



US Army Corps
of Engineers
Los Angeles District



SANTA CLARA RIVER LEVEE FEASIBILITY STUDY VENTURA COUNTY, CALIFORNIA

DRAFT PROJECT MANAGEMENT PLAN



DECEMBER 2014



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REVISIONS TO PMP

Revision Number	Revision Date	Section	Description of Revision



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Appendix C	Detailed Budget
Appendix D	Detailed Schedule
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ACRONYMS

ATR	Agency Technical Review
CADD	Computer Aided Draft and Design
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CEFMS	Corps of Engineers Financial Management System
CMIS	Corporate Management Information System
Corps	U.S. Army Corps of Engineers
DMP	Data Management Plan
DQC	District Quality Control
DX	Directorate of Expertise
EC	Engineer Circular
EC	Environmental Coordinator
EA	Environmental Assessment
EIS	Environmental Impact Statement
EM	Engineer Manual
ER	Engineer Regulation
FGDC	Federal Geographic Data Committee
FR	Feasibility Report
FY	Fiscal Year
GDM	General Design Memorandum
GIS	Geographic Information Systems
HEC	Hydrologic Engineering Center
H & H	Hydrology and Hydraulics
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IDIQ	Indefinite Delivery/Indefinite Quantity
IEPR	Independent External Peer Review
IPR	In-Progress Review
NED	National Economic Development
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NWD	Northwest Division
SPL	Los Angeles District
OMB	Office of Management and Budget
PED	Pre-Engineering and Design
PCX	Planning Center of Expertise
PL	Public Law
PM	Project Manager
PMBP	Project Management Business Process
PMP	Project Management Plan
PDT	Project Delivery Team
PDMT	Project Delivery Management Team
QCP	Quality Control Plan
RIT	Regional Integration Team
SACCR	Schedule and Cost Change Request



SCR-1	Santa Clara River Levee
SMT	Study Management Team
SOG	Senior Oversight Group
SPD	South Pacific Division
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VCWPD	Ventura County Watershed Protection District
VE	Value Engineering
VM	Value Management
VT	Vertical Team
WBS	Work Breakdown Structure
WR	Work Request
WRDA	Water Resources Development Act



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1 PURPOSE OF PLAN

1.1 PROJECT MANAGEMENT PLAN SCOPE

The purpose of the Project Management Plan (PMP) is to establish a strategy for management of the study to ensure that the project is executed in a manner that achieves program and project objectives, within approved schedules and budget, and maximizes effectiveness within the constraints of limited resources. This is accomplished through the development of a series of management plans that define the strategy for conducting project activities. It defines processes for the management of:

- Scope
- Cost
- Schedule
- Quality Assurance and Control
- Acquisition Strategy
- Risk Management
- Safety and Occupation Health Hazard Analysis and Monitoring
- Change
- Communications
- Value Management
- Data Management
- Project Closeout
- Project Approval

1.2 FEASIBILITY SCOPE AND DOCUMENTATION

The U.S. Army Corps of Engineers (Corps), Los Angeles District (SPL), along with the non-Federal sponsor, Ventura County Watershed Protection District (VCWPD), is undertaking the Santa Clara River Levee (SCR-1) Project to document the feasibility of modifying the levee system for the purposes of increasing public safety, continuing to provide flood risk management benefits, and better serve the public interest, while taking into account the environmental impacts of such a project.

The purpose of the economic analysis in this feasibility study is to estimate the National Economic Development (NED) benefits associated with levee system improvements and/or modifications to the existing project to reduce flood risks in the SCR-1 study area. The purpose of the environmental analysis in this study is to assess the environmental impacts of the proposed improvements and/or modifications to the levee system. The Feasibility Report (FR) will include a net benefit analysis, and the National Environmental Policy Act (NEPA) documentation will disclose the environmental effects of the proposed modifications. The FR and NEPA documentation will also present details of Corps and VCWPD participation needed to implement a plan.



Based on recent investigations performed for the Federal Emergency Management Agency (FEMA) levee certification and Corps periodic levee inspection, there is evidence that portions of the SCR-1 are requiring immediate corrections and do not meet FEMA standards for certification. The identified deficiencies seriously impair the functioning of the levee system and pose an unacceptable risk to public safety. This is consistent with the general policy of the Corps that completed projects be observed and monitored to ascertain whether they continue to function as intended and whether there is a potential for modifications to better serve the public interest.

The Project Development Team (PDT) will follow the Corps' six-step planning process to address the study problems, opportunities, objectives, and constraints. The PDT will then develop and screen an array of alternatives, select a final array of alternatives, evaluate the economics and assess environmental impacts of the alternatives, and identify a feasible plan that is economically justified, environmentally acceptable, and meets the study objectives described in this PMP.

The decision document will be in the format of an integrated FR and NEPA documentation, which will either be an Environmental Assessment (EA) or an Environmental Impact Statement (EIS). The FR will describe current problems and opportunities to be addressed during the study, preferences of the sponsor, views of the public, and establish planning criteria and objectives used to formulate and evaluate alternative plans. In addition, the FR and EIS/EA will document the evaluation of alternative plans and provide the foundation for plan selection.

1.3 PROJECT LOCATION

The Santa Clara River Levee is located on the Santa Clara River in the City of Oxnard and adjacent unincorporated areas in Ventura County, California, approximately 64 miles west of Los Angeles (Figure 1). The approximately 4.72-mile-long levee system extends along the southeast bank of the Santa Clara River from Highway 101, at its downstream terminus, to the west end of South Mountain, at its upstream terminus (Figure 2). The height of SCR-1 varies from approximately 4 feet to 13 feet. The compacted fill embankment that forms SCR-1 has a top width of 18 feet. The levee embankment slopes are 2 horizontal to 1 vertical (2H:1V) on both the landward and riverward sides.

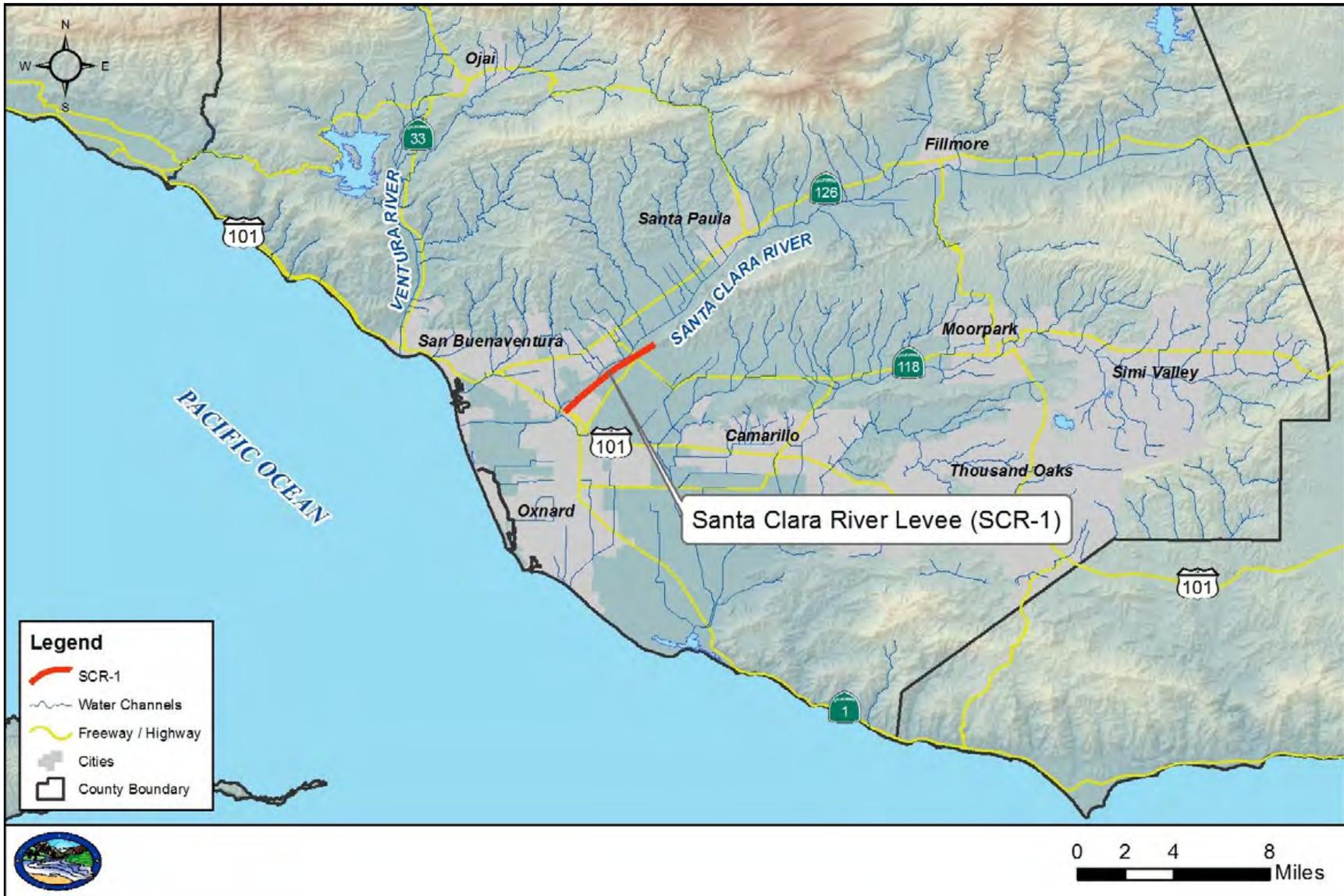


Figure 1 - Santa Clara River Levee (SCR-1) Vicinity Map



Figure 2 - Santa Clara River Levee (SCR-1) Location Map



2 PROJECT AUTHORIZATION

The Santa Clara River project was authorized under Section 203 of the Flood Control Act of 1948 (Public Law 80-858), 88th Congress, 2nd Session, as approved on June 20, 1948. An excerpt of the Act reads as follows:

“Section 203. That the following works of improvement for the benefit of navigation and the control of destructive floodwaters and other purposes are hereby adopted and authorized to be prosecuted under the direction of the Secretary of the Army and the supervision of the Chief of Engineers in accordance with the plans in the respective reports hereinafter designated and subject to the conditions set forth therein:”

This PMP is prepared under resolution by the Committee on Public Works on June 18, 1963, which reads in part as follows:

“... That the Board of Engineers for Rivers and Harbors be and is hereby, requested to review the reports of the Chief of Engineers on the Santa Clara River and its tributaries, Los Angeles and Ventura Counties, California, published as House Document No. 443, Eightieth Congress, first session, and other reports, with a view to determining whether the existing project should be modified in any way at the present time in the interest of flood control and allied purposes.”

The original construction of SCR-1 was completed in April 1961.



3 PLANNING PROBLEMS, OPPORTUNITIES, OBJECTIVES, AND CONSTRAINTS

The following sections summarize the known problems, opportunities, objectives, and constraints identified for the study. These include the analysis of alternatives, design of the recommended alternative, and preparation of the integrated decision document.

3.1 PLANNING PROCESS

Plan formulation is a distinct evaluation process the Corps uses to ensure a systematic evaluation of alternatives for meeting civil works project goals and objectives. The process is prescribed in the Principles and Guidelines, which mandate the processes for water and related land resources project development. Plan formulation includes the formulation and evaluation of a range of alternatives to meet specific project goals and objectives. Alternatives will be reevaluated based on costs, benefits, environmental impacts, engineering feasibility, socio-cultural impacts, and output (USACE 2000).

The USACE planning process is a structured approach to problem solving which involves six steps as follows:

- Step 1: Identify problems and opportunities
- Step 2: Inventory and forecast conditions
- Step 3: Formulate alternative plans
- Step 4: Evaluate alternative plan
- Step 5: Compare alternative plans
- Step 6: Select a plan

3.2 PROBLEMS

3.2.1 Performance History

Numerous severe storms prior to the completion of SCR-1 had been documented in the Corps 1968 report, *“Flood Plain Information, Santa Clara River (Saticoy to Pacific Ocean), Ventura County, California”*. These include the February/March 1938 flood that damaged the Highway 118 Bridge (Los Angeles Avenue); the January 1943 flood that caused severe damage to agricultural land, crops, and bridges; and the January 1952 flood that caused damage to properties along the river.

The most damaging floods of record along the Santa Clara River occurred in January and February 1969 when the levee failed with an estimated peak discharge of 165,000 cfs (approximately a current 40- to 50-year return event) based on a stream measurement made around the time of the peak. The following is an excerpt from the 1969 Corps report, *“Floods in Southern California during January and February, 1969”*, describing the damage to the reach of SCR-1 located between Highways 118 and 101. The location of the levee failure is shown on Figure 3.

