



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS  
1455 MARKET STREET  
SAN FRANCISCO, CALIFORNIA 94103-1399

*To Per 2012*

CESPD-PDS-P

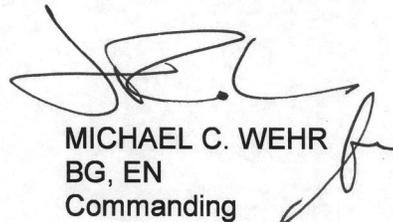
MEMORANDUM FOR Commander, San Francisco District, ATTN: CESPN-PM-A. Ms. Terry Marks

Subject: Pajaro River Project, Watsonville, California, General Reevaluation Report, Review Plan Approval

1. Pajaro River Project, Watsonville, CA, General Reevaluation Report, Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-209, Review of Decision Documents, dated 31 Jan 2012. The South Pacific Division, Planning and Policy Division, Regional Business Technical Division, and San Francisco District Support Team have reviewed the Review Plan that has been submitted. The South Pacific Division approves the Pajaro River Project, Watsonville, California, General Reevaluation Report, Review Plan.
2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan includes independent external peer review.
3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.
4. Point of contact for this action is Lawrence (Leigh) Skaggs, CESPD-PDS-P, 415-503-6588, [Lawrence.LSkaggs@usace.army.mil](mailto:Lawrence.LSkaggs@usace.army.mil).

***Building Strong From New Mexico All The Way To The Pacific!***

Encl  
Review Plan

  
MICHAEL C. WEHR  
BG, EN  
Commanding

# **REVIEW PLAN**

**Pajaro River Project, Watsonville, California  
General Reevaluation Report**

**San Francisco District**

**MSC Approval Date:** 20 December 2012

**Last Revision Date:** 20 December 2012



**US Army Corps  
of Engineers** ®

**REVIEW PLAN**

**Pajaro River Project<sup>1</sup>, Watsonville, California  
General Reevaluation Report**

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<sup>1</sup> Note that over time the “Pajaro River Flood Control Project, Pajaro River California” has become known as the “Pajaro River Project.” Pajaro River Flood Control Project, Santa Cruz, California, Memorandum for Record, CESP-OC, November 2006.

## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Pajaro River Project, Watsonville, CA General Reevaluation Report (GRR).

### b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) Pajaro River, Watsonville, GRR Project Management Plan (PMP)
- (6) Major Subordinate Command (MSC)/District Quality Management Plan (QMP)
- (7) Quality Control Certification for Pajaro River and Tributaries, California General Reevaluation Study, ITR for F4 Milestone + Materials
- (8) Pajaro River GRR AFB Policy Guidance Memorandum (PGM), dated 17 August, 2004 (see Vertical Implementation Guidance portion of Section 3 for more information)
- (9) Pajaro River Flood Risk Management Project Issue Paper, 8 November 2010

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR)/Safety Assurance Review (SAR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

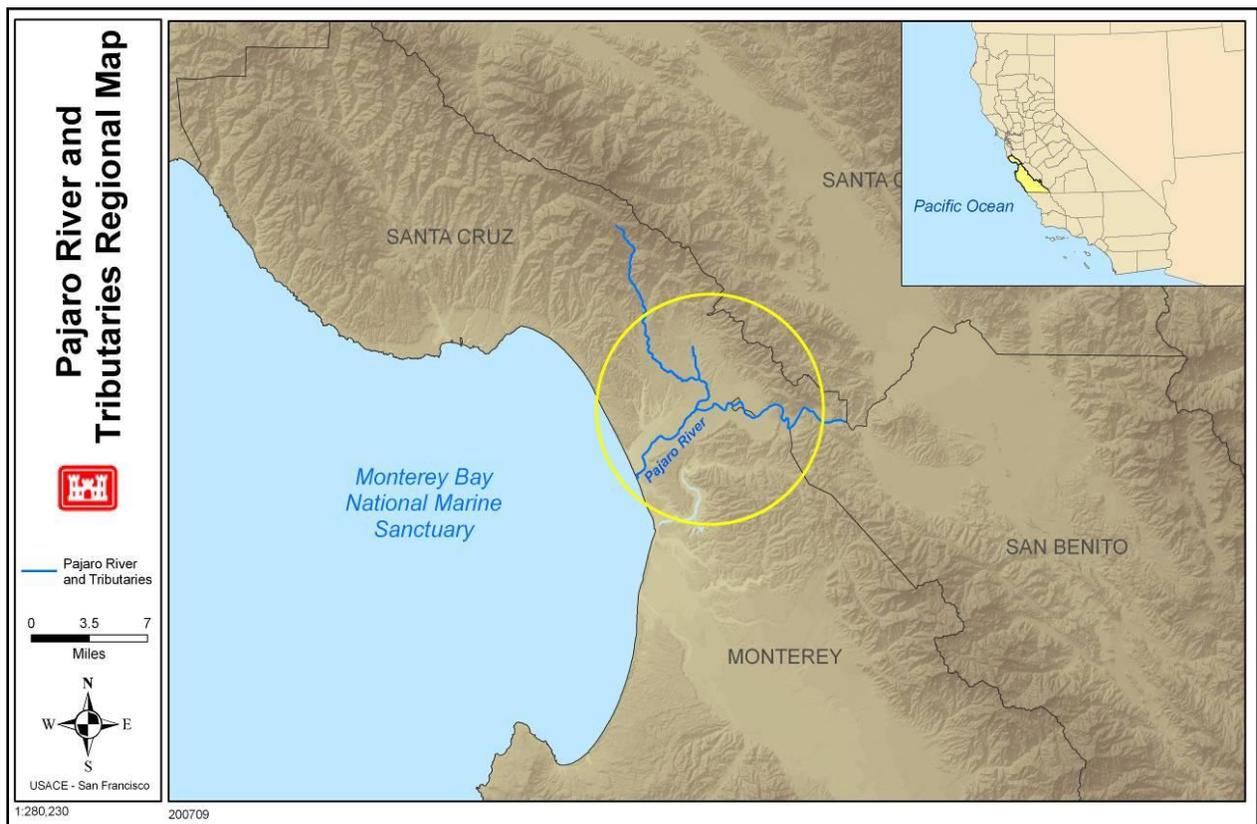
The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Flood Risk Management (FRM) PCX. Since there are ecosystem restoration components, as well as habitat assessment models used in this Project, the PCX for Ecosystem Restoration (ER) will also be coordinated with, as appropriate. The PCX will also coordinate with the RMC, as needed.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost

estimates, construction schedules, and contingencies. The RMO will coordinate with the ER PCX and RMC to ensure that review teams with appropriate expertise are assembled.

