewers that do not have any significant comments pertaining to their assigned discipline shall provide a comment stating this.

(c) Grammatical and editorial comments shall not be submitted into DrChecks. Comments should be submitted to the ATR manager via electronic mail using tracked changes feature in the Word document or as a hard copy mark-up. The ATR manager shall provide these comments to the Lead Planner.

(d) Review comments shall contain these principal elements:

- 1 a clear statement of the concern
- 2 the basis for the concern, such as law, policy, or guidance
- 3 significance for the concern
- 4 specific actions needed to resolve the comment

(e) The "Critical" comment flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Lead Planner first.

(2) PDT Team responsibilities are as follows:

(a) The team shall review comments provided by the ATRT in DrChecks and provide responses to each comment using "*Concur*", "*Non-Concur*", or "*For Information Only*". *Concur* responses shall state what action was taken and provide revised text from the report if applicable. *Non-Concur* responses shall state the basis for the disagreement or clarification of the concern and suggest actions to negotiate the closure of the comment.

(b) PD members shall discuss any "non-Concur" responses prior to submission with the PDT and ATRT manager.

G. Resolution

(1) Reviewers shall back check PDT responses to the review comments and either close the comment or attempt to resolve any disagreements. Conference calls shall be used to resolve any conflicting comments and responses.

(2) A reviewer may close a comment if the comment is addressed and resolved by the response, or if the reviewer determines that the comment was not a valid technical comment as a result of a rebuttal, clarification, or additional information, or because the comment was advisory, primarily based on individual judgment or opinion, or editorial. If reviewer and responder cannot resolve a comment, it should be brought to the attention of the ATR manager and, if not resolved by the ATR Manager, it should be brought to the attention of the planning chief who will need to sign the certification. ATRT members shall keep the ATR manager informed of problematic comments. The vertical team will be informed of any policy variations or other issues that may cause concern during HQ review.

H. Certification

To fully document the ATR process, a statement of technical review will be prepared. Certification by the ATR Manager and the Lead Planner will occur once issues raised by the reviewers have been addressed to the review team's satisfaction and the final report is ready for submission for HQ review. Indication of this concurrence will be documented by the signing of a certification statement (Appendix A). A summary report of all comments and responses will follow the statement and accompany the report throughout the report approval process. An interim certification will be provided by the ATR team lead to indicate concurrence with the report to date until the final certification is performed when the report is considered final.

I. Alternative Formulation Briefing (AFB)

The AFB for this project will occur after the majority of the ATR comments have been resolved. It is possible that the briefing will result in additional technical or policy comments from high level reviewers for resolution. The resolution of significant policy comments may result in major changes to the document. Therefore, the ATR Manager will perform a brief review of the report to ensure that technical issues are resolved.

4. PUBLIC AND AGENCY REVIEW

The public and agencies will continue to have multiple opportunities to participate in this study. Numerous Stakeholder meetings comprised of local landowners, city and county officials and agency representatives have been held in the past several years. Additional Stakeholder meetings are planned for 2010. A meeting to inform the General Public of the final array of alternatives is also planned for 2010. Public review of the draft feasibility report will occur after issuance of the AFB policy guidance memo and concurrence by HQUSACE that the document is ready for public release. As such, public comments other than those provided at any public meetings held during the planning process will not be available to the review teams. Public review of the draft report will begin approximately 1 month after the completion of the ATR process and policy guidance memo. The period will last a minimum of 30 days as required for an Environmental Assessment. One or more public workshops will be held during the public and agency review period. Comments received during the public comment period for the draft report could be provided to the ATRT before review of the final Decision Document. The public review of necessary state or Federal permits will also take place during this period. A formal State and Agency review will occur concurrently with the public review. However, it is anticipated that intensive coordination with these agencies will have occurred concurrent with the planning process. Upon completion of the review period, comments will be consolidated in a matrix and addressed, if needed. A comment resolution meeting will take place if needed to decide upon the best resolution of comments. A summary of the comments and resolutions will be included in the document. A plan for public participation will be developed early in the study which might identify informal as well as additional formal forums for participation in the study.

5. MODEL CERTIFICATION

For the purposes of this RP section, planning models are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision-making. It includes all models used for planning, regardless of their scope or source, as specified in the following sub-paragraphs. This RP section does not cover engineering models used in planning which will be certified under a separate process to be established under SET.

