

# **Matilija Dam**

## **Ecosystem Restoration Project**

Ventura County, California



## **Project Management Plan**

Design Phase

Los Angeles District  
South Pacific Division

June 2005

## **EXECUTIVE SUMMARY**

This Project Management Plan (PMP) was developed specifically for the Matilija Dam Ecosystem Restoration Project, Preconstruction Engineering and Design Phase, (Project) for the purpose of setting forth the management strategy to be employed by both the U. S. Army Corps of Engineers – Los Angeles District (USACOE/District) and the Ventura County Watershed Protection District (VCWPD/Sponsor/Partner/Non-Federal Interest). This PMP will be modified as necessary to document changes throughout the design phase.

The PMP is a document that will provide the District and Sponsor with a tool to communicate project inter-relationships as they relate to tasks, activities, milestones, real estate requirements, and costs. This plan includes a strategy for project implementation to promote a better understanding between the Sponsor and the District, as well as familiarizes the Sponsor in some of the policies and procedures utilized by the District. It is intended to accomplish the following for the Project:

- (1) Define the Project scope.
- (2) Delineate project tasks for design, construction, and operation and maintenance of the project.
- (3) Assign responsibility for completion of tasks.
- (4) Document the baseline cost estimate for the Project.
- (5) Document the baseline schedule for project task completion.
- (6) Document milestones to measure project progress.
- (7) Establish the basis to document changes throughout the project including modification to scope, schedule and cost.
- (7) Specify the management and stakeholders that will guide and oversee the timely completion of the Project.
- (8) Document the strategy for project management. This will include methods for coordinating change management and methods to deal with other special issues.

This document was developed utilizing the following USACOE regulations and guidelines:

- (1) CECW Regulation No. 5-1-11 entitled “Program and Project Management,” dated 27 February 1998
- (2) South Pacific Division Regional Project Management Business Process, 2/2000
- (3) USACOE Business Process (PMBP), ER 5-1-11, 8/2001

The recommended plan for the Project is described in the Feasibility Study, signed by the Chief of Engineers 20 December 2004.

Benefits of the proposed project include ecosystem restoration along portions of the Ventura River and Matilija Creek. See the Feasibility Study for more detailed description of the expected benefits.

## **PROJECT MANAGEMENT PLAN**

Presented for Approval by  
Project Manager:

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DARRELL BUXTON

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Date

District Engineer  
Ventura County Watershed Protection District

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JEFF PRATT

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Date

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Approved by:

Deputy District Engineer  
Project Management

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BRIAN M. MOORE, P.E.

Date

Chief, Engineering Division

---

ROBERT E. KOPLIN, P.E.

Date

Chief, Planning Division

---

RUTH B. VILLALOBOS

Date

Chief, Construction-Operation Division

---

GEORGE L. BEAMS, P.E.

Date

Chief, Resource Management Office

---

JAMES H. HEARN

Date

Chief, Contracting Division

---

THOMAS D. MCKERCHER

Date

Chief, Real Estate Division

---

THERESA M. KAPLAN

Date

District Counsel

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LAWRENCE N. MINCH

Date

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## I. OVERALL PROJECT INFORMATION

This section contains specific project-related information on the purpose, scope, description, authority, history, and basis of design of the project, as well as contact information for those who will be working on and managing the Project.

### Purpose and Scope

The primary purpose of this Project Management Plan (PMP) is to establish the scope, schedule, cost, customer interface, and technical performance requirements for the management and control of the design of the Matilija Dam Ecosystem Restoration Project, California.

The PMP provides performance measurement criteria, including major milestones. The project schedule depicts the inter-relationships of tasks and activities, milestone, duration and costs using the Corps management program, P2. Assumptions associated with cost estimates are included.

### Project Description

Project features include:

- Addition of two wells at Foster Park;
- Construction of levees/floodwalls at Casitas Springs, Live Oak and Meiners Oaks;
- Construction of a high-flow sediment bypass structure at Robles Diversion Dam;
- Slurry of approximately 2 million cubic yards (1/3 of total deposits) of fine sediments (silts and clays) from behind Matilija Dam approximately 5 miles downstream to slurry disposal sites;
- Recontouring of remaining 4 million cubic yards of deposited sediments into sediment storage areas as source for future natural erosion/transport downstream during storm events;
- Construction of 100-foot wide meandering fish passage channel through former sediment deposition area;
- Addition of soil cement to two downstream sediment storage areas;
- Dam removal by controlled blasting in 15-foot increments;
- Construction of recreation trail along slurry pipeline alignment;
- Implementation of a Giant Reed (*Arundo donax*) removal and control plan
- Construction of desilting basin adjacent to Robles Canal (to be paid for by the Sponsor)

### Project Authority

The Matilija Dam Ecosystem Restoration Feasibility Study is prepared in response to the Resolution of the U.S. House of Representatives Committee on Transportation and Infrastructure (Docket 2593), adopted 15 April 1999, which reads as follows:

“Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Ventura River, Ventura County, California, published as House Document 323, 77<sup>th</sup> Congress, 1<sup>st</sup> Session, and other pertinent reports, with a view to determining whether any modifications of the recommendations contained therein are advisable at this time, in the interest of environmental restoration and protection, and related purposes, with particular attention to

restoring anadromous fish populations on Matilija Creek and returning natural sand replenishment to Ventura and other Southern California beaches.”

## **Project History**

Construction of the 190-foot high Matilija Dam was completed in 1947 by the Ventura County Watershed Protection District (VCWPD, formerly the Flood Control District) to provide water storage for agricultural needs and limited flood control. Problems associated with the dam became evident within a couple of decades after construction and include: large volumes of sediment deposited behind the dam and the loss of the majority of the water supply function and designed flood control capability; the deteriorating condition of the dam; the non-functional fish ladder and overall obstruction to migratory fishes; the loss of riparian and wildlife corridors between the Ventura River and Matilija Creek; and the loss of sediment transport contributions from upstream of the dam, with resulting erosion to downstream reaches of the Ventura River, the estuary and the sand-starved beaches along the Ventura County shoreline.

Sedimentation behind the dam has rapidly reduced the ability to store a significant amount of water for future use. It is estimated that approximately 6 million cubic yards of sediments (silts, sands, gravels, cobbles and boulders) have accumulated behind the dam. The remaining shallow reservoir is about 500 acre-feet or seven percent (7%) of the original capacity and is expected to disappear by 2020. Storm flows carry mostly suspended fine sediments downstream; the coarser sediments remain trapped behind the dam. By approximately year 2040, the reservoir basin is expected to have reached an equilibrium condition and be completely filled with sediment totaling over 9 million cubic yards.

Matilija Dam has had many adverse effects on stream ecology and wildlife over the last 55 years. Sediment trapped by the dam has deprived downstream reaches of sand and gravel sized materials necessary to sustain a suitable substrate for spawning, including the creation of riffle and pool formations, sandbars, and secondary channels. These conditions help promote habitat diversity capable of supporting many sensitive wildlife species such as the southern steelhead, southwestern pond turtle, the arroyo toad and the California red-legged frog. The dam has blocked upper watershed natural river flows and therefore has altered natural stream and habitat dynamics. Water that has been impounded and subsequently released downstream is typically of poorer quality, affected by higher temperature, lower dissolved oxygen, and potentially higher nutrient loads. The cumulative adverse effects of Matilija Dam on downstream ecology will continue for at least 100 years, long after the reservoir is completely filled with sediment.

Historically southern steelhead, a species of migratory trout, were common inhabitants of California coastal streams as far south as San Diego. In the last 50 years there has been a dramatic decline from historic estimates of returning adults. This decline has been attributed in large measure to the numerous dams and diversions that have blocked steelhead access into historic habitat in the tributaries of major river systems, and the degradation to quality of habitat in rivers due to agricultural influence and urbanization. In 1997, the southern steelhead was listed as federally endangered. The Ventura River system once supported approximately 4,000 to 5,000 spawning southern steelhead. Current population estimates are less than 100 adult individuals for the Ventura River system. The steelhead habitat upstream from Matilija Dam was historically the most productive spawning and rearing habitat in the Ventura River system. It is estimated that about fifty percent (50%) of this remaining prime habitat was lost due to the construction of the dam.

Steelhead and other aquatic species (fish, including the Arroyo chub- a California State species of special concern, and amphibians) would regain access to approximately 17.3 river miles of high quality spawning and rearing habitat by removing Matilija Dam. Without removal of the dam, fish passage cannot be restored as even a fish ladder facility could not provide a viable solution for a dam of this size.

Matilija Dam has contributed to streambed erosion in the riverine system. Where erosion of the streambed has been most severe and the active channel has become entrenched, the adjacent alluvial deposits in the floodplain are now abandoned. Flood flows up to the 100-year event can remain in the main channel and do not inundate the floodplain. Native habitats dependent on an active floodplain as a result are significantly impacted and drastically altered. The greatest influence of Matilija Dam to riverine sediment supply and transport are within the 8.5 river miles between the structure and San Antonio Creek. In this stretch of the river, the majority of sediment supply is from the North Fork Matilija Creek. Without the dam in place however, Matilija Creek would be the largest sediment contributor in these reaches. Immediately downstream of Matilija Dam, about 4 feet of erosion has occurred since 1971. Bedrock control limits the amount of erosion. In the reach downstream of Robles Diversion Dam, there has been up to 10 feet of erosion, as there is detention of sediment at that facility. However, if Matilija Dam were removed, degradation would not be a significant problem in this reach. Downstream of San Antonio Creek, a reach between river mile 2 and 5.5 (measured from the river mouth) has experienced up to 10 feet of erosion. This is attributed to a combination of sediment supply deficits resulting from the presence of Casitas Dam and Matilija Dam, as well as debris basins in San Antonio Creek watershed, and channel constriction by bridges.

Beach erosion, attributed to the influence of human activities including the construction of dams, has also been a problem along most of the local coastline. Over the last 50 years, Emma Wood State Beach, west of the mouth of the Ventura River, has eroded approximately 150 feet, indicating an erosion rate of 2 to 3 ft/yr. Surfer's Point just downcoast of the river mouth, once a sandy beach, is now mostly cobble. Loss of upper sand beach zones has caused a loss of spawning habitat for the California grunion, and to foraging and breeding habitat for the federally listed threatened western snowy plover. The extent of coastal dunes on both sides of the river mouth has been diminishing over the years as a result of the loss of protective beachfront and erosion by wave action. Coastal dunes and their habitats, which once supported the silvery legless lizard, a California -State species of special concern, are diminishing and will eventually be lost entirely.

The removal of Matilija Dam would release approximately 4 million cubic yards of sands, gravels and more coarse-grained sediment to Ventura River reaches downstream of the dam, and to the nearby coastline. The downstream channel degradation trends would reverse, and equilibrium (roughly pre-dam) channel bed elevations would be restored in about 10 years versus the approximate 100 years it would take if the dam were to remain in-place.

The overtaking of native riparian habitat by invasive and exotic species however has been problematic in the watershed. Giant reed (*Arundo donax*) has become the dominant vegetation type within significant portions of the reservoir basin, and is continuing to spread into the remaining areas, including some portions of Matilija Creek riparian habitat upstream of the reservoir basin. This plant out-competes and displaces the native vegetation and seriously degrades the habitat quality of the area. Giant reed provides no food for wildlife, and at best, very poor habitat for some nesting birds or shelter/shade for native amphibians. Without an intensive removal program, giant reed and other exotic plant species will diminish the ability of the Ventura River to support sensitive species that rely on native willow, cottonwood, and other native riparian species. These include resident and migratory birds, such as least Bell's vireo and southwestern willow flycatcher. The reservoir basin acts as a source of giant reed propagules for the lower watershed as these materials are washed downstream during significant storm

events. Downstream of Matilija Dam, clumps of giant reed have colonized in parts of the floodplain within the Ventura River. With time, these clumps will begin to spread, significantly reducing the value of riparian habitat and in turn the native species that depend on that habitat.

Removal of Matilija Dam allows an opportunity to remove Arundo from the deposited sediments behind the dam and additional downstream areas. Expanding the removal program and including a long-term management and control program would greatly improve the health and sustainability of the native riparian habitat.

Recreation trails exist upstream and downstream of the Matilija Dam area, but not in the vicinity of the dam. The upper trails are located in the Los Padres National Forest. Downstream trails are primarily located along Highway 33, roughly parallel to the Ventura River. Opportunities exist to link the trail systems, particularly in combination with dam removal.

The natural streamflow in the Ventura River and associated subsurface alluvial groundwater is impacted by several major water extraction operations in the watershed: Matilija Dam, Casitas Dam, Robles Diversion Dam, Foster Park diversion facility and other smaller water extractors. The average annual extraction operations in the Ventura River are about 18,000 ac-ft (NOAA, 2003). Matilija Dam provides an average of 590 ac-ft/yr to Robles Diversion Dam located two miles downstream of Matilija Dam (owned by the Bureau of Reclamation and leased to Casitas Municipal Water District, CMWD) and diverts water during large storm events from the Ventura River to Lake Casitas, the primary surface water supply for the County of Ventura. The effects of these extractions limit the duration and magnitude of river flow necessary for successful steelhead migration, and in addition, adversely affect in-stream habitat characteristics. During the summer/fall period when natural flows are low, fish and aquatic organisms that become isolated as a result of receding stream flows are subjected to predation, impaired water quality, and desiccation once flows cease. This diversion dam has impacted steelhead migration, spawning and rearing throughout the lower Ventura River. CMWD is currently constructing a fish ladder that will be completed in 2005, restoring the capability for fish to pass the Robles Dam. The only remaining upstream obstruction to fish passage along Matilija Creek will be Matilija Dam.

Discharges into the Ventura River, including point source contributions from a wastewater treatment facility, and non-point source contributions from agricultural and urban development have affected the water quality of the river. The California Regional Water Quality Control Board has classified the Ventura River as a Category I (impaired) watershed and has approved the river's status on the 303(d) list and TMDL priority schedule for pollutants including DDT, copper, silver, zinc, algae (eutrophication) and trash.

## **Project Design Approach**

Progress will be subject to availability of funds. Generally the process will follow these steps. The specific Detailed Design Report, DDR, and Plans and Specifications, P&S, will be by separate project feature. The initial effort during the PED phase involves the preparation of a General Detailed Design Report. Tasks include additional detailed hydraulic and sediment transport modeling to address the design of the high flow bypass, levee locations and heights, verification of real estate acquisitions, etc... Extensive environmental coordination with resource agencies will also be conducted in this timeframe. The General DDR (labeled DDR A) will document any proposed revisions to the project design, and the general schedule and scope of the specific design features. Work on the Specific Detailed Design Reports (labeled DDR B-F) will begin during the preparation of the General DDR. Each DDR will document

details of the design effort, including design modifications and compliance requirements. Project features located downstream of the dam will be designed and constructed prior to initiation of slurry and dam removal activities to ensure proper environmental compliance, and flood damage and water supply protection. DDR B is for the Foster Park wells, DDR C covers the levees and floodwalls, DDR D is for the modification of the bridges, DDR E is the high flow bypass, and DDR is the dam and sediment removal work. Each project feature DDR will include the preparation of a set of Plans and Specifications. The plans and specifications will be used for solicitation of construction bids.

## **Basis of Design**

The Chief of Engineers report dated 20 December 2004 and the completed Feasibility Study is the basis for the design of the project.

## **Applicable Regulations**

The Project will be managed and designed in accordance with applicable laws, regulations, policies, and procedures.

## **Project Team Members**

An interdisciplinary team from the USACE Los Angeles District will manage the design phase. The team will be lead by a Project Manager from Programs and Project Management Division of the Los Angeles District. The Project Manager and team members will work very closely and coordinate all elements of the project with the designated point of contact at the VCWPD. Table 1-1 lists Project Delivery Team members within the Corps and the VCWPD. Members will change as deemed necessary and as required. In addition, as during the feasibility study, multiple agencies and organizations will be involved project planning and development. Figure 1-1 presents the project organization chart which provides the framework for that coordination.

