PAJARO RIVER FLOOD RISK MANAGEMENT GENERAL REEVALUATION REPORT & INTEGRATED ENVIRONMENTAL ASSESSMENT

November 2017

Updated Draft FONSI and Executive Summary to the Draft General Reevaluation Report and Integrated EA

Prepared by:

U.S. Army Corps of Engineers, San Francisco District

DRAFT FINDING OF NO SIGNIFICANT IMPACT
Pajaro River Flood Risk Management Project
Monterey and Santa Cruz Counties, California

The integrated General Reevaluation Report and Environmental Assessment (GRR/EA), dated [*add date of final GRR/EA*], for the Pajaro River Flood Risk Management Study (Pajaro Study), addresses flood risk in the City of Watsonville, the town of Pajaro, and surrounding agricultural lands in Monterey and Santa Cruz Counties, California. Based on this report, the reviews of other Federal, State, and local agencies, Native American Tribes, input from the public, and the review by my staff, I find the *Tentatively Selected Plan (TSP)* to be technically feasible, economically justified, cost effective, in accordance with environmental statutes, and in the public interest.

The original Pajaro River project was authorized by the Flood Control Act of 1944 (Public Law No. 534, 78th Congress, Ch. 665, 2nd Session). The existing Pajaro flood risk management project (Pajaro Project) was authorized by the Flood Control Act of 1966 (Section 203, Public Law 89-789, 80 Stat. 1421). Section 1001 of the Water Resources Development Act (WRDA) of 1986 states that every two years, the Secretary of the Army shall submit a list of projects to Congress for de-authorization. The list would include authorized projects that have not been constructed and have received no funding for the previous ten fiscal years. In order to continue authorization, the Pajaro Project was identified in the WRDA 1990, Section 107 Continuation of Authorization of Certain Projects (Public Law 101-640, November 28, 1990). Section 107 of WRDA 1990 provided that the Pajaro Project, as authorized by the Flood Control Act of 1966, remain authorized.

The GRR/EA, incorporated herein by reference, evaluated various non-structural and structural alternatives to reduce flood risk along the lower Pajaro River, Salsipuedes and Corralitos Creeks. In addition to a "no action" plan, nine alternative plans were evaluated in the environmental review. The Tentatively Selected Plan (TSP) includes measures to improve existing levees, measures to construct new levees (including setback levees and a ring levee), and measures to construct floodwalls. The plan recommended for implementation, the TSP, includes construction of:

Salsipuedes Creek and Corralitos Creek

- 1 mile of Floodwall
- 0.6 miles of Floodwall on Existing levee
- 4.1 miles of new levee of which 1.5 miles is Setback levees
- 0.5 miles of existing levee improved in place
- 37.2 acres of floodplain between setback levee and creek

- 1.5 miles of existing levee demolition
- 2 bridges Raised

Pajaro River

- 0.85 miles of floodwalls on existing levees
- 5.75 miles of new levees of which 5.10 miles is setback levees
- 0.3 miles of levee improved in place
- 66 acres of floodplain between setback levees and the river
- 5.10 miles of existing levee demolition

The proposed project could have a significant effect on the environment. However, implementation of the following mitigation features would reduce all significant impacts for a mitigated FONSI, thereby avoiding the need to prepare an EIS. Mitigation measures would be implemented, as described in the GRR/EA, to reduce effects to the following resources: aesthetics (Section 4.3.3), agriculture (Section 4.4.3), air quality (Section 4.5.3), aquatic resources (Section 4.6.3), cultural resources (Section 4.7.3), hydrology, hydraulics, geomorphology (Section 4.8.3), land use (Section 4.9.3), noise and vibration (Section 4.10.3), public health and environmental hazards (Section 4.11.3), recreation (Section 4.12.3), socioeconomics and environmental justice (4.13.3), special status federal species (4.14.3), traffic and circulation (4.15.3), utilities and public services (Section 4.16.3), vegetation and wildlife (Section 4.17.3), and water quality (Section 4.18.3). The project has been designed to be self-mitigating and additional compensatory habitat mitigation is not required.

The project is in compliance with the Endangered Species Act. We have requested concurrence from U.S. Fish and Wildlife Service and National Marine Fisheries Service with our determination that the project may affect, but is not likely to adversely affect federally listed species.

In accordance with the guidelines for specification of disposal sites for dredged or fill material under Section 404(b)(1) of the Clean Water Act, the Corps determined that the TSP is the least environmentally damaging practicable alternatives. A letter of support for the project has been requested from the RWQCB. A water quality certification pursuant to Section 401 of the Clean Water Act will be obtained from the Central Coast Regional Water Quality Control Board (RWQCB) prior to initiating construction.

In compliance with the Clean Air Act of 1963, as amended, the Corps will avoid and minimize impacts to air quality with the implementation of best management practices. The Corps will coordinate with Monterey County and Santa Cruz County Departments of Public Works, City of Watsonville Department of Public Works, and local recreation users, and will implement best management practices for safety, such as flaggers, signage, detours, and fencing to notify and control recreation access and traffic around construction sites during construction.

The project is in compliance with Section 106 of the National Historic Preservation Act. A Programmatic Agreement between Corps and the California State Historic Preservation Officer is in development and will be executed before I sign this finding of no significant effect (FONSI). The PA will allow for phased implementation of Section 106 compliance.

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resource Council's 1983 *Economic and Environmental Principles and Guidelines for Water and Related Land Resource Implementation Studies*. All applicable laws, executive orders, regulations and local government plans were considered in the evaluation of alternatives.