The computational models to be employed in the Orestimba Creek, California, Feasibility Study have either been developed by or for the USACE. Model certification and approval for all identified planning models will be coordinated through the PCX as needed. Project schedules and resources will be adjusted to address this process for certification and PCX coordination. They are:

1. HEC-FDA (Current working version undergoing review for certification; expected to be certified within the first 1 year of the study): This model, developed by the Corps' Hydrological Engineering Center, will assist the PDT in applying risk analysis methods for flood damage reduction studies as required by, EM 1110-2-1419. This program:
 - Provides a repository for both the economic and hydrologic data required for the analysis
 - Provides the tools needed to understand the results
 - Calculates the Expected Annual Damages and the Equivalent Annual Damages
 - Computes the Annual Exceedence Probability and the Conditional Non-Exceedence Probability
 - Implements the risk-based analysis procedures contained in EM 1110-2-1619.
2. IWR-Planning Suite (Certified). This software assists with the formulation and comparison of alternative plans. While IWR-PLAN was initially developed to assist with environmental restoration and watershed planning studies, the program can be useful in planning studies addressing a wide variety of problems. IWR-PLAN can assist with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination, or "plan." IWR-PLAN can assist with plan comparison by conducting cost effectiveness and incremental cost analyses, identifying the plans which are the best financial investments and displaying the effects of each on a range of decision variables.

The following are considered to be engineering models as opposed to planning models and undergo a different review and approval process for usage. Engineering tools anticipated to be used in this study are:

1. MCACES or MII: These are cost estimating models.
2. HEC-HMS: By applying this model the PDT is able to:
 - Define the watersheds' physical features
 - Describe the metrological conditions
 - Estimate parameters
 - Analyze simulations
 - Obtain GIS connectivity
3. HEC-ResSim: This model predicts the behavior of reservoirs and to help reservoir

operators plan releases in real-time during day-to-day and emergency operations. The following describes the major features of HEC-ResSim

- o Graphical User Interface
 - o Map-Based Schematic
 - o Rule-Based Operations
4. HEC-RAS: The function of this model is to complete one-dimensional hydraulic calculations for a full network of natural and man made channels. HEC-RAS major capabilities are:
- o User interface
 - o Hydraulic Analysis
 - o Data storage and Management
 - o Graphics and reporting
5. FLO-2D: This model will be used for the overbank reaches.

6. PLANNING CENTERS OF EXPERTISE COORDINATION

The appropriate PCX for this document is the National Flood Risk Management Center of Expertise located at SPD. This Review Plan for a single purpose FRM project will be submitted to the PCX for FRM Director for review and comment. For ATR, the PCX is requested to nominate the ATR team as discussed in paragraph 3.b. above. The approved Review Plan will be posted to the Sacramento District's public website. Any public comments on the Review Plan will be collected by the Office of Water Project Review (OWPR) and provided to the Sacramento District for resolution and incorporation if needed.

7. APPROVALS

The PDT will carry out the Review Plan as described. The Lead Planner will submit the plan to the PDT District Planning Chief for approval. Formal coordination with PCX for FRM will occur through the PDT District Planning Chief.

REVIEW PLAN
ORESTIMBA CREEK, CALIFORNIA
FLOOD RISK MANAGEMENT
FEASIBILITY STUDY
SACRAMENTO DISTRICT

APPENDIX A
STATEMENT OF TECHNICAL REVIEW

COMPLETION OF INDEPENDENT TECHNICAL REVIEW
ORESTIMBA CREEK, CALIFORNIA
FLOOD RISK MANAGEMENT FEASIBILITY STUDY,
**ENVIRONMENTAL ASSESSMENT/
NEGATIVE DECLARATION**
AND APPENDICES

The Sacramento District has completed the project implementation report (feasibility report), environmental assessment/negative declaration and appendices of the Orestimba Creek Feasibility Study. Notice is hereby given that an agency technical review, that is appropriate to the level of risk and complexity inherent in the project, has been conducted as defined in the Review Plan. During the agency technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses; alternatives evaluated; the appropriateness of data used and level obtained; and reasonableness of the result, including whether the product meets the customer's needs consistent with law and existing Corps policy. The ATR was accomplished by an agency team composed of staff from multiple districts. All comments resulting from the ATR have been resolved.

