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

REPLY TO
ATTENTION OF

10-Dec 2012

CESPD-PDS-P

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PM-C. Ms. Raina Fulton

Subject: Prado Basin, Corona, CA, Feasibility Report, Review Plan Approval

1. The Prado Basin, Corona, CA, Feasibility Report, Los Angeles District, Review Plan that is enclosed is in accordance with Engineering Circular (EC) 1165-2-214, Review of Decision Documents, dated 15 Dec 2012. The South Pacific Division, Planning and Policy Division, Regional Business Technical Division, and Los Angeles District Support Team have reviewed the Review Plan that has been submitted. The South Pacific Division approves the Prado Basin, Corona, CA, Feasibility Report, Review Plan.

2. With MSC approval the Review Plan will be made available for public comment via the internet and the comments received will be incorporated into future revisions of the Review Plans. The Review Plan includes independent external peer review.

3. I hereby approve the Review Plan which is subject to change as study circumstances require. This is consistent with study development under the Project Management Business Process. Subsequent revisions to the Review Plan after public comment or during project execution will require new written approval from this office.

4. Point of contact for this action is Kurt Keilman, CESPD-PDS-P, 415-503-6596, Kurt.Keilman@usace.army.mil.

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

MICHAEL C. WEHR
BG, EN
Commanding

Encl
Review Plan

REVIEW PLAN
PRADO BASIN CORONA, CA
FEASIBILITY REPORT

LOS ANGELES DISTRICT

MSC Approval Date: 18 December 2012
Last Revision Date: N/A

US Army Corps
of Engineers ®

ENLL

REVIEW PLAN
PRADO BASIN, CORONA, CA
FEASIBILITY REPORT

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Prado Basin, Corona, California Feasibility Report and Environmental Impact Statement/Record of Decision (EIS/ROD). It is an integral part of the Project Management Plan (PMP).

b. **References**

(1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) Prado Basin Ecosystem Restoration Study PMP and Federal Cost Share Agreement (FCSA)
(6) South Pacific Division Quality Management Plan (CESPD R) 1110-1-8, 30 Dec

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

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is the Water Management and Reallocation Studies (WMRS) PCX.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. Because the study is multi-purpose, the WMRS PCX will coordinate with the Ecosystem Restoration PCX to ensure that review teams with appropriate expertise are assembled. The PCX will ensure that appropriate coordination is made with the RMC for dam safety evaluations.

3. STUDY INFORMATION

a. **Decision Document.** The authorized name of the study is Prado Basin, CA Study. The project is located in Prado Basin, Corona, California. The decision document will be an integrated Feasibility Report and EIS/ROD addressing the multiple purposes of ecosystem restoration and water conservation within and downstream of Prado Basin. The level of approval required will be the Chief of Engineers, and the study will require Congressional authorization. An EIS will be prepared to

satisfy the National Environmental Policy Act (NEPA) and an EIR will be prepared to address the requirements of the California Environmental Quality Act (CEQA). The EIS/EIR will be integrated into the Feasibility Report, thus resulting in a single document. This document will result in a ROD.

b. Study/Project Description.

Study Authorization:

(1) Ecosystem Restoration Authority: The authority to study the feasibility of Ecosystem Restoration is provided by the Flood Control Act of 1938, in accordance with the study resolution adopted by the Committee on Public Works, House of Representatives, adopted May 8, 1964, authorizing the study of the Santa Ana River Basin and Orange County Streams (SARBOC), California.

(2) Water Conservation Authority: The authority to study the feasibility of Water Supply and Conservation Storage at Prado Dam is provided by the Resolution of the Committee on Public Works of the House of Representatives dated May 8, 1964.

> "Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors is hereby requested to review the reports on (a) San Gabriel River and Tributaries, published as House Document No. 838, 76th Congress, 3rd Session; (b) Santa Ana River and Tributaries, published as House Document No. 135, 81st Congress, 1st Session; and (c) the project authorized by the Flood Control Act of 1936 for the protection of the metropolitan area in Orange County, with a view to determining the advisability of modification of the authorized projects in the interest of flood control and related purposes."

Further, the USACE conducted a "Prado Basin Water Supply Reconnaissance Report" in July 1996, which was initiated in response to a request by the Orange County Water District (OCWD) and to HR 101-96, June 20, 1989, the latter of which states:

> "Santa Ana River Project, California—The Committee continues to support conservation and recreation along the Santa Ana River."

Project Location and Description:

Prado Basin is located within the Santa Ana River watershed. The Santa Ana River drainage area above Prado Dam encompasses about 2,255 square miles, making it the largest watershed in southern California. The study area is approximately 50 square miles within which all storm water and groundwater flows drain into the Prado Basin plus 30 miles of downstream river channel. Four major watercourses drain into Prado Basin: Chino Creek, Mill Creek, Santa Ana River, and Temescal Creek. Chino Creek channel drains the western boundary of the study watershed area. Cucamonga and Day Creeks are concrete lined channels traversing the center of the study area and merging to form Mill Creek before entering the Prado Basin, the Santa Ana River is the main watercourse entering the Basin from the northeast, and Temescal Creek enters near the southern boundary of the Basin (Figure 1). The study area extends downstream of the Prado Dam along the Santa Ana River for approximately 30 miles to the Pacific Ocean. The study area lies within the 44th

Congressional District, currently represented by Congressman Ken Calvert, the 43rd Congressional District currently represented by Congressman Joe Baca, the 40th Congressional District currently represented by Congressman Ed Royce, the 42nd Congressional District currently represented by Congressman Gary Miller, the 46th Congressional District currently represented by Congressman Dana Rohrabacher, the 47th Congressional District currently represented by Congressman Loretta Sanchez, and the 48th Congressional District currently represented by Congressman John Campbell. Local jurisdictions in the study area include Riverside, San Bernardino and Orange Counties, as well as the Cities of Corona and Chino.