Having reviewed the GRR/EA and information provided by all interested parties, I find that the Pajaro Project would not have a significant long-term effect on environmental, social, or cultural resources. Based on these considerations, there is no need to prepare an Environmental Impact Statement. Therefore, an Environmental Assessment and FONSI provide adequate environmental documentation to implement the project.

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Travis J. Rayfield
Lieutenant Colonel, U.S. Army
District Commander

Table of Contents

DRAFT FINDING OF NO SIGNIFICANT IMPACT 1

EXECUTIVE SUMMARY 7

STUDY AREA 7
BACKGROUND AND NEED 8
CONSIDERATION OF ALTERNATIVE PLANS 12
AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION 15
COMPLIANCE WITH APPLICABLE LAWS, REGULATIONS, POLICIES AND PLANS 15
PUBLIC INVOLVEMENT 15
COMMUNICATION WITH NATIVE AMERICANS 16
AREAS OF KNOWN OR EXPECTED CONTROVERSY 16
TENTATIVELY SELECTED PLAN 17
ESTIMATED COST AND COST SHARING 20
MAJOR CONCLUSIONS 22

ACRONYMS 23

CHAPTER 1 – STUDY INFORMATION 27

1.1 INTRODUCTION 27
1.2 PURPOSE AND NEED FOR THE PROJECT 27
1.3 PROJECT AUTHORIZATION HISTORY 27
1.4 STUDY AREA 28
1.5 PROJECT SPONSOR AND PARTICIPANTS 31
1.6 HISTORY OF INVESTIGATIONS IN THE STUDY AREA 32
1.7 EXISTING PROGRAMS, STUDIES, AND PROJECTS 33
1.8 INTENDED USES OF THE INTEGRATED REPORT 34
1.9 TERMINOLOGY USED IN THIS INTEGRATED REPORT 34
1.10 REPORT ORGANIZATION 35

CHAPTER 2 – PROBLEM DESCRIPTION AND PLANNING OBJECTIVES 36

2.1 WATER RESOURCES PROBLEMS 36
2.2 PROBLEM STATEMENT SUMMARY 43
2.3 OPPORTUNITIES 43
2.4 PLANNING OBJECTIVES 44
2.5 PLANNING CONSTRAINTS 45
2.6 OTHER PLANNING CONSIDERATIONS 46
2.7 INVENTORY OF EXISTING CONDITIONS 46
2.8 FUTURE WITHOUT PROJECT CONDITIONS 54
2.9 HISTORY OF PLAN FORMULATION 55

CHAPTER 3 – ALTERNATIVES 56

3.1 OVERVIEW OF PLANNING PROCESS 56
3.2 Description of Final Array of Alternatives 56
3.3 EVALUATION OF THE FINAL ARRAY OF ALTERNATIVES 66
3.4 OPTIMIZATION AND INCREMENTAL ANALYSIS OF ALTERNATIVES 1 AND 6 71

3.5 ENGINEERING PERFORMANCE OF THE TSP....79
3.6 THE TENTATIVELY SELECTED PLAN....80

CHAPTER 4 – AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES..... 81

4.1 INTRODUCTION....81
4.2 RESOURCES DISMISSED FROM DETAILED EVALUATION....91
4.3 AESTHETICS....92
4.4 AGRICULTURE....97
4.5 AIR QUALITY....101
4.6 AQUATIC RESOURCES....113
4.7 CULTURAL RESOURCES....119
4.8 HYDROLOGY, HYDRAULICS, GEOMORPHOLOGY....127
4.9 LAND USE....136
4.10 NOISE AND VIBRATION....141
4.11 PUBLIC HEALTH AND ENVIRONMENTAL HAZARDS....147
4.12 RECREATION....151
4.13 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE....153
4.14 SPECIAL STATUS SPECIES....159
4.15 TRAFFIC AND CIRCULATION....163
4.16 UTILITIES AND PUBLIC SERVICES....171
4.17 VEGETATION AND WILDLIFE....175
4.18 WATER QUALITY....183
4.19 CUMULATIVE EFFECTS....189
4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES....194
4.21 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY....194

CHAPTER 5 - PUBLIC INVOLVEMENT, COORDINATION, CONSULTATION, AND COMPLIANCE 196

5.1 PUBLIC INVOLVEMENT....196
5.2 AGENCY CONSULTATION AND COORDINATION....201
5.4 ISSUES OF KNOWN OR EXPECTED CONTROVERSY....205
5.5 COMPLIANCE WITH APPLICABLE LAWS, REGULATIONS, AND POLICIES....206

CHAPTER 6 – TENTATIVELY SELECTED PLAN 209

6.1 TENTATIVELY SELECTED PLAN....209
6.2 FEATURES AND ACCOMPLISHMENTS....209
6.3 MITIGATION....210
6.4 OPERATIONS, MAINTENANCE, REPAIR, REPLACEMENT, AND REHABILITATION....211
6.5 REAL ESTATE....211
6.6 PLAN ECONOMICS AND COST SHARING....212
6.7 RISK AND UNCERTAINTY....214
6.8 RESIDUAL RISK....214
6.9 EXECUTIVE ORDER 11988....214
6.10 ENVIRONMENTAL OPERATING PRINCIPLES....218
6.11 CAMPAIGN PLAN....219
6.12 PLAN IMPLEMENTATION....221

6.13 SCHEDULE 222

7.0 PREPARERS 223

8.0 REFERENCES 224

EXECUTIVE SUMMARY

This integrated General Reevaluation Report and Environmental Assessment (GRR/EA) describes the planning process followed to develop and evaluate an array of alternatives and identify the Tentatively Selected Plan (TSP; NEPA preferred alternative) to address flood risk management problems and opportunities in the Pajaro River Project Area. The U.S. Army Corps of Engineers (USACE), the Santa Cruz County Flood Control and Water Conservation Agency (Santa Cruz County) and the Monterey County Water Resources Agency (Monterey County) are sponsoring this study. This integrated report meets the environmental review and disclosure requirements of the National Environmental Policy Act (NEPA). USACE is the lead agency under NEPA.