### 3. STUDY INFORMATION

- a. **Study/Project Description.** The Pajaro River watershed is located on the central coast of California, about 75 miles south of San Francisco and includes portions of Santa Clara, San Benito, Santa Cruz, and Monterey Counties. The watershed is approximately 88 miles long and 30 miles wide and drains an area of approximately 1,300 square miles of the Central California coastal range, emptying into the Pacific Ocean some six miles west of the town of Watsonville.



**Figure 1.** Project Location Map. The study area is the Pajaro River watershed located on the central coast of California, and includes portions of Santa Clara, San Benito, Santa Cruz, and Monterey Counties.

The project study area is located in the lower Pajaro River watershed. The project's study area encompasses an area of approximately 10,000 acres and includes the stream channels, active floodplains, and terraces along the Pajaro River and Salsipuedes Creek. For flood risk management (FRM) studies such as this, the study area generally corresponds with the extent of the 0.2% annual exceedence probability (AEP) floodplain. The area is divided by the Pajaro River, which serves as a border for the two counties. Santa Cruz County lies to the north of the Pajaro River while Monterey County

lies to the south of the Pajaro River. The Salsipuedes and Corralitos Creeks join just north of the Pajaro River in Santa Cruz County (Figure 2).



**Figure 2.** Study Area. The study area includes the lower Pajaro River and its tributaries, Salsipuedes and Corralitos Creeks, near the City of Watsonville in Santa Cruz County and the town of Pajaro in Monterey County. Project Reaches are shown.

There are two urban areas located within the study area: the city of Watsonville in the southern portion of Santa Cruz County (north of the Pajaro River) and the unincorporated town of Pajaro in Monterey County (south of the Pajaro River). The study area contains a significant amount of agricultural acres devoted to high value crops (e.g., strawberries, raspberries, and lettuce) and includes a significant amount of residential and commercial/industrial structures within the city of Watsonville and the town of Pajaro.

In 1949, the Corps constructed a flood control project on the Pajaro River and Salsipuedes Creek. The flood control project did not include Corralitos Creek. Federal funds for \$748,000 were expended for the construction of the project (\$4,878,000 @FY04 price level). The Pajaro levees were constructed from the river mouth to mile 11.8 on the right bank (north) and to mile 10.6 on the left bank (south) bank. The levees on Salsipuedes Creek were constructed from its confluence at the Pajaro River to mile 2.6 on the west bank and to mile 1.7 on the east bank.

The scope of this GRR reevaluates the authorized project to manage flood risk along the Pajaro River from Murphy's Road Crossing downstream to Monterey Bay (a distance of about 12 miles), and the tributaries Salsipuedes and Corralitos Creeks (a distance of about 5 miles). The areas of impact include the city of Watsonville, the town of Pajaro, and surrounding agricultural areas.

The threat of significant flooding is the primary problem identified in the study area of the Pajaro River Basin, including the lower Pajaro River and Corralitos Creek continuing to the confluence of Salsipuedes Creek. Large flood events result in high release flows in the Pajaro River and its tributaries, followed by overtopping of existing levees (Figure 3).



**Figure 3.** Flooding from Pajaro River in Monterey County, 1995. Orange circle surrounds the flooded town of Pajaro.

Past storm events have exceeded the protection level of the levees. Analysis has shown that the levees could fail at an exceedance probability of 7 percent on Pajaro River, and 18 percent for Salsipuedes and Corralitos Creeks. The threat to public safety in this community includes exposure to floodwaters, accidents during evacuation, and

accidents during flood fighting. The problems and related opportunities as reflected in the draft GRR are listed below:

- **Problem:** There is a risk to public safety in the city of Watsonville and town of Pajaro due to flooding from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.
- **Related opportunity:** There is an opportunity to improve public safety in areas of Watsonville and Pajaro that are at risk of flooding from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.
- **Problem:** There is a risk of economic damages to urban areas within the city of Watsonville and town of Pajaro and surrounding agricultural lands due to flooding from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.
- **Related opportunity:** There is an opportunity to reduce economic damages to urban areas within the city of Watsonville and town of Pajaro and surrounding agricultural lands due to flooding from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.

- b. **Study Authorizations.** In Section 10 of the Flood Control Act of December 1944 (Public Law 534, 78th Congress, 2nd Session), Congress authorized the construction of a flood control project on the Pajaro River, which was completed in 1949. Due to severe flood events in 1955 and 1958, a second flood control project was recommended and subsequently authorized by the Flood Control Act of 1966, Section 203, Public Law 89-789, 80 Stat. 1421. In this Act, Congress authorized the current (and as yet unconstructed) Pajaro River Basin project, stating:

*The project for flood protection on the Pajaro River, California, is hereby authorized substantially in accordance with the recommendations of the Chief of Engineers in House Document Numbered 491, Eighty-ninth Congress, at an estimated costs of \$11,890,000.<sup>2</sup>*

Subsequent to the 1966 authorization, the Corps, in cooperation with the non-Federal partner, formulated and recommended an authorized plan to manage the risk of flooding in the Pajaro River Basin. The channel improvements in the authorized plan included an increased channel capacity by raising the existing levees, enlarging sections of the channel, and clearing certain reaches. The plan also called for modifying the bridges along the Pajaro River and building drainage pond facilities behind certain levee sections. However, the local community rejected this plan as too large and too costly and residents requested that more alternatives be considered. The project was subsequently deferred when the non-Federal partner withdrew their participation.

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<sup>2</sup> Note that over time the “Pajaro River Flood Control Project, Pajaro River California” has become known as the “Pajaro River Project.” *Pajaro River Flood Control Project, Santa Cruz, California, Memorandum for Record, CESP-OC, November 2006.*

In 1986 Congress revisited this legislation and added the following to the Water Resources Development Act (WRDA) of 1986 (PL 99-662) and 1990 (PL 101-640). Section 1001(b)(1) of WRDA 1986 reads:

*Not later than one year after the date of enactment of this Act, the Secretary shall transmit to Congress a list of unconstructed projects, or unconstructed separable elements of projects, which have been authorized, but have received no obligations during the 10 full fiscal years preceding the transmittal of such list. A project or separable element included in such list is not authorized after December 31, 1989, if funds have not been obligated for construction of such project or element after the date of enactment of this Act and before December 31, 1989.*

The 1966 authorized Pajaro River Flood Control Project was subsequently included in a list, published in the Federal Register on 5 October 1990, of USACE projects and separable elements that were candidates for de-authorization on 1 January 1990; however, Section 107 of WRDA 1990 identified the Pajaro River Flood Control Project as remaining authorized. Section 107 reads, in part:

*(a) GENERAL RULE. -- Notwithstanding section 1001(b)(1) of the Water Resources Development Act of 1986, the following projects shall remain authorized to be carried out by the Secretary:  
(1) PAJARO RIVER, SANTA CRUZ, CALIFORNIA. -- The project for flood control, Pajaro River and tributaries, Santa Cruz, California, authorized by the Flood Control Act of 1966 (80 Stat. 1421).*

Section 107, in practical effect, nullified any Section 1001 de-authorization of the Pajaro River Flood Control Project. Furthermore, the project should never have been identified in the Federal Register as a candidate for de-authorization, since funding was periodically provided and expended between Fiscal Year 1969 through at least Fiscal Year 1982. Therefore, the 1986 WRDA claim that no funds were expended during the 10-year period prior to 1989 is erroneous.