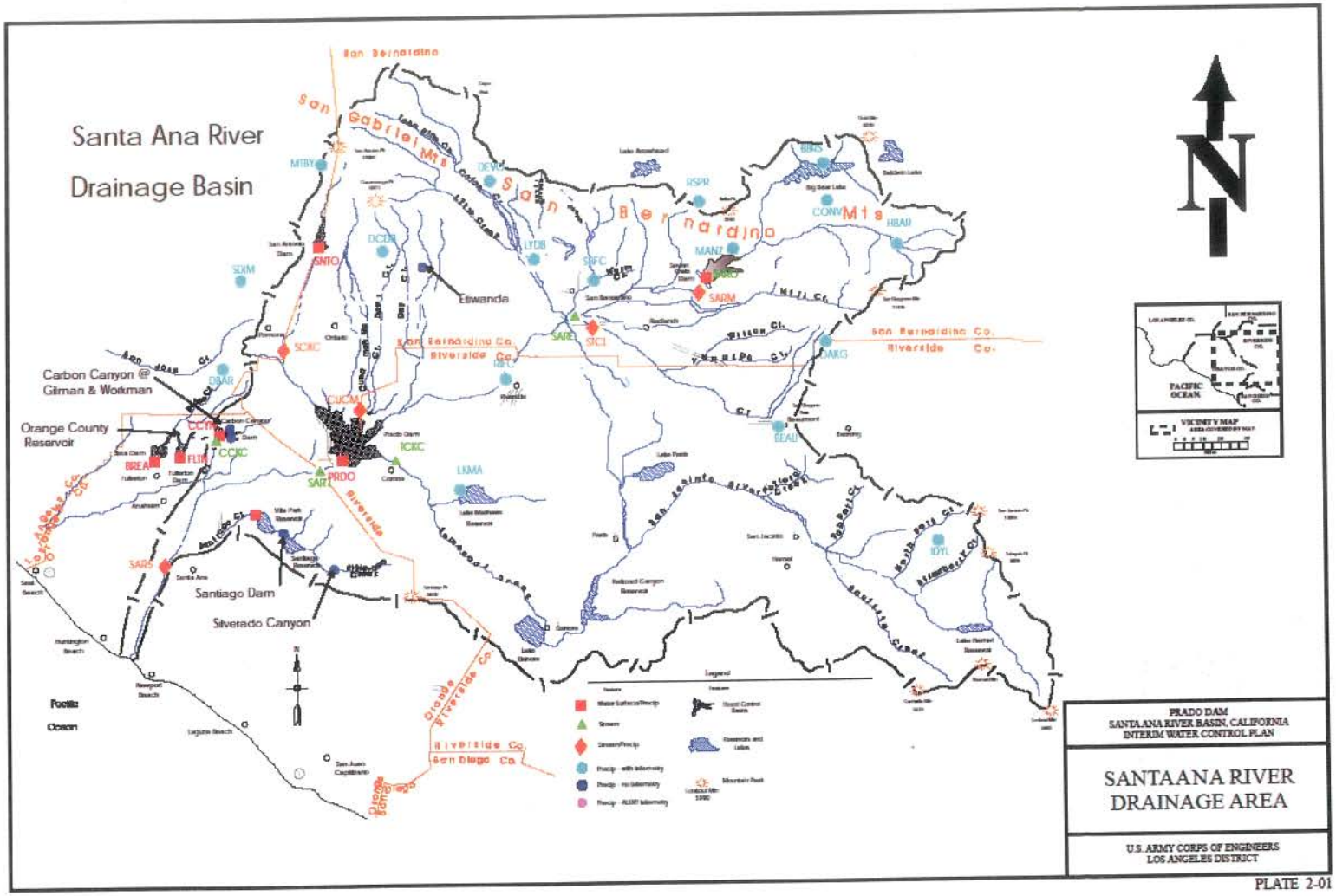

FIGURE 1 – SANTA ANA RIVER DRAINAGE AREA MAP

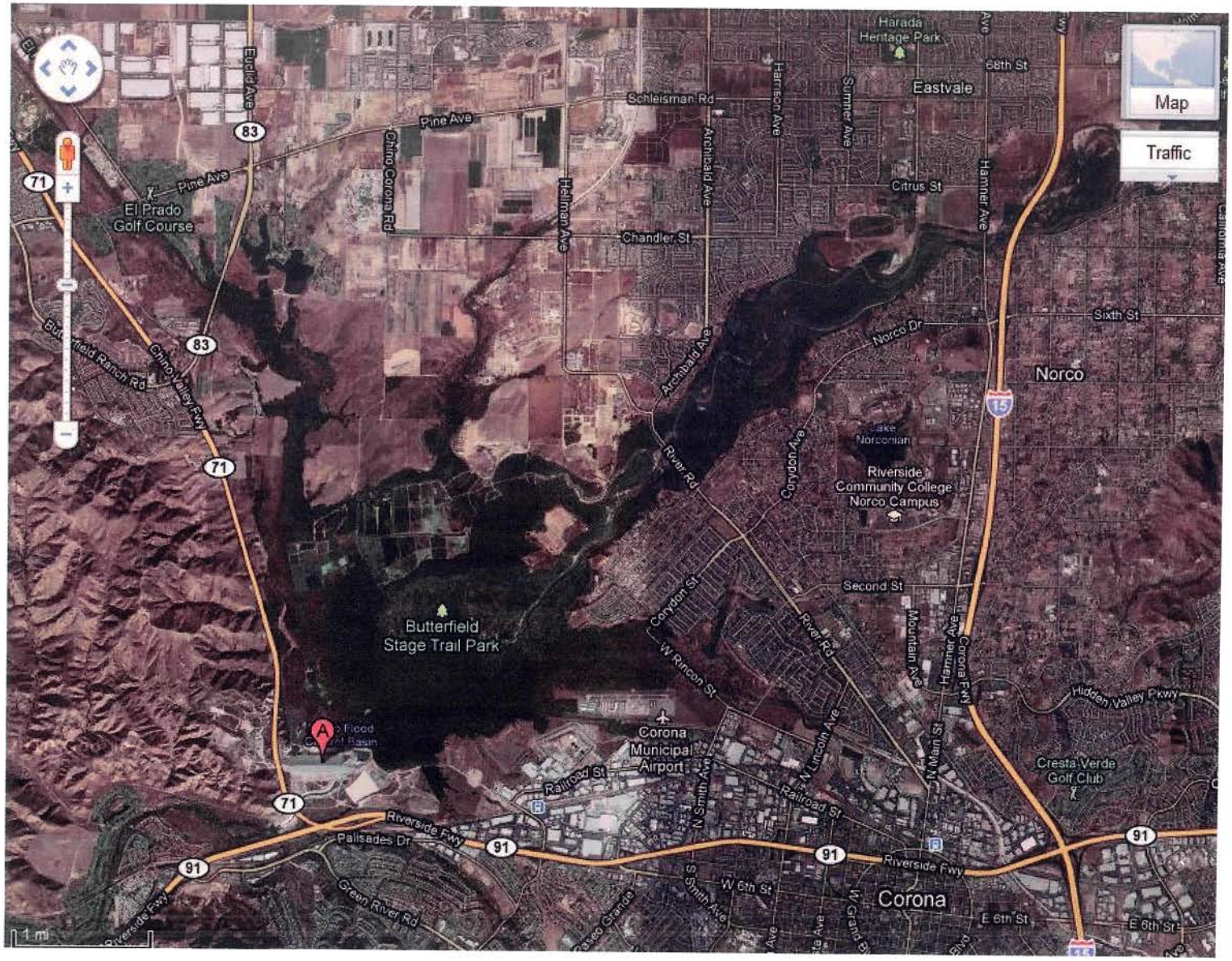

FIGURE 2 – REGIONAL MAP

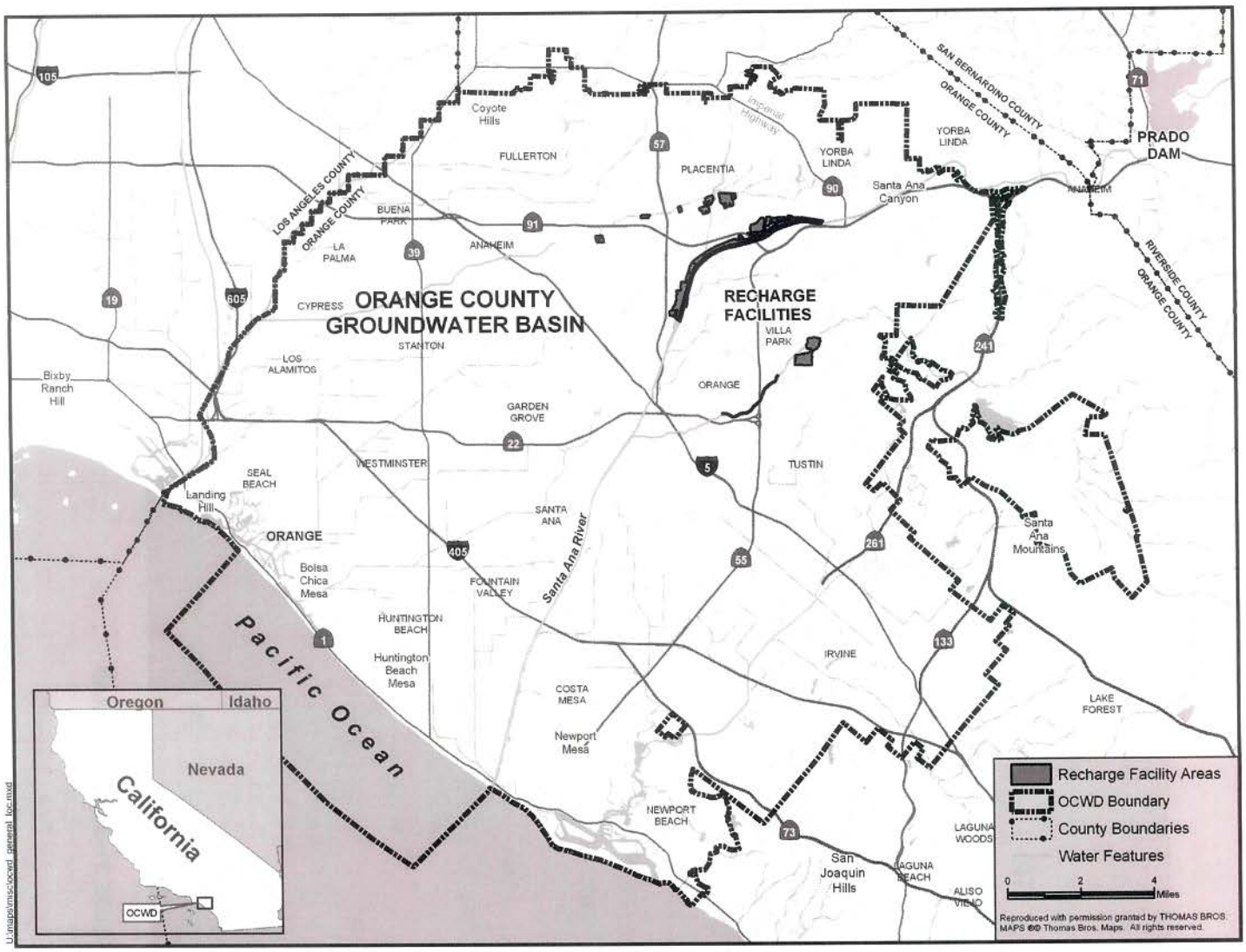

FIGURE 3 – NON-FEDERAL SPONSOR MAP

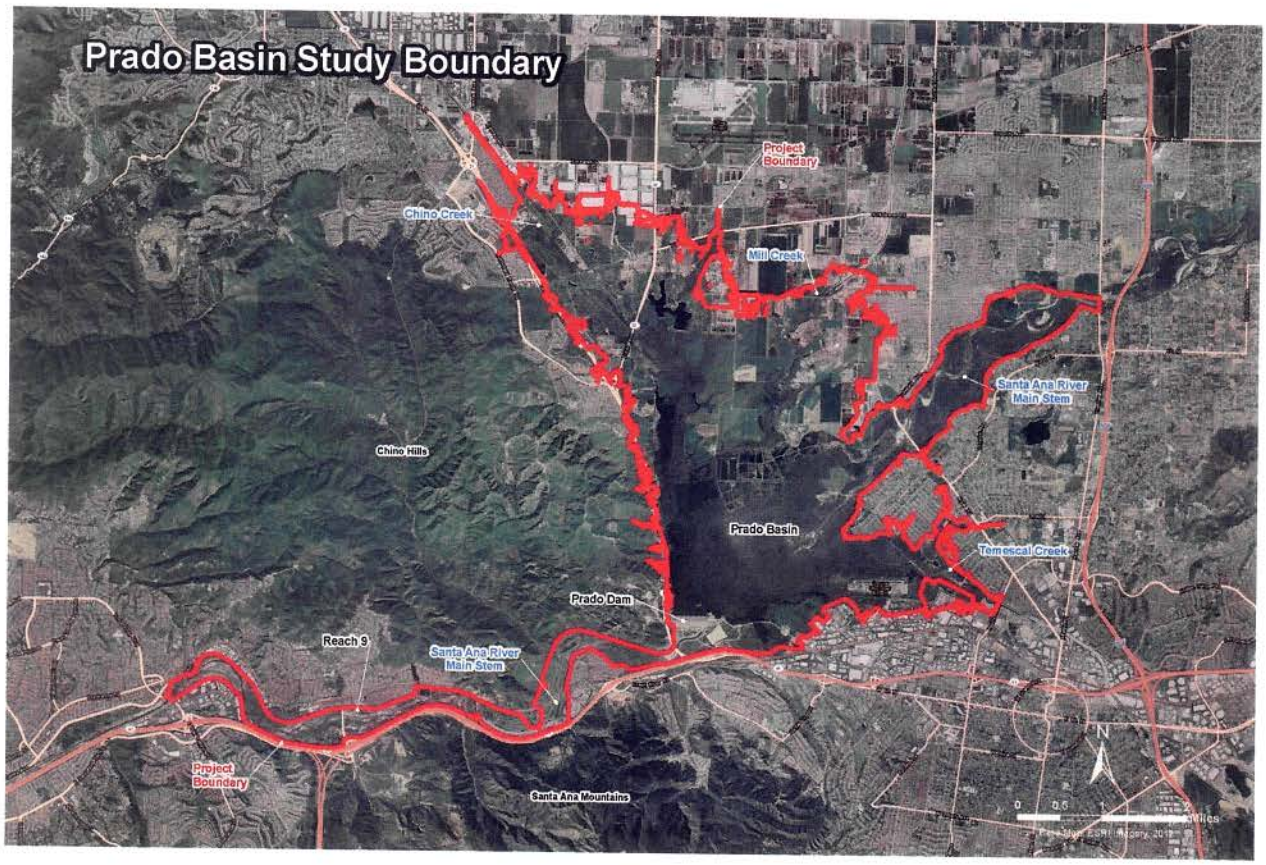

FIGURE 4 – STUDY AREA MAP

The Santa Ana River watershed is the largest river entirely in Southern California draining to the Pacific Ocean. The watershed overlies the two largest groundwater basins in Southern California available for conjunctive use. The Santa Ana River watershed possesses the largest freshwater wetland in Southern California that is an important part of the Pacific Flyway. The population in the watershed is also the fastest growing watershed in the nation with a population that is projected to increase to 6.8 million by 2020.

Prado Basin is located within the Santa Ana River watershed. The Santa Ana River drainage area above Prado Dam encompasses about 2,255 square miles, making it the largest watershed in southern California. The Prado Dam flood control reservoir, operated by the U.S. Army Corps of Engineers (USACE), was constructed for flood control operations for downstream