This GRR/EA is being released for concurrent public review, internal policy review, and Agency Technical Review (ATR). All comments received during the 30-day public review period will be considered and incorporated into the final GRR/EA, as appropriate. The Final GRR/EA will present the recommended plan for implementation with approval obtained through a USACE Director of Civil Works Report (Director's Report) in accordance with the Chief of Engineers discretionary authority and Congressional project authorization provided by Section 203 of the 1966 Flood Control Act; or if warranted through with a new Chief of Engineers Report (Chief's Report) and a new Congressional project authorization.

STUDY AREA

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 (**Figure ES-1**). The watershed, which is approximately 88 miles long and 30 miles wide, drains an area of approximately 1,300 square miles of the southern section of the California Coastal Ranges, emptying into the Pacific Ocean six river miles southwest of the City of Watsonville.

The project area is located within the lower Pajaro River watershed. It encompasses an area of approximately 10,000 acres, which includes the stream channels, active floodplains, and terraces along the Pajaro River and Salsipuedes and Corralitos Creeks. 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, and Monterey County lies to the south. Salsipuedes and Corralitos Creeks, which join just north of the Pajaro River in Santa Cruz County, are tributaries of the Pajaro River.

The City of Watsonville, north of the Pajaro River, and the unincorporated Town of Pajaro, south of the Pajaro River, are the two urban areas within the project area (Figure ES-1). The project area includes both widespread agricultural land devoted to high–value crops (e.g.,

strawberries, raspberries, and lettuce) and extensive residential, commercial, and industrial structures within the two urban areas.

BACKGROUND AND NEED

The purpose of the project is to reduce flood risk to the City of Watsonville, the Town of Pajaro, and surrounding agricultural lands. The purpose of the study is to determine if there is a Federal interest in investing in additional flood risk management solutions in the study area. The Pajaro River Watershed has a long history of flooding that has resulted in substantial damages in the urban areas of the Town of Pajaro and City of Watsonville and surrounding agricultural areas. The study involved the formulation of alternative plans to reduce flood risk in the study area, evaluation of economic and environmental impacts of the alternatives, including the no action alternative, and identification of the plan that maximizes the net National Economic Development (NED) benefits and complies with applicable federal and state environmental regulations.

Since construction of the USACE levee system in 1949, there have been four major floods on the Pajaro River and its tributaries, 1955, 1958, 1995, and 1998, that have resulted in significant flooding caused by overtopping or breaching of the levees. Peak discharges for the four major post-construction floods exceeded the 19,000 cubic feet per second (cfs) design discharge upstream of the Salsipuedes Creek confluence.

The March 1995 storm resulted in the greatest flood damages. During that storm, the breach resulted in the Pajaro River completely inundating the Town of Pajaro and the surrounding agricultural areas. That flood caused damage estimated to be more than $95 million ($67 million in agricultural flood damages and $28 million in urban flood damages). One flood–related death occurred during the event (San Francisco Examiner 1995). The City of Watsonville was threatened, but it only sustained minor flood damage. Based on recent hydrologic analysis, the March 1995 flood was estimated to be the equivalent of a 6.5% (15.4-year) annual chance exceedance (ACE) flood event.

Floodwaters from the February 1998 storm, which is considered the flood of record, caused a major levee breach along the north bank of the Pajaro River approximately 1,500 feet downstream of Highway 1. Flooding was mainly limited to agricultural land. Scour and erosional damage to the project itself and the surrounding area was extensive. According to the counties, costs for emergency repair work alone totaled nearly $9 million. The ACE for the February 1998 flood event was estimated to be 3.5% (28.5-year). Although this was the flood of record, it does not approach the potential flooding of a 1% (100-year) ACE flood event if there were no project.

Since construction of levees along the Pajaro River and Salsipuedes Creek in 1949, documented flooding in the City of Watsonville area has been limited to overflow from Corralitos Creek (where no levee construction has been implemented), which occurred in 1955, 1982, and 1986.

The greatest economic damages resulting from flooding on Corralitos Creek occurred in 1955 when 29 city blocks were flooded to a maximum depth of 2 feet. Floodwaters overtopped the south bank of Corralitos Creek between Green Valley Road and Highway 152. No lives were lost in the storm, but 972 people were evacuated and over $1 million in damages were reported.

Flooding occurred along the southeastern perimeter of Watsonville on January 4, 1982, when the Corralitos Creek levee overtopped. Several homes were damaged, and there was shallow flooding along Bridge Street and Riverside Drive. According to stream gauge records for Corralitos Creek at Freedom, the January 1982 flood is the flood of record for Corralitos Creek. Flooding was also reported to have occurred in February 1986 along Corralitos Creek between the community of Freedom and Highway 152. Local estimates were that several million dollars of flood damage resulted.

The January 1997 flood exceeded the channel capacity on Corralitos Creek, which resulted in minor flooding upstream of the Highway 152 Bridge. During the high flows of February 1998, backwater from the Pajaro River caused overtopping of the east–bank levee in the lower reach of Salsipuedes Creek, just upstream of the Highway 129 Bridge. No flood damages were reported, but levee seepage was evident along the Salsipuedes Creek west–bank levee, just upstream of Highway 152. Emergency repairs by USACE prevented the possibility of severe flooding throughout Watsonville.