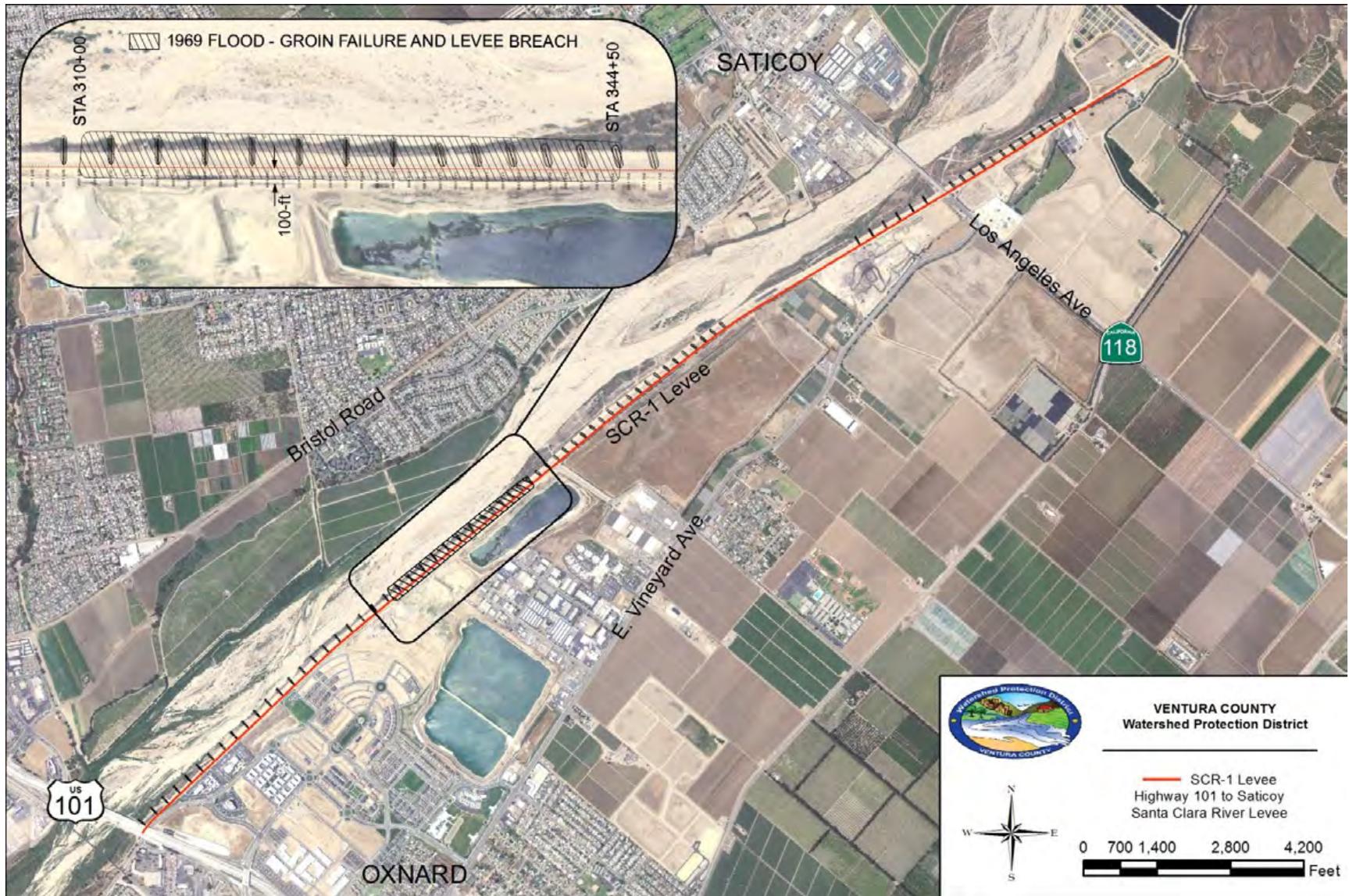


Figure 3 - 1969 Flood Damage along SCR-1



“The only significant damage that occurred in this reach during the January flood was damage to the revetment of an existing levee constructed by the Corps of Engineers. February floodflows washed out about 500 feet of State Route 118 Bridge, damaged agricultural property and utilities, and severely damaged flood-control improvements constructed by the Corps of Engineers. ... The flood eroded the south bank near the existing Corps levee, damaging some groins; then deflected, ricocheted from the State Route 118 Bridge, and returned to the south bank – where the floodflows cut in close to the Corps levee, bounced off to the north bank, and carved a long arch. The floodflows then deflected to the south bank where they undercut the toe protection on the Corps levee, causing the failure of about 2,000 feet of levee and eroding the ground behind the levee for a distance of about 100 feet.”

The original construction, as completed in 1961, contained 40 rock groins. After the 1969 floods, the Corps repaired seven of the original 40 rock groins (between Stations 330+00 and 344+50), restored 2,100 linear feet of levee embankment and provided deeper rock revetment (between Stations 311+00 and 332+00), and constructed 35 additional rock groins (between Stations 246+00 and 330+00 and Stations 421+80 and 436+80). These repairs and restoration were completed in 1971. Currently, 75 rock groins are in place along the SCR-1 extending from Station 246+00 to Station 470+00.

In December 1985, Ventura County restored five groins in the vicinity of the 1969 levee failure location. The damages may have been caused by a 1983 flood, which had an estimated peak discharge of 100,000 cfs. The damage to the rock groins was likely due to the low flow channel encroaching and washing out the top portion of the groin tips. The repairs included the removal of approximately two feet of existing stone and placement of two-ton stone riprap back to the design dimensions and backfilling with uncompacted fill. (This is the only known non-Corps stone added to the system.)

3.2.2 Embankment Protection

The most recent periodic inspection conducted by the Corps in 2010 rated SCR-1 as “unacceptable.” In the report, the primary factors driving the unacceptable rating were broken down into critical and non-critical items. The critical items affect the entire length of the levee system and seriously impact the functioning of the levee system. Non-critical items occur at intermittent locations along the levee but should not prevent the system from performing as intended during the next significant runoff event.

As identified in the periodic inspection report, the most significant issues are related to inadequate scour and erosion protection along the entire length of the levee system. These issues are discussed below.

a. Inadequate Toedown

The revetment toedown along SCR-1 varies between 5 to 10 feet below the river thalweg between Highway 101 and a distance approximately 8,500 feet upstream, beyond which the depth of toedown changes significantly from approximately 5 feet below the streambed to approximately 10 feet above the thalweg. The varying depths of rock revetment along SCR-1 are documented in the 1958 Corps General Design Memorandum (GDM). According to the GDM,



the original design concept called for the riverside slope of the levee to be protected by a continuous stone revetment that extends to a depth of 12 feet below the streambed. Based on the recommendations of a board of consultants, the design was modified to reduce the depth of toedown and to place additional stone at the toe of the revetment. In addition, groins were recommended in areas experiencing direct attack by stream flows.

Assessment of the current streambed profiles (based on 2005 LIDAR information) indicates that the channel thalweg is lower than the toedown of the rock revetment starting at Station 335+00 and continuing upstream through the Highway 118 Bridge (approximately Station 441+00). If the thalweg were to impinge upon the levee, failure of the levee by erosion would be likely since the rock revetment would be undermined. A review of the 1971 as-built toedown of the riverward tips of the groins indicates that the burial depth of the groin tips is above the current thalweg location between Stations 360+00 and 392+00. Migration of the channel thalweg would result in undermining of these groins and would potentially lead to failure of the levee by erosion. The review of the rock revetment toedowns and rock groins concluded that there is insufficient burial depth of both features to prevent the erosion of the levee in the event the channel thalweg migrates toward the levee. This condition occurs from Stations 360+00 to 421+00.

b. Inadequate Rock Size and Quality

In May 2009, a field reconnaissance and geotechnical investigation along SCR-1 was conducted by consultants under contract with VCWPD. A comparison of computed and as-built groin rock size indicates that the as-built groin rock is undersized to withstand the predicted hydraulic forces during the design flood event. Recent analyses indicate that, at one test location, the lower portion of the rock gradation is smaller than the lower bound of the required rock size. A visual assessment indicated approximately 9,000 linear feet of the levee (Station 262+00 to Station 350+00) and 7,000 linear feet upstream (Station 420+00 to Station 490+90) have rock revetment similar to the reference test location. The results of this evaluation are consistent with the observed damage to the groins from the flood events in 1969 and early 1980s, where river flows came into direct contact with the rock groins and caused portions of the groins to fail.

c. Inadequate Rock Groins

As mentioned earlier, the original flood control improvements completed in 1961 included 40 groins. After restoration and repairs were completed in 1971 following the floods in 1969, 75 rock groins are currently in place along the SCR-1 project reach (Station 246+00 to Station 470+00).

As indicated in the November 2009 FEMA PAL Response Report (Tetra Tech 2009), the rock groins are not adequate to prevent the migration of the channel for the following reasons: the rock groins are undersized to withstand the hydraulic forces of the design flood and they are not buried deep enough, for much of their length, to prevent failure due to undermining from lateral migration and scour.

Also as documented in the *FEMA PAL Response Report*, based on historical aerial photos and lateral migration evaluation, the Santa Clara River has the potential to erode the river bank terrace and expose the rock revetment and groins during a single large flood event. Since the



rock groins are not adequate to prevent lateral migration of the river thalweg against the levee side slope, the levee to remain stable must resist the hydraulic force and the attendant scour that would occur with the thalweg located against the toe of the levee. Therefore, the current configuration of levee protection is deemed not adequate to resist the resulting forces and scour.

d. Vegetation and Encroachments

Field investigations of SCR-1 conducted as part of the levee certification in 2008 and the Corps' periodic inspection in 2010 indicate that significant vegetation, consisting of large trees and dense brush, present a levee safety issue and reduce the overall reliability of the system. Significant vegetation prevents adequate inspection and interferes with maintenance and flood fighting activities.

Encroachments identified during the inspection include encroachments on both the riverward and landward levee banks. These primarily comprise of vehicles, power poles, unwanted fill, fence and debris, and unauthorized access ramps, stairs, and utility lines. These encroachments prevent proper maintenance, inspection, and access to the levee. In addition, two side drainage structures and one sluice gate structure were found that were not on the as-built drawings. Permits were not found on file with the Corps for one of the drainage structures. However, final permit records were not available; hence, their impact on the overall levee system is not known.

Since the 2010 inspection, VCWPD has made progress toward correcting identified non-critical items. Corrective actions included removal of unwanted vegetation, repair of access ramps and embankment erosion, removal of miscellaneous unauthorized/unpermitted encroachments, removal of sediment obstruction to interior drainage facilities, repair of grate inlets, and evaluation of the need for flap gates on two side drains.

3.2.3 Lack of Recreation Opportunities and Access

Recreational opportunities associated with the river are limited. The project site currently provides undeveloped recreational opportunities for walking, biking, and nature viewing, as well as a remote control plane airfield. The top of the levee is maintained as a flood control maintenance road; however, due to infrequent traffic, it has become a popular route for passive uses.

3.3 OPPORTUNITIES

There are opportunities to increase public safety while addressing the issues identified for the levee system in its current condition with minimal toedown. This may result in reduced risk to lives and properties currently protected by the levee.

As part of on-going studies, the VCWPD has compiled estimates of the area protected by SCR-1 Levee system. According to the National Levee Database (NLD), the leveed area is approximately 2.2 square miles. The leveed area, shown on **Error! Reference source not found.**, includes approximately 344 acres of residential and public land use, 367 acres of spreading grounds and farmland, 254 acres of commercial and industrial land use, and 443 acres of vacant lots and abandoned gravel pits. The daytime and nighttime population at risk in the protected zone is 7,025 and 7,364, respectively. It is estimate that as many as 1,410 structures would be inundated by levee failure with property damages estimated at \$291 million. Failure of



the levee could result in millions of dollars of urban infrastructure and commercial/residential property losses, not to mention the potential for significant loss of life—particularly if a portion of the levee were to collapse suddenly during the night..



Figure 4 - SCR-1 Leveed Area



Additional opportunities include restoration of ecosystem function and values throughout the study area. This could include restoration strategy to support VCWPD's large-scale eradication efforts of primarily two non-native invasive species that have the greatest impact in the Santa Clara River: giant reed (*Arundo donax*) and tamarisk (*Tamarisk* spp.). Where large tracts of arundo or tamarisk are to be removed, eradication efforts should be followed by revegetation with native riparian species to replace lost nesting habitat. Least Bell's Vireo and Southwestern Willow Flycatcher, both endangered bird species, typically nest in willow scrub habitat.

There is also an opportunity to divert floodwaters from the Central Avenue Drain to the spreading grounds adjacent to the drain (approximately Station 350+00 and 404+00, between the SCR-1 Levee and E. Vineyard Avenue). The United Water Conservation District owns and operates the spreading grounds. The water diversion would address multiple purposes by providing storage for local runoff in a manner which facilitates groundwater recharge and helps support habitat restoration throughout the study area. As part of this effort, groundwater contaminant sources, including nonpoint source pollution, should be identified and evaluated. Any necessary treatment required for surface waters should be identified prior to recharge into the groundwater basin to prevent further degradation of the aquifer.

While the Santa Clara River Levee system modification is a single-purpose flood risk management project, the constructed features may also provide some opportunity to achieve incidental recreational benefits. The site's proximity to residential areas and the scenic views it provides make it an accessible and aesthetically pleasing area for urban recreation. This could include multi-use trails and associated recreational use that may be accommodated on top of the levee without hindering the primary purpose of the project. These opportunities would be compatible with City of Oxnard's Santa Clara River Trail Master Plan (Alta Planning Design 2011). As identified in the Master Plan, the multi-use trails would provide connectivity for alternative transportation and linkage to schools, parks, and residential neighborhoods. Recreational opportunities and features would comply with the Corps' mission and requirements, VCWPD's goals, and local plans.

3.4 NATIONAL OBJECTIVE

The national or Federal objective of water and related land resources planning is to contribute to National Economic Development (NED) consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, and other Federal planning requirements. Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the nation.

3.5 PLANNING OBJECTIVES

The objectives for this study are the following:

- Reduce flood risks by addressing issues identified along the SCR-1.
- Use environmentally sustainable design practices in addressing the flood risk management purpose of the project wherever possible within the levee system reach.
- Cooperate with the mutually beneficial goals of related plans, projects, and agencies.



- Fully coordinate with other Federal, state, local agencies, and stakeholders.

3.6 PLANNING CONSTRAINTS

Planning constraints are significant barriers or restrictions that limit the extent of the planning process. Study-specific planning constraints are statements of things unique to a specific planning study that alternative plans should avoid. The following constraints (i.e., limitations on the range of measures and alternatives that can be proposed) have been identified for the study:

- Maintain the current level of flood protection with any recreation opportunities investigated.
- Under the Endangered Species Act (ESA), any potential project would be required not to jeopardize the continued existence of threatened or endangered species, or to destroy or adversely modify their critical habitat. Project modifications should be sited so that habitation by those species does not adversely impact the non-Federal sponsor's ability to maintain flood control function and perform maintenance on channels.
- Any potential project would be required to comply with State-adopted, USEPA-approved water quality standards.
- Comply with local, state, and Federal laws and regulations.

3.7 ASSUMPTIONS

The following critical assumptions provide a basis for the feasibility study. The PDT will review and refine these assumptions during the course of the study.