urban areas in Orange County. The Orange County Water District (OCWD) constructed more than 400 acres of wetlands within Prado Basin for ecosystem restoration. The basin's inundation area includes critical habitat for several special status species, the largest riparian area of willow woodlands in Southern California, and extensive wetlands used by numerous species of waterfowl and shorebirds. Special status species within the Prado Basin include Least Bell's Vireo, Southwestern Willow Flycatcher, Southern Bald Eagle, Peregrine Falcon, California Red-legged Frog, Arroyo Southwestern Toad, and Santa Ana Sucker.

The study area is approximately 50 square miles and storm water and groundwater flows drain into the Prado Basin. Four major watercourses drain into Prado Basin: Chino Creek, Mill Creek, Santa Ana River, and Temescal Creek. Chino Creek channel drains the western boundary of the study

watershed area. Cucamonga and Day Creeks are concrete lined channels traversing the center of the study watershed area and merging to form Mill Creek before entering the Prado Basin, the Santa Ana River is the main watercourse entering the Basin from the northeast, and Temescal Creek enters near the southern boundary of the Basin (Figure 1). The study area extends downstream of the Prado Dam along the Santa Ana River for approximately 30 miles to the Pacific Ocean.

The project area will encompass the Prado Basin to elevation 566' and each of the four major watercourses to the approximate area where the channels change physical characteristics or are adjacent to another project. Chino Creek will be included upstream from the basin to just upstream of Soquel Canyon Parkway where the creek is channelized. Mill Creek study area will extend upstream to approximately Hellman Avenue where the creek is channelized. The Santa Ana River portion will extend upstream to Hamner Avenue. Temescal Creek will be included upstream to Lincoln Avenue where the creek is channelized.

Downstream of Prado Dam the Santa Ana River winds about 30.5 miles to the Pacific Ocean. The approximately 8 miles immediately downstream of the dam to Weir Canyon Road represent a relatively natural channel with riparian and aquatic habitat as the river meanders within the banks. The lower portion of the river has been modified for efficient flood risk management to the ocean.