**Table 1-1. PROJECT DELIVERY TEAM**

NAME	POSITION	OFFICE TELEPHONE
	CORPS	
DARRELL BUXTON	PROJECT MANAGER – PRIMARY POC	213-452-4007
VIVIAN CAO	SCHEDULER	213-452-4003
ROSA RAMIREZ	RESOURCE MANAGER	213-452-3317
DOUG CHITWOOD	GEOTECHNICAL ENGINEERING – TECHNICAL LEAD	213-452-3587
JIM HUTCHISON	PLANNING	213-452-3826
TIFFANY KAYAMA	ENVIRONMENTAL COORDINATOR	213-452-3845
STEVE DIBBLE	CULTURAL RESOURCES	213-452-3849
PAMELA CONRAD	RECREATION COORDINATOR	213-452-3872
BEN NAKAYAMA	ECONOMIST	213-452-3833
JUAN DOMINGUEZ	COST ENGINEER	213-452-3737

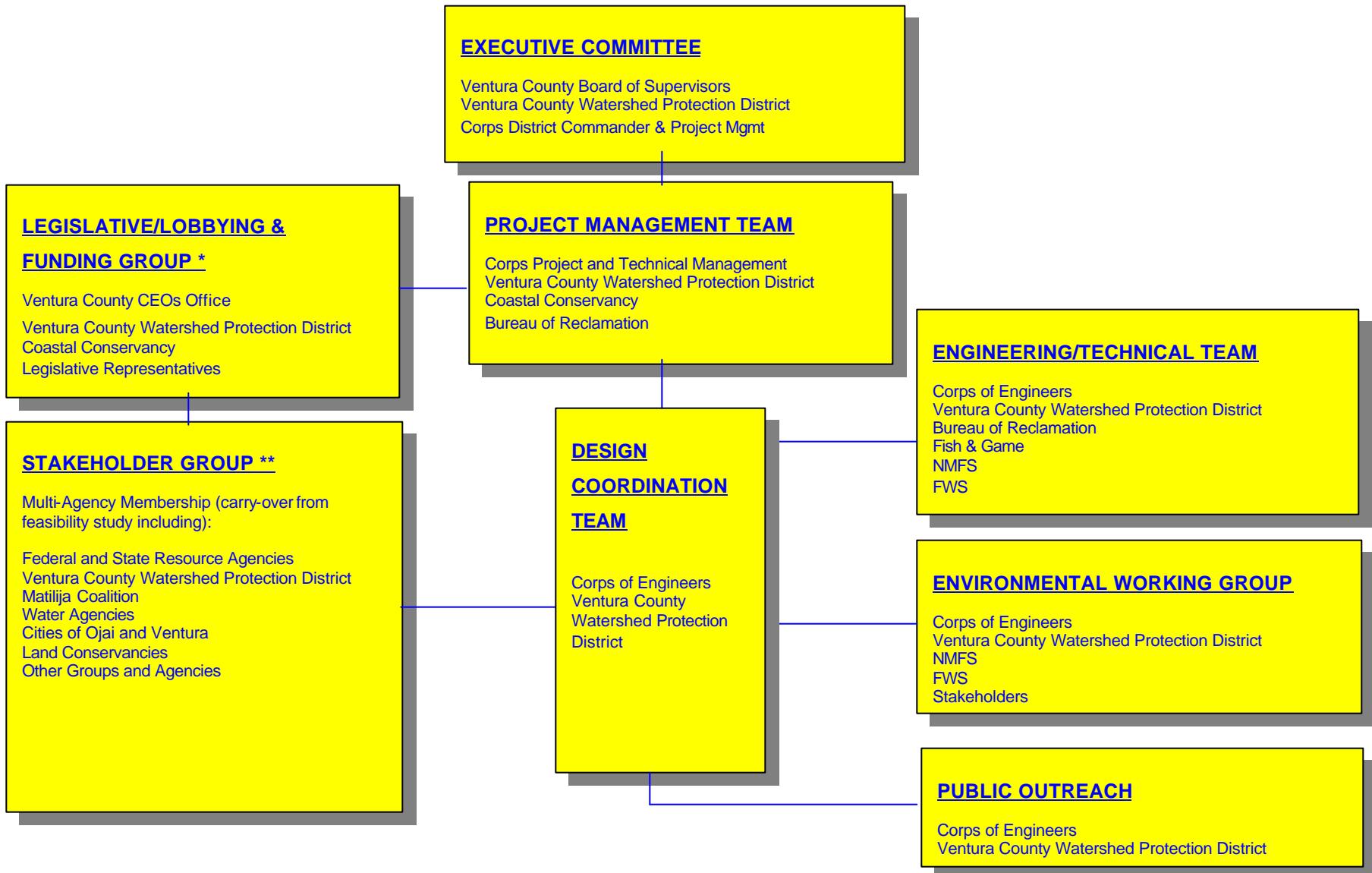
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TONY NEFAS	CIVIL DESIGN B	213-452-3702
TONY WONG	STRUCTURAL DESIGN	213-452-3700
KERRY CASEY	HYDRAULICS AND HYDROLOGY	213.452-3574
ALAN NICHOLS	SURVEY	626-401-4010
TOM LUZANO	LANDSCAPE ARCHITECT	213-452-3651
PETE GARCIA	REAL ESTATE	213-452-3131
JAY EDWARDS	ACCOUNTANT	213-452-3306
GEORGE BEAMS	CHIEF, CONSTRUCTION-OPERATION DIVISION	661-265-7222 X225
MARK WEINTRAUB	COUNSEL	213-4523930
DANIEL CARRASCO	CONTRACTING OFFICER, CONTRACTING DIVISION, WEST REGION BRANCH	213-452-3230
LISA MANGIONE	REGULATORY	805-585-2143
	<b>VCWPD</b>	
JEFF PRATT	DIRECTOR - PRIMARY POC	805-650-
PETER SHEYDAY	ASSISTANT DIRECTOR - CONSTRUCTION. – TECHNICAL LEAD	805-650-2016
SERGIO VARGAS	ASSISTANT DIRECTOR – PLANNING	805-650-4077

# Figure 1-1: Organizational Chart

Ventura County, California



## Project Location

The project area is along the Ventura River and Matilija Creek in Ventura County California (Figure 1-2). The locations of specific project features are shown in Figure 1-3.



Figure 1-2 – Project Location Map



Figure 1-3 – Feature Location Map

## **Customer Requirements**

The non-Federal sponsor shall, prior to implementation, agree to perform the following items of local cooperation:

- a. Provide 35 percent of the total project costs allocated to ecosystem restoration and 50 percent of the total project costs allocated to recreation, as further specified below:
  - (1) Enter into an agreement that provides, prior to execution of a project cooperation agreement for the project, 25 percent of design costs;
  - (2) Provide, during construction, any additional funds needed to cover the non-federal share of design costs;
  - (3) Provide all lands, easements, and rights-of-way, including suitable borrow and dredged or excavated material disposal areas, and perform or assure the performance of all relocations determined by the Government to be necessary for the construction, operation, and maintenance of the project;
  - (4) Provide or pay to the Government the cost of providing all retaining dikes, wastewairs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the project; and
  - (5) Provide, during construction, any additional costs as necessary to make its total contribution equal to 35 percent of the total project costs allocated to ecosystem restoration and 50 percent of the total project costs allocated to recreation.
- b. Provide during construction 100 percent of total project costs allocated to the desilting basin project feature.
- c. Give the Government a right to enter, at reasonable times and in a reasonable manner, upon land which the local sponsor owns or controls for access to the project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, maintaining, repairing, replacing, or rehabilitating the project.
- d. Assume responsibility of operating, maintaining, replacing, repairing, and rehabilitating (OMRR&R) the project or completed functional portions of the project, including mitigation features and the desilting basin without cost to the Government, in a manner compatible with the project's authorized purpose and in accordance with applicable Federal and State laws and specific directions prescribed by the Government in the OMRR&R manual and any subsequent amendments thereto.
- e. Maintain responsibility for the continued OMRR&R of the Ventura River channel flow capacity at the Santa Ana Bridge.
- f. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended, which

provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element.

g. Hold and save the Government free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the Government or the Government's contractors.

h. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project to the extent and in such detail as will properly reflect total project costs.

i. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands, easements or rights-of-way necessary for the construction, operation, and maintenance of the project; except that the non-Federal sponsor shall not perform such investigations on lands, easements, or rights-of-way that the Government determines to be subject to the navigation servitude without prior specific written direction by the Government.

j. Assume complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Government determines necessary for the construction, operation, or maintenance of the project.

k. Agree that, as between the Federal Government and the non-Federal sponsor, the non-Federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and, to the maximum extent practicable, operate, maintain, repair, replace, and rehabilitate the project in a manner that will not cause liability to arise under CERCLA.

l. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public law 91-646, as amended by title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR part 24, in acquiring lands, easements, and rights-of-way, and performing relocations for construction, operation, and maintenance of the project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act.

m. Comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army"; and all applicable federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 (revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a *et seq.*), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 *et seq.*) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)).

n. Provide the non-Federal cost share of that portion of total cultural resource preservation mitigation and data recovery costs attributable to ecosystem restoration that are in excess of one percent of the total amount authorized to be appropriated for ecosystem restoration.

o. Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is authorized.

p. Prevent obstructions of, or encroachments on, the project (including prescribing and enforcing regulations to prevent such obstructions or encroachments) which might reduce the ecosystem restoration, hinder its operation and maintenance, or interfere with its proper function, such as any new development on project lands or the addition of facilities which would degrade the benefits of the project.

q. Provide and maintain necessary access roads, parking areas, and other public use facilities, open and available to all on equal terms.

## **Communication Strategy**

Strategies for documenting information (meeting minutes, memos for the files, important telephone conversations, etc.) and formal communications will be determined jointly by the District Project Manager and the Local Sponsor. Key Points of Contact (POC) for this Project are listed Table 1-1. Additionally, the Corps will prepare several plans outlining local cooperation, reporting, and change control requirements.

### **1. Local Cooperation Plan**

Cooperation between the project partners is a common goal and is required for good communication. Communication between partners will occur at meetings designed to ensure adequate project performance. These meetings will include technical, environmental and design, Project Coordination Team, and Executive Committee meetings, as required. Frequent communication will be had between the primary points of contact from each partner. This will be in the form of e-mails, phone calls, or face-to-face meetings.

An ultimate goal of the local cooperation plan is to develop and execute a successful Project. The plan will be in accordance with ER 1165-2-131, entitled "Local Cooperation Agreements for New Start Construction Projects," dated 15 April 1989.

The Corps can make no commitments relating to a construction schedule or specific provisions of the PCA to the Sponsor on any aspect of the Project until the Project is budgeted as a new construction start, or as construction funds are added by Congress, apportioned by OMB, and the allocation is approved by OASA (CW).

### **2. Reporting Requirements Plan**

Project management reports will be in accordance with the PM reporting requirements. These reports, prepared by the Project Manager, will provide CESPL, CESPD, HQUSACE and OASA (CW) timely information to assess project status, identify trends, identify and resolve project issues, forecast potential schedule and cost changes, and monitor the achievement of project objectives.

### **3. Change Control Plan**

The purpose of the Change Control Plan is to describe the methodology for controlling changes in project scope, schedules, costs, resource requirements, quality, and plans. This plan will describe the procedures for processing changes, maintaining the baseline schedule, and reconciling budgets.

The Matilija Dam Ecosystem Restoration Project will adhere closely to the Change Control Plan implicitly detailed in Project Management regulations:

- Any changes to project schedule will be identified and reported in the schedule report, which will be updated monthly.
- The Corps of Engineers Financial Management System (CEFMS) is set up so that funds cannot be expended unless allocated by the Project Manager. Changes to project costs are controlled by the Project Manager. The Section Chief's will monitor expenditures for their organization and the Project Manager can use his/her authority to remove any unauthorized charges from the project cost accounts and transfer them to the appropriate element's Technical Indirect account.

Early coordination between the partners is required to communicate changes. Every project management meeting will include similar information to, “potential changes” in the agenda. This will be the mechanism to introduce any proposed changes to any part of the project. Significant changes will be elevated to the appropriate level/authority as necessary.

### **Betterments**

Local Sponsor may request that the Corps design any betterment. The term “betterment” shall mean a change in the design of an element of the Project resulting from the application of standards that the Government determines exceed those that the Government would otherwise apply for accomplishing the design of that element

## **II. PROJECT TASKS AND ESTIMATES**

The Project Management Information System (P2) is the U.S. Army Corps of Engineers standard Automated Information System designed and developed to support the business processes of Programs and Project Management. USACE requires the use of P2 for all Civil Works, Military, and HTRW projects.

### **Work Breakdown Structure (WBS)**

Work Breakdown Structure, WBS, codes organize the tasks and estimates that comprise the project. The Work Breakdown Structure is a product-oriented and defines the work to be accomplished for the project. The WBS is based on the scope of work and the tasks to be performed. The Corps is required to contract the applicable work effort for all section 219 projects. Therefore, the Corps will contract technical work and both partners will be responsible to oversee their products. Therefore, each partner will share the responsibility for the project. Project tasks will be linked by their interdependence and used to develop the project schedule. A critical path will be prepared to establish the key milestones that must be met in order for the project to be completed on time. The WBS is shown in **Figure 3-1**.

### **Resource Estimate and Distribution**

Resource estimates are generally time and cost required to perform the desired work. The initial estimates are loaded into the P2 system. The total estimated Project Cost is \$128,500,000. **Table 2-1** summarizes the project cost estimate by Fiscal Years (October to September), as defined in the project schedule.

**TABLE 2-1: Funding by Fiscal Year (\$000) Rounded**

ITEM	FED	NON-FED	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13-17	TOTAL
<b>REAL ESTATE ACQUISITION AND CONSTRUCTION COST SHARING</b>												
Real Estate Acquisition & Associated \$	40	25,300	0	0	4,550	11,900	6,540	2,315	35	0	0	25,340
<b>CONSTRUCTION COST-SHARING FEATURES</b>												
Construction	76,000	0			4,000	14,000	12,000	20,000	16,000	6,000	4,000	76,000
PED	8,000	0	65	1,100	4,100	2,735						8,000
Engineering During Construction	760	0			40	140	120	200	160	60	40	760
Construction Management	4,940	0			260	910	780	1,300	1,040	390	260	4,940
<b>Subtotal Construction Cost</b>	<b>89,700</b>	<b>0</b>	<b>65</b>	<b>1,100</b>	<b>8,400</b>	<b>17,785</b>	<b>12,900</b>	<b>21,500</b>	<b>17,200</b>	<b>6,450</b>	<b>4,300</b>	<b>89,700</b>
Monitoring	2,300	0			300	600	400	500	300	100	100	2,300
Adaptive Management	3,400	0			400	900	600	700	500	200	100	3,400
<b>Subtotal 65/35 Cost Share</b>	<b>95,440</b>	<b>25,300</b>										
Adjustment for 65/35 Cost Share	-16,940	16,900										
<b>TOTAL FIRST COST</b>	<b>78,500</b>	<b>42,200</b>	<b>65</b>	<b>1,100</b>	<b>13,650</b>	<b>31,185</b>	<b>20,440</b>	<b>25,015</b>	<b>18,035</b>	<b>6,750</b>	<b>4,500</b>	<b>120,700</b>
PERCENT OF FIRST COST	65%	35%										100%
<b>OTHER COSTS</b>												
Recreation (50% Fed/50% Sponsor)	500	500							400	400	200	1,000
Cultural Resources (100% Fed)	1,100				100	300	200	200	200	100	0	1,100
Associated Cost (Desilting Basin)	0	5,700				2,000	3,700					5,700
<b>COST SUMMARY</b>												
<b>TOTAL CONTRIBUTION - Federal</b>	<b>80,100</b>		<b>42</b>	<b>715</b>	<b>8,973</b>	<b>20,570</b>	<b>13,486</b>	<b>16,460</b>	<b>12,123</b>	<b>4,688</b>	<b>3,025</b>	<b>80,100</b>
<b>TOTAL CONTRIBUTION - VCWPD</b>		<b>48,400</b>	<b>23</b>	<b>385</b>	<b>4,778</b>	<b>12,915</b>	<b>10,854</b>	<b>8,755</b>	<b>6,512</b>	<b>2,563</b>	<b>1,675</b>	<b>48,500</b>
VCWPD – Cash		23,100	23	385	228	1,015	4,314	6,440	6,477	2,563	1,675	23,100
VCWPD - LERRDs		25,300	0	0	4550	11900	6540	2315	35	0	0	25,340
<b>TOTAL PROJECT COST</b>	<b>80,100</b>	<b>48,400</b>	<b>65</b>	<b>1,100</b>	<b>13,750</b>	<b>33,485</b>	<b>24,340</b>	<b>25,215</b>	<b>18,635</b>	<b>7,250</b>	<b>4,700</b>	<b>128,540</b>

## Milestones

The Corps has predetermined milestones associated with Federal Civil Works projects that have to be included in the schedule. These milestones are checkpoints that will be followed. As the project progresses other milestones may be added. The current milestone list is shown in **Table 2-2**.