In 1990, the WRDA of 1990, Section 107 (Public Law 101-640, Nov 28, 1990), authorized the Reconnaissance Study for Pajaro River, Santa Cruz County, California for the purpose of flood control, Pajaro River and tributaries, Santa Cruz, California, authorized by the Flood Control Act of 1966 (80 Stat 1421). Renewed interests by the County of Santa Cruz led Congress to appropriate funds in 1993 to re-study the deferred 1966 project. In January 1993, a Reconnaissance Study was conducted for the re-study of this deferred project and was initiated entirely with Federal funds as authorized by the Water Resources Development Act (WRDA) of 1990, Section 107 (Public Law 101-640, November 28, 1990), which reads in part as follows:

*(a) GENERAL RULE. Notwithstanding section 1001(b)(1) of the Water Resources Development Act of 1986, the following project shall remain authorized to be carried out by the Secretary: (1) PAJARO RIVER, SANTA CRUZ, CALIFORNIA. The project*

for flood control, Pajaro River and tributaries, Santa Cruz, California, authorized by the Flood Control Act of 1966 (80 Stat. 1421).

As this project was authorized prior to the Section 902 limit specified in WRDA '86, the Section 902 limit does not apply to it.

- c. **Non-federal Sponsors.** USACE conducted the reevaluation study in partnership with the Counties of Santa Cruz and Monterey and the City of Watsonville. The Santa Cruz County Flood Control and Water Conservation District and the Monterey County Water Resources Agency are the non-Federal sponsors for the project.
- d. **Decision Document.** The GRR documents the findings of the general reevaluation study of the Pajaro River, California, Flood Control Project authorized by Congress in 1966. The purpose of the GRR is to present the findings of the feasibility-level investigation being conducted to determine if there is a continued Federal interest in providing flood risk management improvements along the Pajaro River and its tributaries, Salsipuedes and Corralitos Creeks, near the City of Watsonville, California. This 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 decision document is a feasibility level GRR, funded with General Investigation funds that is in the PED phase undertaken to re-evaluate structural and non-structural FRM measures primarily related to structural solutions (levees and floodwalls) and possibly non-structural solutions (flood warning system and structural modifications, e.g. raising homes above the flood elevation). The report analyzes the flooding problems and develops alternatives to solve those problems. Alternatives include the no action plan and various combinations of structural and non-structural measures. An economic and environmental evaluation of alternatives will be conducted. The most economically feasible plan that meets Corps policy requirements for the Pajaro River and its tributary creeks will be recommended for implementation as the National Economic Development (NED) plan.

The study team has incorporated ecosystem restoration elements that promote environmental sustainability and address environmental compliance concerns about potential adverse impacts from the FRM features to Threatened, Endangered, and Sensitive Species (TES) – primarily steelhead trout. Ecosystem restoration measures would likely include restoration of floodplain function and habitat, primarily by incorporating setback levee design into alternative formulation. An accompanying Environmental Impact Statement (EIS) will be conducted for this project and presented with the GRR. Additionally, the GRR and accompanying appendices will address the Regional Economic Development account and Other Social Effects account, along with the NED and Environmental Quality accounts.

The approval level for the GRR is currently identified as the U.S. Army Corps of Engineers Headquarters in Washington, D.C. (HQUSACE), under the Chief of Engineers' discretionary authority. As Congressional reauthorization is not expected; a Director of Civil Works Report is required in lieu of a Chief of Engineers Report.

- e. **Potential Methods.** Potential FRM measures range from adding, modifying, and/or re-regulating storage on major tributaries and new transitory storage within the floodplains to increasing conveyance through raising levees, widening channels and floodway areas, dredging, and constructing/modifying weirs and bypasses. Non-structural floodplain management measures would also be considered. For environmental sustainability, measures range from restoring riparian, wetlands, and floodplain habitats through constructing setback levees for habitat.
- f. **Estimated Cost.** It can be assumed that the ultimate cost associated with a recommended plan is likely to be in the low hundreds of millions of dollars range (\$100M to \$200M range).
- g. **Vertical Team Implementation Guidance.** An AFB conference was held on July 21, 2004 and included HQUSACE, SPD, SPN, and the non-Federal sponsors. The AFB resulted in a number of comments, discussions, and required actions needed to satisfy HQUSACE feedback prior to public release of the GRR and EIS. HQUSACE determined that the project alternatives had not been analyzed in accordance with USACE Planning Guidance E-3.c.(2) of ER 1105-2-100. Specifically, a policy compliant alternative can only include reaches that are independently economically justified. On 17 August 2004, a Project Guidance Memorandum for the Pajaro GRR AFB was issued by HQUSACE, which substantively changed the alternative formulation for the project. The PGM directed SPN to reformulate alternative plans based on a cost-effective reach and bank comparison, and is paraphrased below:

*Costs and Benefits by Reaches. The identified NED plan (alternatives 2A and T4) appears to protect agricultural areas on several reaches of the Pajaro River, Salsipuedes Creek, and Corralitos Creek, while the majority of the project's benefits are due to reducing urban flood damages. It appears that urban damage reduction benefits may subsidize the proposed protection for the agricultural areas. The Draft GRR should show that continuous levees on both right and left banks are necessary to preclude induced flooding and provide a reconnaissance-level quantitative analysis.*

This HQUSACE feedback amounted to a significant setback for the project. It necessitated that all project alternatives be reevaluated to ensure that the economic benefits of each project reach and each bank within that reach must be greater than the costs. Specifically, the future "NED" alternative could not allow the "urban" reaches and associated benefits to economically subsidize the agricultural reaches. After reviewing existing alternatives, the PDT was required to formulate an array of new alternatives.