Project Purposes:

The proposed feasibility study will investigate alternatives to restore environmental resources and conserve water within Prado Basin and downstream of the Prado Dam, within the Santa Ana River. This effort will focus on restoring aquatic, wetland and riparian habitats for endangered and other significant species and conserving water. Alternatives will include elements that satisfy both ecosystem restoration and water conservation.

Types of Measures/Alternatives to be considered:

Environmental restoration measures and alternatives will include creation of wetlands within and downstream of the Basin located within or adjacent to the watercourses with ponds of differing sizes and shapes and varying plant palettes. Restoration of riparian habitat throughout the study area will be accomplished using various types of native plantings, removal of exotic species, and habitat management. Aquatic habitats will include restoration of sand and gravel substrate, creation of pools and riffles, development of fish ladders, and water quality improvements for habitat for the endangered Santa Ana sucker within the Santa Ana River.

Water conservation measures and alternatives will include various elevations for seasonal and year-round buffer pools behind the dam, opportunities for recharge within the basin in ponds, measures to increase recharge rates in the Santa Ana River downstream of the dam, options to increase the capacities of water in-take facilities downstream of the dam, different weather forecasting methods to determine when to release the buffer pool, and scenarios for release rates from the dam at alternative elevations.

Recreation development will address alternatives for locations and types of materials for trails, interpretive signage, viewing blinds for species, rest areas, access, staging areas, kiosks, shade structures, and restrooms. Passive recreation will be consistent with environmental restoration purposes. The measures and alternatives will be expanded during the plan formulation process in

collaboration with the sponsor, contributing partner, and stakeholders. The alternatives will incorporate Best Management Practices (BMP) and adaptive management processes for long-term sustainability of the implemented project.

Estimated Cost Range:

The feasibility study is estimated to cost approximately $3.0 million. Costs will be refined during the plan formulation process. The cost for the design and implementation phase is yet to be determined. The total cost is likely to be $35 to $45 million.

c. **Factors Affecting the Scope and Level of Review.** This multi-purpose study involves investigating use of the dam for expanded water conservation from a seasonal buffer pool and/or above the currently approved level, as well as environmental restoration measures, and passive recreation measures. The study will consider the environmental impacts of these potential measures upstream and downstream of the dam. There may be possible modifications needed to the existing facility, to the water control plan and to the Operation and Management (O&M) Manual.

Potential risks from holding water behind the dam for longer periods of the year and/or holding water at higher elevations seasonally or year-round behind the dam and restoring portions of the tributaries that drain into the basin to a more natural state will need to be analyzed. Under the USACE Dam Safety Program, Prado Dam is classified as a Dam Safety Action Classification (DSAC) 3 dam. Dams in this classification are considered to be significantly inadequate in meeting one or more essential dam safety guidelines, and/or have a moderate to high risk when considering the probability of failure and potential public safety and economic consequences. Current Corps policy does not allow for reallocations of storage that would raise the conservation pool at projects rated DSAC 3 or higher risk projects.

The current DSAC 3 rating will be explained, as well as the consequences of holding water at the same elevation for longer durations or at higher elevations in relation to the underlying reasons for the DSAC rating. The analyses will include, but are not limited to, addressing factors contributing to dam safety for the alternatives, determining weather forecasting triggers for buffer pool releases during flood season, and designing sustainable ecosystem restoration in active channels. A critical constraint will be that any recommended plan cannot reduce the dam's designed level of flood risk protection.

Prado basin does not have a dedicated storage allocation pool for water supply. A water conservation buffer pool is held to take advantage of the ability to capture floodwater flows and year round urban run-off. Paramount to the buffer pool operations is that the pool may be evacuated at any time for flood risk management. The current operations allow a buffer pool to be held to elevation 498' during the flood season and 505' during the non-flood season. The water conservation buffer pool may be released at any time that the storage volume is anticipated to be needed for floodwaters. Thus, the water conservation buffer pool does not negatively impact flood control or the ability to operate the dam for the intended levels of flood risk management. This method of operation has been approved by the Chief of Engineers for the past and current water conservation plans.

The DSAC 3 rating is based on several factors, including seepage, piping, and project features that have not yet been constructed. Several of those features will likely be constructed by the time the FR and EIS document is completed and approved. It is anticipated that upon completion of the project features, the DSAC rating will likely improve to a 4 or 5. The analysis will include existing features in place and the schedule for completion of the remaining features, several of which are currently under construction. However, the DSAC may constrain the timing for implementation of the recommended plan. Again, the water conservation buffer pool is not a dedicated water supply allocation. Because DSAC ratings are relatively new and this is not a dedicated storage pool, there may be some technical and/or policy concerns to address. The integrity of the dam and flood risk management is of the utmost importance. The large urban population downstream relies on the protection afforded by Prado Dam. They also rely on the water conservation provided from the dam. The DSAC rating and potential changes to improve it, coupled with water conservation, is likely to be the most challenging part of the analysis.

Flood forecasting will be carefully considered for timing the evacuation of the pool behind the dam in conjunction with extended water capture and storage in order to assure safety and minimize risks. Scenarios for forecasting different intensities of storms and different releases from the dam will be analyzed to address the length of time to evacuate the buffer pool in anticipation of incoming storm events. It is not anticipated that the study will be highly controversial.

Projected water conservation benefits arise from water captured behind the dam and then released slowly enough to infiltrate into the Santa Ana River downstream of the dam and from water released and captured by the OCWD intake structures downstream for off-stream storage and recharge. This scenario is what occurs under current conditions. The goals of the study are to find alternatives to increase the storage and releases to increase the downstream capture and groundwater recharge. Increases to the water conservation buffers pools have been approved for Prado basin four times from 1969 to 2006. The current flood season buffer pool at elevation 498' allows capture of 9,300 acre-feet of water and 20,000 acre-feet during non-flood season at elevation 505'. An increase of the non-flood season pool to elevation 505' would allow the capture of an additional 10,700 acre-feet of water per year when the pool reaches that elevation. The likely alternatives to be analyzed include year-round storage to 505' and seasonal and rear-round storage at elevation 508'. The non-Federal sponsor, who is experienced under the current operations, will calculate benefits and amounts of groundwater recharge.