There is significant risk to public health, safety, and property in the project area associated with flooding. The existing levee system within the project area provides flood risk management benefits to over 10,000 acres of mixed-use land with a current population estimated at 12,600 residents located in the floodplain (approximately 3,000 residents in Pajaro and 9,600 in Watsonville) and an estimated $1.2 billion in damageable property. Further, as the floodplain habitat has been altered, native functional habitats have been lost causing impacts to endangered and threatened species.

The problems and opportunities in the Pajaro Project area include:

- PROBLEM: There is a risk to human life and safety in the City of Watsonville, Town of Pajaro, and surrounding unincorporated areas due to flooding from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.

- PROBLEM: There is a high risk of economic flood damage to urban infrastructure within the City of Watsonville and Town of Pajaro from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.

- PROBLEM: There is a high risk of economic flood damage to agricultural infrastructure and croplands within the project area from the Pajaro River, Salsipuedes Creek, and Corralitos Creek.

- PROBLEM: Aquatic and riparian habitat have been significantly compromised in the Pajaro River and Salsipuedes Creek tributary since the construction of the 1949 Federal project. The existing levee system and land uses have adversely modified geomorphic processes, ecological functions, and water quality associated with these ecosystems, which act as essential habitat for federally listed species. These ecosystems have been designated as critical habitat for steelhead trout.

Opportunities listed here are those positive conditions to be achieved by an alternative plan.

- OPPORTUNITY: There is an opportunity to coordinate with Pajaro River watershed flood and land management organizations, in the effort to deliver sustainable flood risk management within the watershed. Flood risk management includes public safety and flood damage reduction for urban and agricultural areas.

- OPPORTUNITY: To sustain and increase aquatic habitat, riparian habitat, and water quality for special status and other native species in conjunction with other flood risk management features in the project area.

- OPPORTUNITY: There is an opportunity to restore a more naturally functioning riverine system that would minimize future maintenance requirements and related impacts to riverine ESA species.

- OPPORTUNITY: Based on the subsurface geological setting, there is an opportunity to improve water recharge in the Corralitos reaches of this project in conjunction with other flood risk management features.

- OPPORTUNITY: There is an opportunity to increase recreational opportunities in conjunction with flood risk management features and existing land uses.

Figure ES-1: The Pajaro River Study Area

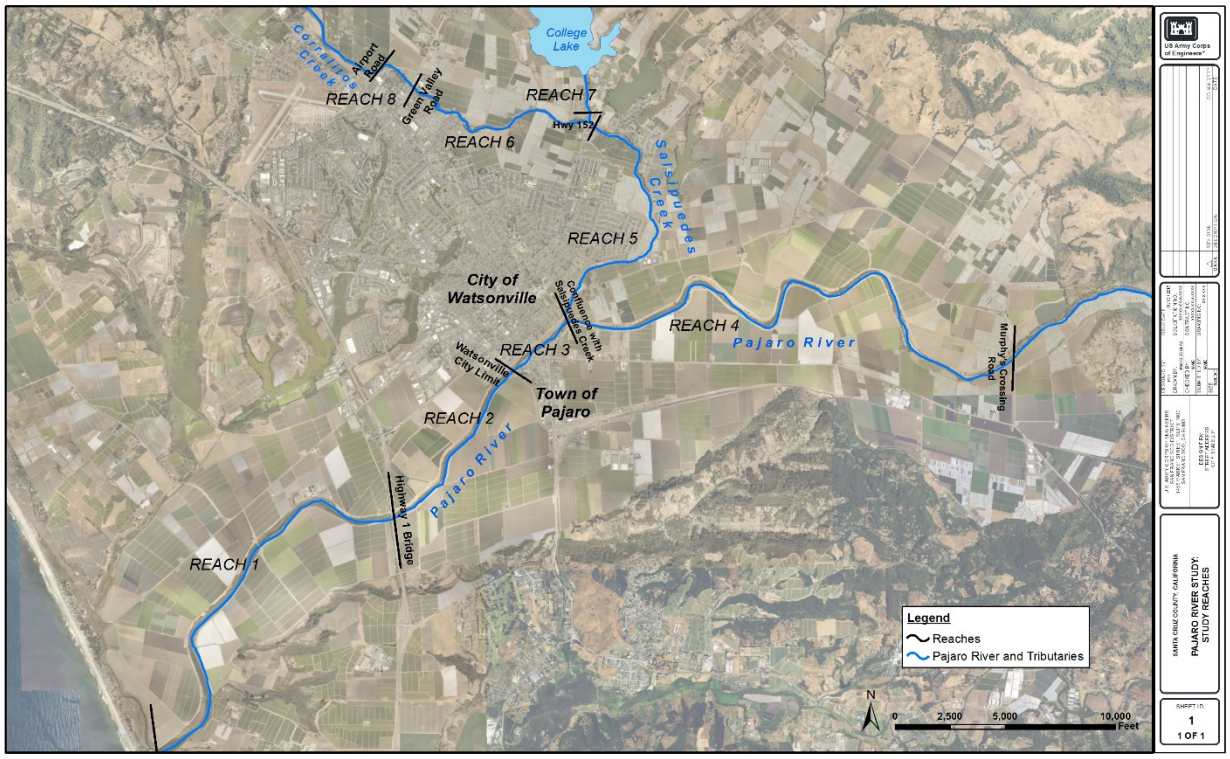

Figure ES-2: Study Reaches

CONSIDERATION OF ALTERNATIVE PLANS

During the study, the Federal planning process for development of water resource projects was followed to identify a Tentatively Selected Plan (TSP) for implementation under the discretionary authority of USACE Chief of Engineers in accordance with the project authorization provided by Section 203 of the 1966 Flood Control Act; or for a new Congressional authorization if warranted. Following definition of flood related problems and opportunities, specific planning objectives and planning constraints were identified. Various management measures were then identified to achieve the planning objectives and avoid the planning constraints. Management measures were combined to form an initial array of flood risk management alternative plans.