The 2008-2009 economic and hydraulic reanalysis of the alternatives determined that while some reaches within the Pajaro River project area were independently justified and separable<sup>3</sup>, others reaches were not justified. Specifically, it was found that Reach 1

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<sup>3</sup> A **Separable Element** (as defined by ER-1105-2-100, Appendix E, page 9):

(2) A separable element is any part of a project which has separately assigned benefits and costs, and which can be implemented as a separate action (at a later date or as a separate project).

and the right-bank of Reach 4 were not independently justified and thus could not be included in the NED alternative. After the reformulation, evaluation and comparison of seven additional alternatives (9, 9A, 9B, 9C, 9D, T5, T6), Alternative 9D was identified as the Corps' tentatively identified NED alternative. 9D was formulated based on the previous NED (2A) but did not include the economically unjustified separable elements. Alternative 9D only included the construction of new levees in reaches 2, 3 and the right-bank of lower reach 4. Based on the separable formulation, Alternative 9D included a 1-bank levee design.

Comments in the Project Guidance Memorandum were addressed through the 2008-2009 plan reformulation process. During and subsequent to that time, SPN engaged as necessary and appropriate with SPD through formal and informal meetings and strategy sessions. For instance, roughly twice a year, the non-Federal sponsors would request that SPD participate in the project's bi-monthly Executive Committee (ExComm) meetings between SPN and the non-Federal sponsors. This would engage vertical team communication and feedback with the PDT on issues including economic analysis, alternative formulation, environmental impact analysis, and general program and policy questions. This interaction has been a vital component of formulation.

- h. **Factors Affecting the Scope and Level of Review.** The scope and level of review varies based on the complexity, challenges, and risk that a given project has. The Pajaro River Project is a complex and relatively high-risk project, which will require detailed review, as documented in this Review Plan.
- i. **Challenges.** The study will be complex because of the extensive river and tributary system, existing natural reservoir, existing Federal levee system, and the high degree of urbanization within the project area. It should be noted that although there is an existing natural reservoir in the project area, ResSim is not used for GRR analysis and there is no need for reservoir modeling in the study. The outflow structure at College Lake is designed as a concrete weir that has been designed to contain inflow hydrograph volumes so that the total outflow from College Lake during the 100-year event is limited

In addition, the study area includes highly productive agricultural lands and critical habitat for TES species – primarily Steelhead Trout. With these factors, it is clear that the flood risk reduction interests of the urban residents may not be completely harmonious with agricultural interests. Similarly, the environmental interests of the resource agencies might not be completely harmonious with the urban flood risk reduction and/or agricultural interests. Monterey and Santa Cruz County agricultural interests have stated that the project should avoid encroachment on the agricultural land due to the existing high value of the croplands. In contrast, Federal and State resource agencies have repeatedly stated that they will only support alternatives that involve increases in river corridor width, channel complexity, functional floodplains, and the creation of wetlands. All of these habitat features are dependent on an increase in the river corridor width. Failure of the study to adequately address the Resource Agency's concerns would very likely result in a "Jeopardy Decision" and regulatory-type permits from those agencies would not be granted.

With this, the project has the potential to be controversial and will likely have significant agency and public interest. It is clear that the project must seek to balance trade-offs between the urban flood risk management, agricultural, and environmental interests. There is potential for significant public dispute over the nature and effects of the project since the most ecologically acceptable alternatives require additional agricultural land to be used for restoration or setback levees. Farming is the major industry in this area and land is very valuable. Additionally, the presence of TES in this watershed—in particular Steelhead trout—make the need for an environmentally friendly plan great. In order to earn public and agency support, the recommended plan will need to address and balance both economic and ecological concerns. Once the draft GRR and EIS are available for public review, the Corps will have the opportunity to request formal comments and to incorporate these comments and concerns into the GRR and EIS.

In addition, local funding for the project will be subject to the passage of local Proposition 218. This proposition would require a majority of residents living in the flood protection area to approve revenue-generating measures that fund the local share. The assessment charged to any property would be proportional to the benefit received by the property from the flood risk management measures. It appears as though the majority of residents that would receive flood protection live in Watsonville, which is in Santa Cruz County. The much smaller town of Pajaro, which also desires flood protection, is in Monterey County. Currently, the governance of the river is split between the two counties as their county line runs through the middle of the river. If it remains split by the center of the river, then both counties would have a separate Proposition 218 vote. Adding to the challenge of the local funding is the income disparity between Pajaro and Watsonville residents, as Pajaro residents may not be able to afford their share of the levee costs. Local entities are currently working on a strategy to address these issues.

- j. **Project Risk.** This project is considered to have high overall risk. The potential for failure is high because of the complex nature of the study area. Furthermore, failure of a flood risk management system in this urban area has the potential to result in human loss of life. It will be important to make sound planning assumptions in application of all the modeling and judgment and to do so will require application of multiple levels of review. 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. The San Francisco District Chief of Engineering concurs with the assessment that there is a significant threat to human life associated with the project (per EC 1165-2-209 Frequently Ask Question 3.j.).
- k. **In-Kind Contributions.** At this time, no products have been identified that will be provided by the non-Federal sponsors as in-kind services. Products and analyses

provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR.

#### **4. DISTRICT QUALITY CONTROL (DQC)**

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and shall be implemented and documented in accordance with procedures prescribed in MSC and district quality manuals and Paragraph 8 of EC 1165-2-209.

- a. Documentation of DQC.** 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 Pajaro River, Watsonville GRR, 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. For each review, DQC reviewers will provide comments to the project delivery team in Dr. Checks, MS Word or MS Excel. For each milestone (i.e., Alternative Formulation Briefing, Draft Feasibility Report, Final Feasibility Report), the comments, responses, and resolution will be compiled into a report with a signed letter of certification from the District Chief of Planning Branch. These certification sheets will be provided to the ATR Team lead for review. An example DQC Certification sheet is included in Attachment 2. DQC is required for this GRR.
- b. Products to Undergo DQC.** DQC will be performed on interim reports and milestone documentation (i.e., AFB II, Draft Feasibility Report, Final Feasibility Report) prior to agency technical review.
- c. Required DQC Expertise.** Senior-level non-PDT members and/or supervisory staff will conduct DQC. The technical disciplines represented on the DQC team will mirror that of the project delivery team. DQC will be managed by the project manager or lead planner.

#### **5. AGENCY TECHNICAL REVIEW (ATR)**

The Pajaro River Project is required to undergo ATR because ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document

explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

**a. Products to Undergo ATR.**

- i.** Draft EIS and GRR
- ii.** Final EIS and GRR

**b. Required ATR Team Expertise.** It is anticipated that the team will consist of about 11 reviewers. The ATRT members will be identified at the time the review is conducted and will be presented in Attachment 1.