- The SCR-1 Project was constructed prior to the WRDA of 1986. It is understood that any feasibility study or resulting construction would be carried out under current cost share requirements.
- There are several potential partnering options to proceed into a feasibility study.
 - Section 216, River and Harbor and Flood Control Act of 1970: This draft 905(b) has been drafted for a Section 216 study. This would require a new start Appropriation to be implemented.
 - Section 205, Flood Control Act of 1948: A small flood control project such as Section 205 could be considered for the SCR-1 Levee; however, preliminary cost estimates indicate that this project would exceed the program limit.
 - Santa Clara River Watershed Study: The Corps, Los Angeles District, Los Angeles County Department of Public Works, and VCWPD have partnered in this feasibility study to support comprehensive flood risk management, ecosystem restoration, and other water resources decision-making planning throughout the watershed. The SCR-1 Levee system is located at the downstream terminus of the watershed and could be included in the ongoing watershed study. Incorporation of the SCR-1 Levee system into the watershed study would require the Corps, Los Angeles District, to revise the Santa Clara River Watershed Study Report and the District Engineer to recommend that the SCR-1 Levee be added as a spin-off alternative carried forward into a feasibility phase.



- Levee Safety Action Classification: The funding for this Federal program is still being determined, and it is likely that the initial funding will go to Federally owned and operated levees. Based on the 2010 Periodic Inspection, the SCR-1 was rated with an *Unacceptable* rating. As such, the SCR-1 levee system is currently not eligible for Federal funding through Public Law 84-99 for repairs if damaged during a flood event in the future. Once VCWPD presents the Corps with proof that all items rated *Unacceptable* have been corrected, the system will be inspected for eligibility in the program.



4 TEAMS, ROLES, AND RESPONSIBILITIES

4.1 STUDY TEAMS

The PDT will conduct the study. The Project Manager (PM) and the Planner will be the project and study leads, respectively. This effort will be assisted by the non-Federal sponsor, other Federal, state, and local agencies, and several specialized teams. These teams include the following:

- Study Management Team
- Executive Committee
- Vertical Team
- District Quality Control Team
- Agency Technical Review Team

4.1.1 Project Manager

The Corps PM for this study will be _____. The PM will be directly responsible for the timely and successful completion of the study. The PM for VCWPD will be _____.

4.1.2 Project Delivery Team (PDT)

The PDT is responsible for the study and analysis of project alternatives, and the development of the products resulting from the study. The Planner will be the study team leader and main author of the decision document (i.e., Feasibility Report), while the Environmental Coordinator will be the lead for the environmental analysis effort and main author of the NEPA/environmental compliance sections of the integrated document. The PDT members are listed in Table 1.

4.1.3 Study Management Team

The purpose of the Study Management Team (SMT) is to oversee the execution of the study and to provide operational input to study direction. The SMT consists of the PM, the Planner, and the PM for VCWPD.

4.1.4 Executive Committee

The Executive Committee is a senior oversight group (SOG) composed of senior Los Angeles District leadership and members of VCWPD. The District Engineer (DE) is the chair of this committee. The purpose of the Executive Committee is to provide high level guidance and to resolve issues that cannot be resolved at the PDT or SMT level. The Executive Committee will meet, at a minimum, once a year to receive a status briefing from the SMT and is expected to meet quarterly, or as needed, to resolve issues that arise.

4.1.5 District Quality Control Team

The purpose of the District Quality Control (DQC) is to provide quality control of the study report prior to their release from Los Angeles District. The DQC Team is composed of Los Angeles District staff with expertise in the various disciplines that are required for the FR/EIS.



Table 1 - Project Delivery Team

Name	Role	Phone	Email
	Project Manager		
	Lead Planner		
	Environmental Coordinator		
	Economist		
	Hydrologist		
	Hydraulic Engineer		
	Cost Engineer		
	Geotechnical Engineer		
	Civil Engineer		
	Archaeologist		
	Real Estate Specialist		
	Regulatory		
	Counsel		
	Surveyor		
	CADD/GIS Specialist		



4.1.6 Vertical Team

The Vertical Team (VT) includes the South Pacific Division (SPD) Regional Integration Team (RIT), Headquarters United States Army Corps Engineers (HQUSACE), SPD representatives, as needed, the SMT, and the PDT. The team's purpose is to resolve policy and technical issues before these impact study schedule. The members of the VT will coordinate with staff at SPD and HQUSACE, as appropriate, to answer questions that are raised, and to assure smooth transit of the report as it progresses through the review process.

4.1.7 Agency Technical Review Team

An Agency Technical Review (ATR) is a review coordinated through the Planning Center of Expertise (PCX) for flood risk management, and the Directorate of Expertise (DX) for Cost Estimating. The ATR is conducted by a District other than Los Angeles District. The specifics of ATR are discussed in the Review Plan (Appendix A). The ATR team is assigned by the primary PCX upon request from Los Angeles District.

4.1.8 Independent External Peer Review

A Type I Independent External Peer Review (IEPR) is required when a study determines, or anticipates, that specific criteria will be met as per Appendix D of EC 1165-2-214, Civil Works Review Policy. For the purposes of this study, the PDT proposes for a Type I IEPR based on a risk-informed decision process described in the attached Review Plan (Appendix A).

4.2 SPONSORS AND STAKEHOLDERS

The VCWPD is the non-Federal sponsor of the study. VCWPD has been involved in the development of this PMP. Stakeholders include any person, group, or organization that has direct or indirect interests in the outcome of the study. The primary stakeholders involved in this study are listed below.

- Federal
 - Congressional Delegation (XXXXXX)
 - U.S. Army Corps of Engineers (District, Division, HQ, DDN-PCX)
 - U.S. Fish and Wildlife Service (USFWS)
 - U.S. Environmental Protection Agency (USEPA)
 - National Marine Fisheries Service (NMFS)
 - Federal Emergency Management Agency (FEMA)
- State/Local
 - California Department of Fish and Game
 - California Department of Transportation
 - California Regional Water Quality Control Board – Los Angeles Region
 - California Office of Historic Preservation
 - South Coast Air Quality Management District
 - Ventura County Watershed Protection District
 - Ventura County Air Pollution Control Board
 - Ventura County Sanitation District
 - City of Oxnard



- Public/Organizations
 - Adjacent property owners/homeowners associations
 - Friends of the Santa Clara River
 - The Nature Conservancy
 - Sierra Club



5 WORK BREAKDOWN STRUCTURE

A work breakdown structure (WBS) is a hierarchical description of project products. The WBS identifies the work required in producing the final product (FR/EIS) for the current phase of the project. In the WBS, the work required to produce the FR/EIS is progressively categorized into finer sub-products. The financial reporting level of the WBS will be Level 5. The lowest level of the WBS will be divided into tasks that support the preparation of the associated sub-product.

5.1 LEVELS OF PROJECT DEVELOPMENT AND WORK BREAKDOWN STRUCTURE

The relationship between the study phase and related phases of project development is illustrated in Figure 5. Level 1 is the project itself, with successive levels representing discrete phases or aspects of project development. Level 5 represents the sub-products necessary to produce the FR/EIS and associated appendices. A WBS is applied to these study products and sub-products, creating a hierarchy of activities. The WBS provides a means to organize the study phase activities in a logical sequence and identify products or deliverables through the various stages of the study phase. Detailed description of the project scope is presented in Detailed Scope of Work (Appendix B).



LEVEL 1 (Project):

- Santa Clara River Levee Project

LEVEL 2 (Major Phases of Project Development):

- Reconnaissance Phase
- Feasibility Study Phase
- Preconstruction Engineering and Design (PED) Phase
- Construction Phase
- Operation and Maintenance Phase

LEVEL 3 (Product of the Feasibility Study Phase):

- Decision Document (FR/EIS)

LEVEL 4 (Features of the Decision Document):

- Environmental Analysis
- Engineering Analysis
- Economic Analysis
- Cost Analysis
- Real Estate Analysis

LEVEL 5 (Specific Products and Sub-Products to Achieve Level 4 Features):

- Without-Project Condition Analysis
- Public Involvement
- Public Information Meeting
- Alternatives Analysis
- Milestone Meetings with SPD
- Recommended Plan Selection
- Feasibility-Level Design and Cost
- Feasibility Study Report and NEPA Analysis
- Public, Technical, and Policy Reviews

Figure 5 - Levels and Phases of Project Development



6 SCOPE MANAGEMENT PLAN

6.1 APPLICABLE GUIDANCE

The study will generally be conducted in accordance with criteria and guidance applicable to Corps feasibility studies, including the following:

- USACE “Project Management Business Process,” May 2009
- USACE “Environmental Operating Principles”
- ER 5-1-11, “Program and Project Management,” August 17, 2001
- ER 1105-2-100, “Planning Guidance Notebook, April 22, 2000 including “Appendix G, Amendment #1” June 30, 2004, and “Appendix H, Amendment #1” November 20, 2007
- ER 1110-2-1150, “Engineering and Design for Civil Works Projects,” August 31, 1999
- ER 11-1-321, “Value Engineering”, February 28, 2005
- ER 405-1-12, “Real Estate Handbook,” November 20, 1985
- “Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies,” U.S. Water Resources Council, March 10, 1983, as revised
- ER 200-2-2, “Procedures for Implementing NEPA”, U.S. Army Corps of Engineers, March 4, 1988
- EC 1105-2-405, Division Engineers Submittal of Final Decision Document for Projects Requiring Specific Authorization, Corps of Engineers, March 31, 2005
- EC 1105-2-406, Planning District Engineers Presentation of Final Decision Document for Projects Requiring Specific Authorization, March 31, 2005
- EC-1105-2-407, Planning Models Improvement Program: Model Certification, May 31, 2005
- EC-1165-2-214, Civil Works Review Policy, December 15, 2012
- EC-1105-2-409, Planning in a Collaborative Environment, May 31, 2005
- ER-1110-1-12, Quality Management, September 30, 2006
- ER110-2-1302, Civil Works Cost Estimating
- ER 1110-2-10-1150, Engineering and Design of Civil Works Projects
- ETL 1110-2-573, Engineering and Design: Construction Cost Estimating Guide for Civil Works, September 30, 2008
- ER 1110-2-8160, Engineering and Design: Policies for Referencing Project Elevation Grades to Nationwide Vertical Datums, March 1, 2009
- ER 1165-2-132, Water Resources Policies and Authorities: Hazardous, Toxic, and Radioactive Waste Guidance for Civil Works Projects, June 26, 1992
- All applicable Federal, state and local policies and regulations pertinent to fish and wildlife



6.2 SCOPE MANAGEMENT

Scope management is one of the most critical activities performed by the PDT to produce a product that meets the sponsor's needs while remaining on schedule and within budget. Scope management has two components: first to constrain *scope creep*¹, and second, to assure that proposed scope modification is necessary to produce the product, or adds a feature that is agreed upon by the Corps, sponsor, and stakeholders. The PDT will continuously evaluate its work effort to assure that all of the work required to produce the desired product is accomplished. The PDT is the first line of defense against scope creep.

At the early stages of scope development, the project scope may not be fully developed and/or may be based on non-valid assumptions. As the study progresses the assumptions may be revised and requirements may be changed. These changes will have an impact on study scope, as well as cost and schedule. As the PDT identifies significant work effort that must be completed to produce the desired product, but which was not included in the original scope, these changes will be processed through the Change Management Plan, (Section 13 of this PMP). No change that has significant impact on cost, scope, or schedule will be incorporated into the scope without being coordinated and approved by the sponsor.

¹ Scope creep is a term for inclusion of non-essential work into the work effort.



7 FUNDING MANAGEMENT PLAN

7.1 BASELINE STUDY BUDGET ESTIMATE

The study budget is approximately \$ _____, and is therefore policy compliant under the new 3x3x3 planning paradigm. The total project cost is \$ _____, which accounts for both the study budget of \$ _____ and a 5 percent contingency. Each member of the PDT has prepared a budget estimate for the work in which they are responsible. Quality control and ATR costs are also included in the budget estimate. The budget has been developed based on products required for achieving the five milestones under the Civil Works new 3x3x3 planning methodology. The study baseline cost estimate is summarized by project milestone in Table 2, and by resource category in Table 3. The detailed breakdown of study costs are presented in the Detailed Study Budget (Appendix C).

The PM will allocate funds to the PDT for completion of products and deliverables. The PM is responsible for management of all contingency. Technical leads are responsible for sub-allocations and detailed budgeting for their assigned products. Changes to the baseline cost and schedule will only occur in accordance with the Change Management process discussed in Section 13 of this PMP.

Table 2 - Summary of Costs by Project Milestone

Milestone	Budget
1 - Alternative	
2 - Tentatively Selected Plan	
3 - Agency Decision	
4 - Civil Works Review Board	
5 - Chief's Report	
TOTAL	\$ 0



Table 3 - Summary of Costs by Resources and Milestones

Discipline	Alternatives	Tentatively Selected Plan	Agency Decision Milestone	Final Report	Chief's Report	Budget
Project Management						
Plan Formulation						
Environmental						
Hydrology/Hydraulics						
Geotechnical						
Design						
Surveys						
Cost Estimates						
Real Estate						
Cultural Resources						
Regulatory						
Public Affairs						
Value Engineering						
Sponsor Work In-Kind						
TOTAL	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0



7.2 SPONSOR COST SHARING REQUIREMENTS

The study is cost shared in accordance with the WRDA of 1986 (P.L. 99-662), Section 105, which provides for cost sharing requirements for Federal projects. As the local sponsor, the VCWPD will be required to provide 50 percent of the cost of the feasibility phase.

For purposes of allocating the cost share amounts, a total study cost of \$ _____ was used. The Federal Government and the VCWPD will each be required to provide \$ _____. The VCWPD will use a combination of work in-kind and cash contributions to fulfill their requirement.

7.3 FUNDS MANAGEMENT

Fund expenditures will be tracked by the Corps of Engineers Financial Management System (CEFMS), an integrated component of P2. Federal and sponsor funds will be tracked separately, and in-kind services will be captured and credited against the sponsor's financial obligation.