The strategy to move from the initial array to the final array of alternatives included the following steps: Apply metrics to the initial array of alternatives; select the best alternative for each separable area based on cost and benefit analysis; and combine the best alternatives to be carried forward to the final array. The final alternative plans were then compared to tentatively identify the plan that reasonably maximized net National Economic Development (NED) benefits, consistent with protecting the Nation's environment. The tentative NED plan is also the Tentatively Selected Plan (TSP).

The Final Array of Alternatives described in the draft GRR/EA are discussed below. Additional alternatives were originally proposed during the plan formulation process, but were screened from further analysis. More information about the alternatives eliminated from consideration can be found in the Plan Formulation Appendix (Appendix A).

No Action Alternative

Under the No Action Alternative, USACE would not conduct any additional work to address flooding concerns in the Pajaro Project area. As a result, the City of Watsonville and Town of Pajaro and surrounding agricultural area would remain at risk of a levee failure and flooding. There would be a continued high risk to human health and safety, property, and the adverse economic impact that serious flooding could cause would continue, and the risk of a catastrophic flood would remain high. Operation and maintenance of the levee system would continue as presently executed by the local maintaining entities.

Mainstem Alternatives

Alternative 1. This alternative includes improvements on both banks of Reaches 2, 3, and 4 (See **Figure ES-2**). Improvement on both banks of Reach 2 include demolition of the existing levee and construction of a new 100-foot setback levee. In Reach 3 on both banks the existing levee would be improved in place with a floodwall. In Reach 4 on the left bank the existing levee would be degraded and a new 100 foot setback levee would constructed. These levees would be constructed to contain the 1% Annual Chance Exceedance (ACE) event. On the right bank of Reach 4 the existing levee would be improved in place to contain the 4% ACE event.

Alternative 2. This alternative includes project features in Reach 2 and Reach 3. Alternative 2 limits the flood risk management areas to the City of Watsonville and the Town of Pajaro; protection provided to agricultural land is limited. In Reach 2, levees would be set back 100 feet on the north side of the Pajaro River. Reach 3 levees would be improved in place with a floodwall to the same level as those in Alternative 1. Levees on the south side of Pajaro River would be raised in their current locations starting at a point 100 feet downstream from the railroad bridge to a point 750 feet downstream of Salsipuedes Creek. Project levees would be constructed that encircle the Town of Pajaro. Existing project levees in Monterey County outside of the ring levee project area (Reaches 2 and 4) would remain in place and would not be raised. All bridges crossing the Pajaro River will remain in place.

Alternative 3. Alternative 3 includes features from Alternative 1 plus optimized Channel Migration Zone (CMZ) levees in Reach 4. The CMZ levees in Reach 4 are designed to consider larger setbacks where space is available at meander bends in order to provide for cost savings on levee construction and O&M as well as to provide for a more self-sustaining channel. In reaches 2 and 3 the levees would be improved the same as Alternative 1, new levees setback 100 feet on both banks of Reach 2 and the existing levees improved in place with a floodwall on Reach 3. In Reach 4, instead of a one-sided levee on the left-bank there would be optimized CMZ levees on both banks of lower Reach 4.

Alternative 4. This alternative is the same as Alternative 1 but the completion levee on the right bank of reach 4 would be designed to the non-Federal sponsor's preferred 2% ACE. This alternative includes improvements on both banks of Reaches 2, 3, and 4. Improvement on both banks of Reach 2 include demolition of the existing levee and construction of a new 100-foot setback levee. In Reach 3 on both banks the existing levee would be improved in place. In Reach 4 on the left bank the existing levee would be degraded and a new 100 foot setback levee would constructed. These levees would be constructed to contain the .01 Annual Chance Exceedance (ACE) event.

Tributary Alternatives

Alternative 5. In Reach 5, flood risk management would be achieved by raising existing levees in place with a setback levee on the opposite bank (the setback side switches between right and left–banks), and constructing floodwalls or a combination levee with a floodwall on top where urban development prevents raising existing levees. Salsipuedes Creek levees would be set back from 100 feet up to a maximum 225 feet in Reach 5. A floodwall would be constructed 2–5 feet tall on top of a new levee on the right–bank along the most downstream 2,450 feet of Reach 5 (starting at the confluence with the Pajaro River). Beginning approximately 8,800 feet upstream from the confluence with the Pajaro River, a floodwall would be constructed on the left–bank between Lakeview Road and College Road—a distance of approximately 1,460 feet—followed by a 2,584 foot length of floodwall about 4 feet tall on top of a new levee.

In Reach 6, new levees would be built on both sides of the Creek, set back from the existing natural streambanks approximately 50–75 feet (edge of channel to centerline of levee). A 490–foot length of floodwall would be constructed on the right–bank at Marigold Avenue. In Reach 7, an earthen detention levee structure that transitions into a floodwall on the right–bank of Salsipuedes Creek would be constructed aligned along the northern border of the Orchard Park subdivision. Approximately 1,700 feet of the Pinto Creek ditch would be relocated to accommodate construction of the detention levee because it is situated within the footprint of the proposed levee embankment. Pinto Creek would be realigned so that it empties into College Lake behind the containment levee. No levees or floodwalls would be constructed along the left–bank. New culverts, trapezoidal earth channel sections, and concrete U–walls would be constructed to connect the outflow channel from College Lake to the confluence of Corralitos and Salsipuedes Creeks. Channel improvements downstream of College Lake would be implemented to ensure improved regulation of College Lake during large storm events. In Reach 8, a new levee would be constructed on the left–bank only.