**Table 2-2: Project Milestone Schedule**

Milestone No.	Milestone Description	Current Approved Schedule
160	PMP for Project Approved by PRB	June 2005
Xxx	DA/PMP Submitted to Division	June 2005
Xxx	DA Executed	July 2005
	General DDR	July 05 – Sept 07
580	Plans and Specifications BCOE Review	
	Specific DDR and P&S	
	B – Foster Park Wells	Aug 06 – Feb 07
	C – Levees/Floodwalls	Sept 06- Apr 07
	D – Santa Ana Bridge	Jan 07 – Nov 07
	E – High Flow Bypass	Oct 07 – Jan 08
	F – Dam Modifications	Oct 07 – Oct 08

### **III. NETWORK ANALYSIS SCHEDULE (NAS)**

#### **P2 Schedule (NAS)**

The project schedule will be controlled in the Corps' P2 system and will be used to monitor the progress of activities and milestones, and will be used to prepare the funding plan for the project at various times as needed.

#### **Resources Allocation**

The time and cost estimate for each task is recorded in the P2 system and is generally referred to as a resource estimate or resource plan..

#### **Project Schedule and Cost Control**

##### **1. Cost Control**

###### **a) Unauthorized Charges.**

Appendix I-B of ER 5-7-1 gives the Project Manager the responsibility and authority to identify unauthorized charges to the Project and, if necessary, reallocates those charges to the technical indirect sub-account of the organization whose charges are in question. This action is not subject to the approval of the Chief of the respective organization, but may be appealed by that Chief to the Deputy District Engineer for Project Management. If the matter is not appealed within the close of the fiscal quarter, or if the appeal is denied, the charges in question will be transferred to the organization's technical indirect main account. If the requested changes are not made, the Project Manager will either implement the guidelines in appendix I-B of ER 5-7-1, or elevate the issue to the proper level of authority.

###### **b) Additional Funds.**

The organizational elements will not exceed the amounts indicated on their service requests. If any organizational element perceives the need for additional funds, that element will submit "Request For Funds" to the Project Manager. Additional funds, if approved, will be transferred from the contingency account and formally documented.

##### **2. Schedule Control**

The organizational elements will not exceed the time allotted for activities on their service requests. If unforeseen events indicate that the agreed upon schedules will not be met, the responsible person of the task will notify the Project Manager as soon as possible. The Project Manager will endeavor to reduce any schedule delays within the Project Manager's authority prior to elevating the issue to the Project Review Board.

The schedule is shown in a summary Gantt chart in **Figure 3-1**, while the actual project schedule will be kept and maintained in the Corps P2 system. The Project Manager will update the schedule at least quarterly, and the results will be shared with the Project Team Members, District management, Sponsor, and the PRB.

The schedule update responsibility is as follows:

The Project Manager is responsible for working with the project team members to obtain current project data relating to activity, schedule, and milestone performance.

The Project Team Members are responsible for marking up supplied reports with actual start, completion, and remaining duration dates for each activity, for schedule changes that impact milestone performance.

The Project Manager is responsible for generating and forwarding reports to all the technical divisions and Branch Chiefs for distribution to technical personnel responsible for project performance. The Chiefs will be responsible for ensuring that the reports are completed and returned to the Project Manager.

### **3. Project Schedule and Cost Changes**

Any District organizational element that identifies a potential change in the project schedule or cost shall submit the request to the Project Manager.

The Project manager shall, upon receipt of the above request, follow the steps in accordance with ER 5-7-1, p. II-11, and the CESPD guidance (dated 9 April 1990).

### **4. Project Contingency Management**

The Project Manager will manage project contingencies in accordance with ER 5-7-1, commensurate with the degree of certainty and risk associated with the specific work. The contingency will be broken into the various aspects of the Project.

MATILJA DAM ECOSYSTEM RESTORATION PROJECT - PED PHASE SCHEDULE

**MATILJA DAM ECOSYSTEM RESTORATION PROJECT - PED PHASE SCHEDULE**

The Gantt chart illustrates the timeline for the Matilija Dam Ecosystem Restoration Project across several phases and years. The x-axis represents time from January 2005 to December 2013, divided into months and quarters. The y-axis lists various project components. The legend indicates four phases: Corps Lead (Design, Plans/Specifications) represented by yellow bars, VCWPD Lead (Design, Plans/Specifications) represented by cyan bars, Bid Period represented by brown bars, and Construction Phase represented by red bars.

Month	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A										
Calendar Year	2005				2006				2007				2008				2009				2010				2011				2012				2013															
Fiscal Year	05				06				07				08				09				10				11				12				13															
FY Quarter	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4											
<b>Initiate General DDR</b>	General DDR Initiation Phase																																															
<b>Foster Park Wells</b>	Foster Park Wells Phase																																															
DDR & P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>Levees</b>	Levee Construction Phase																																															
DDR & P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>Santa Ana Bridge</b>	Santa Ana Bridge Construction Phase																																															
Design, P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>Camino Cielo Bridge</b>	Camino Cielo Bridge Construction Phase																																															
Design, P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>High Flow Bypass</b>	High Flow Bypass Construction Phase																																															
DDR & P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>Desilting Basin</b>	Desilting Basin Construction Phase																																															
Design, P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															
<b>Dam and Sediment Removal, Recreation</b>	Dam and Sediment Removal, Recreation Phase																																															
DDR & P&S	Design, Plans/Specifications Phase																																															
Bid	Bid Period Phase																																															
Construction	Construction Phase																																															

## IV. ORGANIZATION SCOPES

The purpose of this section is to provide an overview of the role and description of the tasks each District organization will be performing during the course of this Project. **Table 4-1** depicts in general the scope of work or tasks with the responsible individual or group determined as a result of the interface of the Work Breakdown Structure (WBS). It is a presentation of the organization responsibility for the performance and products listed in the Critical Path Network, it is presented here as a separate document. **Table 4-2** displays the tasks and milestones listed by organizations. The assigned tasks/products and responsibility were coordinated with the District organizations at the Section level.

**Table 4-1. Organizational Responsibility Assignment**

<b>Program and Project Management Division (PPMD)</b>	
	Primary contact for the Corps
	Management of Project cost and schedule
	Preparation and updating of the PMP and PCA if applicable.
	Report project status to the team members, management, Sponsor, PRB and other stake holders
	Preparation and management of budget/financial/close-out documents
	Preparation of all Project documents
<b>Engineering Division</b>	
	Oversight on the preparation of technical documents
	Oversight and preparation of NED feature DDR's and Plans and Specification
	Preparation of project cost estimates
	Assist the Project Manager in the maintenance of the PMP and quarterly status NAS updates
<b>Construction-Operations Division</b>	
	Inspecting and administering activities and applicable reports/documents
	Assist PPMD in updates of status and other requested information
	Assist Engineering Division in preparation and review of contract documents
<b>Planning Division</b>	
	Provide plan formulation technical support to the Project Manager
	Oversight of the preparation of required environmental mitigation plans, monitoring plans, and supplemental EA documents.
	Assist Engineering Division in preparation and review of contract documents and O&M Manuals
	Execute the Project Environmental Monitoring Program
	Assist in obtaining Resource and Regulatory Agency Permits
<b>Regulatory Division</b>	
	Resource and Regulatory Agency Permits
<b>Real Estate Division</b>	
	Prepare the Real Estate Plan
	Review Sponsor appraisals
	Provide Real Estate Certification
<b>Contracting Division</b>	
	Preparation and processing of all contract and procurement documents
<b>Sponsor</b>	
	Prepare plans and specification for non-NED and LERRD features
	Participate in Design Coordination Team activities including Real Estate appraisals
	Review applicable documents

**Table 4-2. Scope and Organization Responsibility**

Milestone No.	Work Unit Description	Office Symbol	Organization Code
690	PCA Agreement	PM-C	L1H0100
	PPMD	PM-C	L1H0100
500	Plans & Specifications		
	Geotechnical - Soils	ED-G	L1L0650
	Geotechnical Branch	ED-G	L1L0600
	Real Estate Branch	RE-C	L1N0600
	Environmental Resource Branch (including permits and environmental clearance processes)	PD-R	L1K0300
	Construction Branch	CO-SA	L1M0D00
	PPMD	PM-C	L1H0100
580	Plans and Specifications, BCOE Review		
	Geotechnical - Soils	ED-G	L1L0650
	Construction Branch	CO-SA	L1M0D00
	Environmental Resource Branch	PD-R	L1K0300

## V. SCOPE OF WORK

This chapter describes the general scope of work efforts to be accomplished in the Preconstruction Engineering and Design (PED) phase of the project. Detailed planning, engineering and design of the Matilija project will be conducted in six phases: a General Detailed Design Report (DDR) and five feature-specific DDGs and plans and specifications (Foster Park wells, levees and floodwalls, bridge modifications, the Robles Diversion Dam high flow bypass, and dam and sediment removal). Recreation and arundo (Giant Reed) removal features will be included in the dam and sediment removal phase. Summary task descriptions are included for each DDR sorted by Project Delivery Team (PDT) responsibilities. Table 6-1 summarizes, for each phase, the cost estimates for each technical discipline. Detailed cost estimates are presented in Attachment 1.

An associated feature, the desilting basin on the Robles Diversion Canal, is not part of the Federal Recommended Plan, but is included in the Locally Preferred Plan. Therefore, this feature is not cost-shared; costs will be borne completely by the sponsor.

Feature specific DDGs and plans and specifications are being prepared in order to allow construction of those features to be conducted during different future fiscal years, with downstream features implemented prior to slurry of fines and dam removal operations. Estimates of the general schedule for implementation of the design, solicitation for construction bids, and the overall construction timeframe are presented at the end of the chapter.

### Feature A: General DDR

The purpose of the General DDR is to provide documentation for those features not specifically limited to one of the other phases. While numerous issues will be addressed in this phase, the most significant is the further analysis of sediment transport potential and impacts, particularly as related to ecosystem benefits, induced flood damages and impacts to water supply and quality. The results of these studies will be used in further design of the mitigation features.

In addition to the locations identified in the feasibility study, additional hydraulic evaluation will be conducted on four other locations to determine the need to provide protection or the feasibility of providing protection versus full buyout. These locations are Matilija Creek at Matilija Hot Springs, Ventura River at Camino Cielo, Ventura River at Ojai Valley Sanitary District Treatment Plant, and Ventura River between Fresno Creek and Casitas Springs. Note that the this estimate only includes evaluation. Should design of projects not originally included in the feasibility study be recommended, additional CEQA/NEPA work and renegotiation of the Project Management Plan will be required.

The Engineering Division technical lead for the PED phase is from the Geotechnical Branch of the Corps LA District. Therefore, geotechnical task descriptions for all the DDGs include additional technical management tasks associated with project oversight.

## **Programs and Project Management Division (PPMD)**

The following tasks are not limited to this particular feature but are on-going throughout the duration of the PED phase.

### Task A-1 – Project Management

PM responsibilities encompass all general management of the DDR and Plans and Specification efforts. The PM, from each partner, will be the primary point of contact (POC) for the design phase. They will coordinate frequently to ensure adequate project progress. They will direct and focus efforts in coordination with the technical managers and supervisors. The PM will arrange for an executive meeting, when necessary, to resolve issues that cannot be resolved by the PM or other technical managers. General responsibilities include schedule, cost, budget, project review, PMP updates and reporting project status. Other Corps specific responsibilities are to prepare and update fact sheets, data sheets, justification sheets, budget documents, schedules and other Corps required documentation. The sponsor's PM will be responsible for similar items within their organization, but the Corps will be responsible to control the main schedule and project information. All sponsor activities related to lobbying or obtaining funding for the Corps will not be included in the design cost. Both partners will respond to comments throughout the design phase.

All PM costs are shown in Section A of this document but will be spread throughout the entire design phase. No additional funding for PM is shown in the other feature designs.

### Task A-2 – Program analysts support

The program analyst will work on the project as needed to address questions and concerns from the Corps Division and Headquarter offices relating to project funding and will support the PM in other efforts. They will update budget documents and assist in preparing future budget requests. They will ensure that current budgetary laws are upheld and will work to get funding required for suitable project progress.

### Task A-3 – Scheduler

The scheduler will assist the PM in loading, updating and maintaining the project schedule and cost estimate in the Corps "P2" project management system. The scheduler will ensure that the appropriate milestones are in the project schedule and each tasks has the appropriate resource estimate attached to it. They will also assist the PM in updating status and other information for the creation of reporting documents.

### Task A-2 – Resource Management

The Resource Manager (RM) will receive and log Federal and Non-Federal funds for the project. They will maintain funding information in the Corps of Engineers Financial Management System (CEFMS). They will assist the PM in approving and certifying labor codes for PDT members. The RM will generate funding reports for PM team meeting and discussions as needed.

## **Hydrology and Hydraulics (H&H)**

### Task A-1 - Visit Site:

Perform field reconnaissance of the Ventura River and watershed as needed to assess any changes with the geomorphology of drainage area, main channel, overbanks, and major tributaries. Visit sites for recommended features of the project.

**Task A-2 – Geomorphology:**

Refine the geomorphic analysis that characterizes the channel morphology and general stability or erosional characteristics of the watershed.

**Task A-3 - Refine/Update Sediment Transport Models:**

The sediment transport models will be updated to include latest survey information, feature locations, and model refinements. GSTAR-1D will be rerun with various removal strategies for the temporary stabilization structures. In addition, other methods to predict the erosion of sediment within the reservoir will be evaluated. This effort will include sensitivity analyses for sediment transport input parameters.

**Task A-4 - Update HecRAS Models:**

Subsequent to the update of the sediment models, the HecRAS models will be updated to reflect the changes due to topographic changes, feature locations, and sediment transport results. Tables for revised hydraulic calculation results and graphs of flood profiles will be generated.

**Task A-5 - Levee/Floodwall Requirements:**

Refine/update the discharge-frequency and stage-discharge relationships at the levee and floodwall locations. In addition to the locations identified in the feasibility study, four other locations will be evaluated to determine feasibility of providing protection versus full buyout. These include: Matilija Creek at Matilija Hot Springs, Ventura River at Camino Cielo, Ventura River at Ojai Valley Sanitary District Treatment Plant, and Ventura River between Fresno Creek and Casitas Springs.

**Task A-6 - Risk and Uncertainty:**

Work with Project Economist to develop the parameters necessary to quantify the hydrologic and hydraulic risk and uncertainty for each levee and floodwall location.

**Task A-7 - Flood Plain Mapping:**

The inundation area maps for the 10-, 50-, 100-, and 500-yr flood plains will be prepared in GIS format and .pdf files will be generated.