Work performed by the PDT will be authorized through work requests. Both the PM and the first line supervisor will sign the Work Request (WR), and first line supervisors will be responsible for managing the work in accordance with the WR. The PM will monitor expenditure of funds versus progress toward completion of products no less than monthly to ensure that progress toward product completion is consistent with funds expended. Contract expenditures will be captured as billings are paid. The PM will provide quarterly financial and status elements to the sponsors.

The budget is based on assumptions made at the initiation of the study phase. Some of these assumptions may be incorrect, resulting in more, or less, work than initially anticipated. As the study progresses, additional requirements may be identified. These changes to the initial assumptions will have an impact on study cost, scope, and schedule. To provide for limited changes, a contingency of approximately ____ percent has been included in the original estimate. All changes that will have any significant impact on study cost will be processed through the Change Management Plan (Section 13 of this PMP), and will be coordinated with the sponsor.



8 SCHEDULE MANAGEMENT PLAN

8.1 SCHEDULE DEVELOPMENT

The schedule developed by the PDT is based on the scope identified in the WBS. The PDT identified logical relationships and constraints between tasks, and this information is entered into the P2 schedule component, Primavera, by the Data Management Branch to produce the study schedule. The schedule will be approved by the PDMT.

8.2 SCHEDULE MANAGEMENT

The PM is responsible for execution and control of the study. Because the product is a planning study, the Planning Lead and PM will partner to conduct day-to-day operational control of the study execution and to assure that the study process and products are developed in accordance with this PMP. The Environmental Coordinator (EC) is responsible for ensuring NEPA compliance and will work closely with both the PM and the Planning Lead to track and manage the schedule, ensuring that it aligns with the rest of the study process and timeline.

Study progress will be reviewed monthly, at a minimum. Work progress will be provided by PDT members to the PM for the purpose of updating P2. Based on this information, the PM will determine the study progress against the schedule and budget. Deviations in schedule and/or study costs will be identified and corrective action will be initiated.

The schedule is based on assumptions made at the initiation of the study phase. Some of these assumptions may be incorrect, resulting in more, or less, work than initially anticipated. As the study progresses, additional requirements may be identified. These changes to the initial assumptions will have an impact on study schedule, scope, and study cost. All changes that will have any significant impact on study schedule will be processed through the Change Management Plan (Section 13 of this PMP), and will be coordinated with the sponsor.

8.3 MILESTONE SCHEDULE

The milestone schedule is shown in Table 4 below.

Table 4 - Milestone Schedule

Milestone	Timing
1 - Alternative	
2 - Tentatively Selected Plan	
3 - Agency Decision	
4 - Civil Works Review Board	
5 - Chief's Report	



9 PROJECT QUALITY CONTROL PLAN

9.1 PURPOSE

The Corps is the nation's premier engineering agency and is extremely concerned that its products comply with law and policy and present proposed projects that are environmentally, economically, and technically appropriate, accurate, and correct in their content and recommendations. This Project Quality Control Plan (QCP) presents the process that assures quality products. The purpose of the QCP is to assure that:

- The FR/EIS are consistent with current criteria, procedures and policy.
- Clearly justified and valid assumptions used are in accordance with established guidance and policy, with any deviations clearly identified and properly approved.
- Concepts, features, analytical methods, analyses, and details are appropriate, fully coordinated, and correct.
- Problems/issues are properly defined and scoped.
- Conclusions and recommendations are reasonable.

The QCP defines the responsibilities and roles of each review element involved in the quality control process.

9.2 METHODOLOGY

9.2.1 General Process

The quality management methodology that governs the Corps' project review process is specified by EC 1165-2-214, Civil Works Review. This EC details the requirements for review of the FR/EIS. The Review Plan for this study documents this process and is attached as Appendix A of this PMP. The review plan is separately reviewed by the PCX and approved by South Pacific Division and is posted on the District's public website.

The quality management process incorporates reviews both within and external to the District. The EC briefly discusses review within the District, but focuses on external reviews. Within the District, quality management is addressed at the technical section level, by the PDT and by the District Quality Control (DQC) review. Quality control responsibilities, including team member roles in reviews, internal reviews (PDT and DQC), and technical and policy reviews, are all explained in detail in Appendix A.

9.2.2 Technical Coordination

Generally, product development shall be performed in accordance with established criteria and guidance and with established policy. Meetings with the appropriate review team members during the planning process will be held at key decision points. Meetings will also be held to discuss and resolve technical and/or policy issues that may arise during the course of product development. Technical issues and concerns raised during the technical review process will be documented, as will the resolution of these issues and concerns.



10 ACQUISITION MANAGEMENT PLAN

10.1 PURPOSE

The intent of the Acquisition Management Plan is to identify which study products will be obtained through contract and establish the method of contracting. The types of contracting include assistance by other Federal agencies, acquisition of commercial products, personal and engineering services, and work-in-kind by the sponsor. The products acquired include data, data interpretation and analysis, modeling and other engineering services, report preparation, public outreach assistance, and reviews.

The project delivery acquisition strategy outlines the methods of contracting that will be used throughout the duration of the study, design, and construction elements of the project. The PDT will identify and summarize the procurement options and/or methods of contracting for each resource and for producing each product associated with the FR/EIS. Separate acquisition strategies need to be identified for the design and construction elements of the project. At this time, the contract procurement elements (Table 5) are anticipated.

Table 5 - Contract Procurement Elements

Task/Element	Method of Contracting

All remaining work will be completed in-house by Los Angeles District resources, representing ___ percent of all work to be performed.

10.2 ACQUISITION REQUIREMENTS

Per PROC2050 of the Project Management Business Process (PMBP) manual, a formal written acquisition plan requiring higher level approval may be required. Contract thresholds in Engineer Federal Acquisition Regulation Supplement dictate when formal written acquisition plans are required. The study products anticipated to be acquired are detailed below.

10.2.1 Data

Property information including boundaries and ownership will be provided by the non-federal sponsor as work-in-kind.

10.2.2 Modeling and Engineering Services

To be determined if services will be provided/completed outside of Los Angeles District.



10.2.3 Reviews

ATR will be obtained through the lead PCX with a government order to another Corps District.
IEPR will be obtained through an IDIQ contract.



11 RISK MANAGEMENT PLAN

Risks are events or circumstances that have a positive or negative impact on the execution of the project. Risk Management is an ongoing systematic process of identifying, analyzing, and responding to risk. Risk is a product of probability of an event or circumstance occurring and the severity of the impact if it occurs. Risks that could impact product delivery quality, scope, schedule, and/or budget are to be identified and assessed by the PDT. Risk management is a four-step process of identification of potential risk, assessment of probability of occurrence, qualification and/or quantification of impact, and preparation of a method of avoiding or minimizing the impact of the risk. A subset of the risk management plan is the cost risk management plan, which is a specialized process to assess the risk of construction cost uncertainty. This process is conducted in the feasibility phase by the cost engineer and impacts design methods, materials, construction methods and timing, and cost contingency.

11.1 IDENTIFICATION OF RISKS

Risks fall into three categories: known risks are risks that can be identified both as to probability and timing of occurrence; unknown risks are risks that can be identified but their timing is uncertain; and unforeseeable or unknown risks are risks that cannot be anticipated. Known and unknown risks are captured in one or more of the following categories:

- Scope
- Quality
- Schedule
- Cost
- Life Safety

Risks to project implementation (completion of the feasibility phase) are identified in Table 6, which assesses the degree of risk. Risk ratings are a product of the probability rating (1-10), and impact rating (1-10) and are quantified as follows:

- Low: 1-9
- Medium: 10-36
- High: 37-81
- Extreme: 82-100

For the purposes of this PMP, the risk rating is a tool that helps capture qualitative risks on a quantitative scale to help the team identify where to focus time and energy on scoping efforts.

11.2 ASSESSMENT OF PROBABILITY OF OCCURRENCE

Risk assessment will be qualitative using a 1 to 10 scale where 1 through 3 are low probability, 4 through 6 are medium probability, 7 through 9 are high probability, and 10 is extreme probability.



11.3 QUALIFICATION AND/OR QUANTIFICATION OF IMPACT

Risk qualification and/or quantification will be similar to the assessment process. In this case, a 10, which is extreme risk, would result in the termination of the project if mitigating action was not undertaken.

11.4 RISK MANAGEMENT

The goal of risk management is to identify the measures that will be used if a risk occurs. Response ranges from no action to taking active steps to minimize or mitigate risks. Some risks will be so minimal that no action will need to be taken.



Table 6 - Risk Register

Action	Assessment																									
	Probability										Impact										Risk					
	Low			Medium			High			Extreme	Low			Medium			High			Extreme	Low (1-9)	Medium (10-36)	High (37-81)	Extreme (82-100)		
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10						
Funding Interruption – Federal																										
Funding Interruption – Non-Federal																										
Change in Assumptions used for Economic Analysis																										
Insufficient Benefits																										
Insufficient Economic Data																										
In-House Staff Constraints																										
Extensive Mitigation Negotiations																										
Environmental Permits not obtained on time																										
Listing of Endangered Species																										
Extensive Public Comments																										



12 SAFETY AND OCCUPATIONAL HEALTH PLAN

This Safety and Occupational Health Plan implements the requirements in EM 385-1-1, *U.S. Army Corps of Engineers Safety and Health Requirements Manual*, and requirements of the Americans with Disability Act of 1990, P.L. 101-336.

12.1 SAFETY AND OCCUPATIONAL HEALTH – OFFICE

Work facilities provided for employees will comply with access and accommodation provisions of P.L. 101-336 to include, but not limited to, Title II – Public Entities, Title III – Public Accommodations, and Title IV – Telecommunications.

Work facilities will comply with provisions of EM 385-1-1 to include, but not limited to, Section 2 – Sanitation, Section 3 – Medical and First Aid Requirements, Section 7 – Lighting, Section 9 Fire Prevention and Protection, and Section 21 - Safe Access and Fall Protection. Work facilities will comply with current building standards and life safety codes. The District Safety Officer has the responsibility to assure that safety standards are met and complied with. Employees have the responsibility to bring conditions that are not in compliance to the attention of the District Safety Officer.

12.2 SAFETY AND OCCUPATIONAL HEALTH – FIELD

Safety briefings are conducted annually by the District Safety Officer and by Division and Section management. Specialized safety briefings may also be provided at construction sites and operating projects. This briefing includes both office and field safety practices. It is the employee's responsibility to attend safety briefings when offered.

In general, it is the responsibility of the employee to be aware of field conditions and act and dress accordingly. Employees are expected to be familiar and comply with Federal, state, and local laws and regulations, while conducting activities in the field and while traveling to and from those activities. Employees are expected to have knowledge of basic first aid and to plan ahead for accidents that may occur when away from the office.



13 CHANGE MANAGEMENT PLAN

13.1 PMP

The PMP is a living document that will be revised, as necessary, throughout the life of the study. The PDT is responsible for determining when amendments or modifications to this PMP are required. PDT members are responsible for monitoring their work items and identifying when changes are necessary. Significant changes will require the generation of a change request form in P2, revising the PMP, and requesting a Schedule and Cost Change Request (SACCR). For the purposes of this project, “significant” category changes will include:

- Unanticipated or unbudgeted environmental, economic or social issues
- Congressional funding reductions
- Additional analysis
- Additional data-gathering requirements

All other changes will be considered “minor,” and will be documented by the PM in the PMP revision log. At the least, the PM will update the PMP annually at the start of each new fiscal year.

13.2 SACCR

SACCRs are required when the project scope changes, the total cost of a project (or authorized portion) will increase, and/or the completion date of a project (or authorized portion) will slip. Project SACCRs will be prepared by the PM and submitted to SPD for approval. All approved SACCRs will be retained in the project directory.

13.3 CHANGE REQUEST FORM

Change Requests can be presented in the form of verbal or informal requests; however, as a best practice, proposed changes will be formally recorded to facilitate the understanding of the intent of the proposed change. The Change Request Form provides a means of documenting the impact of proposed changes and provides the rationale for approving changes that exceed the project’s baseline performance thresholds. Change Request Forms will be posted to the project in P2.

Any change requests that impact the budget past \$3 million will require a waiver from the 3x3x3 Planning Process. This waiver is signed at the Corps’ Headquarters level.



14 COMMUNICATIONS MANAGEMENT

14.1 COMMUNICATIONS GOALS AND OBJECTIVES

14.1.1 General

The PM will be responsible for day-to-day management of the study. They will maintain close coordination with the entire PDT to ensure timely prosecution of the study and compliance with this agreement. The PM will meet and confer with the sponsor's designated representative on a regular basis throughout the study to discuss study execution and progress. The PM will maintain a written record of such meetings, with a copy provided to the sponsor's representative. A PDT kick-off meeting will be held at the outset of each feasibility phase milestone throughout the study to discuss specific coordination requirements leading to establishment of routine PDT meetings required to complete that project phase. Any PDT member can request a team meeting to discuss technical issues or new information. For more detailed information on project communication goals, strategies, and key talking points, see Appendix B, Communication Plan.

14.1.2 Goals

The goals for Communications Management include the following:

- Keep internal Corps' team (PDT, senior management, technical review team, and vertical team) and sponsor informed.
- Inform stakeholders of public comment opportunities and study milestones.
- Inform the public of agency plans, milestones and opportunities to provide comments.
- Answer questions from local elected officials as representatives of their community.



15 DATA MANAGEMENT PLAN

15.1 PURPOSE

This Data Management Plan (DMP) outlines the processes and standards for the collection and life cycle maintenance of data used by the PDT members, partners, sponsors, and stakeholders. Data management is also a key component to Value and Quality Management. Data management utilizes the concept of an enterprise District repository for data with manager(s) responsible for maintenance/storage of data from all projects. This concept reduces the collection of redundant data and provides a central location for PDT members to determine available information for a project. The concept of data management extends outside the timeframe of a single project PDT. Geospatial data management for one project spans from initial data searches/collection, supplemental data collection, use of data, database management, and storage of data after completion of the project.