TBD _____

Roger Setters
Team Leader,
Orestimba Creek Feasibility Study
Agency Technical Review Team

_____ Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

A summary of all comments and responses is attached. Significant concerns and the explanation of the resolution are as follows:

(Describe the major technical concerns, possible impact and resolution)

As noted above, all concerns resulting from the independent technical review of the project have been fully resolved.

Alicia E. Kirchner
Chief, Planning Division

Date

FRM-PCX Review Plan Template

REVIEW PLAN

ORESTIMBA CREEK, CALIFORNIA
FLOOD RISK MANAGEMENT
FEASIBILITY STUDY

SACRAMENTO DISTRICT

APPENDIX B

PRODUCT DELIVERY TEAM

Name	Discipline	Phone	Email
Michelle Williams	Project Manager	916-557-6750	David.P.VanRijn@usace.army.mil
Sara Schultz	Lead Planner/Planning	916-557-7368	Sara.M.Schultz@usace.army.mil
Paul Hsia	Civil Design	916-557-6648	ShangChing.Hsia@usace.army.mil
Lindsay Dembosz	Environmental Analysis	916-557-5276	Lindsay.S.Dembosz@usace.army.mil
Bob Collins	Hydrology/Reservoir Operations	916-557-7132	Robert.F.Collins@usace.army.mil
Peter Blodgett	Hydraulic Design	916-557-7529	Peter.J.Blodgett@usace.army.mil
Nick Applegate	Economics	916-557-6711	Nicholas.J.Applegate@usace.army.mil
Bob Vrchoticky	Cost Engineering	916-557-7336	Robert.D.Vrchoticky@usace.army.mil
Todd Wixom	Real Estate/Lands	916-557-6797	Todd.P.Wixom@usace.army.mil
Richard Perry	Cultural Resources	916-557-5218	Richard.M.Perry@usace.army.mil
Glen Johnson	Geotechnical Engineering	916-557-6681	Glen.A.Johnson@usace.army.mil

AGENCY TECHNICAL REVIEW TEAM

Name	Discipline	Phone	Email
Roger Setters	ATR Manager/Plan Formulation	502-315-6891	Roger.D.Setters@usace.army.mil
Stephen Golyski	Civil Design	716-879-4228	Stephen.J.Golyski@usace.army.mil
Hannah Hadley	Environmental Resources	206-764-6950	Hannah.F.Hadley@usace.army.mil
Tamara Massong	Hydrology/Reservoir Operations	505-342-3348	Tamara.M.Massong@usace.army.mil
Stephen Scissons	Hydraulics	505-342-3328	Stephen.K.Scissons@usace.army.mil
Michael Hallisy	Economics	213-452-3815	Michael.J.Hallisy@usace.army.mil
Glen Matlock	Cost Engineering ¹	509-527-7083	Glen.R.Matlock@usace.army.mil
Patty Smith	Real Estate/Lands	502-315-7017	Patty.S.Smith@usace.army.mil
Jonathan Kolber	Geotechnical Engineering	716-879-4165	Jonathan.E.Kolber@usace.army.mil

¹The cost engineering team member nomination will be coordinated with the NWW Cost Estimating Center of Expertise as required. That PCX will determine if the cost estimate will need to be reviewed by PCX staff.

VERTICAL TEAM

Name	Discipline	Phone	Email
Karen Berresford	District Support Team Lead	415-503-6557	Karen.G.Berresford@usace.army.mil
Ken Zwickl	Regional Integration Team	202-761-4085	Kenneth.J.Zwickl@usace.army.mil

PLANNING CENTER OF EXPERTISE FLOOD RISK MANAGEMENT

Name	Discipline	Phone	Email
Eric Thaut ¹	Program Manager, PCX Flood Risk Management	415-503-6852	Eric.W.Thaut@usace.army.mil
David Vigh,	Program Manager, PCX Ecosystem Restoration	601-634-5854	David.A.Vigh@usace.army.mil

¹ Primary PCX is FRM, who will coordinate with PCX for EC as appropriate.

Primary Review Member Discipline / Expertise Descriptions

Review Plan Team representation is required in the disciplines listed below. In general, the review team members will each have a minimum of 10 years experience and education in their respective discipline. A statement of qualifications is required for each discipline prior to acceptance as a review team member and for any subsequent changes thereto.