**Table 1. ATR Team Members and Expertise Required**

<b>ATR Team Member</b>	<b>Expertise Required</b>
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in flood risk management; familiarity with the "Planning Guidance Notebook" (ER-1105-100) and the Water Resources Council's Principals and Guidelines.
Economics	The Economics reviewer should be a senior economist with experience in the analysis of demographics, land use, recreation analysis, and flood damage assessments using HEC-FDA; use of RECONS model to address regional economic development associated with a project; discussion of other social effects (OSE) associated with flood risk, and well as OSE benefits from reduction in flood risk; economic justification of projects in accordance with current USACE policy for urban flood damages and agricultural flood damages.
Environmental Resources	The Environmental Resources reviewer should have experience in the integration of environmental evaluation and compliance requirements pursuant to the "Procedures for Implementing NEPA" (ER 200-2-2), national environmental statutes, applicable executive orders, and other Federal planning requirements, into the planning of Civil Works projects. Experience with ESA, fishery resources, and riparian habitat is also required.
Cultural Resources	The cultural resources reviewer should be an archaeologist familiar with records searches, cultural resource survey methodology, area of potential effects, Section 106 of the National Historic Preservation Act, and State and Federal laws/executive orders pertaining to American Indian Tribes.
Hydrologist	Team member will be an expert in the field of rainfall runoff models, flow-frequency analysis, hydrologic effects of flood control operations, risk and uncertainty analysis, and hydrologic analysis using HEC-1.
Hydraulic Engineer	Team member will be an expert in the field of hydraulics and have a thorough understanding of open channel dynamics; detention/retention basins; application of levees; floodplain mapping, risk and uncertainty analysis, and computer modeling techniques, such as HEC-RAS
Geotechnical	The reviewer should be a geotechnical engineer familiar with sampling and

Engineering	laboratory testing, embankment stability and seepage analyses, planning analysis, levees, and a number of other closely associated technical subjects.
Civil Engineering	The reviewer should be a civil engineer with experience in designing grading plans and levees, levee stability, and levee and bank-protection removal or modification, earthen channels, and concrete bypasses.
Cost Engineering	The reviewer should be a cost estimating specialist competent in cost estimating for both construction and ecosystem restoration using MCACES/MII; working knowledge of construction and environmental restoration; capable of making professional determinations based on experience.
Real Estate	The real estate specialist should be familiar with real estate valuation, gross appraisal, utility relocations, takings, and partial takings as needed for implementation of Civil Works projects.
Risk Analysis	The risk analysis reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results.

- c. Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a technical review comment will normally include:
- i.** The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
  - ii.** The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
  - iii.** The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
  - iv.** The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily

resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

## **6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)**

- a. **Type I IEPR:** The Pajaro River Project will evaluate a variety of flood risk management measures, including levee construction, flood wall construction, and non-structural flood risk management measures. EC 1105-2-410 sets forth thresholds that can trigger IEPR: (1) public safety concerns; (2) high level of complexity; (3) novel or precedent-setting approaches; (4) project is controversial; (5) significant interagency interest; (6) has a total project cost greater than \$45 million; (7) preparation of an EIS and; (7) significant economic, environmental and social effects to the nation. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted.

The Pajaro study will be required to undergo Type I IEPR. The ultimate cost associated of the Pajaro River Project is likely to be between \$150M to \$200M range and the project includes the preparation of an EIS. The consequences of non-performance on project economics, the environmental and social well-being (public safety and social justice) for this project are high. There are multiple TES in the study area and non-

performance of ecosystem restoration measures could result in the harm of these listed species. Finally, there is a risk of flooding causing loss of life were the project to fail to perform. Because the project will include a Type II IEPR SAR review (see below), the below questions regarding Safety Assurance will also be addressed during the Type I IEPR.

*Paragraph 2.c.(3) of Appendix D of EC 1165-2-209:* For those decision documents where a Safety Assurance Review is required as defined in Appendix E, the panel should address the following questions for the selected alternative:

- (a) In accordance with ER1110-2-1150, is the quality and quantity of the surveys, investigations, and engineering sufficient for a concept design?
- (b) Are the models used to assess hazards appropriate?
- (c) Are the assumptions made for the hazards appropriate?
- (d) Does the analysis adequately address the uncertainty given the consequences associated with the potential for loss of life for this type of project?

Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study.

#### **(1) Products to Undergo Type I IEPR.**

- Draft EIS and GRR (including supporting documentation).

Of the products that will undergo IEPR, all will be reviewed by the PDT and undergo DQC and ATR prior to submittal for IEPR. This includes products that are produced by the non-Federal sponsors as in-kind services, though the PDT does not anticipate the sponsor producing any in-kind services at this time.

**(2) Required Type I IEPR Panel Expertise.** IEPR will be conducted by a minimum of three IEPR team members. Disciplines that are anticipated to undergo IEPR are hydrology, hydraulic engineering, geotechnical engineering, civil design, economics, and environmental impacts. Work undertaken as part of these technical disciplines is considered to be highly complex due to the size of the study area as well as the existing complex water storage and conveyance system in the study area. Specific factors for this determination are (1) population at risk from flash-flooding; (2) the complex existing levee and water conveyance system; (3) through-levee seepage, under-levee seepage and subsidence issues associated with the existing levees; (4) the complex hydraulic system and

associated floodplain; and (5) potential impacts on TES species in the project area. Of the products that will undergo IEPR, all will be reviewed by the PDT and undergo DQC and ATR prior to submittal for IEPR. This includes products that are produced by the non-Federal sponsors as in-kind services.

**Table 2. IEPR Panel Members and Expertise Required**

<b>IEPR Panel Members and Disciplines</b>	<b>Expertise Required</b>
Economics (Flood Damage Economist, Agricultural Economist)	<p>The Economics Panel Member should have enough familiarity with Corps processes to be able to assess the adequacy of the economic analysis, which will include:</p> <ul style="list-style-type: none"> <li>• Cost-Effectiveness Analysis and Incremental Cost Analysis</li> <li>• NED analysis</li> <li>• NED/NER trade-off analysis</li> <li>• HEC-FDA flood damage analysis</li> <li>• Agricultural, well, and urban frequency damage estimation modeling</li> <li>• Non-structural flood risk management</li> </ul>
Environmental Impacts	<p>The NEPA Compliance Expert should have over 10 years of experience with NEPA compliance, including consideration of impacts on riparian corridors, visual resources, and recreation resources. The Fisheries Biologist should have extensive experience with anadromous salmonid fisheries in California.</p>
Civil Engineering	<p>Civil engineer panel member shall be a registered professional engineer with 10 years experience in levee construction, bank-protection removal or modification, ecosystem restoration techniques, and operations and maintenance requirements.</p>
Geotechnical Engineering	<p>Geotechnical engineer panel member shall be a registered professional engineer with 15 years of experience in the general field, levee and dam safety analysis (including stability, seepage, erosion, and settlement), levee and dam failure modes and contributors to levee and dam failure, survey, and analysis techniques.</p>
Hydrology and Hydraulic Engineering	<p>The Hydraulic Engineering panel member shall be a registered professional engineer with 15 years who has extensive experience with risk and uncertainty analysis, fluvial flood processes, sediment transport, levee overtopping and breaching, flood mapping, model calibration and verification.</p>

(3) **Documentation of Type I IEPR.** The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

Reviews of the interim products (hydrology, hydraulic and geotechnical design and economics) will be documented in interim Review Reports using the same format as presented above for the final Review Report. The interim Review Reports will be incorporated into the final Review Report.