15.2 GOALS

The goals for the DMP are to:

- Support the PDT's execution of civil works design and construction projects.
- Provide accurate, efficient, and effective information to meet project requirements.
- Protect and preserve corporate investment in geospatial data, applications, and institutional knowledge.
- Facilitate effective evolution of Geographic Information Systems (GIS), Computer Aided Draft and Design (CADD), and other geospatial technologies, as well as coordinate consistent implementation and deployment of related technologies within the District.
- Identify the overall goal of the data management effort including collection, management, and archiving of data, including applicable standards.

15.3 RESPONSIBILITY

15.3.1 Project Manager

The PM is responsible for:

- Assuring the PDT incorporates a DMP into the PMP for the project and assigns data coordinator.
- Ensuring that data management policies are integrated into the project delivery process to optimize overall value.
- Ensuring that data management activities are scheduled, conducted, and resourced.
- Ensuring schedules are developed, and adequate funds are budgeted for all data management activities, including review by District, partners, and customers.
- Ensuring that the PDT is responsible for project/program quality.



15.3.2 Project Delivery Team

The PDT is responsible for the following:

- Support the PDT in the efficient execution of civil, military construction, and environmental restoration projects.
- Help protect the investment in CADD, geospatial data, applications, and institutional knowledge.
- Facilitate the sharing of CADD and geospatial data among civil, military, and environmental projects. At the project initiation phase, determine how large of a role CADD and geospatial technologies will play.
- Educate the PMs and PDT members on how CADD and geospatial technology can be used to add value to the project.
- Identify CADD and geospatial data requirements and ensure that the appropriate CADD, geospatial, and data standards are followed. This includes following the current AE/C CADD standard, Spatial Data Standards for Facilities, Infrastructure and Environment and development of Federal Geographic Data Committee (FGDC) metadata.
- Acquire existing geospatial datasets from Federal, state, local agencies, the public domain and available through Corps license agreements.
- Reformat data as required for use with the geospatial technologies.
- Create new data layers through the integration of existing and acquired data.
- Integrate CADD and GIS data.
- Identify CADD and geospatial application requirements needed for the project.
- Develop geospatial technology applications in accordance with applicable guidelines and standards.
- Perform spatial analysis and data modeling.
- Provide data visualization and mapping products.
- Develop and maintain a geospatial data management plan for the life cycle of the project.
- Develop and maintain a spatial DMP for the life cycle of the project.
- Coordinating with District and Division Geospatial Data Managers on policy requirements.

15.4 OBJECTIVES

The following are the DMP's objectives.

- All submittals, as delineated in the A-E contract and per the submittal register for the construction contract, will be in accordance with both the Scope of Work and Acquisition Strategy Meeting (ASM) notes.
- Project Management related documents (PMPs, Value Engineering Study, etc.) will be attached to Corporate Management Information System (CMIS).
- When appropriate, actual design will incorporate the use of Building Information Model (BIM).



15.5 PROJECT FILES

All project working files are to be maintained on the District ___ drive at: _____. No project files should be maintained on local or private file locations. This requirement is to prevent loss of important work in the event the PDT member is unavoidably absent from the PDT for an extended period of time, or leaves the PDT. It is also important in that supervisors and/or PDT members may need to consult in-progress work to respond to data calls. Hard copies of original official files will be the responsibility of the PM to file and store in an official project record. The electronic project file structure root directory is as follows:

15.5.1 Authority and Guidance

All project authorization information will be maintained in this folder: _____.

15.5.2 Official Project Records

The office project records folder will be located in this folder: _____. This folder will contain files that are the basis of the study such as Congressional, HQUSACE, SPD, and sponsor guidance or requests, product transmittals, review certifications, product approvals, etc. All documents in this folder will be in PDF format.

15.5.3 Fact Sheets

This folder will contain fact sheets, information papers, justification sheets, Project books, etc., for all phases of the project (reconnaissance through construction): _____.

15.5.4 Reference Reports

This folder will contain data and reports from previous Corps and others work efforts on the study area: _____. Each report will be contained in a sub-folder that identifies the contents by name, year, and author.

15.5.5 Presentations, Maps, Figures, and Photos

Graphic material is of interest to all project phases, and this folder will contain project graphics in sub-folders: _____. The main folder will also contain links to the GIS and CADD file locations.

15.5.6 Reconnaissance, Feasibility, PED, and Construction

These folders will contain working files for the subject phase of the project. Sub-folders will include the PMP for the phase, budget data for the phase, phase PDT meetings, phase-specific correspondence, discipline specific working files, and phase product (e.g., reconnaissance report, feasibility report, etc.).

15.5.7 Other

The PDT may identify other folders that are pertinent to the overall project regardless of phase. These folders should be located on the project file structure root directory.



15.6 FILE NAMING CONVENTION

PDT members are encouraged to be explicit in identifying their files to allow others to easily find data. For correspondence, the name should include what type of correspondence, (e.g., letter, trip report, MFR, etc.), author and recipient, and subject matter. All filenames should start with the creation or revision date in *YYMMDD* format. This format will identify the most recent of revised documents and will sort in chronological order. Old versions of files should be kept in a sub-folder identified as “Old Versions” so that only the most recent version is displayed.



16 CLOSEOUT MANAGEMENT PLAN

16.1 PURPOSE

This closeout management plan (CMP) summarizes the processes that will be performed at the completion of the study phase of the project.

16.2 GENERAL

At the completion of the study phase, the PM shall initiate all financial closeout actions. This will include audit, a letter to the sponsor informing them of the audit results, and reconciliation of final cost-sharing obligations. The PDT will ensure that all project documents are appropriately filed. The project would be completed by the Issuance of the LRR Division Commander’s Notice (Milestone CW2060). The CMP will take about _____ months to complete. The closeout plan for this phase is comprised of the three items as follows:

- Final Accounting of Project Costs
- After Action Review
- Recommendation for Design, Implementation Phase Funding

Key areas of the following processes are highlighted here for consideration.

IMPORTANT: Guidance and quotes from processes (below) is made here for reference purposes only. The on-line PMBP shall be accessed to obtain all current information relevant to the processes that are referenced.

16.3 RESPONSIBILITIES – PROJECT EXECUTION AND CONTROL

Table 7 - Project Execution and Control Responsibilities

Team Member	Responsibility
PM	Verify that adequate funds are available to begin/continue execution, and progress project.
PM	Request PDT progress project activities.
PDT	Review project activities to determine the need for progressing and updating schedule or funding.
PDT	Review PMP, including Change Management, Safety, Communications, Quality, Risk, Acquisition, and Closeout. The PMP will be the continuing vehicle for measuring the quality of a project. Evaluation of quality objectives within the PMP is a continuous activity during project execution.
PDT	Progress and update project activities, including any known issues.
PDT	Notify PM in accordance with Communications Plan –that funding and activities have been reviewed.
PDT	Determine if changes need to be made. (Ref. Change Mgt PROC3010).
PM	Go to PROC4000 – Activity/Program Closeout.



16.4 RESPONSIBILITIES – ACTIVITY/PROGRAM CLOSEOUT – PROC4000

From PROC4000 – “...*This process is performed whenever projects and/or phases of projects, including specific activities, are completed or terminated...*”

Closeout of projects and/or phases of projects may serve at least four critical purposes:

- Transferring of cost to the appropriate accounts
- Reprogramming excess funds
- Recording of post-completion events and decisions made
- Providing an administrative record to serve as a basis for judicial review community relations

Table 8 - Activity/Program Closeout Responsibilities

Team Member	Responsibility
PM	Ensure PDT reviews un-liquidated CEFMS for completed activities.
PDT	Clear outstanding obligations and commitments.
PDT	Close work items/reallocate funds, if appropriate.
PDT	If an activity has an asset work item - Process cost transfer or Plant in Service, in accordance with applicable regulations, policies, and local SOPs.
PDT	Determine whether activities represent completion of a product or project phase.

16.5 RESPONSIBILITIES – GENERAL GUIDANCE

Table 9 - General Guidance Responsibilities

Team Member	Responsibility
PM	Ensure the completed products are turned over to the sponsor.
PM	Ensure PDT completes all (applicable) closeout documents (e.g., contractor and A-E evaluations, and transfer documents), and that these documents are completed in accordance with applicable regulations.
PDT	Complete all closeout documents and request feedback from sponsor.
PDT	Complete Lessons Learned.
PM	Cost Sharing - Examine total expenditures for each type of funds to determine if correct cost sharing exists. Initiate balancing of accounts.
PDT	Process cost transfer as necessary, in accordance with cost-sharing requirements and applicable regulations, policies, and local SOPs.
PM	Prepare and send customer memorandum closing project with appropriate documents attached.
PM	Organize records and store/archive properly.



17 APPROVALS

All issued versions of this PMP will require the approval of the core PDT as well as the affected Section Chiefs. The sponsor approves significant changes to the PMP. The approval page for endorsement of this PMP by the Project Delivery Management Team, approval by the Deputy District Commander for Project Management, and by the _____ of the VCWPD is included at the front of the PMP.



APPENDIX A

REVIEW PLAN

**Santa Clara River Levee Feasibility Study
Ventura County, California
Integrated Feasibility Report and Environmental Impact Statement**

**U.S. Army Corps of Engineers
Los Angeles District**

PCX Endorsement Date: _____

MSC Approval Date: _____

Last Revision Date: December 2014



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1. PURPOSE AND REQUIREMENTS

- a. **Purpose:** This Review Plan defines the scope and level of peer review for the Santa Clara River Levee, Ventura County, California, Integrated Feasibility Report and Environmental Impact Statement (FR/EIS).
- b. **References:**
 - Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 December 2012
 - EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
 - Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
 - ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
 - Cost and Schedule Risk Analysis Guidance, 17 May 2009
 - Project Management Plan for the Santa Clara River Levee, Ventura County, California, 2014
- c. **Requirements:** This Review Plan was developed in accordance with EC 1165-2-214, 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), and Policy and Legal Compliance Review. In addition to these levels of review, per EC 1165-2-214, decision documents are subject to cost engineering review and certification and planning model certification/approval.

2. REVIEW MANAGEMENT ORGANIZATION COORDINATION

The Review Management Organization (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 PCX for flood risk management (FRM).

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 feasibility study for the Santa Clara River Levee Project is a single-purpose study.



3. STUDY INFORMATION

- a. **Decision Document:** The authorized name of the study is Santa Clara River Levee Feasibility Study. The location is Ventura County, California. The decision document will be an integrated FR/EIS. The purpose of the FR/EIS is to document the project delivery team's (PDT) evaluation of the Federal interest in modifying the levee system for the purposes of increasing public safety, continuing to provide FRM benefits, and better serve the public interest, while taking into account the environmental impacts of such a project. The integrated FR/EIS will require approval from Major Subordinate Command (MSC), U.S. Army Corps of Engineers Headquarters (HQUSACE), the Chief of Engineers, as well as congressional authorization. The EIS will satisfy the requirements under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).
- b. **Study/Project Description:** The Santa Clara River Levee (SCR-1) is located on the Santa Clara River in the City of Oxnard and adjacent unincorporated areas in Ventura County, California, approximately 64 miles west of Los Angeles. The approximately 4.72-mile-long levee system extends along the southeast bank of the Santa Clara River from Highway 101, at its downstream terminus, to the west end of South Mountain, at its upstream terminus. The height of SCR-1 varies from approximately 4 feet to 13 feet. The compacted fill embankment that forms SCR-1 has a top width of 18 feet. The levee embankment slopes are 2H:1V on both the landward and riverward sides.

Based on recent investigations performed for the Federal Emergency Management Agency (FEMA) levee certification and USACE, Los Angeles District's periodic levee inspection, there is evidence that portions of the SCR-1 are requiring immediate corrections and do not meet FEMA standards for certification. The identified deficiencies seriously impair the functioning of the levee system and pose an unacceptable risk to public safety. This is consistent with the general policy of the Corps that completed projects be observed and monitored to ascertain whether they continue to function as intended and whether there is a potential for modifications to better serve the public interest.

The cost-sharing non-Federal sponsor is the Ventura County Watershed Protection District (VCWPD).

- c. **Factors Affecting the Scope and Level of Review:**
- Preliminary analysis indicates that impacts to fish and wildlife, including threatened and endangered species, are expected to be less than significant. To the extent practicable, environmental concerns can be addressed through mitigation measures of avoidance, minimization, or compensation, and through public education and outreach efforts. However, an EIS will be completed for NEPA compliance due to a determination that the proposed project would be considered a major Federal action.
 - Public and stakeholder interest is expected to be widespread and complex.



- Information in the decision document is unlikely to be based on novel methods, involve the use of innovative materials or techniques, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. This project would be for an activity (FRM) for which there is ample experience within the Corps.
- The project will be justified by life safety and involve significant threat to human life/safety assurance.
- The project design is not anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design and construction schedule.

d. **In-Kind Contributions:** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include:

- Project management
- Participation in scoping activities, including public meetings
- GIS support
- Graphics/visual information support
- Property information, including boundaries and ownership

4. DISTRICT QUALITY CONTROL

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo District Quality Control (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 should be in accordance with the Quality Manual of the District and the home MSC.

- a. **Documentation of DQC:** DrChecks™ review software will be used to document all DQC comments, responses, and associated resolutions accomplished throughout the review process. Relevant DQC records will be provided to the ATR team during each ATR event, and the ATR team will provide comments as to the adequacy of the DQC effort for the associated product.
- b. **Products to Undergo DQC:** The decision document (draft and final FR/EIS), including feasibility-level design of the recommended plan and all technical appendices, will undergo DQC prior to release from the District for external reviews (e.g., ATR and Type I IEPR). All DQC reviews will be complete and closed out before external reviews are initiated.
- c. **Required DQC Expertise:** Required expertise for DQC includes individuals from Planning, Environmental Resources, Cultural Resources, Hydrology, Hydraulics, Civil Design, Geotechnical, Cost Engineering, Asset Management, and Office of Counsel.