Continued drought conditions in the area could potentially mean the benefits for water conservation and environmental restoration would not be fully realized. Climate change could also impact the realization of benefits for both water conservation and ecosystem restoration. However, it is also likely that continued drought conditions and the unreliability of the State Water Project water could increase the cost of imported water and thus, increase the benefits of taking advantage of the local floodwaters and run-off captures when the opportunities arise. The study will address the changes in the hydrologic conditions in the watershed from the more recent period of record for storms and the changes in run-off entering the basin, land use changes, and the population growth projections in this highly urbanized area. Water demand analysis will identify future water use in the OCWD service area and water supply analysis will look at future sources of water that are expected to be available to OCWD. A risk-based model that computes the projected water supply costs for the without-project conditions will be developed for the baseline analysis. The model will be a lifecycle simulation model that incorporates water supply data, water yield data, and water cost data. The model should generate expected as well as probabilistic ranges of the cost for

providing water to the users. The model will determine the with-project water supply costs for the service area, as well as the reduction in costs (benefits) for the alternatives. The benefit-to-cost ratio will be updated to reflect the higher value of water and the downstream improvements. Population projections will be assessed using several sources, including the United States Census, state, county, and city government agencies, and state universities. Land use will be based on aerial photography, land use plans, general plans, and leases/outgrants.

Public scoping meetings, workshops, individual meetings, and public hearings have been conducted for the previous water conservation plans. Similar meetings will be conducted during the combined FR and EIS/EIR process. Several species listed as threatened or endangered under the federal Endangered Species Act are known to occur within the project area. Critical habitat for several species, including the Santa Ana sucker (*Catostomus santaanae*) occurs within the project area, as well. Resource agencies including, but not limited to, the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG), and the Regional Water Quality Control Board (RWQCB) will be consulted with to attain permits and approvals prior to project implementation (e.g. biological opinion and corresponding incidental take, 1600 permit, and 401 Certification, respectively). Concerns that have been voiced in the past and will likely be voiced again include the need to mitigate for any loss of riparian habitat, the need to provide financial remuneration to leases negatively impacted, scheduling certain aspects of construction and dam operations to avoid or minimize impacts to threatened and endangered species, especially during breeding and spawning seasons, and minimizing work within channels during the rainy season. The resource/regulatory agencies, key environmental stakeholders, and the public are aware that the non-federal sponsor desires to increase the water conservation and restore ecosystems within and downstream of the Prado basin. They are generally supportive with caveats that the habitat lost must be mitigated or restored.

The feasibility study will address the impacts of the recommended plan on the endangered species located in the area, including, but not limited to, the Least Bell's Vireo and the Santa Ana Sucker. On net, there should be significant environmental benefits from the project, should it be approved. It is anticipated that there will be significant coordination and interaction with the local, state and Federal resource agencies. The recommended plan is also likely to have positive economic effects with national and regional economic benefits; and will help to address regional water issues as it stresses water conservation.

Separately from this project, the Corps has initiated informal consultation with the USFWS on potential impacts to recently designated Santa Ana sucker critical habitat from ongoing operation of Prado Dam and other elements of the Santa Ana River Mainstem flood damage reduction project. It is anticipated that certain features of a Water Conservation and Ecosystem Restoration project could help ameliorate or dampen effects of ongoing dam operations. Sand bypass measures, for instance, would have the potential to increase the gradient and resulting velocities upstream of the project area, possibly re-exposing gravel beds that are used for spawning. Sand bypass would also reduce adverse affects caused by bed degradation downstream of the dam. Direct and indirect improvements to sucker habitat upstream and downstream of the dam would enable this species to cope more successfully with unavoidable and ongoing hydrologic consequences of existing dam operations. These factors (anticipated positive changes to the future with-project condition) would be considered during the consultation process.

The integrated FR and EIS/ROD will employ standard methodologies that have been used in the two most recent water conservation studies of 1993 and 2006. Most models expected to be used have been used in similar studies in the past. However, several will require model approval or certification to be compliant with EC 1105-2-412.

The 2009 State Water Plan Update includes a statement by Mr. Lester Snow, Secretary of Natural Resources, "Update 2009" comes on the heels of a historic water legislation package passed by the Legislature and signed into law by Governor Schwarzenegger in November 2009. The landmark legislative package positions California for 21st Century water management by establishing new urban water conservation targets, requiring statewide groundwater monitoring, and creating a new framework for improved governance in the Sacramento-San Joaquin Delta." The OCWD water conservation at Prado allows water to be recharge into the spreading basins downstream of the dam in the Santa Ana River and off-stream. No opposition is expected from state agencies and it is not expected that the Governor would request IEPR.

The potential project is not expected to have a substantial impact on important public policies or private sector decisions. The financial impact will be less than $500 million in any one year. It is unlikely there will be any novel, controversial, precedent-setting, or significant inter-agency interest.

The implementation costs are likely to be $35-45 million. Water conservation costs will be required for mitigation of habitat, additional costs for dam tender time, and costs associated with potential downstream damages. No infrastructure costs will be incurred from water conservation. Costs are anticipated to be in the range of $4-8 million. Ecosystem restoration costs may include excavation of ponds, a minor inlet and outlet to convey water from the tributary to the ponds and then return flows from the ponds to the tributary, planting of native vegetation, and removal of exotic species. These costs are estimated to range from $15-20 million. Recreation costs may include interpretive trails around the ecosystem restoration areas, viewing blinds, signage, and benches. These costs are estimated to range from $2-4 million. Thus, overall costs range from $21-32 million.

At this time, the information in the decision document is not anticipated to use novel methods, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices.