**a. Type II IEPR/Safety Assurance Review (SAR).** The Pajaro study will be required to undergo Type I IEPR. EC 1165-2-209 requires that an IEPR/SAR be performed on projects that involve hurricane and storm risk management, flood risk management, and other projects that where potential hazards pose a significant threat to human life. The SAR is an extension (not a replacement) of the ATR (formerly Independent Technical Review) requirements outlined in EC 1165-2-209, Quality Management for Civil Works). The intent of the SAR is to complement the ATR and to avoid impacts to program schedules and cost. Where appropriate and reasonable, the District can conduct the ATR and SAR concurrent and in concert if it enhances the review process. The SAR is a strategic level review and every effort should be made to avoid having the SAR duplicate the ATR

Details for the Type II IEPR will be determined at that time. The RMO for this review will be delegated to the Risk Management Center (RMC), which is established in the Corps of Engineers Institute for Water Resources (CEIWR) in Colorado. The RMC will select an independent contractor to develop and acquire the SAR panel that will perform the SAR. The SAR panel review contractor and the panel members will be experienced in the assessment, analysis, and evaluation of SAR projects conducted through their established IEPR process, and shall be selected in accordance with the guidance provided in EC 1165-2-209. The RMC does not have the resources to administer the SAR panel review contract and therefore, will delegate the administration of the SAR panel contract to the requesting District. The POC for the administration of this contract will be the Engineering Technical Lead.

## **7. POLICY AND LEGAL COMPLIANCE REVIEW**

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in 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 home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

## **8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering MCX certification. The RMO is responsible for coordination with the Cost Engineering MCX.

## **9. MODEL CERTIFICATION AND APPROVAL**

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, 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. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

- a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document:

**Table 3. Project Planning Models**

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Certification / Approval Status</b>
HEC-FDA 1.2.5 (Flood Damage Analysis)	The Hydrologic Engineering Center’s Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Pajaro River and its tributaries near the city of Watsonville to aid in the selection of a recommended plan to manage flood risk.	Certified
Agricultural Damage Estimation Model	In order to estimate flood damage to agriculture in the study area, it was necessary to develop a spreadsheet model that could incorporate numerous variables and that would provide a risk-based estimate of flood damage that could then be incorporated into the study’s broader FDA model. To this end, a spreadsheet model was created with MS Excel, which uses the @Risk program produced by Palisade, Inc. to run simulations that incorporate the uncertainty as defined by the specified distributions. The event-based (AEP of 10%, 4%, 2%, 1%, and .2%) damages – with uncertainty – are estimated with uncertainty in the spreadsheet model, and then entered into the feasibility study’s HEC-FDA model as aggregate exceedence probability-damage functions for the appropriate economic or planning area.	Pending— submitted to FRM PCX for Review August 2011
Well Damage Estimation Model	The spreadsheet model is intended to estimate the event-based damage (with risk and uncertainty) the numerous wells in the floodplain of the main stem and tributaries of the Pajaro River, located between Santa Cruz County and Monterey County in California. The event-based (AEP of 10%, 4%, 2%, 1%, and .2%) damages – with uncertainty – are estimated with uncertainty in the spreadsheet model, and then entered into the feasibility study’s HEC-FDA model as aggregate exceedence probability-damage functions for the appropriate economic or planning area.	Pending— submitted to FRM PCX for Review August 2011
Urban Frequency-Damage Estimation Model	The spreadsheet model estimates the stage-damage relationship (curve) for structures, contents, and automobiles in the floodplain of the main stem and tributaries of the Pajaro River, located between Santa Cruz County and Monterey County in California. The model results are used as inputs to the HEC-FDA program, which estimates the expected annual flood damages for the without- and with-project conditions. The estimate of the	Pending— submitted to FRM PCX for Review August 2011

	expected annual reduction in flood damages to structures and contents is the primary NED benefit category in the Pajaro River GRR.	
Various Habitat Evaluation Procedure models	Habitat evaluation procedure models will be used to determine the mitigation requirements for this project. Per the requirements of the Fish and Wildlife Coordination Act, the PDT is consulting with the U.S. Fish and Wildlife Service to obtain their qualitative and quantitative recommendations on mitigation requirements, which will help inform model selection for the habitat evaluation. The Ecosystem Restoration Planning Center of Expertise has responsibility for approving ecosystem output methodologies for use in ecosystem restoration planning and mitigation planning. The Ecosystem PCX will need to certify or approve for use each regionally modified version of these methodologies and individual models and guidebooks used in application of these methods. The PDT will coordinate with the Ecosystem PCX to conduct model review concurrent with ATR.	Pending
RECONS	This model will be used to assess regional economic development (RED) effects for the alternatives, and when applicable to assess other social effects (OSE).	Approved for use and USACE preferred

b. **Engineering Models.** The following engineering models are anticipated to be used in the development of the decision document:

**Table 4. Project Engineering Models**

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Approval Status</b>
HEC-RAS 4.0 (River Analysis System)	The Hydrologic Engineering Center’s River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady and unsteady flow analysis to evaluate the future without- and with-project conditions for a full network of natural and manmade channels along the Pajaro River and its tributaries.	HH&C CoP Preferred Model
MCACES or MII	These are cost-estimating models that will be used to estimate the cost of various measures and alternatives.	Approved
HEC-HMS 3.3	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems and will be used to analyze these processes in the Pajaro River	CoP Preferred

	watershed. HEC-HMS is designed to work in varied geographic areas to solve a wide range of problems.	
HEC-1 4.1	This model will be used to compute basin-average precipitation from gages or hypothetical storms. The results are the discharges that are used in the RAS model for the Pajaro River and its tributaries.	Allowed for Use
Slope/W(Geo-Slope)	Slope W is a limit-equilibrium slope stability analysis program that can import pore pressures directly from Seep/W/	CoP Preferred
Seep/W(Geo-Slope)	Seep/W is a finite element seepage program used to calculate pore pressures and seepage gradients.	CoP Preferred
UTEXAS4	UTEXAS 4 is a limit equilibrium slope stability program.	CoP Preferred
GMS Seep2d	Seep2d is a finite element seepage program used to calculate pore pressures and seepage gradients.	CoP Preferred

## 10. REVIEW SCHEDULES AND COSTS

a. **ATR Schedule and Cost.** The estimated ATR cost is \$70,000.