5. AGENCY TECHNICAL REVIEW

Agency Technical Review (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. ATR is managed within USACE by the designated RMO, which is the Planning Center of Expertise for FRM for this study, 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.** The ATR team will review the draft and final FR/EIS (decision document) including feasibility-level design of the recommended plan, technical appendices, and any supporting documentation that is not contained in the technical appendices. This review will occur following completion of DQC. The ATR team will also be informally engaged throughout the feasibility phase and will complete interim reviews on specific products as necessary.
- b. **Required ATR Team Expertise.** Table 1 lists the anticipated disciplines for the ATR team. This list will be revised if the expertise needed for the review changes, as the study progresses. The expertise represented on the ATR team reflects the significant expertise involved in the work effort and generally mirrors the expertise on the PDT. The PDT made the initial assessment of expertise needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the Review Plan, and may suggest candidates as the study progresses. In addition to the expertise outlined below, ATR reviewers should be experienced in reviewing products resulting from risk-informed decision-making following SMART Planning processes. The RMO, in cooperation with the PDT, vertical team, and other appropriate centers of expertise, will determine the final make-up of the ATR team. The names, organizations, contact information, credentials, and years of experience of the ATR members will be included in Attachment 1 once the ATR team is established.

Table 1 - ATR Team Members and Expertise

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with 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 review for specific discipline (e.g., planning, economics, environmental resources, etc.).
Planning	The planning reviewer should be a senior water resources planner with experience in FRM studies in highly urbanized areas.
Economics	The economics reviewer should be a senior water resources economist with experience in FRM studies in highly urbanized



ATR Team Members/Disciplines	Expertise Required
	areas.
Environmental Resources	The environmental reviewer should be a senior water resources environmental manager with experience in FRM studies, including EIS, in highly urbanized areas.
Cultural Resources	The cultural reviewer should be a senior water resources archaeologist with experience in FRM studies in highly urbanized areas in the western United States.
Hydrology	The hydrology reviewer should be a senior water resources hydrologist with experience in FRM studies in highly urbanized areas, especially concerning flash flooding and alluvial fans.
Hydraulic Engineering	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of open channel dynamics, levees/floodwalls, and computer modeling techniques such as HEC-RAS.
Civil Engineering	The civil engineering reviewer should be a senior water resources civil engineer with experience in FRM studies.
Cost Engineering	The cost engineering reviewer should be a senior water resources cost engineer with experience in FRM studies.
Real Estate	The real estate reviewer should be a senior water resources civil engineer with experience in FRM studies in highly urbanized areas.

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 quality review comment will normally include:

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures.
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed.
- (3) 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.
- (4) 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 then 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 lead 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).
- 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 Alternatives Milestone, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. 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. There are two types of IEPR:

- **Type I IEPR.** 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. For decision documents where a Type II IEPR (Safety Assurance Review [SAR]) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.



- **Type II IEPR.** Type II IEPR, or SAR, are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.
- a. **Decision on IEPR.** Based on a risk-informed decision process, SPL proposes a Type I IEPR that would be focused on the economic analysis and environmental analysis. While the project would not involve significant threat to human life, and is estimated to cost more than the \$45 million threshold for Type I IEPR, the NEPA document is an EIS. Details of the Type I IEPR risk informed decision summary is provided below:
- The project does not involve significant threat to human life.
 - Project construction costs were estimated during reconnaissance phase to be approximately between \$97 and \$137 million, which is above the \$45 million threshold in EC 1165-2-214.
 - The NEPA document is an EIS.
 - Information is based on methods commonly used for flood risk management, does not present complex challenges for interpretation or contain precedent-setting methods or models, and is unlikely to present conclusions likely to change prevailing practices.
 - Project would be for an activity (levee rehabilitation) for which there is ample experience within the USACE.
 - Type II IEPR is not anticipated.
- b. **Products to Undergo Type I IEPR.** The draft integrated FR/EIS will undergo Type I IEPR.
- c. **Required Type I IEPR Panel Expertise.** The IEPR panel will contain no more than three reviewers. Reviewers will be selected by an Outside Eligible Organization (OEO) and candidates may be nominated by the Corps. The likely disciplines and expertise required for IEPR are presented in Table 2. Each discipline will review products related to their area of expertise and focus their review on the previously listed items. Additional technical areas requiring IEPR may be identified during the study/review process.

Table 2 - IEPR Team Members and Expertise

IEPR Panel Members/Disciplines	Expertise Required
Economics/Plan Formulation	The Economics panel member should be a senior economist with extensive knowledge of cost/benefit analysis for FRM projects in highly urbanized areas. The panel member should also be an expert in the USACE plan formulation process, procedures, and standards with experience in the evaluation of alternative plans for FRM studies.
Environmental Resources	The panel member should be a senior biologist/ecologist with



IEPR Panel Members/Disciplines	Expertise Required
	extensive experience in evaluation and conducting NEPA impact assessments for FRM studies. The panel member should be familiar with USACE environmental analysis and feasibility reports.
Hydrologic/Hydraulic Engineering	The panel member should be a senior hydrologic and hydraulic engineer with extensive experience in open channel flow systems, floodplain hydraulics, and interior flood control systems. The panel member should also be familiar with USACE application of risk and uncertainty in FRM studies.

d. **Documentation of Type I IEPR.** The IEPR Panel will be selected and managed by an OEO, per EC 1165-2-214, 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.
- 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. The 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.

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 DX, located in the Walla Walla District. The DX 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 DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

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 - Planning Models

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
MII	Cost Estimating	Certified
Crystal Ball	Risk and Uncertainty - Cost Engineering	Certified
@Risk	Risk and Uncertainty - Other	Certified/Approved
CEDEP	Corps-proprietary, Excel add-on for Cost Engineering	Certified
HEC-FDA	Risk and Uncertainty - Economic Analysis	Certified



Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
ArcGIS	Visualization	Certified
Automated Risk Assessment Modeling System	Visualization	Certified

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

Table 4 - Engineering Models

Model Name and Version	Brief Description of the Model and How it will be Applied in the Study	Approval Status
HSPF Model	USEPA's Hydrologic Simulation Program	Approved
HEC-RAS	Hydraulic Modeling	Certified
HEC-GeoRAS	Hydraulic Modeling - Geospatial Data	Certified

10. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.** The ATR schedule and cost estimated is presented in Table 5.

Table 5 - ATR Schedule and Cost

Task	Date	Estimated Cost
Limited ATR of preliminary technical documentation (Prior to Alternatives Milestone and/or TSP Milestone)	FY XX	
ATR of draft FR/EIS (Prior to Agency Decision Milestone)	FY XX	
ATR of final FR/EIS (Prior to Final Report Milestone)	FY XX	

- b. **Type I IEPR Schedule and Cost.** The ATR schedule and cost estimated is presented in Table 6.

Table 6 - IEPR Schedule and Cost

Task	Date	Estimated Cost
PCX Coordination of IEPR	FY XX	
Type I IEPR of draft FR/EIS (Prior to Agency Decision Milestone)*	FY XX	
Total		

*Estimated contract for three reviewers

- c. **Model Certification/Approval Schedule and Cost.** Not applicable. There are no models requiring certification for this study.



11. PUBLIC PARTICIPATION

The public will be invited to comment directly to the PDT through informal and formal public scoping meetings and public review comment periods programmed into the feasibility schedule. This includes a public review of the draft FR/EIS (public review occurs concurrently with ATR, IEPR, and HQ policy reviews). Public input will be available to the IEPR team to ensure public comments have been considered in development of the draft and final FR/EIS.

This Review Plan and the accompanying PMP will be posted to the District web site for public review once it is approved by the MSC.

12. REVIEW PLAN APPROVAL AND UPDATES

The South Pacific Division (SPD) 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 Commander’s approval memorandum, should be posted on the home District’s webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Los Angeles District: _____
 Email: _____
 Phone: _____

- Planning Center of Expertise: _____
 Email: _____
 Phone: _____



ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team Roster

Discipline	Name	Organization
Project Manager		
Lead Planner		
Economist		
Environmental Coordinator		
Cultural Resource Specialist		
Hydrologist		
Hydraulic Engineer		
HTRW Specialist		
Civil Engineer		
Cost Engineer		
Real Estate		
Public Affairs		
Office of Counsel		
Project Manager (Local Sponsor)		

ATR Team Roster

Discipline	Name	Organization
ATR Lead		
Economics		
Environmental Resources		
Cultural Resources		
Hydrology		
Hydraulic Engineering		
Civil Engineering		
Cost Engineering		
Real Estate		

IEPR Panel Roster

Discipline	Name	Organization
Economics		
Environmental		
Hydrologic and Hydraulic Engineering		



ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. 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 U.S. 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™.

<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name ATR Team Leader Office Symbol/Company</p>	<p>_____</p> <p>Date</p>
<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name Project Manager Office Symbol</p>	<p>_____</p> <p>Date</p>
<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name Architect-Engineer Project Manager¹ Company/Location</p>	<p>_____</p> <p>Date</p>
<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name Review Management Office Representative Office Symbol</p>	<p>_____</p> <p>Date</p>

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution as are 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.

<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name Chief, Engineering Division Office Symbol</p>	<p>_____</p> <p>Date</p>
<p><i>Signature</i></p> <hr style="border: 0.5px solid black;"/> <p>Name Chief, Planning Division Office Symbol</p>	<p>_____</p> <p>Date</p>

¹ Only needed if some portion of the ATR was contracted.



ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

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



APPENDIX B

DETAILED SCOPE OF WORK

**Santa Clara River Levee Feasibility Study
Ventura County, California
Integrated Feasibility Report and Environmental Impact Statement**

**U.S. Army Corps of Engineers
Los Angeles District**

Last Revision Date: December 2014



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1. ALTERNATIVES MILESTONE

DURATION

- Approximately ___ months

The Project Development Team (PDT) will work to identify problems, opportunities, objectives, and constraints. The PDT will also identify existing conditions and future without-project conditions using available data to the extent possible. All possible management measures to address the problems will be identified and subsequently formulated into a focused array of alternatives. It is assumed that, at a minimum, three action alternatives plus the No Action will be formulated. In this milestone phase, the PDT will also identify the criteria that will be used to evaluate the alternatives based on the study objectives. At the conclusion of this phase of work, the Vertical Team (VT) agrees on the focused array of alternatives and the team's proposed path forward for continuing feasibility. The PDT should continue strategic interactions with the VT (including the Regional Integration Team [RIT], Agency Technical Review [ATR] lead, and Office of Water Project Review [OWPR] lead) during in-progress reviews (IPRs) and informal communication, as needed.

DELIVERABLES

1. FS/EIS Outline and Existing Conditions
 - a. Existing Conditions
 - b. Focused Array
2. Risk Register
3. Report Synopsis (PF)
4. Decision Log (PF)
5. Decision Management Plan (PF)

OVERALL TEAM TASKS

- PDT Meetings
- Kickoff Charette (___ days)
- NEPA Scoping Meeting (Preparation and Meeting)
- Existing Conditions Analysis: hydrologic studies, hydraulic studies, sediment analysis, water quality, geotechnical studies, environmental studies (affected environment), cultural resources, hazardous materials and wastes, socioeconomics, and recreation
- Initial Plan Formulation Activities: Identify initial array of alternatives
- SMART Planning Documents: Report Synopsis, Decision Log, Risk Register, Data Management Plan (DMP)
- Preparation for Alternatives Milestone Meeting
- Alternatives Milestone Meeting

DISCIPLINE SPECIFIC SCOPES

- **Hydrology:** Existing information will be collected, reviewed, and categorized. The hydrologic engineering effort will be coordinated with the PDT to ensure reaches and



other parameters are developed consisted with other discipline needs and requirements.

- Collect and review hydrologic information from the Corps, Ventura County, other public agencies, and private sources
 - Perform field reconnaissance of the project area
 - Collect/compile GIS data layers to develop the segmentation of the drainage basin
 - Develop model parameters to proceed with calibration
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Prepare Existing Conditions documentation/appendix for draft FR/EIS
- **Hydraulics:** Detailed hydraulic models will be developed for the project reach. These models will be used to evaluate the flood conveyance capacity of the channel. The results, in conjunction with the sediment analysis, will produce parameters for use in the evaluation of the alternatives.
 - Collect and review hydraulic information from the Corps, Ventura County, other public agencies, and private sources
 - Collect and review applicable plans for structures, bridges, utilities, topographic mapping, and field surveys within the project area
 - Perform field reconnaissance of the project area
 - Determine hydraulic parameters
 - Prepare hydraulic models
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Prepare Existing Conditions documentation/appendix for draft FR/EIS
 - **Sedimentation:** Include a description of the physical characteristics of the watershed to familiarize the PDT with fundamentals of the river behavior, general principles of fluvial geomorphology, sedimentation, hydraulics, and streambank erosion.
 - Collect and review sedimentation information from the Corps, Ventura County, other public agencies, and private sources
 - Perform field reconnaissance of the project area
 - Sample sediment to determine particle size distribution at source areas and sink areas
 - Prepare a geomorphic analysis to characterize the general stability or erosional characteristics of the watershed
 - Analyze and quantify the sediment yield or production rates of the watershed
 - Select an applicable bed material transport analysis procedure
 - Develop model parameters
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Prepare Existing Conditions documentation/appendix for draft FR/EIS
 - **Water Quality:** Include a collection of existing information and quantification of impacts. The HPSF model developed from the hydrologic analysis will be supplemented with water quality information.
 - Collect and review water (both surface water and groundwater) quality



information from the Corps, Ventura County, other public agencies, and private sources