Other factors affecting the scope/challenges include:

- Existing land use
- Project construction schedules and limits
- Existing lease holders
- Flowage easements within the flood control basin
- Coordinating reservoir regulation with OCWD spreading operations
- Coordinating reservoir regulation with upstream dams (Seven Oaks and San Antonio)
- Analyses that clearly show no negative impact to flood control benefits
- Weather forecasting as opposed to flood forecasting as it relates to USACE policy compliance and acceptable risk
- Water management rule curves based on re-evaluation of the non-flood season due to climate change, non-stationarity of hydrology, etc.

A Water Control Manual (WCM)/Water Control Plan (WCP) update will be completed during the implementation phase. An Operations and Maintenance Manual will also be created during the implementation phase. Costs for that work will be estimated at the beginning of that phase.

In-Kind Contributions. Products and analyses provided by the non-Federal sponsor as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: portions of Project Management, Plan Formulation, Environmental Resources and Biological Resources. Additionally, the non-Federal sponsor will review and comment on documents prepared by the District and fully participate in all review conferences. All products are subject to peer review before any in-kind credit is processed.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. **Documentation of DQC.** When DQC is complete for each technical product, a DQC completion memorandum will be written and signed off on by all DQC reviewers. This memorandum will be transmitted along with the technical product to the Lead Planner, who will provide it to the ATR team when necessary.

b. **Products to Undergo DQC.** All technical products to be used in the feasibility report will undergo DQC as mandated in the District/MSC Quality Management Plan.

c. **Required DQC Expertise.** DQC reviewers generally include each PDT member's Section Chief and Branch Chief. The DQC team also includes Office of Counsel.

SPL DQC TEAM DISCIPLINES
Project Management
Plan Formulation
Biology
Economics
Design
Hydrology & Hydraulics
Reservoir Regulations
Geotechnical
Cost Estimating
Asset Management
Regulatory
Office of Counsel
Cultural Resources

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

Products to Undergo ATR. The following products will require ATR: Draft Feasibility Report and EIS following TSP Milestone.

The study's scope includes the purposes of ecosystem restoration, and enhanced operations for water conservation storage and flood water retention operations will require consideration of dam safety modifications. The ATR will require that the RMO (WMRS PCX) coordinate with the Cost DX, USACE Risk Management Center and the Ecosystem Restoration Planning Center of Expertise.

a. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should demonstrate expertise in the federal water resources plan formulation process. Specifically, the reviewer should be familiar with evaluation of alternative plans for ecosystem restoration and water conservation projects. Familiarity with USACE standards and procedures is required.
Economics	The economics reviewer should be familiar with water conservation, supply and demand economics, as well as conducting National Ecosystem Restoration analysis. The team member shall also have knowledge and experience conducting and reviewing economic analysis of: 1) projects/alternatives with environmental outputs, including the application of IWR-Plan to conduct cost-effectiveness and incremental cost analysis (CE/ICA); 2) regional economic development benefits using Input/Output modeling through the use of RECONS; and 3) other social effects associated with project alternatives. The reviewer should have knowledge and experience conducting and evaluating risk based analysis that utilizes Microsoft Excel and Palisade @Risk software.
Environmental Resources	The environmental resources reviewer should have at minimum a

	Masters Degree in ecology or biology. S/he should have particular knowledge of ecosystem restoration and should also be familiar with all National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) requirements, habitat assessment modeling, and CE/ICA. The reviewer should have experience in the coastal/riverine environment of the western US. Familiarity with fish passage, mitigation for endangered species and water quality impacts would also be beneficial.
Hydrology & Hydraulic Engineering	The hydrologic reviewer should be an expert in the field of hydrology and familiar with use of models such as HEC-SSP and HEC-HMS. Specific areas of expertise include snowpack-driven yield, reservoir routing for conservation and flood control purposes (i.e., low and high flows), and groundwater recharge. The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of reservoir operations and modeling, e.g., HEC-RAS. Sediment transport models will include HEC-6. The reviewer should be familiar with the HEC-ResSim model to look at alternative conditions. The reviewer should also be familiar with semi-arid flood control dams, including sediment removal, transport and migration. The reviewer should be knowledgeable about the reservoir regulations, operation of multi-purpose reservoirs and have expertise in the modification and development of water control plans.
Regulatory	The regulatory reviewer should have expertise in the Clean Water Act and associated requirements and the 404 permit process.
Geotechnical Engineering	The geotechnical engineering reviewer should have extensive experience in geotechnical evaluation of flood risk management structures such as static and dynamic slope stability evaluation, evaluation of the seepage through earthen embankments and under-seepage through the foundation of the flood risk management structures, including dam and levee embankments, floodwalls, closure structures and other pertinent features, and in settlement evaluation of the structure.
Civil Engineering	The civil engineering reviewer should be a Professional Engineer and have experience with engineering analyses related to design and construction of ecosystem restoration and water conservation or related projects in the arid south-west environment. Necessary qualifications will be needed for Safety Assurance Review (SAR), as life safety issues exist with this project. The reviewer will hold at a minimum a B.S. degree in Structural Engineering or Civil Engineering,
Structural Engineering	The Structural Engineering reviewer should be a Professional Engineer with expertise in structural engineering and earthen dam engineering. Expertise should include familiarity with design elements necessary to convey sediment over or through the

	existing earthen dam, fish passage structures, inlet/outlet facilities associated with ecosystem restoration features, as well as typical recreation facilities.
Cost Engineering	The cost engineering team member should possess the background to ensure the proper application of clearly established criteria, regulations, laws, codes, principles and professional practices. S/he will review the various work products and assure that all the parts fit together as a coherent whole. As required, the cost engineering reviewer will be assigned or pre-approved by the Cost DX.
Real Estate	The Real Estate reviewer should be familiar with Corps real estate requirements, regulations and policies. The reviewer should be familiar with appraisals and easements as they are likely to be required for the study.
Dam Safety	The dam safety team member should have expertise with current Corps dam safety policies and procedures. This reviewer should be selected in consultation with the RMC.