Alternative 6. This alternative would include the same measures as Alternative 5 but would exclude the levees along the left bank of Corralitos Creek. Instead, a ring levee would be constructed around the Orchard Park subdivision and the School district building along Corralitos Creek.

Alternative 7. The intent of this alternative is to construct optimize CMZ levee setbacks at meander bends in order to balance natural geomorphic conditions and sustainability with

existing land use. This alternative would have all the elements of Alternative 5; however, Channel Migration Zones (CMZ) levees would be incorporated into design of the proposed levee setbacks in Reaches 5, 6 and 8.

Alternative 8. This alternative would have all the elements of Alternative 5; however, Channel Migration Zones (CMZ) levees would be incorporated into design of the proposed levee setbacks in Reaches 5, 6 and 8 and there would be no levee on the left-bank of Corralitos Creek. Instead, a ring levee would be constructed around the Orchard Park subdivision in Reach 7 and the School district building along Corralitos Creek in Reach 8.

AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION

The environmental effects of implementing each of the action alternatives are described in Chapter 4. Initial evaluation of the effects of the project indicated that there would likely be little to no effect on geology, seismicity, timber and minerals. Sixteen other resources were analyzed in greater detail and compared to the No Action Alternative. The alternative formulation process focused considerable effort on developing a final array of alternatives that would avoid and minimize adverse effects. With the incorporation of the mitigation measures, including best practices, identified in Chapter 4, all of the action alternatives (Alternatives 1 through 8, and the TSP) would result in less than significant direct and indirect effects, and would not incrementally contribute to a significant cumulative effects on the resources considered. Therefore, a draft finding of no significant impact (FONSI) has been prepared and accompanies this GRR/EA.

COMPLIANCE WITH APPLICABLE LAWS, REGULATIONS, POLICIES AND PLANS

This document includes an integrated environmental assessment (EA) that complies with National Environmental Policy Act (NEPA) requirements. The project will comply with all Federal and State laws, regulations, Executive Orders, and permit requirements (see Chapter 5).

PUBLIC INVOLVEMENT

Public involvement activities associated with the project include public and agency meetings, consultation with Native American Tribes, and distribution of the draft GRR/EA for public review and comment. USACE published the notice of intent (NOI) to prepare a joint EIS/EIR for the Pajaro River Flood Risk Management Study in the Federal Register (June 8, 2001, 66 FR30894). One public scoping meeting was held on June 21, 2001 at the Watsonville Senior Center. The purpose of the meeting was to initiate scoping for the study and EIS/EIR while gathering additional information and community comments from citizens who live, work, and commute near the project area. The public was invited to submit written comments during and after the meeting.

Since publication of the NOI in 2001, the USACE and the study sponsors worked with stakeholders to identify and analyze a broad range of measures, alternatives, and mitigation. As part of this process, the study partners incorporated measures to avoid, minimize and compensate for adverse environmental effect. As a result, the environmental review conducted as part of this study has initially concluded that, with mitigation, the proposed alternatives would not result in any significant environmental effects. Therefore, an EA has been prepared instead of an EIS. Also, the Corps now requires water resources planning and National Environmental Policy Act (NEPA) documents to be integrated into a single document, in this case, an integrated GRR/EA. The California Environmental Quality Act (CEQA) document for the study is being prepared separately by Santa Cruz and Monterey Counties as the CEQA lead agencies.

This Draft GRR/EA will be circulated for a 30-day review to Federal, State, and local agencies; organizations; and individuals who have previously expressed an interest in the project. Public notification of the availability of the draft document for comment will be made by at least one of the following procedures: publication in the Federal Register; publication in a local newspaper of general circulation; and, direct mailings to agencies and individuals known to have an interest in the proposed action. A public workshop will be held on November 8, 2017, during the review period to provide additional opportunity for comments on the draft GRR/EA. The public workshop will be at the Watsonville Civic Plaza Community Room, 275 Main Street, 4th Floor, Watsonville, CA 95076, from 6:00 p.m. to 8:00 p.m. All comments received during the public review period will be considered and incorporated into the final GRR/EA, as appropriate. A comments and responses appendix will be included in the final GRR/EA.

COMMUNICATION WITH NATIVE AMERICANS

A list of potentially interested Native Americans was obtained from the Native American Heritage Commission. Consultation letters were sent to the Amah Mutsun Tribal Band, the Amah Mutsun Tribal Band of Mission San Juan Bautista, the Costanoan Rumsen Carmel Tribe, the Costanoan Ohlone Rumsen-Mutsen Tribe, the Esselen Tribe of Monterey County, the Indian Canvon Mutsun Band of Costanoan, the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area, the Ohlone/Coastanoan-Esselen Nation, the Salinan Tribe of Monterey and San Luis Obispo Counties, and the Xolo-Salinan Tribe. Both the draft and final GRR/EA will be provided to these Tribes.

AREAS OF KNOWN OR EXPECTED CONTROVERSY

NEPA requires identification of issues of known controversy that have been raised in the scoping process and throughout the development of the project. The following issues were identified as a result of public scoping, stakeholder engagement, and conduct of the environmental review.

Property Acquisition

A specific issue of concern involves potential conflicts with private property within or near the construction area. In some cases, permanent property acquisition would be needed for project construction and O&M. Temporary construction easements will likely be needed for construction staging and equipment access, and temporary restrictions on access to private property may also be necessary.