**Task A-8 - Groundwater Impacts:**

The impacts to groundwater as described in the Feasibility Report will be refined based on available/updated information.

**Task A-9 - Water Quality Impacts:**

The impacts to water quality as described in the Feasibility Report will be refined based on available/updated information.

**Task A-10 - Adaptive Management Plan:**

The H&H Project Engineer will work together with the PDT members to provide input for development of the Adaptive Management Plan. Part of this effort will be to design a data collection program to support the Adaptive Management Plan

**Task A-11 – Documentation:**

Prepare documentation for the Matilija Dam ER General DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive

enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes in the watershed with the Recommended Plan in place.

**Task A-12 - Support Environmental Effort:**

The H&H Project Engineer will provide H&H information as needed by Environmental staff to assist in their analysis of the watershed.

**Task A-13 - GIS Support:**

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

**Task A-14 - Meetings, Conferences, Coordination:**

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

**Geotechnical**

**Task A-1 - Technical Management Tasks:**

This item includes all tasks associated with the Project Lead. Included are preparation of the project quality control plan, meetings, conferences, coordination, collecting required information, report compilation and review, support Independent Technical Review (ITR) coordinator and finalize report and contract package.

**Task A-2 - Geotechnical tasks:**

Review of hazardous, toxic and radioactive waste (HTRW) concerns of sediment. The issue to be addressed is that which was raised during review concerning the impacts of the small quantity of HTRW material that was identified in the sediment to be slurried downstream and the potential impacts that could have on water quality. It is assumed that no additional investigations will be required. It is proposed that a noted expert in water quality review the feasibility level test data and provide a written report addressing the issue. Coordinate with the California Regional Water Control Board and California Department of Health Services. As this will be prepared by an A/E, ITR is included herein. If additional field and laboratory work is required, this need will be presented to the project manager.

**Survey**

**Tasks A-1 and A-2:**

This estimate assumes that the LIDAR data provided by VCWPD will be adequate for the needs of Engineering Division. Quality assurance (QA) points will be shot at the dam, the Santa Ana Bridge, and one other structure to be named later, to check the accuracy of the LIDAR data. In addition, well locations, provided by the VCWPD in vicinity of the disposal areas, will be surveyed and cataloged. The VCWPD will coordinate all site access. This estimate assumes the lake, and another 20 land acres, will need to be surveyed and mapped at Matilija Dam. Sufficient points will be shot in the 20 acres in the immediate vicinity of Robles Diversion Dam to develop contours to one-foot accuracy. The Survey Section will develop the mapping for the Matilija Dam area and the Robles Diversion Dam areas only. It

is understood that the QA and Matilija Dam portions of the work are to be completed before January 2006. The work in the vicinity of Robles Diversion Dam is to be completed prior to October 2007.

## **Design**

### Task A-1 - Preliminary Design Work:

This will include familiarization with the project by reviewing, primarily, the Feasibility Report and preparing Power Point slides for the Tech Review Conference.

### Task A-2 – Attend meetings, field trips

### Task A-3 - Coordinate with Geotechnical, H&H, Environmental, Real Estate:

Design Section B will be responsible for producing the civil sheets and several others that contain information to be provided from the indicated disciplines. Design Section B will help identify locations where 1foot contour interval topo is required.

### Task A-4 - Prepare plates showing conceptual layout of design:

Base maps received from the Survey Section will be used as a basis for civil plates. Levees, channels and other hydraulic features will be added to the drawings from information provided from H&H and Geotechnical. Civil Design Section B will layout appurtenant structures such as access roads and fencing. Includes cost associated with CADD use and maintenance. Include well locations in the vicinity of the disposal areas.

### Task A-5 – Prepare Text:

A narrative description of features described in item 4, above, will be developed.

### Task A-6 - 90% ITR:

Review of DDR from Civil perspective. Review team member may be from Design Section B or from a different section.

### Task A-7 – Respond to 90% ITR:

Design team member will review comments made during the ITR that pertain to his discipline, respond to the comments and make any necessary corrections to the DDR.

### Task A-8 – Assemble DDR:

The DDR will be formatted to conform to the style established by the Technical Leader. Reprographic expenses are for incidental charges associated with making hard copies for internal use such as check prints. Any hard copies reproduced for distribution to reviewers or others will be the responsibility of the technical leader.

## **Structures**

No tasks assigned.

## **Real Estate**

### Task A-1 – Meetings and Coordination with Sponsor:

Coordinate with PM, PDT, and non-Federal Sponsor (NFS) of all LERRD (Lands, easements, rights-of-way, relocations and disposal areas) requirements, review non-Federal sponsor's Relocation Plan as per PL 91-646.

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**Task A-2 – Project Cooperation Agreement Participation:**

Real Estates participation in the review, negotiation and execution of PCA

**Task A-3 – Attorney's review and legal participation of PCA:**

Real Estate Legal review PCA final comments of compensability of utility/facility relocations.

**Task A-4 – Coordinate with Sponsor on Acquisition for Giant Reed (Arundo) Removal and attorney participation for permanent easement acquisition:**

Real Estate legal participation of interest to be acquired by NFS for Giant Reed (Arundo) removal. Investigate opportunities for navigational servitude, particularly for arundo removal areas in the vicinity of flood control features. This may affect the estimated cost for this task.

**Task A-5 – Determine properties for Acquisition**

Following availability of refined flood mapping, determine properties or portions of properties needed for acquisition or for flowage easements.

## **Environmental Resources**

**Task A-1 - Miscellaneous NEPA Documentation:**

Environmental Resources Branch (ERB) will coordinate and complete supplemental NEPA documentation (environmental assessments) to address all project changes that result in impacts not covered in the Final EIS/EIR (December 2004). Assume 5 Environmental Assessments (EAs) will be needed over the course of the PED Phase. NEPA documentation will be in compliance with all applicable laws and regulations including, but not limited to, the Clean Air Act, Clean Water Act, the National Historic Preservation Act, and the Endangered Species Act of 1973. Coordinate with VCWPD to ensure that CEQA supplements or addenda are completed with the environmental assessments.

**Task A-2 - Habitat Restoration Plan:**

The Corps will develop a Habitat Restoration Plan that will describe how areas that were disturbed by project construction (including giant reed removal) would be restored/revegetated. The plan may consist of an overall Habitat Plan for the entire project with more detailed site-specific plans for the various disturbed areas (i.e., sediment storage area behind the dam, slurry disposal site, sediment disposal site, giant reed removal areas, slurryline right-of-way, levee areas).

The plan would include methods to restore habitats on all temporary impact areas (i.e., preserving and respreading topsoil, specific grading techniques, choosing appropriate plant palettes). Appropriate maintenance and monitoring methods for the revegetated sites to ensure habitat restoration success shall be included.

**Task A-3 - Section 7 Consult w/ NMFS:** (could be put under Task F)

ERB to initiate and complete Section 7 consultation with the NMFS. Close coordination with the NMFS will be required including meetings and/or conference calls to provide information and clarification of project related issues and to assist in identifying/developing measures to minimize impacts to listed species.

**Task A-4 - Predator Control Plan/Capture-Relocate Plan:**

The Corps will develop and implement a predator control plan in consultation with CDFG and USFWS. The plan will include measures to identify and reduce number of aquatic predators in Matilija Reservoir and minimize the potential for release of these species downstream during dam removal.

**Task A-5 - Monitoring & Adaptive Mgt. Plan (M&AMP):**

The Corps will develop a more detailed M&AMP based on the M&AMP prepared during the Feasibility Study, including more detailed information generated during the PED Phase. ERB will coordinate extensively with H&H during preparation of the Plan.

The Plan will track and evaluate the success of giant reed eradication and steelhead habitat restoration. The Plan will include success criteria and reporting requirements per the feasibility-level M&AMP. Monitoring would include establishing transects to monitor for sedimentation during certain discharges, monitoring of giant reed removal sites and determining the success in eradicating giant reed, monitoring fish and wildlife in the project area to document effects resulting from the proposed action. The Plan will include developing protocols for adaptive measures to be performed if sediment does not behave (deposit) as predicted in the EIS/EIR.

**Task A-6 - Noise and Transportation Management Plans:**

ERB will develop a noise monitoring plan to avoid or minimize noise impacts to sensitive receptors (schools, hospitals, residential areas, etc.). The plan shall identify mitigation measures, as proposed in the EIS/EIR, to be implemented during construction and how noise complaints will be addressed and handled during construction. ERB will prepare contract scope of work for transportation management plan, manage contract, and review submittals.

**Task A-7 - General Coordination – Biologist:** (over 4 years of PED)

Coordination with PDT members, local sponsor, Environmental Working Group, and resource agencies during course of the PED Phase, including participation in meetings, providing information, obtaining information, reviewing documents, and ensure biological integrity is maintained throughout this phase. Further coordination with resource agencies to ensure all applicable permits and approvals are obtained and that the environmental commitments made in the EIS/EIR are followed.

**Task A-8 - General Coordination – Environmental Coordinator:** (over 4 years of PED)

Coordination with PDT members, local sponsor, Environmental Working Group, and resource agencies during the course of the PED phase, including participation in meetings, coordinate and develop supplemental NEPA/CEQA documentation, etc. Extensive involvement will be necessary to ensure all applicable permits and approvals are obtained and that the environmental commitments made in the EIS/EIR are followed.

## **Cultural Resources**

**Task A-1 - Programmatic Agreement:**

The Programmatic Agreement (PA) is the compliance document for Section 106 of the National Historic Preservation Act (36 CFR 800). This document will detail the survey, evaluation, and mitigation measures that will be implemented for the project. The PA will be negotiated between the Corps, the

State Historic Preservation Officer, and Advisory Council on Historic Preservation. Additional consulting parties will be the Sponsor and Federally Recognized Tribes.

**Task A-2 - Native American Coordination:**

This coordination will be our required consultations with Federally Recognized Tribes and other groups. The purpose of this coordination is to solicit their concerns with Tribal resources that may be affected by the project.

**Task A-3 - Geo-archeological Evaluation:**

The purpose of this investigation will be to obtain information on the potential for finding buried archeological deposits during construction. It will also provide information necessary to develop a discovery plan. The discovery plan will detail what procedures will be followed in the event of an inadvertent discovery during construction.

**Plan Formulation**

**Tasks A-1 and A-2 – Attend Meetings, Field Trips, Input to Study:**

The plan formulation leads from the feasibility study will be available to consult with the team, when necessary, throughout the PED phase to ensure consistency with the plan features, recommendations and commitments to resource agencies and the public, as described in the feasibility study. The plan formulation leads will be available for review meetings and field trips when requested. It is assumed that participation of each lead will require approximately two days per month, on average for the duration of the PED phase.

**Economics**

**Task A-1 - Financial Analysis & DE'S Assessment of Financial Capability:**

As part of the Project Cooperation Agreement, a financial analysis must be prepared documenting that the Local Sponsor is capable of meeting its cost-sharing obligations for the proposed project. Economics will coordinate with Project Management to obtain projections of federal and non-federal projected expenditures by fiscal year, as well as a Statement of Financial Capability and Financing Plan from the Local Sponsor. Historical financial statements (e.g., income statements, balance sheets, cash flow statements, etc.), pro forma statements, bond ratings, and other documentation will be analyzed to assess the Sponsor's financial capability. An Assessment of Financial Capability will be prepared for the District Commander's signature as part of the PCA.

**Task A-2 –Economic Updates:**

PPMD requests updates of benefit/cost and remaining benefit/remaining cost ratios each year. This information is required for project justification sheets and such information is forwarded to SPD and HQ. Updated total project costs and sunk costs are provided by PPMD. Such costs are deflated to the price level of the latest approved report, and benefits and costs are recomputed at both the current Federal Discount Rate and the effective rate at the date of project authorization.

**Task A-3 – Re-assess levels of flood protection:**

Incorporate the levels of protection in the floodplain into HEC-FDA; compute the probability statistics and assess mitigation measures.

**Task A-3 - Other Reports and Meeting Attendance:**

It is possible we could receive additional comments from HQ, OMB or ASA relating to the economic analysis. It is also likely that some sort of update of the Chief's Report could be required since there was no WRDA 2004 (assuming we get a WRDA 2005 or 2006). Also, it is possible we could be required to conduct an LRR at some point during project construction, as guidance specifies that an LRR should be done if seeking project funding and the latest approved economic analyses are more than 3 years old.

**Value Engineering**

**Tasks A-1 and A-2:**

Value Engineering (VE) is an organized effort to analyze the functions of design, construction, operations, maintenance, facilities, equipment, procedures, methods and supplies to ensure that these functions are achieved at the lowest total cost while maintaining requirements for performance, reliability, quality, maintainability, safety, and the users/local sponsors needs. Conducted by a multi-disciplinary team and led by the District VE officer, VE studies use a 5-phase approach: (1) During the initial information phase the team will gather data through site visits, document review, and interviewing the PDT and others; (2) Develop a list of potential changes through brainstorming; (3) Analyze the brainstorm list in order to develop a short list of VE proposals; (4) Prepare the proposals for presentation; (5) Present the VE proposals to the PDT.

**Public Affairs**

**Task A-1 – Provide Summary Status Newsletter Semiannually:**

A print and online version of a newsletter will be generated semi-annually for five years. The newsletter will be used to disseminate project status and information to stakeholder interests, the general public and the press. Conceptual designs for specific features could be included when prepared, along with before and after designs for high visibility work, such as levees, dam removal, slurry and sediment storage areas, and recreation trail features. The newsletter will also be used to provide future meeting dates, a project timeframe and a list of stakeholder members and organizations.

**Task A-2 – Sponsor/Stakeholder Public Meetings:**

Have one summary stakeholder meeting, co-chaired by the Sponsor for the public and stakeholder interests on an annual basis to review the progress of work to date, and future remaining work efforts. Specific workshops will be held for each project feature as listed below.

**Task A-3 – Website Updates:**

In addition to the online newsletter described in Task A-1, the Sponsor and Corps websites will be updated on a monthly basis to indicate the progress of work and important meeting dates.

**Task A-4 – Other reports, meeting attendance:**

This task covers other meetings, reports and newsletter needs, as requested during the course of the study.

**Feature B: Foster Park Wells**

The Recommended Plan in the feasibility study includes the construction of two groundwater wells at Foster Park to mitigate impacts to the water supply facilities in this area resulting from increased sediment

flows. Well depths are estimated to be approximately 50-feet. Access, design requirements, connection locations, power and other required data will be provided by the local partner.

## **H&H**

### Task B-1 - Visit Site:

Perform field reconnaissance of the Foster Park area as needed to assess any changes with the geomorphology of area, main channel, overbanks, and proposed well locations.

### Task B-2 - Groundwater Impacts:

The impacts to groundwater as described in the General DDR will be refined based on available/updated information.

### Task B-3 - Water Quality Impacts:

The impacts to water quality as described in the General DDR will be refined based on available/updated information.

### Task B-4 - Adaptive Management Plan:

The H&H Project Engineer will work together with the PDT members to provide input for development of the Adaptive Management Plan.

### Task B-5 – Documentation:

Prepare documentation for the Matilija Dam ER Foster Park Wells DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes that affect the Foster Park wells with the Recommended Plan in place.

### Task B-6 - GIS Support:

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

### Task B-7 - Support Civil Design Effort:

The H&H Project Engineer will provide H&H information as needed by Civil Design staff to assist in their design of the wells. Includes cost associated with CADD use and maintenance.

### Task B-8 - Meetings, Conferences, Coordination:

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

### Task B-9 – Review:

The H&H ITR Engineer will review all submittals and provide written comments. The H&H ITR Engineer will backcheck all responses to comments to ensure comments have been addressed adequately.

## **Geotechnical**

### Assumptions:

The DDR and plans and specifications will be prepared by an A/E contractor. Requirements and data will be provided by the City of Ventura Water Department. Geotechnical support provided by the District will be limited to ITR. Value of A/E contract is assumed to be 12 percent of feasibility estimate of \$800,000.