**Table 5. ATR Timeline**

<b>Completed ATR Review Schedule</b>	<b>Date</b>
ATR Feasibility Scoping Meeting material	November 2000
ATR Alternatives Review Conference material <sup>1</sup>	September 2003
Alternative Formulation Briefing (AFB)	July 2004
AFB Policy Memo Issued	August 2004
ATR on draft GRR with appendices initiated but not completed	May 2009
ATR Hydraulic Evaluation LPP	2011
<b>Planned ATR Review Schedule</b>	<b>Date</b>
Draft EIS & GRR	February 2013
ATR Draft EIS & GRR Comments	February 2013
PDT Draft EIS & GRR Response	March 2013
ATR Draft EIS & GRR Back-check	March 2013
ATR Certification Draft Report	April 2013
IRC (AFB II)	August 2013
Public Review of Draft Report	September 2013
Final GRR and Final EIS	November 2013
ATR Final GRR and Final EIS Comments & Backcheck/Respond to Public Comments	December 2013
Submit Final Report to SPD	February 2014
SPD Review for Public Release	February 2014
File FEIS with EPA	March 2014
Respond to Public Comment on Final Report	April 2014
Submit Final Report to SPD	May 2014

Final SPD Review	June 2014
HQUSACE Review and Approval	July 2014 – September 2014

<sup>1</sup>Required by the Major Subordinate Command. ATR Timeline reflects target dates that are subject to change given the dynamic Feasibility Study process, public consensus, and environmental resource agency coordination.

**b. IEPR Cost and Schedule.**

**Type 1 IEPR.** Type I IEPR is currently estimated to be \$300,000. IEPR is a project cost. The IEPR panel review will be Federally funded. In-house costs associated with obtaining the IEPR panel contract as well as responding to IEPR comments will be cost shared expenses. It is not anticipated that the public, including scientific or professional societies, will be asked to nominate potential external peer reviewers.

**Type II IEPR.** Typically, SARs for these types of work products range from \$50,000 to \$250,000. SAR is a project cost, but is not cost shared. The SAR panel review will be federally funded. In-house costs associated with developing and procuring the SAR panel contract as well as PDT response to SAR comments will be cost shared expenses. The cost for SAR will be developed with an SAR coordinator once a coordinator is identified by the RMO, which is the RMC for SARs.

**Table 6: IEPR Activity**

IEPR Activity	Date
Begin Peer Review Procurement for AFB II	March 2013
Independent Peer Review	May 2013 – July 2013
Incorporate AFB & IEPR Comments and pre EIS and GRR for release	Aug – Sept 2014
IEPR panel member and/or OEO representative participates in CWRB	TBD

**c. Model Certification/Approval Schedule and Cost.** The estimated cost for model certification/approval is \$50,000. The models were submitted in 2011, but the schedule for review and approval for use is still TBD. The District has recently requested that the PCX provide an update on the schedule for approval for use of these models.

**11. PUBLIC PARTICIPATION.**

The public has participated in the Pajaro River project since the start of the Reconnaissance Study in February 1993. From 2001-2004 plan formulation for this project was driven by a formal stakeholder process. The project sponsors hosted over 20 formal meetings from June – December 2001, alone. These meetings included those with all project stakeholders, working group meetings, and focus group meetings with the agricultural industry, local environmental organizations, regulatory agencies, the city of Watsonville, town of Pajaro, and community organizations. In addition to the formal meetings, a series of Working

Group meetings were held that involved executive and technical staff from Santa Cruz and Monterey counties, District staff of Congressman Sam Farr, the USACE, and hydraulic engineers from Northwest Hydraulic Consultants. The Working Group was charged with synthesizing all information and viewpoints, and initiating project design options for stakeholder consideration (McBride and Associates 2001). A Technical Committee was created in May 2002 to involve the resource agencies early on in the planning process of this project. Primary participants include scientists from National Oceanic and Atmospheric Administration (NOAA) Fisheries, California Department of Fish and Game, Corps of Engineers, Monterey County, Santa Cruz County, California Coastal Commission, US Fish and Wildlife Service, and the Regional Water Quality Control Board. The major topics of discussion is the consistency of the proposed project alternatives with laws, regulations and policies, such as, but not limited to, the Endangered Species Act, Clean Water Act, Coastal Zone Protection Act and the Fish and Wildlife Coordination Act.

Through this public participation as well as policy compliance feedback provided by the MSC and HQUSACE, the draft GRR and EIS have gone through many iterations. The public review of the draft GRR and draft EIS will likely occur in 2013 but is contingent on approval by SPD and HQUSACE at the next project AFB 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 is expected to begin approximately 1 month after the completion of the ATR process. The period will last a minimum of 45 days as required for an EIS. 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 IEPR team prior to completion of the final Review Report and 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. Upon completion of the review period, comments will be consolidated in a matrix and addressed, as necessary. A comment resolution meeting will take place as necessary to determine 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 in the GRR. It will indicate whether the public, including scientific or professional societies will be asked to nominate potential peer reviewers. It will also indicate how the final decision document, associated review reports, and USACE responses to IEPR comments (if applicable) would be made available to the public.

## **12. REVIEW PLAN APPROVAL AND UPDATES**

The South Pacific Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope

and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, will be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC. The PDT should contact the RMO about 8 weeks in advance of any scheduled peer review or model certification effort to coordinate the effort.

### **13. REVIEW PLAN POINTS OF CONTACT**

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Terry Marks, San Francisco District Project Delivery Team Project Manager, contact at (415) 503-6907, or [Terry.L.Marks@usace.army.mil](mailto:Terry.L.Marks@usace.army.mil).
- Paul Bowers, District Support Team Lead, South Pacific Division, contact at 415-503-6556, or [Paul.W.Bowers@usace.army.mil](mailto:Paul.W.Bowers@usace.army.mil).
- Eric Thaut, Program Manager, Flood Risk Management Planning Center of Expertise, contact at 415-503-6852, or [Eric.W.Thaut@usace.army.mil](mailto:Eric.W.Thaut@usace.army.mil).