Hydrology & Hydraulics: Team member will be an expert in the field of urban hydrology & hydraulics, have a thorough understanding of the dynamics of the both open channel flow systems, enclosed systems, application of detention / retention basins, effects of best management practices and low impact development on hydrology, approaches that can benefit water quality, application of levees and flood walls in an urban environment with space constraints, non-structural measures especially as related to multipurpose alternatives including ecosystem restoration, non-structural solutions involving flood warning systems, and non-structural alternatives related to flood proofing. The team member will have an understanding of computer modeling techniques that will be used for this project (HEC-HMS, HEC-RAS, UNET, and TABS). A certified flood plain manager is recommended but not required.

Structural: Team member will have a thorough understanding of non-structural measures, levee, flood wall, and retaining wall design, and structures typically associated with levees (pump stations, gate well structures, utility penetrations, stoplog & sandbag gaps, and other closure structures). A certified professional engineer is recommended though not required.

Geotechnical: Team member will be experienced in levee & floodwall design, post-construction evaluation, and rehabilitation. A certified professional engineer is recommended.

Economics: Team member will be experienced in civil works and related flood risk reduction projects, and have a thorough understanding of HEC-FDA.

Plan Formulation: Team member will be experienced with the civil works process, watershed

level projects, current flood damage reduction planning and policy guidance, and have experience in plan formulation for multipurpose projects, specifically integrating measures for flood risk management, ecosystem restoration, recreation, watersheds, and planning in a collaborative environment.

Environmental: Team member will be experienced in NEPA/CEQA process and analysis, and have a biological or environmental background that is familiar with the project area and ecosystem restoration.

Cultural Resources: Team member will be experienced in cultural resources and tribal issues, regulations, and laws.

Civil / Site / Utilities / Relocations: This discipline may require a dedicated team member, or may be satisfied by structural or geotechnical reviewer, depending on individual qualifications. Team member will have experience in utility relocations, positive closure requirements and internal drainage for levee construction, and application of non-structural flood damage reduction, specifically flood proofing. A certified professional engineer is suggested.

Cost Estimating: Team member will be familiar with cost estimating for similar civil works projects using MCACES. Team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. A separate process and coordination is also required through the Walla Walla District DX for cost engineering.

Real Estate: Team member will be experienced in federal civil work real estate laws, policies and guidance. Members shall have experience working with respective sponsor real estate issues.

Other disciplines/functions involved in the project included as needed with similar general experience and educational requirements.

PEER REVIEW PLAN

**ORESTIMBA CREEK, CALIFORNIA
FLOOD RISK MANAGEMENT
FEASIBILITY STUDY**

SACRAMENTO DISTRICT

**APPENDIX C
ACRONYMS AND ABBREVIATIONS**

<u>Term</u>	<u>Definition</u>	<u>Term</u>	<u>Definition</u>
ASA(CW)	Assistant Secretary of the Army for Civil Works	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
ATR	Agency Technical Review	OEO	Outside Eligible Organization
CEQA	California Environmental Quality Act	PCX	Planning Center of Expertise
CESPD	Corps of Engineers, South Pacific Division	PDT	Product Delivery Team
		PAC	Post Authorization Change
DQC	District Quality Control	PPA	Project Partnership Agreement
DX	Directory of Expertise	PL	Public Law
EA	Environmental Assessment	QMP	Quality Management Plan
EC	Engineering Circular	QA	Quality Assurance
		QC	Quality Control
		RD	Reclamation District
EDR	Engineering Document Report	RED	Regional Economic Development
EIR	Environmental Impact Report	WRCB	Water Resources Control Board
EIS	Environmental Impact Statement	WRDA	Water Resources Development Act
EO	Executive Order		
ER	Ecosystem Restoration		
FDR	Flood Damage Reduction		
FEMA	Federal Emergency Management Agency		
FRM	Flood Risk Management		
GRR	General Reevaluation Report		
IEPR	Independent External Peer Review		
ITR	Independent Technical Review		
MSC	Major Subordinate Command		
NED	National Economic Development		
NER	National Ecosystem Restoration		
NEPA	National Environmental Policy Act		
O&M	Operation and maintenance		
OMB	Office and Management and Budget		