### Task B-1 - Technical Management:

Same basic work as described in A-1 but includes DDR and plans and specs review, support ITR coordinator, prepare contract package

### Task B-2 - Manage A/E Contract:

Includes those tasks directly associated with the A/E contract, including A/E scope preparation and management, collecting required information (requirements from City of Ventura Water), act as liaison between A/E and reviewers.

### Task B-3 - DDR ITR:

Geotechnical review for DDR. In addition, a portion of the estimated costs may be provided to other disciplines for support.

### Task B-4 - P&S ITR:

Geotechnical review for P&S. In addition, a portion of the estimated costs may be provided to other disciplines for support (the extent of Civil or structural work currently unknown).

## **Survey**

See tasks under General DDR.

## **Design**

### Tasks B-1 and B-2 - Technical Review of Foster Park Wells DDR, Plans and Specs:

This design effort will be performed by an A/E under the supervision of the project lead. Design B will have no design role but will participate in 60% and 90% Quality Assurance reviews.

## **Structures**

### Tasks B-1 and B-2 - Technical Review of Foster Park Wells DDR, Plans and Specs:

This effort will be performed by an A/E under the supervision of the project lead. Structural Design will have no design role but will conduct Independent Technical Review of any miscellaneous features

## **Cost Estimating**

### Task B-1 – 90% P&S Research/Gather Information

The estimator shall prepare and furnish cost estimates for each viable alternative or site. Cost estimates shall be developed with sound construction practices include appropriate comments describing the method of construction, assumptions used in developing the estimate, and the technical/design data available.

Task B-2 – 90% P&S: Attend site visit to assess construction difficulties.

Task B-3 – 90% P&S Quantities Evaluation

Quantity “take-off” evaluations must be as accurate as possible and based on all available engineering and design data. Quantity calculations shall be indexed, divided with numerical tabs, and bounded in a 3-ring binder. Calculation worksheets shall make reference to drawings sheet numbers and details.

Task B-4 – 90% P&S Prepare Estimate (Mii)

Estimator shall develop the Total Current Working Estimate (CWE) to support NED Plan. Total CWE shall be prepared and furnished using the Microcomputer Aided Cost Estimating System (MCACES) software, Second Generation (Mii). Estimate submittals shall occur at 90% and 100% Plans and Specs stage of the design process. The cost estimate submittals shall include as a minimum: quantity calculations; quotes from material suppliers and subcontractors; a narrative defining the parameters upon which the cost estimate has been prepared to support the project scope and schedule; miscellaneous supporting documentation such as backup data, brochures on special equipment, working drawings, production calculations; telephone conversations; and a print out of the MCACES (Mii) estimate including direct, indirect and owner summary sheets, detail sheets and backup.

Task B-5 – 90% P&S – Narrative and Schedule

On the Total CWE and the Locally Preferred Plan, descriptive statements regarding methods of construction, material sources and prices, type of equipment required, access, haul distances, estimated production rates, placement procedures, environmental restrictions, crew sizes and labor rates, dewatering, job conditions, and other assumptions shall be included as appropriate in MCACES (Mii) as notes. A construction schedule must be developed using the Microsoft Project \_\_\_\_\_ Scheduling Software. The schedule must identify the sequence and duration of the tasks.

Task B-6 – 90% P&S – Meetings, Coordination, Filing: The COE and the sponsor must be kept aware of the current and forecasted total cost of the project.

Task B-7 – 90% P&S – ITR: Conduct Independent Technical Review at each stage of the design estimate.

Task B-8 – 100% P&S Research/Gather Information

The estimator shall prepare and furnish cost estimates for each viable alternative or site. Cost estimates shall be developed with sound construction practices include appropriate comments describing the method of construction, assumptions used in developing the estimate, and the technical/design data available.

Task B-9 – 100% P&S Quantities Evaluation

Quantity “take-off” evaluations must be as accurate as possible and based on all available engineering and design data. Quantity calculations shall be indexed, divided with numerical tabs, and bounded in a 3-ring binder. Calculation worksheets shall make reference to drawings sheet numbers and details.

Task B-10 – 100% P&S Prepare Final Government Estimate (Mii)

Estimator shall develop the Total Current Working Estimate (CWE) to support NED Plan. Total CWE shall be prepared and furnished using the Microcomputer Aided Cost Estimating System (MCACES) software, Second Generation (Mii). Estimate submittals shall occur at 90% and 100% Plans and Specs stage of the design process. The cost estimate submittals shall include as a minimum: quantity calculations; quotes from material suppliers and subcontractors; a narrative defining the parameters upon which the cost estimate has been prepared to support the project scope and schedule; miscellaneous

supporting documentation such as backup data, brochures on special equipment, working drawings, production calculations; telephone conversations; and a print out of the MCACES (Mii) estimate including direct, indirect and owner summary sheets, detail sheets and backup.

**Task B-11 – 100% P&S – Narrative and Schedule**

On the Total CWE and the Locally Preferred Plan, descriptive statements regarding methods of construction, material sources and prices, type of equipment required, access, haul distances, estimated production rates, placement procedures, environmental restrictions, crew sizes and labor rates, dewatering, job conditions, and other assumptions shall be included as appropriate in MCACES (Mii) as notes. A construction schedule must be developed using the Microsoft Project \_\_\_\_\_ Scheduling Software. The schedule must identify the sequence and duration of the tasks.

**Task B-12 – 100% P&S – Meetings, Coordination, Filing:** The COE and the sponsor must be kept aware of the current and forecasted total cost of the project.

**Task B-13 – 100% P&S – ITR:** Conduct Independent Technical Review at each stage of the design estimate.

**Real Estate**

**Task B-1 – Rights-of-Entry for survey/exploration:**

Estimate is based on need to obtain Rights-Of-Entry (ROE), estimate may increase or decrease depending on the actual number of ROE identified as required.

**Task B-2 – Prepare/update Feasibility Real Estate Plan for final design:**

Update Real Estate Plan (REP) and costs for any changes in project final design for inclusion in Design Documentation Report (DDR).

**Task B-3 – Attorney’s Final Comments of Compensability:**

Real Estate Attorney’s final comments of compensability of utility/facility relocations.

**Task B- 4 – Cadastral coordinates with Engineering for preparation of RE maps:**

Cadastral’s coordination with Engineering of final project for changes in real estate area and number of parcels required.

**Task B-5 – Assess LER for the Project and Legal Review (ROW Activities):**

This includes review of facility/utility relocations, PL 91-646 and any other interest of real estate that may become necessary.

**Task B-6 – Coordinate with Sponsor on acquisitions:**

Full coordination and consultation with the NFS must occur prior to the Government’s determination of the interests and estates required for a cost shared project.

**Task B-7 - Certify that all required LERRDS have been acquired:**

Prior to a solicitation of a contract the District Chief of RE is required to certify in writing that sufficient real property interests are available to support construction prior to the contract.

**Task B-8 – Appraisal Branch reviews Sponsor’s credit appraisals:**

Appraiser meets with NFS and it’s appraiser on scope of work and appraisal premise. Final review of NFS’s acquisition and crediting appraisals.

**Task B-9 – Cadastral review of Sponsor’s survey of acquired LER:**  
Cadastral’s review of NFS’s survey of required real estate acquisition.

## **Environmental Resources**

### **Task B-1 - Biologist coordination:**

Provide biological support during preparation of the plans and specs. Coordination will take place with PDT, local sponsor, the Environmental Working Group, and resource agencies. Assist in the development of an operation agreement between the City of Ventura and NMFS to prevent impacts to surface water.

### **Task B-2 - Environmental coordinator coordination:**

Provide environmental management support during preparation of the plans and specs. Coordination will take place with PDT, local sponsor, the Environmental Working Group, and resource agencies. Lead in the development of an operation agreement between the City of Ventura and NMFS to prevent impacts to surface water.

### **Task B-3 - Pre-construct Plant surveys:**

Pre-construction surveys shall be conducted to for special-status plant species within all areas subject to project disturbance. Project construction would avoid, to the greatest extent possible, unnecessary disturbance to special-status plant species. ERB will prepare contract scope of work for surveys, manage contract, and review submittals. Coordinate with local sponsor to obtain take permits from California Department of Fish and Game or the US Fish and Wildlife Service, if needed.

### **Task B-4 - Pre-construct sensitive bird & biological surveys (including bat surveys):**

Pre-construction protocol-level surveys shall be conducted for the least Bell’s vireo and southwestern willow flycatcher. Pre-construction surveys shall also be conducted for sensitive birds, active nests or roosts in riparian areas that would be subject to project disturbance. Also, surveys for sensitive bats at the Santa Ana Bridge and any other structures that may house suitable roosting habitat for this species. ERB will prepare contract scope of work for surveys, manage contract, and review submittals. Coordinate with local sponsor to obtain take permits from California Department of Fish and Game or the US Fish and Wildlife Service, if needed.

## **Cultural Resources**

### **Task B-1 - Cultural Resource Survey/SHPD Documentation:**

This consists of a field survey/inventory of historic and prehistoric resources within the area of potential effects. The survey will be of areas not surveyed during the feasibility phase. SHPD documentation consists of the letters/memos/reports that will be produced to consult with the SHPD for this feature of the project.

## **Public Affairs**

### **Task B-1 – Public Workshops for Foster Park Wells:**

One public workshop will be held to review the plans for the construction and operation and maintenance activities associated with the two Foster Park wells.

## Feature C: Levees/Floodwalls for Meiners Oaks, Live Oak, Casitas Springs

The Recommended Plan in the feasibility study includes constructing new and raising existing levees and floodwalls. Specific locations and approximate elevations of the improvements will be determined during the preparation of the general DDR and finalized in the actual design phase. The design estimate assumes that three levees will be modified/built under three separate contracts (Live Oak Acres, Casitas Springs and Meiners Oaks. The levee and/or floodwall at Meiners Oaks will be new features) and that the settlement, protection or relocation of underlying utilities will not be a factor affecting design.

### H&H

#### Task C-1 - Visit Site:

Perform field reconnaissance of the proposed levee and floodwall locations as needed to assess any changes with the geomorphology of area, main channel, overbanks, and proposed levee locations.

#### Task C-2 - Refine/Update Sediment Transport Models:

The sediment transport models will be updated to include latest survey information, feature locations, and model refinements.

#### Task C-3 - Update HecRAS Models:

Subsequent to the update of the sediment models, the HecRAS models will be updated to reflect the changes due to topographic changes, feature locations, and sediment transport results. Tables for revised hydraulic calculation results and graphs of flood profiles will be generated.

#### Task C-4 - Levee/Floodwall Design:

Determine final levee and floodwall heights, widths, and extents. This will be an iterative process working with the Civil Design Engineer.

#### Task C-5 - Support Civil Design Effort:

The H&H Project Engineer will provide H&H information as needed by Civil Design staff to assist in their design of the levees and floodwalls. Includes cost associated with CADD use and maintenance.

#### Task C-6 - Risk and Uncertainty:

Work with Project Economist to develop the parameters necessary to quantify the hydrologic and hydraulic risk and uncertainty for each levee and floodwall location.

#### Task C-7 - Flood Plain Mapping:

The inundation area maps for the 10-, 50-, 100-, and 500-yr flood plains with the final levees in place will be prepared in GIS format and .pdf files will be generated.

#### Task C-8 – Documentation:

Prepare documentation for the Matilija Dam ER Levees/Floodwalls for Meiners Oaks, Live Oak, and Casitas Springs DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes in the levee and floodwall locations with the Recommended Plan in place.

#### Task C-9 - GIS Support:

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data

Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

**Task C-10 - Meetings, Conferences, Coordination:**

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

**Task C-11 – Review:**

The H&H ITR Engineer will review all submittals and provide written comments. The H&H ITR Engineer will backcheck all responses to comments to ensure comments have been addressed adequately.

**Geotechnical**

**Assumptions :**

- (1) In two of the three cases, there are existing levees that will be raised.
- (2) The levees to be raised are adequately constructed and the fill will not be removed and the levee rebuilt to meet Corps current practice.
- (3) Settlement of the levee or underlying utility will not be a factor affecting design.
- (4) Slope protection and toe-down depth must reflect the new hydraulic analyses.
- (5) Geotechnical effort reflects assumption that borrow for earthen levees will come from the areas designated as silt-disposal areas.
- (6) There will be three distinct construction contracts for the work.
- (7) The investigations of the disposal areas will be conducted under the assumption that California DSOD will not identify the dikes, if any, around the disposal areas as regulatory dams.
- (8) A soil cement demonstration section will be constructed during the first contract to demonstrate to the local sponsor the feasibility of the proposal to use and remove soil cement in the channel upstream of Matilija to retain sediment. A summary report will be prepared by the materials engineer using engineering during construction (EDC) funds.

**Task C-1 - Technical Management:**

Same as described in Task B-1.

**Task C-2: Null**

**Task C-3 - Field Investigations:**

Assumes two test trenches per levee and three per each of three borrow areas. Conducted using in house staff operating rented backhoe. (4 days, technician). A geologist coordinates access, schedules, works the rig, packages and delivers sample to the laboratory, and prepares a summary report (8 days). Geologist prepares logs (2 days).

**Task C-4 - Laboratory Investigations:**

Assumes work is done at District Baseyard Laboratory. Includes 30 gradations, 10 of which include hydrometer, 5 Atterbergs (multipoint, wet), and 10 moisture contents.

**Task C-5 - Data review:**

Engineer evaluates test data and selects parameters.

**Task C-6 – Analysis:**

Engineer conducts appropriate slope stability or other analyses. Develops criteria for plans and specs.

**Task C-7 - Report preparation:**

Engineer prepares DDR documentation.

**Task C-8 - Independent Technical Review:**

Self-explanatory.

**Task C-9 - Response to ITR:**

Self-explanatory.

**Task C-10:** Null.

**Task C-11 - Geology Tasks:**

Attend meetings, prepare/review slope protection spec, respond to ITR comments.

**Task C-12 - Materials Tasks:**

Attend meetings, prepare/review concrete related specs, respond to ITR comments.

**Task C-13 - Soils Tasks:**

Attend meetings, prepare/review earthwork specs, respond to ITR comments.

**Task C-14 - Independent Technical Review:**

Self-explanatory. At the 60%, 90%, and 100% the total Geotechnical Branch will require 3, 6, and 3 days, respectively.

## **Landscaping**

**Task C-1 - Esthetic Treatment and Erosion Control Plans and Specifications:**

The Landscape Architect will prepare DDR, and Final Landscape Design Material consisting of contract drawings, specifications, and quantity take-offs for the project. Includes cost associated with CADD use and maintenance.

**Task C-2 - Site Visits/Coordination:**

The Landscape Architect will conduct 3 site visits/field investigations to verify existing conditions. This shall be accomplished by field inspections, discussion with appropriate personnel, and by checking previous work and as-built drawings, if applicable.

**Task C-3 - ITR Meetings-Comment Responses:**

The Landscape Architect will attend all ITR meetings and be responsible for responding to landscape comments.

## **Design**

**Task C-1 - Preliminary Design Work:**

Determine necessity for and request additional topographic data. Request and assemble existing data, primarily from local interests.

**Task C-2 – Attend meetings, field trips:**

Attend 3 one-day field trips and 6 half-day meetings.

**Task C-3 – Coordinate with Geotechnical, H&H, Environmental, Real Estate:**

Most of the effort under this task will be coordination with H&H who will provide design dimensions for levees and floodwalls.

**Task C-4 - Layout Plates:**

Orientation and scale of topographic and cultural features will be determined. Includes cost associated with CADD use and maintenance.

**Task C-5 - Incorporate utilities:**

Utility information provided by local sponsor will be incorporated into drawings.

**Task C-6 - Apply templates of design to drawings:**

Templates will be modeled from hydraulic data in the Inroads computer program and run with a digital terrain model in Microstation. This will produce a project footprint along with other design information such as profiles, cross sections and quantities. Includes cost associated with CADD use and maintenance.