## ATTACHMENT 1: TEAM ROSTERS

### PRODUCT DELIVERY TEAM

Name	Discipline	Phone	Email
Terry Marks	Project Manager	415-503-6907	<a href="mailto:Terry.L.Marks@usace.army.mil">Terry.L.Marks@usace.army.mil</a>
Joél Benegar	Lead Planner	415-503-6848	<a href="mailto:Joel.R.Benegar@usace.army.mil">Joel.R.Benegar@usace.army.mil</a>
TBD	Civil Design		
Chris Eng	Environmental Planner	415-503-6868	<a href="mailto:Christopher.K.Eng@usace.army.mil">Christopher.K.Eng@usace.army.mil</a>
Bill Firth	Hydrology & Hydraulic Engineer	415-503-6901	<a href="mailto:William.R.Firth@usace.army.mil">William.R.Firth@usace.army.mil</a>
Mark Bierman	Economics	415-503-6830	<a href="mailto:Mark.D.Bierman@usace.army.mil">Mark.D.Bierman@usace.army.mil</a>
York So	Cost Engineer	415-503-6878	<a href="mailto:York.I.So@usace.army.mil">York.I.So@usace.army.mil</a>
Bonivee Delapaz	Real Estate/Acquisition Specialist	916-557-7738	<a href="mailto:Bonivee.A.Delapaz@usace.army.mil">Bonivee.A.Delapaz@usace.army.mil</a> <a href="mailto:Delapaz@usace.army.mil">Delapaz@usace.army.mil</a>
Richard Stratford	Cultural Resources	415-503-6845	<a href="mailto:Richard.A.Stradford@usace.army.mil">Richard.A.Stradford@usace.army.mil</a>
Brian Hubel	Geotechnical Engineer	415-503-6922	<a href="mailto:Brian.A.Hubel@usace.army.mil">Brian.A.Hubel@usace.army.mil</a>
Syed Burney	Engineering and Technical Services	415-503-6826	<a href="mailto:Syed.I.Burney@usace.army.mil">Syed.I.Burney@usace.army.mil</a>

### AGENCY TECHNICAL REVIEW TEAM

Name, credentials	Discipline (years of	Phone	Email
TBD	ATR Manager/Plan Formulation		
TBD	Civil Design		
TBD	Environmental Resources		
TBD	Hydrology/Reservoir		
TBD	Hydraulics		
TBD	Economics		
TBD	Cost Engineering <sup>1</sup>		
TBD	Real Estate/Lands		
TBD	Cultural Resources		
TBD	Geotechnical Engineering		

<sup>1</sup>The cost engineering team member nomination will be coordinated with the NWW Cost Estimating Center of Expertise as required.

### VERTICAL TEAM

Name	Discipline	Phone	Email
Paul Bowers	District Support Team Lead	415-503-6556	<a href="mailto:Paul.W.Bowers@usace.army.mil">Paul.W.Bowers@usace.army.mil</a>
Bradd Schwichtenberg	Regional Integration Team	202-761-1367	<a href="mailto:Bradd.R.Schwichtenberg@usace.army.mil">Bradd.R.Schwichtenberg@usace.army.mil</a>
Pauline Acosta	Regional Integration Team	202-761-4085	<a href="mailto:Pauline.M.Acosta@usace.army.mil">Pauline.M.Acosta@usace.army.mil</a>
Eric Thaut	RMO	415-503-6852	<a href="mailto:Eric.W.Thaut@usace.army.mil">Eric.W.Thaut@usace.army.mil</a>
BG Michael C. Wehr	MSC	415-503-6501	<a href="mailto:Michael.C.Wehr@usace.army.mil">Michael.C.Wehr@usace.army.mil</a>

**ATTACHMENT 2: CERTIFICATIONS**

**STATEMENT OF TECHNICAL REVIEW  
COMPLETION OF QUALITY ASSURANCE REVIEW AND DISTRICT QUALITY CONTROL**

The District has completed the \_\_\_\_\_ of the Pajaro River Project, located in Watsonville, California. Notice is hereby given that (1) a Quality Assurance review has been conducted as defined in the Quality Management Plan and (2) district quality that is appropriate to the level of risk and complexity inherent in the project, have been conducted as defined in the project’s Peer Review Plan. During the district quality control 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 review also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from QA and DQC have been resolved.

\_\_\_\_\_  
Tom Kendall  
*Chief, Planning Branch*  
CESPN-ET-P

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name  
*Chief, Engineering Branch*  
CESPN-ET-ED

\_\_\_\_\_  
Date

\_\_\_\_\_  
Terry Marks  
Project Manager  
CESPN-PM-A

\_\_\_\_\_  
Date

## COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the General Reevaluation Report (GRR) for the Pajaro River Project, Watsonville, CA. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, 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 results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks<sup>sm</sup>.

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Name  
ATR Team Leader  
*CESXX-XX-XX*

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Date

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Terry Marks  
*Project Manager*  
*CESPN-PM-A*

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Date

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Syed Burney  
*Review Management Office Representative*  
*CESPN-ET*

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Date

## CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: [Describe the major technical concerns and their resolution.](#)

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

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Name  
*Chief, Engineering Branch*  
*CESPN-ET-ED*

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Date

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Tom Kendall  
*Chief, Planning Branch*  
*CESPN-ET-P*

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Date

### ATTACHMENT 3: REVIEW PLAN REVISIONS

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>
7 April 2009	Original Review Plan	
28 Nov 2012	Updated Review Plan to meet updated guidance, template and to update review strategy, schedule, and project information.	

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

<b><u>Term</u></b>	<b><u>Definition</u></b>	<b><u>Term</u></b>	<b><u>Definition</u></b>
AEP	Annual Exceedence Probability	NER	National Ecosystem Restoration
AFB	Alternative Formulation Briefing	NEPA	National Environmental Policy Act
ASA(CW)	Assistant Secretary of the Army for Civil Works	O&M	Operation and maintenance
ATR	Agency Technical Review	OMB	Office and Management and Budget
CSDR	Coastal Storm Damage Reduction	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DPR	Detailed Project Report	OEO	Outside Eligible Organization
DQC	District Quality Control/Quality Assurance	OSE	Other Social Effects
DX	Directory of Expertise	PCX	Planning Center of Expertise
EA	Environmental Assessment	PDT	Project Delivery Team
EC	Engineer Circular	PAC	Post Authorization Change
EIS	Environmental Impact Statement	PMP	Project Management Plan
EO	Executive Order	PL	Public Law
ER	Ecosystem Restoration	QMP	Quality Management Plan
FDR	Flood Damage Reduction	QA	Quality Assurance
FEMA	Federal Emergency Management Agency	QC	Quality Control
FRM	Flood Risk Management	RED	Regional Economic Development
FSM	Feasibility Scoping Meeting	RMC	Risk Management Center
GRR	General Reevaluation Report	RMO	Review Management Organization
Home District/MSD	The District or MSD responsible for the preparation of the decision document	RTS	Regional Technical Specialist
HQUSACE	Headquarters, U.S. Army Corps of Engineers	SAR	Safety Assurance Review
IEPR	Independent External Peer Review	SPD	South Pacific Division
ITR	Independent Technical Review	SPN	San Francisco District
LRR	Limited Reevaluation Report	TES	Threatened and Endangered species
MSC	Major Subordinate Command	USACE	U.S. Army Corps of Engineers
NED	National Economic Development	WRDA	Water Resources Development Act