Construction-Related Effects

Some portions of the levee system in the project area are adjacent to residential areas and other developed land uses. Construction activities are likely to result in construction-related effects including noise and traffic detours (car, bicycle, and pedestrian). These effects are described, together with mitigation measures to reduce adverse effects, in Chapter 4.

Levee Encroachment

The project would require removal, relocation or replacement of features in, on, or under the levee or adjacent O&M corridors such as structures, pipelines, walls, stairs, utilities and other elements such as vegetation.

Setback Levee Distance

A long-standing concern among some agencies and stakeholders is the appropriate and desirable distance from the waterway that levees should be setback. To provide the most ecological benefits some prefer a large setback distance. To preserve agricultural values and private property, others prefer a small setback distance, or no setback at all. A variety of distances were analyzed during development of the final alternatives.

TENTATIVELY SELECTED PLAN

The Tentatively Selected Plan (TSP) is the NED plan, which reasonably maximizes net benefits, is the combined Alternative 1 on the Mainstem of the Pajaro River and Alternative 6 on the Tributaries (**Figure ES-3**). An economic optimization analysis and further refinements to hydraulic and geotechnical engineering analysis was performed on the TSP (Alternative 1 [Main Stem] and Alternative 6 [Tributaries]). As a result the following modifications and refinements were made:

- 4% ACE improvement to the existing levee the right bank of Reach 4 (Alternative 1) on the mainstem was removed.
- 4% ACE levees/floodwalls in Reaches 5 and 6 of the tributaries (Alternative 6) were found to be economically optimal in lieu 1% ACE ring levee at Corralitos Creek.

- Project features and improvements associated with flood risk management at College Lake and Pinto Creek in Reach 7 (Alternative 6) were removed.

This plan meets the study objectives of reducing flood risk and flood damages. The TSP greatly reduces flood risk to people and property in the project area. The TSP provides benefits to 12,600 residents by improving existing levees and adding levees to reduce the chance of hazardous flooding in the area.

The structural features of the TSP on the mainstem include:

- 0.85 miles of floodwalls on existing levees
- 5.75 miles of new levees of which 5.10 miles is setback levees
- 0.3 miles of levee improved in place
- 66 acres of floodplain between setback levees and the river
- 5.10 miles of existing levee demolition

These features provide for a 1% ACE level of protection for the City of Watsonville and the Town of Pajaro, and adjacent agricultural areas

The structural features of the TSP on the tributaries include:

- 1 mile of Floodwall
- 0.6 miles of Floodwall on Existing levee
- 4.1 miles of new levee of which 1.5 miles is Setback levees
- 0.5 miles of existing levee improved in place
- 37.2 acres of floodplain between setback levee and creek
- 1.5 miles of existing levee demolition
- 2 bridges Raised

These features provide 1% ACE level of protection for the City of Watsonville (including adjacent agricultural areas) and 4% ACE level of protection for the Orchard Park and Interlaken neighborhoods (including adjacent agricultural areas).

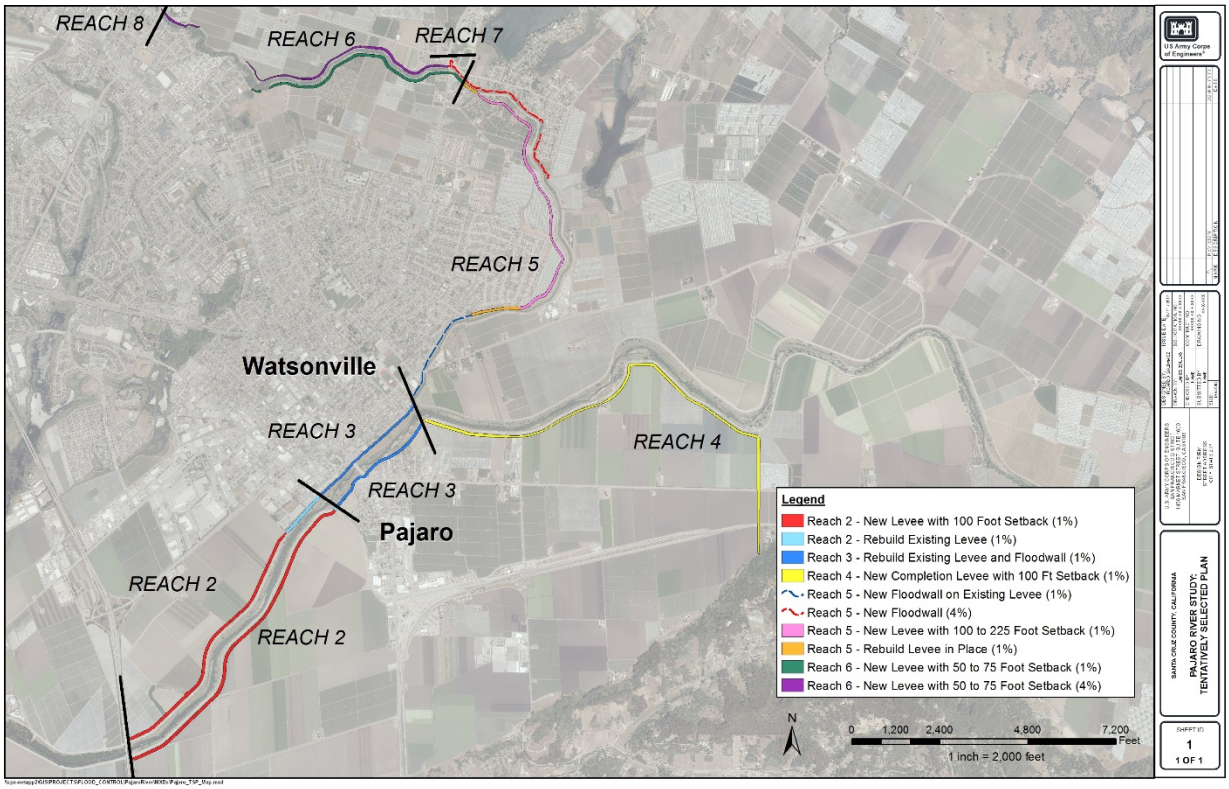

Figure ES-3: The Tentatively Selected Plan

ESTIMATED COST AND COST SHARING

Investment cost accounts from the draft Micro Computer-Aided Cost Engineering System (MCACES) cost estimate for the TSP are displayed in **Table ES-1** below.