**Task C-7 - Mark up guide specs:**

Guide specs not covered by other disciplines such as soils, hydraulics, environmental or structures will be marked up by Design B. These usually include specs for general requirements and fencing.

**Task C-8 - Prepare text of DDR:**

The descriptions of each feature being designed and all assumptions and criteria used will be updated in the DDR.

**Task C-9 - Perform quantity takeoffs:**

Quantities developed from the takeoffs will be used by Cost Estimating to determine construction costs. Most of the quantities will be obtained from the Inroads computer program, others will be obtained through manual computations. All quantities will be summarized in spreadsheets. Includes cost associated with CADD use and maintenance.

**Task C-10 - Assemble 60% package:**

The DDR will be formatted to conform to the style established by the Technical Leader. The plans and specifications developed by Design Section B will be integrated with those developed by other disciplines into one package.

**Task C-11 - 60% ITR:**

An independent reviewer will be assigned to review the DDR and plans/specifications and enter comments into DrChecks. The Civil design reviewer may or may not be from Design Section B.

**Task C-12 - Respond to 60% ITR, sponsor review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task C-13 - Assemble 90% package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for distribution for backchecks and further reviews.

**Task C-14 - 90% ITR:**

The review team members will verify that their previous comments were incorporated and will review any additions or changes to the design. The Civil design reviewer may or may not be from Design Section B.

**Task C-15 - Respond to 90% ITR, sponsors review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task C-16 - Prepare final package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for project advertisement. Support will be provided to Contracting in their preparation of front end portion of the specifications. Reprographic expenses are for incidental charges associated with making hard copies for internal use such as check prints. Any hard copies reproduced for distribution to reviewers or others will be the responsibility of the technical leader.

**Task C-17 - Provide support during advertisement:**

Design Section B will help answer Contractor questions and make changes to the contract documents that result from contractor comments or other sources. These will be prepared prior to award of contract. Design Section B will provide the Technical Leader with information relating to Civil Design for inclusion into the overall report.

## **Structures**

**Assumptions:**

- (1) This estimate assumes that the work will be done as three separate contracts: The Meiners Oaks, Live Oak and Casitas Springs levee.
- (2) Each contract shall include walls of five different heights with maximum of 20 ft flood wall will be designed.
- (3) Each contract is assumed that the backfill is level.
- (4) The above assumptions are based upon the 100-yr flood as described by the recommended plan of the feasibility study.

**Task C-1 Meetings**

Self-explanatory.

**Task C-2 Coordination**

Self-explanatory.

**Task C-3 Structural Design**

Walls will be designed according EM 1110-2-2502 or other relevant guidance. DDR documentation will be prepared concurrent with analyses. Plans and specifications will be prepared under this item. Includes cost associated with CADD use and maintenance.

**Task C-4 60% Internal Technical Review**  
Self-explanatory; Includes review of DDR.

**Task C-5 90% Internal Technical Review**  
Self-explanatory.

**Task C-6 Respond to ITR**  
Self-explanatory.

### **Cost Estimating**

Tasks C-1 to C-13 are the same descriptions as Tasks B-1 to B-13. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

### **Real Estate**

Tasks C-1 to C-9 are the same descriptions as Tasks B-1 to B-9. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

### **Environmental Resources**

Tasks C-1 to C-4 are the same descriptions as Tasks B-1 to B-4. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

### **Cultural Resources**

#### **Task C-1 - Cultural Resource Survey/SHPD Documentation:**

This consists of a field survey/inventory of historic and prehistoric resources within the area of potential effects. The survey will be of areas not surveyed during the feasibility phase. SHPD documentation consists of the letters/memos/reports that will be produced to consult with the SHPD for this feature of the project.

### **Public Affairs**

#### **Task C-1 – Public Workshops for Levees/Floodwalls:**

Several public workshops will be held, primarily with the local residents. These workshops will focus on the three locations where existing levees are being modified or new levees are being constructed. The public workshops will be used to review preliminary and final plans and discuss activities involved in the construction of the levees and floodwalls, aesthetic impacts, access requirements, operational timeframes and mitigation requirements associated with traffic, noise and environmental impacts.

## **Feature D: Santa Ana and Camino Cielo Bridge Modifications**

The Recommended Plan in the feasibility study includes the construction of a new bridge at Camino Cielo and extending the existing Santa Ana Bridge. The estimate assumes that the design and preparation of the plans and specifications will be done by the Ventura County Watershed Protection District as LERRDs. In addition to real estate and environmental resources support, the Corps will be reviewing the

design to ensure that there is proper flow conveyance for the project and that the bridges are not eligible for protection under SHPO. No DDR will be prepared by the Corps for the two bridge modifications.

## **H&H**

### Task D-1 - Visit Site:

Perform field reconnaissance of the Santa Ana Bridge crossing as needed to assess any changes with the geomorphology of area, main channel, overbanks, and proposed bridge modifications locations.

### Task D-2 - Refine/Update Sediment Transport Models:

The sediment transport models will be updated to include latest survey information, feature locations, and model refinements.

### Task D-3 - Update HecRAS Models:

Subsequent to the update of the sediment models, the HecRAS models will be updated to reflect the changes due to topographic changes, feature locations, and sediment transport results. Tables for revised hydraulic calculation results and graphs of flood profiles will be generated.

### Task D-4 - Bridge Design:

Determine final water surface elevations and bridge design parameters. This will be an iterative process working with the Civil Design Engineer.

### Task D-5 - Support Civil Design Effort:

The H&H Project Engineer will provide H&H information as needed by Civil Design staff to assist in their design of the bridge modifications.

### Task D-6 - Risk and Uncertainty:

Define the hydrologic and hydraulic risk and uncertainty at the Santa Ana Bridge location with proposed modifications in place.

### Task D-7 - Flood Plain Mapping:

The inundation area maps for the 10-, 50-, 100-, and 500-yr flood plains with the final bridge modifications in place will be prepared in GIS format and .pdf files will be generated.

### Task D-8 – Documentation:

Prepare documentation for the Matilija Dam ER Santa Ana Bridge Modifications DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes at the Santa Ana Bridge location with the Recommended Plan in place.

### Task D-9 - GIS Support:

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

### Task D-10 - Meetings, Conferences, Coordination:

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone

review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

**Task D-11 – Review:**

The H&H ITR Engineer will review all submittals and provide written comments. The H&H ITR Engineer will backcheck all responses to comments to ensure comments have been addressed adequately.

**Geotechnical**

**Task D-1 - Technical Management:**

Technical Management will be limited to meetings and coordination.

**Design**

No Tasks Assigned.

**Structures**

No Tasks Assigned.

**Cost Estimating**

No Tasks Assigned.

**Real Estate**

Tasks D-1 to D-9 are the same descriptions as Tasks B-1 to B-9. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

**Environmental Resources**

Tasks D-1 to D-4 are the same descriptions as Tasks B-1 to B-4. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

Task D-5 – Noise and Transportation Management Plan is the same description as Task A-6. The only difference is the estimated duration of the task.

**Cultural Resources**

**Task D-1 - Cultural Resource Survey/SHPD Documentation:**

This consists of a field survey/inventory of historic and prehistoric resources within the area of potential effects. The survey will be of areas not surveyed during the feasibility phase. SHPD documentation consists of the letters/memos/reports that will be produced to consult with the SHPD for this feature of the project.

## Public Affairs

### Task D-1 – Public Workshops for Bridge Modifications:

Public workshops will be held to address the Santa Ana Bridge modification and Camino Cielo Bridge relocation. In particular, traffic control plans and construction durations will be discussed.

## Feature E: Robles Diversion Dam High Flow Bypass

The Recommended Plan in the Feasibility study includes the modification of the existing Robles Diversion Dam to include a high-flow bypass for the purpose of reducing the amount of additional deposition resulting from removal of the dam. The assumed bypass includes four radial gates and a new concrete overflow weir (to replace the existing timber crib weir structure). Fish passage will be addressed as necessary. The estimate assumes that necessary as-builts will be available from the local partner and that underlying utilities will have no effect on the design.

### PPMD

See general DDR section.

### H&H

#### Task E-1 - Visit Site:

Perform field reconnaissance at Robles Diversion Dam as needed to assess any changes with the geomorphology of area, main channel, overbanks, and proposed high flow bypass location.

#### Task E-2 - Physical Model:

A physical model will be prepared to assist in design for the high flow bypass. The model will be used to provide sediment volume estimates for O&M purposes.

#### Task E-3 - Refine/Update Sediment Transport Models:

The sediment transport models will be updated to include latest survey information, feature locations, and physical model results.

#### Task E-4 - Update HecRAS Models:

Subsequent to the update of the sediment models, the HecRAS models will be updated to reflect the changes due to topographic changes, feature locations, and sediment transport results. Tables for revised hydraulic calculation results and graphs of flood profiles will be generated.

#### Task E-5 - High Flow Bypass Design:

Determine the flow capacity and location of the spillway structure (right bank or left bank) based on sluicing efficiency and fish passage impacts. Investigate changes to the proposed structure that would benefit fish passage and sediment exclusion from the diversion intake. Determine final water surface elevations and hydraulic design parameters for the high flow bypass and any appurtenant features. This will be an iterative process working with the Civil Design Engineer.

**Task E-6 - Support Civil Design Effort:**

The H&H Project Engineer will provide H&H information as needed by Civil Design staff to assist in their design of the high flow bypass. Includes cost associated with CADD use and maintenance.

**Task E-7 - Risk and Uncertainty:**

Define the hydrologic and hydraulic risk and uncertainty at the Robles Diversion Dam High Flow Bypass location with proposed features in place.

**Task E-8 - Flood Plain Mapping:**

The inundation area maps for the 10-, 50-, 100-, and 500-yr flood plains with the final high flow bypass in place will be prepared in GIS format and .pdf files will be generated.

**Task E-9 – Documentation:**

Prepare documentation for the Matilija Dam ER Robles Diversion Dam High Flow Bypass DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes at the high flow bypass location with the Recommended Plan in place.

**Task E-10 - GIS Support:**

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

**Task E-11 - Meetings, Conferences, Coordination:**

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

**Task E-12 – Review:**

The H&H ITR Engineer will review all submittals and provide written comments. The H&H ITR Engineer will backcheck all responses to comments to ensure comments have been addressed adequately.

**Geotechnical**

**Assumptions:**

- (1) Field conditions are such that the proposed exploration program is adequate. Unusual site (or loading) conditions may require additional and/or more expensive explorations methodologies.
- (2) Mechanical design (and ITR) to be done by an A/E contractor; project lead will be responsible for that scope of work.

**Task E-1 - Technical Management:**

Same as described in B-1.

**Task E-2 - Manage A/E Contract:**

Includes those tasks directly associated with the A/E contract, including A/E scope preparation and management, collecting required information (including requirements from Casitas Municipal Water District), act as liaison between A/E and reviewers.

**Task E-3 - Manage A/E ITR Contract:**

Management of ITR contract.

**Task E-4:** Null

**Task E-5 - Field Investigations:**

Assume two test trenches. Conducted using in house staff operating rented backhoe. 2 days, technician. A geologist coordinates access, schedules, works the rig, packages and delivers sample to the laboratory, and prepares a summary report and logs (6 days).

**Task E-6 - Laboratory testing:**

Assumes that work is done both at District Baseyard lab and contract laboratory. Assumes 6 gradations, 2 gradations with hydrometer, 2 Atterbergs (multipoint, wet), 2 moisture contents, 1 corrosivity suite.

**Task E-7 - Data review:**

Engineer evaluates test data and selects parameters.

**Task E-8 – Analysis:**

Engineer conducts required analyses.

**Task E-9 - Report preparation:**

Report summarizes, documents findings.

**Tasks E-10 and E-11 - Independent Technical Review and Response to ITR:**

Self-explanatory.

**Task E-12:** Null.

**Task E-13 - Geology Tasks:**

Attend meetings, prepare/review slope protection spec, respond to ITR comments.

**Task E-14 - Materials Tasks:**

Attend meetings, prepare/review concrete related specs, respond to ITR comments.

**Task E-15 - Soils Tasks:**

Attend meetings, prepare/review earthwork specs, respond to ITR comments.

**Task E-16 - Independent Technical Review:**

Self-explanatory. At the 60%, 90%, and 100% the total Geotechnical Branch will require 2, 6, and 2 days, respectively.

**Design**

**Task E-1 - Preliminary Design Work:**

Determine necessity for and request additional topographic data. Request and assemble existing data, primarily from local interests.

**Task E-2 - Attend meetings, field trips:**

Attend 2 one-day field trips and 4 half-day meetings.

**Task E-3 - Coordinate with Geotechnical, H&H, Environmental, Real Estate:**

Most of the effort under this task will be coordination with H&H who will provide design dimensions embankment and gate structures.

**Task E-4 - Layout Plates:**

Orientation and scale of topographic and cultural features will be determined. Includes cost associated with CADD use and maintenance.

**Task E-5 - Incorporate utilities:**

Utility information provided by local sponsor will be incorporated into drawings.

**Task E-6 - Apply templates of design to drawings:**

Templates will be modeled from hydraulic data in the Inroads computer program and run with a digital terrain model in Microstation. This will produce a project footprint along with other design information such as profiles, cross sections and quantities. Includes cost associated with CADD use and maintenance.

**Task E-7 - Mark up guide specs:**

Guide specs not covered by other disciplines such as soils, hydraulics, environmental or structures will be marked up by Design B. These usually include specs for general requirements and fencing.

**Task E-8 - Prepare text of DDR:**

The descriptions of each feature being designed and all assumptions and criteria used will be updated in the DDR.

**Task E-9 - Perform quantity takeoffs:**

Quantities developed from the takeoffs will be used by Cost Estimating to determine construction costs. Most of the quantities will be obtained from the Inroads computer program, others will be obtained through manual computations. All quantities will be summarized in spreadsheets. Includes cost associated with CADD use and maintenance.

**Task E-10 - Assemble 60% package:**

The DDR will be formatted to conform to the style established by the Technical Leader. The plans and specifications developed by Design Section B will be integrated with those developed by other disciplines into one package.

**Task E-11 - 60% ITR:**

An independent reviewer will be assigned to review the DDR and plans/specifications and enter comments into DrChecks. The Civil design reviewer may or may not be from Design Section B.

**Task E-12 - Respond to 60% ITR, sponsor review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task E-13 - Assemble 90% package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for distribution for backchecks and further reviews.

**Task E-14 - 90% ITR:**

The review team members will verify that their previous comments were incorporated and will review any additions or changes to the design. The Civil design reviewer may or may not be from Design Section B.

**Task E-15 - Respond to 90% ITR, sponsors review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task E-16 - Prepare final package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for project advertisement. Support will be provided to Contracting in their preparation of front end portion of the specifications. Reprographic expenses are for incidental charges associated with making hard copies for internal use such as check prints. Any hard copies reproduced for distribution to reviewers or others will be the responsibility of the technical leader.

**Task E-17 - Provide support during advertisement:**

Design Section B will help answer Contractor questions and make changes to the contract documents that result from contractor comments or other sources.

**Task E-18 - Prepare instructions to the field:**

These will be prepared prior to award of contract. Design Section B will provide the Technical Leader with information relating to Civil Design for inclusion into the overall report.

## **Structures**

**Assumptions:**

- (1) This estimate is based upon the design of four radial gates with dimension of 30 ft – width by 10 ft – height each.
- (2) The water elevation behind these gates is assumed to be 10 feet.

**Task E-1 Meetings**

Self-explanatory.

**Task E-2 Coordination**

Self-explanatory.

**Task E-3 DDR Preparation**

Preparation of documentation of analyses.

**Task E-4 DDR ITR**

Self-explanatory.