- Perform field reconnaissance of the project area
 - Research applicable documents to determine water rights issues
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Prepare Existing Conditions documentation/appendix for draft FR/EIS
- **Economics:** The economics team will conduct an initial data collection and analysis.
 - Collect historical data and establish existing condition
 - Review and analyze data
 - Establish baseline/existing condition
 - Prepare for and attend charette/kickoff workshop, including PCX designated lead economist
 - Prepare for and attend NEPA scoping meeting
 - Prepare for and attend Alternatives Milestone meeting, including at least one IPR with the Vertical Team
 - Prepare for and attend PDT meetings
 - General coordination/meetings with VCWPD
 - Provide input for the development of the report synopsis, decision log, DMP, and risk register
 - Write initial Draft Economic Appendix through existing conditions
 - Compile Existing Conditions documentation into draft FR/EIS
 - **Environmental Coordination:** This includes the preparation and filing of Notice of Intent, initial agency coordination, preparation of existing conditions report.
 - Prepare for and attend meetings: PDT, charette, NEPA scoping, Alternatives Milestone
 - NEPA scoping process to determine what will be analyzed in draft FR/EIS
 - NEPA Work Plan for entire feasibility phase; seek cooperating agencies (USFWS, NMFS, and California Fish and Game)
 - Develop Memorandum of Understanding with any cooperating agencies
 - Prepare Notice of Intent and submit to Federal Register
 - Work with Plan Formulation Lead to refine draft FR/EIS outline; NEPA Purpose and Need Statement
 - Establish maximum possible area of effect on environmental resources
 - Prepare Existing Conditions description for major environmental resources of concern
 - Background research on potential major issues
 - Communications to resource agencies
 - Meeting with resource agencies to scope draft FR/EIS environmental analysis
 - Work with Plan Formulation Lead to compile scoping comments from public (unless task is contracted)
 - Mapping of significant environmental resources



- **Cultural Resources:** This includes review of existing information including, but not limited to, published and unpublished reports on previous archival and archaeological investigations specific to the project area.
 - Attend PDT meetings
 - Attend Kickoff Charette (___ days)
 - Attend Alternatives Milestone meeting
 - Compile existing data/background research on project area for existing conditions
 - Review FS/EIS outline
 - Prepare Existing Conditions Section of draft FR/EIS
 - Add information to Risk Register
 - Prepare SHPO Notification/APE documentation letters (*Note: This task might carry over into the Tentatively Selected Plan [TSP] milestone*)

ASSUMPTIONS:

- * SHPO Notification/APE Documentation Letter will be prepared and sent out at the end of the Alternatives Milestone or beginning of TSP. (*Note: This task is dependent on having enough information to inform SHPO on what the project is.*)
 - * Existing conditions section will be reviewed during DQC
- **Geotechnical:** Pertinent geologic and geotechnical information characterizing the project area will be provided. No subsurface drilling or sampling investigations is anticipated.
 - Compile existing geotechnical information to describe historic and existing conditions in the area
 - Conduct field reconnaissance
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Prepare Existing Conditions documentation/appendix for draft FR/EIS
 - **HTRW:** Published information on HTRW-related issues will be researched.
 - Attend PDT meetings
 - Attend Alternatives Milestone meeting
 - Compile existing data/background research on project area
 - Conduct a Phase I Environmental Site Assessment of the project area
 - Prepare Existing Conditions Section of draft FR/EIS
 - **Cost Engineering:**
 - Attend PDT meetings
 - Attend Kickoff Charrette (___ days)
 - Attend Alternatives Milestone meeting
 - Participate in formulation of initial array of alternatives
 - Provide input in risk register, report synopsis and decision log



- **Plan Formulation:** This task includes all efforts performed by study management at the Corps and sponsor. Plan formulation activities will be conducted in close coordination with the sponsor and other agencies.
 - Prepare for and attend Kickoff Charette workshops
 - Prepare for and attend NEPA scoping meeting
 - Prepare for and attend Alternatives Milestone meeting, including at least one IPR with the VT
 - Prepare for and attend PDT meetings
 - General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
 - Facilitate identification/documentation of problems, opportunities, goals, objectives, and constraints
 - Facilitate identification/documentation of management measures
 - Facilitate screening of measures, formulation of initial array of alternatives, and identification of focused array of alternatives (multiple meetings/workshops)
 - Facilitate identification of screening criteria for final array of alternatives
 - Coordinate with Environmental Coordinator to develop/refine draft FR/EIS
 - Develop report synopsis, decision log, DMP, and risk register
 - Compile existing conditions documentation into draft FR/EIS
 - Coordinate with Environmental Coordinator to compile scoping comments from public (unless task is contracted)



2. TENTATIVELY SELECTED PLAN MILESTONE

DURATION

- Approximately ___ months

During this phase of the feasibility study, the PDT develops conceptual designs and parametric cost estimates for the focused array of alternatives. Economic and environmental evaluations will be completed to inform selection of a final array of alternatives (three action alternatives, at a minimum) and ultimately a Tentatively Selected Plan (TSP). The TSP Milestone meeting ensures Vertical Team concurrence on the TSP or the Locally Preferred Plan (LPP) that will be released as part of the draft FR/EIS for public and agency review. The draft FR/EIS will be prepared and DQC will be completed prior to the TSP milestone.

DELIVERABLES

1. Integrated Draft Feasibility Study and Environmental Impact Statement
2. Risk Register
3. Report Synopsis (Plan Formulation)
4. Decision Log (Plan Formulation)
5. Decision Management Plan (Plan Formulation)

OVERALL TEAM TASK

- PDT Meetings
- Stakeholder/Agency Outreach meetings
- Evaluation and comparison of alternatives
- Conceptual cost estimate
- Conceptual design
- Economic analysis (BCR)
- Environmental analysis
- Select TSP
- Write draft FR/EIS including Technical Appendices
- DQC of draft FR/EIS and Technical Appendices
- Response to DQC comments; revise draft FR/EIS
- SMART Planning Documents: Report Synopsis, Decision Log, Risk Register, DMP
- Prepare for TSP Milestone Meeting (multiple IPRs)
- TSP Milestone Meeting

DISCIPLINE SPECIFIC SCOPES:

- **Hydrology:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Modify hydrologic models, as appropriate, to evaluate the project alternatives
 - Develop discharge-frequency information at appropriate locations for each alternative



- Develop parameters necessary to quantify the hydrologic risk and uncertainty for each alternative
- Update Hydrologic documentation

- **Hydraulics:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Estimate hydraulic roughness coefficients for all reaches within the project area under with-project conditions; estimate additional hydraulic parameters
 - Prepare detailed hydraulic models under the with-project conditions using HEC-RAS.
 - Prepare overflow maps representing different flooding situations
 - Update Hydraulic documentation

- **Sedimentation:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Adjust sedimentation model, as appropriate, to evaluate the project alternatives
 - Update Sediment Analysis documentation

- **Water Quality:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Develop water quality criteria for each project alternative; adjust water quality models, as appropriate, to evaluate project alternatives
 - Update Water Quality documentation

- **Economics:** Analyze and present the potential benefits and costs of flood risk management solutions against the without-project conditions. Finalize data collection; evaluate the array of alternatives to determine BCR; conduct sensitivity analysis. Recreation opportunities are incidental to the flood risk management project; however, they are quantifiable and measurable.
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Analysis of without-project and with-project conditions
 - Determine preliminary benefits
 - Receive project costs from cost engineering, including O&M costs, and calculate average annual costs
 - Compute NED benefits and benefit-to-cost ratios (BCR)
 - General coordination/meetings with VCWPD and other key stakeholder groups
 - Provide economic input for screening/identification of final array of alternatives and associated documentation
 - Provide input to the identification and documentation of TSP
 - Update report synopsis, decision log, DMP, and risk register
 - Update Draft Economic Appendix; develop draft FR/EIS report sections
 - DQC responses and report revisions



- General coordination with an ATR economist
- ATR of economics analysis prior to TSP Milestone and/or concurrent review
- **Environmental Coordination:** This includes the preparation and filing of Notice of Intent, initial agency coordination, preparation of existing conditions report.
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Collect information to include in draft FR/EIS – compile details into an Environmental Appendix
 - Alternatives screening and trade-offs analysis
 - Identify potential short- and long-term impacts to environmental resources based on preliminary impact analysis
 - Write environmental sections of draft FR/EIS
 - Fish and Wildlife Coordination Act Report coordination with USFWS
 - Meeting with resource agencies to evaluate alternatives and potential mitigation options
 - Prepare Monitoring and Adaptive Management Plan for mitigation proposal
 - Communicate initial environmental impact assessment to VCWPD for feedback
 - Provide guidance to Cost Estimator on environmental/mitigation features
 - Address special evaluations required to comply with certain legal requirements including 404(b)(10) evaluation, California Fish and Game 1601 Streambed Alteration Agreement, and California Endangered Species Act
 - Answer questions for Cost Estimator re: environmental/mitigation features
- **Cultural Resources:** Obtain additional detail for with-project conditions.
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Send out Determination and Findings letters to SHPO after TSP is selected
 - Prepare cultural resources documentation for draft FR/EIS
 - Update risk register
 - DQC review to be done by CR supervisor

ASSUMPTIONS:

- o No staff-to-staff tribal meetings
- o No SHPO meetings
- o No Historic Structures will need to be documented (e.g., bridges, historic buildings, etc.). *Note: This assumption could change if the background research reveals that there are historic structures in or adjacent to project footprint that need to be recorded. In this case, a survey of built environment will need to be completed if the historic structures have not been recorded.*
- o No Memorandum of Agreement/Memorandum of Understanding (MOU) to prepare or execute



- **Geotechnical:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Assess impacts of specific project alternatives
 - Assess site material sources and foundation in support of project alternatives
 - Evaluate geotechnical constraints, feasibility, functionality, and constructability
 - Update Geotechnical documentation

- **HTRW:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Analyze HTRW potential related to specific project alternatives
 - Update HTRW documentation

- **Cost Engineering:**
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Prepare comparative cost estimates
 - o Coordinate with PDT
 - * Mitigation features of work defined by environmental PDT members
 - * Potential work impacts due to finding of historic structures
 - * Handling of HTRW material defined by HTRW PDT specialist
 - * Civil design input to determine construction sequencing, production rates, crew sizes, and durations
 - * Asset management input to determine LERRDs
 - Develop Construction Schedule
 - Develop Cost and Schedule Risk Analysis
 - Develop Total Project Cost summary
 - Prepare Cost Appendix

- **Real Estate:** Determine the value of land affected by the alternatives, the cost of land necessary to construct, operate, and maintain any proposed project, and verify property ownership in the project area.
 - Prepare for and attend meetings: PDT, draft FR/EIS coordination, IPRs, TSP Milestone
 - Initiate discussion with VCWPD regarding acquisition policies and procedures
 - Coordinate with Legal Branch on potential legal matters
 - Determine Lands, Easements, Rights-of-Way, Relocations, and Disposal Areas (LERRD) for potential project areas
 - Prepare draft Real Estate Plan
 - Obtain rights-of-entry for survey and cultural resources, as required
 - Prepare draft Real Estate Map



- **Plan Formulation:** This task includes all efforts performed by study management at the Corps and sponsor. Plan formulation activities will be conducted in close coordination with the sponsor, other agencies, and stakeholders.
 - Prepare for and attend TSP Milestone meeting, including at least two IPRs with the Vertical Team
 - Prepare for and attend PDT meetings
 - General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
 - Provide ancillary support to conceptual design team, cost estimating, real estate, and economic lead; general coordination during design activities
 - Facilitate screening/identification of final array of alternatives and associated documentation
 - Facilitate and document evaluation, comparison, and trade-offs for final array of alternatives
 - Facilitate identification and documentation of TSP
 - Update report synopsis, decision log, DMP, and risk register
 - Prepare draft FR/EIS; coordinate with appropriate disciplines for development of Technical Appendices
 - DQC responses and report revisions
 - General ATR coordination

- **Institutional Assessment:** This task involves the Corps PM in coordination with the local sponsor to determine the financial and legal arrangements required to implement the TSP, including methods of financing the projects and operating and maintaining existing projects.
 - Analyze sponsor's organizational, legal, and financial capability to undertake the required financial obligation for implementing and maintaining the project
 - Review current financial agreements in place for O&M of water resource related infrastructure
 - Coordinate financial discussions with the local sponsor, other interested agencies, and stakeholders
 - Prepare draft financial and cost recovery documentation for the draft FR/EIS
 - Research water rights for surface and groundwater to determine potential use of water at recharge site
 - Prepare for and attend TSP Milestone meeting



3. AGENCY DECISION MILESTONE

DURATION

- Approximately ___ months

The Agency Decision Milestone (ADM) occurs after completion of the concurrent review of the draft FR/EIS. Comments from public, ATR, HQ Policy Review, and Independent External Peer Review (IEPR) of the draft FR/EIS will need to be responded to and resolved prior to the ADM. Revision of the draft FR/EIS based on concurrent review comments is not required before the ADM can occur, but can be in-progress. At this milestone, the team will discuss and get concurrence from the VT on significant review comments, how they were resolved, and path forward for completion of feasibility level designs.

DELIVERABLES

1. Concurrent Review Summary (Plan Formulation)
2. Report Synopsis (Plan Formulation)
3. Decision Log (Plan Formulation)
4. Risk Register
5. Decision Management Plan (Plan Formulation)

OVERALL TEAM TASKS

- PDT Meetings
- ATR Review (Response to comments and Report Revisions)
- IEPR Review (Contracting costs, Response to Comments, and Report Revisions)
- NWD Review (Response to comments and Report Revisions)
- HQ Policy Review (Response to comments and Report Revisions)
- Public Review (Response to comments and Report Revisions)
- Public Meeting; 45-day Public Review Period
- SMART Planning Documents: Report Synopsis, Decision Log, Risk Register, DMP
- Prepare for ADM Milestone Meeting (multiple IPRs)
- ADM Milestone Meeting

DISCIPLINE SPECIFIC SCOPES

- **Hydrology:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- **Hydraulics:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- **Sedimentation:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone



- Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- **Water Quality:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- **Economics:**
 - Based on report updates resulting from technical economics ATR prior to TSP (currently assumed to take place prior to TSP—see comments), DQC of draft FR/EIS and economics appendix updates prior to concurrent reviews (ATR, IEPR, NWD, HQ, public)
 - Respond to DQC comments including report revisions
 - Regional Economic Development (RED) Analysis
 - Risk and Uncertainty
 - o Compute NED benefits
 - o Calculate BCR for risk/uncertainty scenarios
 - o Complete NED benefit analysis
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
 - Prepare for and attend Public Meeting
 - Update report synopsis, decision log, DMP, and risk register
 - Develop report synopsis abstract, concurrent review summary, and risk register summary
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- **Environmental Coordination:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - Prepare for and attend Public Meeting
 - Coordinate with court reporter/recorder for Public Meeting
 - Prepare/Update Biological Assessment document
 - Prepare/Update CWA 404(b)(1) analysis
 - Prepare supporting documents for 401 water quality certification
 - Mitigation design; refine the Monitoring and Adaptive Management Plan
 - Coordinate for Final CAR from USFWS
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise NEPA sections of the FR/EIS
- **Cultural Resources:**
 - Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
 - Prepare for and attend Public Meeting
 - Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
 - Update Risk Register

ASSUMPTIONS:

- * No staff-to-staff tribal and SHPO meetings



- * No Historic Structures will need to be documented (e.g., bridges, historic buildings, etc.).
- * No Memorandum of Agreement/Memorandum of Understanding (MOU) to prepare or execute.