Table ES-1. First Cost of Tentatively Selected Plan ($1,000)[1]

Cost Account	Construction Item	GRR Recommended Plan
01	Lands and Damages[2]	46,124
02	Relocations[2]	63,306
06	Fish & Wildlife Facilities[3]	0
11	Levees & Floodwalls	74,018
16	Bank Stabilization	3,116
18	Cultural Resources Preservation	0
	Subtotal	**186,564**
30	Planning Engineering & Design (PED)	38,628
31	Construction Management	20,364
	Total First Cost	**245,556**
	Associated Costs	
	Total Costs	**245,556**

[1]Costs are in October 2016 price levels at 2.875 percent and 50 year period of analysis.
[2]LERRDs cost estimates have been updated and is currently estimated at a total of $84.3M per refinements to current project footprint as a result of the economic optimization analysis. The LERRDs cost estimate for the Final Integrated GRR/EA will be updated accordingly.
[3]The project has been designed to be self-mitigating through incorporation of setback levees and no additional compensatory mitigation costs are anticipated.

The estimated annual costs and benefits of the TSP are presented in **Table ES-2**. Refinement of the TSP to a recommended plan during the next milestone phase of work will further refine this information.

Table ES-2: Estimated Annual Costs for the Tentatively Selected Plan ($1,000)

Item	GRR Recommended Plan[1]
First Cost	245,556
Interest During Construction (IDC)	2,726
Total	**248,282**
Interest and Amortization	9,422
OMRR&R	200
Subtotal – Average Annual Costs	**9,622**
Monetary Benefits (FRM)	17,985
Net Annual FRM Benefits	**8,363**
FRM Benefit-Cost Ratio	**1.9**

[1]Costs are October 2016 price levels at 2.875%, for a 50-year period of analysis.

Table ES-3 below shows the preliminary cost apportionment for the TSP. The non-Federal sponsors are responsible for all Lands, Easements, Rights of Way, Relocations, and Disposal Sites (LERRDs) costs, and a minimum of 5% cash. The maximum non-Federal share is 50% of the total project cost.

Table ES-3. Preliminary Cost-Share Apportionment for Tentatively Selected Plan[1]

A				
ACT	**ITEM**	**FEDERAL**	**NON-FEDERAL**	**TOTAL**
1	Lands and Damages[2]		46,124	46,124
2	Relocations[3]	-	63,306	63,306
6	Fish and Wildlife Facilities	-	-	-
11	Levees and Floodwalls	74,018	-	74,018
16	Bank Stabilization	3,116		3,116
18	Cultural Resources	-		-
30	PED	38,628		38,628
31	Construction Management	20,364		20,364
	Subtotal First Cost	136,126	109,430	245,556
	Non-Federal 5% Cash Contribution[4]	-12,278	12,278	
	Total First Cost	123,848	121,708	245,556
	% of Total First Cost	50.4%	49.6%	

[1]Recommended plan summary of first cost from 2017 Pajaro River FRM Study
[2]Based on October 2016 price level, 2.875% interest rate, 50-year period of analysis, Costs in $1,000
[3]LERRDs cost estimates have been updated and is currently estimated at a total of $84.3M per refinements to current project footprint as a result of the economic optimization analysis. The LERRDs cost estimate for the Final Integrated GRR/EA will be updated accordingly.
[4]Non-Federal cash contribution reflects the 5% requirement for structural FRM features

MAJOR CONCLUSIONS

The preliminary recommendation of the District Engineer of the San Francisco District, U.S. Army Corps of Engineers is that the report be finalized based on results of public review, internal policy review, and ATR, of this draft GRR/EA, and if warranted, recommended for authorization for implementation as a Federal project. The estimated first cost of the tentatively selected plan is $245,556,000 and the estimated annual OMRR&R costs are $200,000. The Federal portion of the estimated first cost is $123,848,000. The non-Federal sponsor portion of the estimated first cost is $121,708,000.

District Quality Control (DQC) discovered an instability issue with the hydraulic model in the areas where setback levees are recommended. This hydraulic model instability caused a volume conservation error where a significant portion of the hydrograph was being lost in the transfer of flow from the 1D cross section to the newly created 2D setback area, which resulted in erroneous lower water surface elevations with the setback levees potentially undersized. This issue occurs wherever there are setback levees at all frequencies across all alternatives. As such, it is not expected to significantly impact the alternative formulation or comparison. All indications to date suggest that there is still Federal interest supporting a viable NED plan; however the sizing and scale of the NED plan with respect to project performance and level of protection provided is at risk of changing. There now exists the possibility that that the current design height of the setback levees may not be able to contain the current NED plan of 1% (1/100) ACE event as expected. Preliminary efforts were unable to sufficiently resolve the issue in time to meet the suspense date for public release of the Draft GRR/EA for concurrent review (Public/USACE Policy/USACE ATR/Regulatory Resource Agencies). The hydraulic model issue will be resolved during the concurrent review as the study advances into feasibility-level design.