**Task E-5 Structural Design 60%**

Structural features will be designed according to the following or other relevant guidance. EM 1110-2-2702, Engineering and Design - Design of Spillway Tainter Gates; EM 1110-2-2104, Engineering and Design - Strength Design for Reinforced Concrete Hydraulic Structures; EM 1110-2-2400, Engineering and Design - Structural Design and Evaluation of Outlet Works; EM 1110-2-2105, Engineering and

Design - Design of Hydraulic Steel Structures. 60% Plans and specifications will be prepared under this item. Includes cost associated with CADD use and maintenance.

**Task E-6 Structural Design 90%**

Same, except that 90% plans and specifications will be prepared under this item. Includes cost associated with CADD use and maintenance. In addition, five days are added to support the cost estimate of the gates.

**Task E-7 60% Internal Technical Review**

Self-explanatory.

**Task E-8 90% Internal Technical Review**

Self-explanatory.

**Task E-9 Respond to ITR**

Self-explanatory.

**Cost Estimating**

Tasks E-1 to E-13 are the same descriptions as Tasks B-1 to B-13. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

**Real Estate**

Task E-1 to E-9 are the same descriptions as Tasks B-1 to B-9. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

**Environmental Resources**

Task E-1 - Environmental coordinator coordination: See B-2.

Task E-2 - Biologist NMFS Coordination: (same as Task A-3)

ERB to initiate and complete Section 7 consultation with the NMFS. Close coordination with the NMFS will be required including meetings and/or conference calls to provide information and clarification of project related issues and to assist in identifying/developing measures to minimize impacts to listed species.

Tasks E-3 and E-4 are the same descriptions as Tasks B-3 and B-4. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

**Cultural Resources**

Task E-1 - Cultural Resource Survey/SHPD Documentation:

This consists of a field survey/inventory of historic and prehistoric resources within the area of potential effects. The survey will be of areas not surveyed during the feasibility phase. SHPD documentation consists of the letters/memos/reports that will be produced to consult with the SHPD for this feature of the project.

## Public Affairs

### Task E-1 – Public Workshops for Robles Diversion Dam High Flow Bypass:

Public workshops will be held to address the various design and operation issues relating the Robles High Flow By Pass structure. Emphasis will be placed on operation of the bypass gates in concert with the operation of the Robles fish ladder and the Robles Diversion Canal. The Sponsor, Casitas Municipal Water District and the National Marine Fisheries Service will participate in these workshops.

## Feature F: Dam and Sediment Removal

The dam and sediment removal alternative is developed extensively in the Feasibility report. In summary, following the relocation of sensitive species and removal of Arundo (Giant Reed) and other non-native plants, the fine sediment deposited beneath the existing lake is slurried downstream to four disposal sites located in the vicinity and downstream of the Highway 150 Bridge. Water for the slurry operation will be imported from another site. The dam is removed concurrent with the sediment removal. A channel following the approximate pre-dam stream alignment and elevation, is excavated through the coarser upstream sediments; these sediments are stockpiled upstream of the dam as detailed in the feasibility report. The channel side slopes in the lower half of the reservoir basin would be lined with slope protection in those areas where stockpiled sediment contains a higher fines content. The intent of the slope protection will be to permit a metered rate of erosion. The downstream disposal sites will be revegetated using native plants. Those stockpile areas upstream of the dam will not be revegetated. The project design will include hiking and a multiple-use earthen recreation trail that follows the alignment of the slurry pipeline and access road.

### PPMD

See general DDR section.

### H&H

#### Task F-1 - Visit Site:

Perform field reconnaissance at Matilija Dam and Camino Cielo Bridge as needed to assess any changes with the geomorphology of area, main channel, and overbanks.

#### Task F-2 - Physical Model:

A physical model will be prepared to assist in evaluation of processes within the reservoir area of Matilija Dam. A 2-dimensional numerical model will be used if a physical model is not practical.

#### Task F-3 - Refine/Update Sediment Transport Models:

The sediment transport models will be updated to include latest survey information, feature locations, and physical model results.

#### Task F-4 - Update HecRAS Models:

Subsequent to the update of the sediment models, the HecRAS models will be updated to reflect the changes due to topographic changes, feature locations, and sediment transport results. Tables for revised hydraulic calculation results and graphs of flood profiles will be generated.

**Task F-5 - Temporary Stabilization Feature Design:**

Determine appropriate material, height, and length of revetments. Determine final water surface elevations and hydraulic design parameters for the temporary stabilization features within the reservoir area. This will be an iterative process working with the Civil Design Engineer.

**Task F-6 - Support Civil Design Effort:**

The H&H Project Engineer will provide H&H information as needed by Civil Design staff to assist in their design of the temporary stabilization features. Includes cost associated with CADD use and maintenance.

**Task F-7 - Risk and Uncertainty:**

Define the hydrologic and hydraulic risk and uncertainty at Matilija Dam with proposed features in place.

**Task F-8 - Flood Plain Mapping:**

The inundation area maps for the 10-, 50-, 100-, and 500-yr flood plains with the final high flow bypass in place will be prepared in GIS format and .pdf files will be generated.

**Task F-9 – Documentation:**

Prepare documentation for the Matilija Dam ER Matilija Dam Removal DDR in a Hydrology, Hydraulics, and Sedimentation Appendix to be included with the Main Report. The appendix will be comprehensive enough to allow the reader full understanding of the hydrologic, hydraulic, and sedimentation processes at Matilija Dam and the Camino Cielo Bridge locations with the Recommended Plan in place.

**Task F-10 - GIS Support:**

Convert all hydrologic, hydraulic, and sedimentation information into appropriate GIS layers compatible with ArcInfo/ArcView format. The information included in the GIS shall follow the SDS (Spatial Data Standard), as described by CADD/GIS Technology Center, Federal Government. Each separable element will be stored in the GIS as a separate theme. The themes shall be compatible with the ArcInfo/ArcView format. Metadata for all data is required.

**Task F-11 - Meetings, Conferences, Coordination:**

The H&H Project Engineer will meet at regular intervals with other members of the Project Delivery Team (PDT) to ensure the work effort is coordinated. The H&H Project Engineer will attend milestone review meetings. The H&H Project Engineer will meet with the PDT to discuss and present the model setup, application, and results.

**Task F-12 – Review:**

The H&H ITR Engineer will review all submittals and provide written comments. The H&H ITR Engineer will backcheck all responses to comments to ensure comments have been addressed adequately.

**Geotechnical**

**Assumptions:**

- (1) The contractor will design his water supply and slurry system.
- (2) The dikes surrounding the disposal areas, if any, will be not be subject to California DSOD authority and that the contractor will design his own system in compliance with general criteria provided in the specifications.
- (3) The California DSOD will not require detailed modeling of the dam structure to be removed.

- (4) No additional field investigations, sampling and testing (including HTRW) will be required. This may be dependant upon the amount of sediment deposited or the required height of the stockpile in the reservoir area.

Task F-1 - Technical Management:

Same as described in B-1.

Task F-2 - DSOD Coordination:

Technical manager and District Dam Safety Coordinator will coordinate with California Division of Safety of Dams.

Task F-3: Null.

Task F-4 - Data review:

Engineer evaluates available data and selects parameters. Also includes incorporating existing logs into USACE format .

Task F-5 – Analyses:

Engineer conducts required analyses, including viability of using slope protection means other than soil cement.

Task F-6 - Geology Support:

Provides design support for design final abutment treatment. Address rock slope stability. Summarize in report.

Task F-7 - Report preparation:

Report summarizes, documents findings.

Tasks F-8 and F-9 - Independent Technical Review and Response to ITR:

Self-explanatory.

Task F-10: Null.

Task F-11 - Geology Tasks:

Attend meetings, prepare/review slope protection spec, respond to ITR comments.

Task F-12 - Materials Tasks:

Attend meetings, prepare/review concrete related specs, respond to ITR comments.

Task F-13 - Soils Tasks:

Attend meetings, prepare/review earthwork specs, respond to ITR comments.

Task F-14 - Independent Technical Review:

Self-explanatory. At the 60%, 90%, and 100% the total Geotechnical Branch will require 4, 8, and 4 days, respectively.

## **Landscaping**

### Task F-1 - Esthetic Treatment and Erosion Control Plans and Specifications:

The Landscape Architect will prepare DDR, and Final Landscape Design Material consisting of contract drawings, specifications, and quantity take-offs for the project. Includes cost associated with CADD use and maintenance.

### Task F-2 - Site Visits/Coordination:

The Landscape Architect will conduct 3 site visits/field investigations to verify existing conditions. This shall be accomplished by field inspections, discussion with appropriate personnel, and by checking previous work and as-built drawings, if applicable.

### Task F-3 - Review Recreation Plan (ED-DA - Luzano):

The Landscape Architect will review and provide recreation comments using the USACE Dr. Check's system for recording review comments.

### Task F-4 - ITR Meetings-Comment Responses:

The Landscape Architect will attend all ITR meetings and be responsible for responding to landscape comments.

## **Design**

### Task F-1 - Preliminary Design Work:

Request and assemble existing data, primarily from local interests. Assess topographic coverage; existing topo coverage of 2' contour interval likely adequate if existing development not impacted by design.

### Task F-2 - Attend meetings, field trips:

Attend 4 one-day field trips and 8 half-day meetings

### Task F-3 - Coordinate with Geotechnical, H&H, Environmental, Real Estate:

Most of the effort under this task will be coordination with H&H who will provide design dimensions channels and slope protection.

### Task F-4 - Layout Plates:

Orientation and scale of topographic and cultural features will be determined.

### Task F-5 - Incorporate utilities:

Utility information provided by local sponsor will be incorporated into drawings. Includes cost associated with CADD use and maintenance.

### Task F-6 - Apply templates of design to drawings:

Templates will be modeled from hydraulic data in the Inroads computer program and run with a digital terrain model in Microstation. Effort will include location of slurry and freshwater pipelines. This will produce a project footprint along with other design information such as profiles, cross sections and quantities. Includes cost associated with CADD use and maintenance.

**Task F-7 - Mark up guide specs:**

Guide specs not covered by other disciplines such as soils, hydraulics, environmental or structures will be marked up by Design B. These usually include specs for general requirements and fencing.

**Task F-8 - Prepare text of DDR:**

The descriptions of each feature being designed and all assumptions and criteria used will be updated in the DDR.

**Task F-9 - Perform quantity takeoffs:**

Quantities developed from the takeoffs will be used by Cost Estimating to determine construction costs. Most of the quantities will be obtained from the Inroads computer program, others will be obtained through manual computations. All quantities will be summarized in spreadsheets. Includes cost associated with CADD use and maintenance.

**Task F-10 - Assemble 60% package:**

The DDR will be formatted to conform to the style established by the Technical Leader. The plans and specifications developed by Design Section B will be integrated with those developed by other disciplines into one package.

**Task F-11 - 60% ITR:**

An independent reviewer will be assigned to review the DDR and plans/specifications and enter comments into DrChecks. The Civil design reviewer may or may not be from Design Section B.

**Task F-12 - Respond to 60% ITR, sponsor review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task F-13 - Assemble 90% package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for distribution for backchecks and further reviews.

**Task F-14 - 90% ITR:**

The review team members will verify that their previous comments were incorporated and will review any additions or changes to the design. The Civil design reviewer may or may not be from Design Section B.

**Task F-15 - Respond to 90% ITR, sponsors review, BCOE review, make changes:**

Design team members will respond to ITR comments in DrChecks and in the appropriate format for the sponsor and BCOE reviews if DrChecks is not used. Any required changes to the design documents will be made. Design team members will coordinate with reviewers to resolve any conflicts.

**Task F-16 - Prepare final package:**

Design documents will be updated to incorporate changes from other disciplines and assembled for project advertisement. Support will be provided to Contracting in their preparation of front end portion of the specifications. Reprographic expenses are for incidental charges associated with making hard copies for internal use such as check prints. Any hard copies reproduced for distribution to reviewers or others will be the responsibility of the technical leader.

**Task F-17 - Provide support during advertisement:**

Design Section B will help answer Contractor questions and make changes to the contract documents that result from contractor comments or other sources. Design Section B will provide technical support in evaluation of Contractor's proposals to remove dam and design of slurry line.

**Task F-18 - Prepare instructions to the field:**

These will be prepared prior to award of contract. Design Section B will provide the Technical Leader with information relating to Civil Design for inclusion into the overall report.

**Structures**

**Task F-1 Meetings**

Self-explanatory.

**Task F-2 Coordination**

Self-explanatory.

**Task F-3 Structural assessment of limitations on dam removal**

Assumptions:

- (1) Reservoir area material slurried downstream, over a nine-month period.
- (2) demolition will be concurrent with the slurry process.
- (3) structure removed flush to the canyon walls.
- (4) dam removal utilized controlled blasting in approximately 15-foot vertical increments.

These tasks will be performed by an A/E under the supervision of the project structural engineer. The A/E will:

- (1) Conduct analyses appropriate to develop a sequence of structural demolition, in accordance with the assumed removal scenario, such that the likelihood of structure failure or an uncontrolled release will not exceed what it was prior to commencement of demolition.
- (2) Document the analyses and the recommended removal scenario. The report will detail which scenarios are clearly unacceptable and why and which scenarios may be acceptable but would require further analyses should they be proposed by the contractor. A brief description of these analyses is to be included.
- (3) Respond to comments from independent technical reviewers, including the State of California Department of Water Resources Division of Safety of Dams.

**Task F-4 Structural design of miscellaneous structures**

Conduct structural analyses, document in DDR, prepare plans and specifications. Possible structures include side drains and wing walls. Includes cost associated with CADD use and maintenance.

**Task F-5 60% Internal Technical Review**

Self-explanatory; Includes review of DDR.

**Task F-6 90% Internal Technical Review**

Self-explanatory.

**Task F-7 Respond to ITR**

Self-explanatory.

## **Cost Estimating**

Tasks F-1 to F-13 are the same descriptions as Tasks B-1 to B-13. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

## **Real Estate**

Tasks F-1 to F-9 are the same descriptions as Tasks B-1 to B-9. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

## **Environmental Resources**

Tasks F-1 to F-4 are the same descriptions as Tasks B-1 to B-4. The only difference is the estimated duration of the tasks. Refer to the summary cost tables to see the estimated durations for each task.

Tasks F-5 and F-6 are the same descriptions as Tasks A-6 and A-7. The only difference is the estimated duration of the tasks.

## **Cultural Resources**

### Task F-1- NRHP Evaluation of Historic/Prehistoric Sites/SHPO Documentation:

This consists of National Register of Historic Places (NRHP) evaluation and test excavation of the historic/prehistoric sites behind Matilija Dam. It will also provide accurate boundaries for the purposes of avoidance. SHPO documentation consists of the letters/memos/reports that will be produced to consult with the SHPO for this feature of the project.

### Task F-2 - Matilija Hot Springs Historic Architectural Evaluation:

This consists of a NRHP evaluation of structures at the Matilija Hot Springs site by a qualified architectural historian. This information will be used for avoidance and mitigation measure development.

### Task F-3 - Native American Coordination:

This coordination will be our required consultations with Federally Recognized Tribes and other groups. The purpose of this coordination is to solicit their concerns with Tribal resources that may be affected by the project.

## **Recreation**

### Task F-1 – Environmental Assessment:

An Environmental Assessment will document the existing environmental conditions of the project area, including project description, project alternatives, affected environment, environmental consequences, environmental concerns and recommendations and compliance with environmental statutes.

### Task F-2 – Site Visits:

Site visits are pertinent to understanding the natural landscape and opportunities that may exist to create a successful and dynamic recreation plan. Photo documentation and written descriptions of the area will occur during site visits.

**Task F-3 - Meetings:**

Meetings with local sponsors will promote necessary communication of recreation needs and encourage compromise when designing the recreation alternatives.

**Task F-4 – Inventory of Existing Recreation Facilities:**

An inventory of existing recreation facilities in the area will determine the need for additional recreational features. This information is necessary to design a recreation plan that connects existing recreational amenities in the region.