- **Geotechnical:**

- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
- Respond to ATR, IEPR, SPD, HQ, and public comments and revise report

- **HTRW:**

- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
- Respond to ATR, IEPR, SPD, HQ, and public comments and revise report

- **Cost Engineering:**

- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
- Prepare for and attend Public Meeting
- Respond to ATR, IEPR, SPD, HQ, and public comments and revise report
- Update cost estimate, cost and schedule risk analysis, construction schedule, and total project cost summary, as necessary.

- **Real Estate:**

- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
- Respond to ATR, IEPR, SPD, HQ, and public comments and revise report

- **Plan Formulation:**

- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone
- Prepare for and attend Public Meeting
- General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
- Update report synopsis, concurrent review summary, decision log, DMP, and risk register
- Respond to ATR, IEPR, SPD, HQ, and public comments and revise FR/EIS

- **Institutional Assessment:**

- Respond to ATR, IEPR, SPD, HQ, and public comments and revise financial and cost recovery documentation, as necessary
- Prepare for and attend meetings: PDT, concurrent reviews, IPRs, ADM Milestone



4. FINAL REPORT MILESTONE/CIVIL WORKS REVIEW BOARD

DURATION

- Approximately ___ months

The PDT completes the feasibility (35 percent) level design and finalizes the FR/EIS. DQC and ATR reviews will take place, and the team will update the FR/EIS based on comments. The Civil Works Review Board (CWRB) is the corporate checkpoint to determine if the final feasibility study report and NEPA document, and the proposed Report of the Chief of Engineers, are ready to be released for State and Agency review, as required by the Flood Control Act of 1944, as amended (33 USC 701-1).

DELIVERABLES

1. Final Integrated Feasibility Study and Environmental Impact Statement
2. Draft Record of Decision (Environmental Resources Branch)
3. Draft Biological Assessment (Environmental Resources Branch)
4. Report Synopsis (Plan Formulation)
5. Decision Log (Plan Formulation)
6. Risk Register
7. Decision Management Plan (Plan Formulation)

OVERALL TEAM TASKS

- PDT Meetings
- Stakeholder/Agency Outreach meetings
- Feasibility-level design
- Feasibility-level cost estimate
- Feasibility-level real estate
- Update Final FR/EIS including Comment/Response and Report Revisions
- DQC of Final FR/EIS including Comment/Response and Report Revisions
- ATR of Final FR/EIS including Comment/Response and Report Revisions
- Preparation of draft Biological Assessment
- Preparation of draft ROD
- Preparation for CWRB Milestone
- CWRB Milestone Meeting

DISCIPLINE SPECIFIC SCOPES

- **Hydrology:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Hydrology Appendix
- **Hydraulics:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Hydraulic Appendix



- **Sedimentation:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Sedimentation Appendix

- **Water Quality:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Water Quality Appendix

- **Economics:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
 - Respond to DQC and ATR comments and finalize Economic Appendix
 - ATR responses and report revisions

- **Environmental Coordination:**
 - Prepare Draft Record of Decision
 - Complete ESA consultation
 - Finalize mitigation plans
 - Respond to DQC and ATR comments and finalize FR/EIS
 - Draft Record of Decision
 - Complete ESA consultation
 - Finalize mitigation plans
 - Coordinate receipt of all necessary compliance documents
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone

- **Cultural Resources:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Cultural Resources documentation

- **Geotechnical:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Geotechnical Appendix

- **HTRW:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize HTRW documentation

- **Cost Engineering:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Update feasibility level cost estimate, as necessary, to include:
 - o Mitigation features of work (provided by environmental)
 - o Potential work impacts (due to finding of historic structures)



- o Handling of HTRW material needs (provided by HTRW specialist)
 - Update Construction Schedule
 - Update Cost and Schedule Risk Analysis
 - Update Total Project Cost summary
 - Respond to DQC and ATR comments and finalize Cost Appendix
- **Real Estate:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - Respond to DQC and ATR comments and finalize Real Estate Plan
- **Plan Formulation:**
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone
 - General coordination/meetings with VCWPD, resource agencies, and other key stakeholder groups
 - Provide ancillary support to design team, cost estimating, and real estate; general coordination during design activities
 - Respond to DQC and ATR comments and update Final FR/EIS
 - Develop CWRB documentation package
- **Institutional Assessment:**
 - Respond to DQC and ATR comments and finalize financial and cost recovery documentation
 - Prepare for and attend meetings: PDT, IPRs, CWRB Milestone



5. CHIEF'S REPORT MILESTONE

DURATION

- Approximately ___ months

After the final FR/EIS is submitted to HQUSACE, a Report of the Chief of Engineers (Chief's Report) is developed and staffed through the appropriate HQUSACE offices. Once the Chief of Engineers signs the report signifying approval of the project recommendation, the Chief of Staff signs the notification letters forwarding the Chief's Report to the chairpersons of the Senate Committee on Environment and Public Works, and the House of Representatives Committee on Transportation and Infrastructure. The signed Chief's Report is then returned to the RIT, which prepares the final package for the Office of the Assistant Secretary of the Army for Civil Works (OASA (CW)).

DELIVERABLES

1. Chief's Report

OVERALL TEAM TASKS:

- State and Agency Review
- Develop Chief's Report Package
- HQ/ASA(CW) Coordination

DISCIPLINE SPECIFIC SCOPES:

- **Project Management and Plan Formulation**
 - General coordination with SPD/HQ/ASA(CW)
 - General State and Agency Review coordination
 - Input to and review of Chief's Report and other final documentation



APPENDIX C

DETAILED BUDGET

**Santa Clara River Levee Feasibility Study
Ventura County, California
Integrated Feasibility Report and Environmental Impact Statement**

**U.S. Army Corps of Engineers
Los Angeles District**

Last Revision Date: December 2014



TOTAL ESTIMATED BUDGET SUMMARY

PDT Work Group	Labor	Contingencies	Milestones				
			Alternatives	Tentatively Selected Plan	Agency Decision	Final Report	Chief's Report
Programs & Project Mgmt.							
Plan Formulation							
Hydrology & Hydraulics							
Geotechnical							
Survey							
Design							
Structures							
Cost Estimating							
Real Estate							
Environmental							
Cultural Resources							
Economics							
Regulatory							
Value Engineering							
Public Affairs							
Sponsor In-Kind							
Reviews							
Non-Labor							
TOTAL BUDGET							



Insert: PMP Cost Worksheet Breakdown



APPENDIX D

DETAILED SCHEDULE

**Santa Clara River Levee Feasibility Study
Ventura County, California
Integrated Feasibility Report and Environmental Impact Statement**

**U.S. Army Corps of Engineers
Los Angeles District**

Last Revision Date: December 2014



A detailed schedule will be prepared based on the tasks identified in Appendix B. Schedule development will be coordinated with the PDT members and approved by their respective supervisors.



APPENDIX E

COMMUNICATION PLAN

**Santa Clara River Levee Feasibility Study
Ventura County, California
Integrated Feasibility Report and Environmental Impact Statement**

**U.S. Army Corps of Engineers
Los Angeles District**

Last Revision Date: December 2014



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1. PLAN COMPONENTS

- Purpose
- Background
- Team
- Goals
- Audiences
- Messages/Talking points
- Frequently Asked Questions
- Tactics, Tools, Channels, and Activities
- Timeline
- Action Plan
- Stakeholders
- Issues and Concerns

2. PLAN PURPOSE

This document establishes a communication plan for external communication issues related to the Los Angeles District of the U.S. Army Corps of Engineers (Corps) determining that there is a Federal interest in pursuing a study of modifying the Santa Clara River Levee. The plan outlines the responsibilities for each Corps member involved in communication and gives an overview of the situation along with main talking points and potential questions and answers.

3. BACKGROUND

The protective works of the Santa Clara River Levee were originally designed in 1958 by the U.S. Army Corps of Engineers to control the Corps' predicted Standard Project Flood discharge of 225,000 cubic feet per second (cfs) emanating from the Santa Clara River watershed. The purpose of the levee system is to provide protection against damages and potential loss of life caused by floods along the Santa Clara River that in the adjacent overflow areas immediately southeast of the levee system.

Based on recent investigations performed for Federal Emergency Management Agency (FEMA) levee certification and Corps periodic levee inspection, there is evidence that portions of the Project are requiring immediate corrections and do not meet FEMA standards for certification. The identified deficiencies seriously impair the functioning of the levee system and pose an unacceptable risk to public safety. This evaluation provides the impetus for studying required changes/modifications to the existing Santa Clara River levee. This is consistent with the general policy of the Corps that completed projects be observed and monitored to ascertain whether they continue to function as intended and whether there is a potential for modifications to better serve the public interest.

The cost-sharing non-Federal sponsor is the Ventura County Watershed Protection District (VCWPD).



4. COMMUNICATION TEAM

Corps of Engineers	Title	Phone	Email
	Project Manager		
	Public Affairs		
	Office of Counsel		

VCWPD	Title	Phone	Email
	Project Manager		
	Community Relations		

5. COMMUNICATION GOALS

Goal: Provide accurate and timely information about the Corps’ Santa Clara River Levee Feasibility Study as related to relevant city, county, state, and Federal regulations.
Increase accuracy of media reports

- Use the internet, social media, and electronic communications to provide project information to the public.
- Communicate plans, possible actions, and data quickly, clearly and accurately.

Goal: Increase community and individual awareness of the rationale and objectives for the study. Recognize and address that stakeholders within the watershed have a wide range of concerns and issues.

- Provide balanced and objective information to assist the audience in understanding the actions.
- Obtain informed comments and feedback on analysis, alternatives, and/or decisions through public meetings.
- Work directly with stakeholders throughout the process to ensure that their concerns are understood and considered.
- Provide clear communication on Corps processes.

Goal: Work to ensure that the VCWPD and Corps messages and public information are complementary, and avoid discrepancy and conflict.



- Maintain ongoing and regular communication between Corps and VCWPD public information offices.
- Share communication resources, as reasonable and feasible.
- Set guidelines to ensure that the Corps and the VCWPD are in agreement and clear on which organization should be responsible for which messages and responses.

6. KEY AUDIENCES

- Federal agencies
- State agencies
- County agencies
- City agencies
- NGOs
- Environmental interests
- Fishery interests
- Tribes
- Elected officials
- General public
- Citizen action groups
- Media
- Academic/scientific community
- Property owners
- Business owners

7. KEY MESSAGE/TALKING POINTS

RECONNAISSANCE STUDY PROCESS

- The VCWPD requested that the Corps of Engineers determine the feasibility of modifying the Santa Clara River Levee for the purposes of increasing public safety, continuing to provide flood risk management benefits, and better serve the public interest.
- The Corps of Engineers has determined there is Federal interest in studying the potential modification of the levee and has initiated a General Investigation Study.
- Define what constitutes “Federal interest.”
- This is the second phase of study in a Corps of Engineers’ process. In _____, the Corps Los Angeles District completed a Section 905(b) Analysis that found there is Federal interest in pursuing this study. Since that report was issued, the President included this study in the Administration’s Fiscal Year _____ budget, and Congress gave the Corps the green light to pursue this study in their annual Fiscal Year spending bill.
- An integrated Feasibility Report and Environmental Impact Statement (FR/EIS) will be prepared. This Corps process provides multiple opportunities for public outreach and input.
- Study data will be posted to the Los Angeles District’s project website. Los Angeles District will provide study documents for public review.



8. FREQUENTLY ASKED QUESTIONS AND ANSWERS

RECONNAISSANCE Q&A

To be added

FEASIBILITY Q&A

To be added

9. COMMUNICATION TACTICS, TOOLS, CHANNELS, AND ACTIVITIES

- Project website
- Stakeholder engagement
- Public forums and meetings
- Public Information Materials
- Public email communication channels
- E-newsletter
- Presentations
- Displays
- Speaking engagements
- Video
- Web page
- Fact sheet/infograph
- Social media outreach
- News releases/media advisories
- Person-to-person phone calls, emails, meetings
- News conferences
- Media availability sessions at official/public information meetings



10. TIMELINE

Task	Duration	Start	Finish

11. COMMUNICATION PLAN

Tools/Activities	Target Audience	Target Date
Project website	All stakeholders	Feasibility
News releases	Media	Feasibility
Fact sheet/infograph	All stakeholders	TBD
Public meetings		Feasibility
Social media outreach		Feasibility
Person-to-person phone calls, emails, meetings		Ongoing - starting with core stakeholders
Core stakeholder update meetings		Ongoing - after initial briefing, increasing as needed
Core agency update meetings	Agencies with role in project	Ongoing - starting in feasibility
Maps	Government/environmental interests/community interests/business interests	
Update meetings	DC/Federal stakeholders	Ongoing

12. STAKEHOLDERS

Stakeholder	POC	Role	Outreach Date/POC
FEDERAL			
STATE			



Stakeholder	POC	Role	Outreach Date/POC
LOCAL			
COMMUNITY/BUSINESS			

13. POSSIBLE ISSUES AND CONCERNS

To be added