**Task F-5 – Recreation Report:**

A recreation report will provide detailed information regarding recreation alternatives, descriptions of trail systems, recreational features and structures, need for the recreation, and potential connectivity to existing recreation in the area.

**Task F-6 – Specifications:**

Specifications and details of the features will provide design descriptions and illustrations of specific recreation elements such as interpretive media, rest stops, structures etc.

**Task F-7 - Landscape Planting Plate:**

A landscape planting plate will map the specific plants, location of planting and planting details.

**Task F-8 – Trail Design Plate:**

A trail design plate will map the trail system and recreation features to provide a visual understanding of the recreation plan.

**Task F-9 – Preliminary Costs:**

A preliminary cost estimate will be provided to the cost estimate engineer for processing into MCACES for a final cost estimate.

**Public Affairs**

**Task F-1 – Public Workshops for Dam and Sediment Removal:**

A series of public workshops will be held for the design and construction activities related to the slurry and water supply pipelines, slurry disposal sites, dam removal, sediment storage sites, arundo removal and management and the recreation trails. Conceptual plans will be presented for these features as they are developed and reviewed for discussion of aesthetic, noise, traffic, environmental and other related impacts.

**Table 6-1 PED Phase (PMP) Cost Summary**

<b>DDR #</b>	<b>Project Delivery Team Work Group</b>	<b>Total Labor</b>	<b>Non-Labor e.g. Travel</b>	<b>Totals (Rounded)</b>
A	<b>General DDR</b>			
	PPMD	\$805,500	\$0	\$806,000
	H&H	\$198,030	\$500	\$199,000
	Geotechnical	\$103,500	\$25,000	\$129,000
	Survey	\$13,800	\$98,000	\$112,000
	Landscaping	\$0	\$0	\$0
	Design B	\$40,850	\$1,730	\$43,000
	Structures	\$0	\$0	\$0
	Cost Estimating	\$6,250	\$0	\$6,000
	Real Estate	\$49,450	\$0	\$49,000
	Environmental Resources	\$418,750	\$190,000	\$609,000
	Cultural Resources	\$71,250	\$44,500	\$116,000
	Recreation	\$0	\$0	\$0
	Plan Formulation	\$324,000	\$0	\$324,000
	Economics	\$111,550	\$0	\$112,000
	Value Engineering Study	\$13,750	\$75,000	\$89,000
	Public Affairs	\$339,250	\$42,000	\$381,000
	Sponsor Coordination			\$148,750
	<b><i>Subtotal</i></b>	<b><i>\$2,495,930</i></b>	<b><i>\$476,730</i></b>	<b><i>\$3,123,750</i></b>
B	<b>Foster Park Wells DDR, Plans and Specs</b>			
	PPMD	\$0	\$0	\$0
	H&H	\$51,660	\$200	\$52,000
	Geotechnical	\$65,550	\$100,000	\$166,000
	Survey	\$0	\$0	\$0
	Landscaping	\$0	\$0	\$0
	Design B	\$8,600	\$0	\$9,000
	Structures	\$3,750	\$0	\$4,000
	Cost Estimating	\$43,750	\$0	\$44,000
	Real Estate	\$13,975	\$0	\$14,000
	Environmental Resources	\$35,000	\$6,500	\$42,000
	Cultural Resources	\$15,000	\$300	\$15,000
	Recreation	\$0	\$0	\$0
	Plan Formulation	\$0	\$0	\$0
	Economics	\$0	\$0	\$0
	Public Affairs	\$3,450	\$0	\$3,000
	Sponsor Coordination			\$17,450
	<b><i>Subtotal</i></b>	<b><i>\$240,735</i></b>	<b><i>\$107,000</i></b>	<b><i>\$366,450</i></b>

<b>DDR #</b>	<b>Project Delivery Team Work Group</b>	<b>Total Labor</b>	<b>Non-Labor e.g. Travel</b>	<b>Totals (Rounded)</b>
C	<b>Levees/Floodwalls for Meiners Oaks, Live Oak, Casitas Springs DDR, Plans and Specs (3 set of P&amp;S?)</b>			
	PPMD	\$0	\$0	\$0
	H&H	\$93,480	\$600	\$94,000
	Geotechnical	\$119,945	\$1,200	\$121,000
	Survey	\$0	\$0	\$0
	Landscaping	\$47,500	\$360	\$48,000
	Design B	\$150,500	\$6,005	\$157,000
	Structures	\$72,500	\$1,200	\$74,000
	Cost Estimating	\$50,000	\$0	\$50,000
	Real Estate	\$33,325	\$0	\$33,000
	Environmental Resources	\$26,250	\$13,000	\$39,000
	Cultural Resources	\$37,500	\$800	\$38,000
	Recreation	\$0	\$0	\$0
	Plan Formulation	\$0	\$0	\$0
	Economics	\$0	\$0	\$0
	Public Affairs	\$23,000	\$2,000	\$25,000
	Sponsor Coordination			\$33,950
	<b><i>Subtotal</i></b>	<b><i>\$654,000</i></b>	<b><i>\$25,165</i></b>	<b><i>\$712,950</i></b>
D	<b>Santa Ana and Camino Cielo Bridge Modifications DDR, Plans and Specs</b>			
	PPMD	\$0	\$0	\$0
	H&H	\$95,940	\$0	\$96,000
	Geotechnical	\$11,500	\$0	\$12,000
	Survey	\$0	\$0	\$0
	Landscaping	\$0	\$0	\$0
	Design B	\$0	\$0	\$0
	Structures	\$0	\$0	\$0
	Cost Estimating	\$0	\$0	\$0
	Real Estate	\$40,850	\$0	\$41,000
	Environmental Resources	\$22,500	\$6,500	\$29,000
	Cultural Resources	\$12,500	\$300	\$13,000
	Recreation	\$0	\$0	\$0
	Plan Formulation	\$0	\$0	\$0
	Economics	\$0	\$0	\$0
	Public Affairs	\$11,500	\$2,000	\$14,000
	Sponsor Coordination			\$10,250
	<b><i>Subtotal</i></b>	<b><i>\$194,790</i></b>	<b><i>\$8,800</i></b>	<b><i>\$215,250</i></b>

<b>DDR #</b>	<b>Project Delivery Team Work Group</b>	<b>Total Labor</b>	<b>Non-Labor e.g. Travel</b>	<b>Totals (Rounded)</b>
E	<b>Robles Diversion Dam High Flow Bypass DDR, Plans and Specs</b>			
	PPMD	\$0	\$0	\$0
	H&H	\$147,600	\$350,600	\$498,000
	Geotechnical	\$152,950	\$155,600	\$309,000
	Survey	\$5,750	\$50,000	\$56,000
	Landscaping	\$0	\$0	\$0
	Design B	\$155,875	\$5,990	\$162,000
	Structures	\$230,000	\$3,750	\$234,000
	Cost Estimating	\$67,500	\$0	\$68,000
	Real Estate	\$24,725	\$0	\$25,000
	Environmental Resources	\$10,000	\$6,500	\$17,000
	Cultural Resources	\$7,500	\$200	\$8,000
	Recreation	\$0	\$0	\$0
	Plan Formulation	\$0	\$0	\$0
	Economics	\$0	\$0	\$0
	Public Affairs	\$17,250	\$5,000	\$22,000
	Sponsor Coordination			\$69,950
	<i><b>Subtotal</b></i>	<b>\$819,150</b>	<b>\$577,640</b>	<b>\$1,468,950</b>
F	<b>Dam and sediment removal DDR, Plans and Specs</b>			
	PPMD	\$0	\$0	\$0
	H&H	\$132,840	\$351,000	\$484,000
	Geotechnical	\$361,100	\$0	\$361,000
	Survey	\$0	\$0	\$0
	Landscaping	\$51,250	\$360	\$52,000
	Design B	\$206,400	\$10,000	\$216,000
	Structures	\$60,000	\$60,300	\$120,000
	Cost Estimating	\$95,000	\$0	\$95,000
	Real Estate	\$36,550	\$0	\$37,000
	Environmental Resources	\$68,750	\$32,500	\$101,000
	Cultural Resources	\$62,500	\$258,000	\$321,000
	Recreation	\$100,050	\$0	\$100,000
	Plan Formulation	\$0	\$0	\$0
	Economics	\$0	\$0	\$0
	Public Affairs	\$57,500	\$10,000	\$68,000
	Sponsor Coordination			\$97,750
	<i><b>Subtotal</b></i>	<b>\$1,231,940</b>	<b>\$722,160</b>	<b>\$2,052,750</b>
	<i><b>Totals</b></i>	<b>\$5,636,545</b>	<b>\$1,917,495</b>	<b>\$7,940,100</b>
	<i><b>Rounded Total</b></i>	<b>\$6,000,000</b>	<b>\$2,000,000</b>	<b>\$8,000,000</b>

## **VI. QUALITY CONTROL PLAN**

The District Quality Management Control Plan follows the South Pacific Division, Corps of Engineers guidance in accordance with CESPD ER 1110-1-8, "Quality Management Plan (QMP)," dated 20 September 2004. The subsequent paragraphs summarize the procedures to be adhered to:

1. The District will develop and implement quality management practices, including Quality Assurance (QA) and Quality Control (QC), to ensure that technical products meet the agreed-upon requirements of the customer and appropriate laws, policies, and technical criteria, on schedule and within budget. Quality is defined as the precision with which the project objectives, benefits, and critical success factors are realized.
2. A Quality Control Plan (QCP) will be prepared for every product or service, whether obtained using in-house or contractor forces, updated as warranted, and reviewed annually. Contract forces may include other Corps of Engineers offices, other government agencies, and private industry sources. The QCP will include, at a minimum, the items listed in paragraph 6.a. of CECW-A EC 1165-2-203, "Technical Policy Compliance Review," as summarized below:

Discussion of selected independent technical review options that identify the review team members, qualifications, and the rationale for selection.

Schedule in-progress technical and/or policy review.

Description of the process for documenting decision, issues, and issue resolution.

Discussion of methods to use to resolve significant technical and other policy issues.

Discussion of lessons learned and the process to be used.

Legal review of all decision documents (except reconnaissance level reports and project study plans) and associated NEPA compliance documents by District or Operating Division counsel.

3. A single QCP will be developed which encompasses the Planning, Engineering, Real Estate, Construction-Operations, and Programs and Project Management aspects of a particular product or service. The functional element responsible for the technical product will develop the QCP for that product with input from all the other functional elements involved in the development of the product.
4. Independent Technical Review: Key to the successful execution of the quality control process for the products developed by the Planning, Engineering, and Real Estate Divisions and their contractors as well as certain products of Construction-Operations and Programs and Project Management Division is the independent technical review of a product. This review will be accomplished by an Independent Technical Review Team (ITRT) composed of individuals having expertise in and representing all disciplines involved in the type of product being developed and reviewed, who have a minimum of five years experience in the discipline and who were not involved in product development or supervision thereof. The sponsor representative and function chief(s) of the technical disciplines involved in product development will nominate review team members. In addition, independent technical review of a supervisor's work by a subordinate may not be advisable and any proposal for such must be highlighted

in the product QCP. The project sponsor will be allowed representation and participation in the Quality reviews by the ITRT.

5. Sub-products will be technically reviewed before they are integrated into the overall product. To insure this, product development team members will consult with their Independent Technical Review Team (ITRT) counterparts at appropriate points throughout the development efforts to discuss major assumptions and functional decisions, analytical approaches, and significant calculations to preclude significant comments from occurring during the final independent technical review, which could adversely impact project schedules and costs.
6. Issues involving technical and policy interpretation will be brought to the attention of the chief of the responsible functional element for resolution. In some cases, the chief of the responsible functional element may request that CESPD hold an Issue Resolution Conference (IRC) to resolve major policy or technical issues. CESPD may arrange for HQUSACE and sponsor participation in the issue resolution conference.
7. Development and execution of a QCP for products developed by a contractor, including architect-engineer (A/E) firms, other Corps Field Operating Activities, and other agencies, will be the responsibility of the contractor. The QCP for the contractor product will be reviewed and approved by the District. In order to maintain contractor responsibility, the contractor will be responsible for QC of his own work. The District may perform independent technical review of the contractor's work only for special cases when special expertise is required.
8. Final Documentation and QC Certification: Proper documentation is another key component of an effective quality control process. Significant comments, issues, and decisions must be recorded, and the entire process must leave a clear audit trail. The documentation and certification of the independent technical review and other quality control activities, and where appropriate the District's quality assurance processes prescribed in a product's QCP, will be made part of the project file and will be included with the submission of a specific product to CESPD.
9. Quality Control Plans, product specific, generic and programmatic, will be reviewed annually and updated as warranted. QCPs will be updated whenever significant changes require modification of the QCP. Upon identification of a needed change, the revised QCP will be submitted to the responsible function chief for review and approval within 30 days.

## **VII. APPENDICES**

### **Abbreviations**

ACO	Administrative Contracting Officer
ASA(CW)	Assistant Secretary to the Army (Civil Works)
A/E	Architect-Engineer
B/C	Benefits/Cost
BCOE	Bidability, Constructability, Operability and Environmental (Compliance)
CECW-L	Corps of Engineers Civil Works-Washington D.C.
CEFMS	Corps of Engineers Financial Management System
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensations and Liability Act
CESPD	Civil Engineering South Pacific Division
CESPL	Los Angeles District, Corps of Engineers
CPN	Critical Path Network
CW	Civil Works
CY	Cubic Yards
EA	Environmental Assessment
EBS	Electronic Bid Sets
EDC	Engineering During Construction
ER	Engineering Regulation
ERB	Engineering Review Board
FDM	Feature Design Memoranda
FIP	Federal Information Processing
FOIA	Freedom of Information Act
GDM	General Design Memorandum
GE	Government Estimate
HABS	Historic America Building Survey
HQUSACE	Headquarters, U.S. Army Corps of Engineers
HTRW	Hazardous, Toxic and Radioactive Waste
IRC	Independent Review Committee
ITRT	Independent Technical Review Team
LAD	Los Angeles District
LERRDS	Lands, Easements, Rights-of-Way, Relocations, Disposal
MCY	Million Cubic Yards
MOA	Memorandum of Agreement
NAS	Network Analysis System
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOP	Notice of Preparation
NRHP	National Register of Historic Place
OASA (CW)	Office of the Assistant Secretary of the Army (Civil Works)
OBS	Organizational Breakdown Structure

OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
P.L.	Public Law
PCA	Project Cooperation Agreement
PD	Planning Division
PDR	Pre-Design Report
PED	Pre-Construction, Engineering, and Design
PGL	Policy Guidance Letter
PMP	Project Management Plan
PPMD	Program and Project Management Division
PRB	Project Review Board
PS	Plans and Specifications
QA	Quality Assurance
QC	Quality Control
QCP	Quality Control Plan
QMP	Quality Management Plan
RAM	Responsibility Assignment Matrix
RAP	Resource Allocation Plan
RMO	Resource Management Office
SEIR	Supplemental Environmental Impact Report
SEIS	Supplemental Environmental Impact Statement
USCOE	United States Corps of Engineers
USFWS	United States Fish and Wildlife Service
VCWPD	Ventura County Watershed Protection District
WBS	Work Breakdown Structure
WRLC	Washington Level Review Center
WRDA	Water Resources Development Act

## **TABLE OF AUTHORITIES**

### Regulations

CECW Regulation No. 5-1-11 entitled “Program and Project Management,” dated 27 February 1998.....i	
CESPD ER 1110-1-8, “Quality Management Plan (QMP),” dated 14 December 1998..... V—1	
ER 1165-2-131, entitled “Local Cooperation Agreements for New Start Construction Projects,” dated 15 April 19891 .....I—4	
Engineer Circulars (CECW ER)	
EC 1105-2-206, entitled XX dated XX .....	VI—11
EC 1105-2-208 entitled XX, dated XX .....	VI—11
EC 5-1-48, entitled XX dated 24 April 1992 .....	VI—11