VERTICAL TEAM	
Kurt Keilman	DST
Leigh Skaggs	DST
Nedenia Kennedy	DST
Boniface Bigornia	DST
Paul Bowers	DST
Brad Schwichtenberg	RIT
Pauline Acosta	RIT
Joseph Bittner	RIT
TBD	Endowed Chair

b. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

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

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

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

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

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

Dispute Resolution. The review team leader shall review the documentation to identify any outstanding disagreements between members of the project delivery team and the review team. Any disagreements shall be brought to the attention of the appropriate function chief to facilitate resolution of technical disagreements between study and review team counterparts. If a dispute is between representatives from different functional organizations, then the issue shall be forwarded to the planning function chief, who shall facilitate resolution. The appropriate function chief shall make the final decision. The function chief may consult with CESPD staff or regional technical experts that can serve as an unbiased sounding board or major technical issues may be formally submitted to CESPD for resolution.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of

USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. **Decision on IEPR.** Both Type I and Type II IEPR will be required for the study as it will require an EIS and may have dam safety concerns, significant interagency interest and significant economic and environmental effects. It is not anticipated that the study will be controversial, or have significant social effects to the nation, or be requested by the Governor of California. Because it is anticipated that a Safety Assurance Review will be required during design and construction phases, the Type I IEPR will also address safety assurance considerations at the feasibility-level of design per Paragraph 2.c.(3) of Appendix D of EC 1165-2-209.

b. **Products to Undergo Type I IEPR.** Type I IEPR will be conducted for the entire decision document (including support documentation) when the draft report and EIS are ready (after the F5 Milestone).

c. **Required Type I IEPR Panel Expertise**

IEPR Panel Members/Disciplines	Expertise Required
Economics	The economics reviewer will have, at a minimum, a Masters Degree in economics, and demonstrate expertise with water conservation, supply and demand economics, as well as ecosystem restoration analysis. The panel member should also have knowledge and experience conducting and reviewing economic analysis of: 1) projects/alternatives with environmental outputs, including cost-effectiveness and incremental cost analysis (CE/ICA); 2) regional economic development benefits

	using Input/Output modeling through the use of IMPLAN or similar models; and 3) other social effects associated with project alternatives. The reviewer should have knowledge and experience conducting and evaluating risk based analyses. Preference will be given to candidates who have experience in evaluating alternatives using the principles and guidelines for federal water resources projects.
Environmental	The panel member will have at minimum a Masters Degree in ecology or biology. Candidates must have expert knowledge of ecosystem restoration and should also be familiar with all National Environmental Policy Act (NEPA) and Threatened and Endangered Species Act requirements and documentation. The candidate should also be familiar with the California Environmental Quality Act (CEQA). The panel member should have experience in the coastal environment of the western US, and familiarity with mitigation for endangered species and water quality impacts.
Engineering	Engineering disciplines represented on the IEPR panel are expected to include hydrology and hydraulics, geotechnical, and civil and/or structural engineering, depending on the measures and alternatives developed for potential modifications to the existing project. All candidates will be licensed or registered Professional Engineers. 1. Hydrology & Hydraulics engineering. The panel member will have, at a minimum, a Masters degree, and demonstrate expertise in the analysis and modeling of multi-purpose reservoirs and riverine hydrology and hydraulics. Candidates should have a thorough understanding of multi-purpose reservoir operations, open channel dynamics, flood routing, and watershed hydrology. Candidates should have an understanding of computer modeling techniques that will be used for this study (e.g. HEC-ResSim, HEC-RAS, HMS, etc.). 2. Geotechnical engineering. The panel member must have extensive experience in geotechnical evaluation of flood risk management structures such as static and dynamic slope stability evaluation, evaluation of the seepage through earthen embankments and underseepage through the foundation of the flood risk management structures, including dam and levee embankments, floodwalls, closure structures and other pertinent features, and in settlement evaluation of the structure. 3. Civil or structural engineering The panel member must demonstrate expertise in the design and construction of critical infrastructure related to dams, water conservation and ecosystem restoration project features. Specific requirements will be refined as the study alternatives are developed.

Civil Works Planning	The panel member will have, at a minimum, a Master's degree in water resources engineering or a related planning field and must demonstrate expertise in the plan formulation process with respect to large, complex civil works projects with high public and interagency interests. . The panelist should be familiar with evaluation of alternative plans for ecosystem restoration and water conservation projects. Candidates should be familiar with the development and evaluation of alternative plans for water supply for municipal industrial and agricultural uses, to include surface and groundwater sources. Preference will be given to candidates with experience in the USACE planning process as outlined in ER-1105-2-100, Planning Guidance Notebook.

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

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

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

SAFETY ACTION REVIEW (SAR)

SAR Team Members/Disciplines	Expertise Required
Economics	The economics reviewer will have, at a minimum, a Masters Degree in economics, and demonstrate expertise with water conservation, supply and demand economics, as well as ecosystem restoration analysis. The panel member should also have knowledge and experience conducting and reviewing economic analysis of: 1) projects/alternatives with environmental

	outputs, including cost-effectiveness and incremental cost analysis (CE/ICA); 2) regional economic development benefits using Input/Output modeling through the use of IMPLAN or similar models; and 3) other social effects associated with project alternatives. The reviewer should have knowledge and experience conducting and evaluating risk based analyses. Preference will be given to candidates who have experience in evaluating alternatives using the principles and guidelines for federal water resources projects.
Environmental	The panel member will have at minimum a Masters Degree in ecology or biology. Candidates must have expert knowledge of ecosystem restoration and should also be familiar with all National Environmental Policy Act (NEPA) and Threatened and Endangered Species Act requirements and documentation. The candidate should also be familiar with the California Environmental Quality Act (CEQA). The panel member should have experience in the coastal environment of the western US, and familiarity with mitigation for endangered species and water quality impacts.
Engineering	Engineering disciplines represented on the IEPR panel are expected to include hydrology and hydraulics, geotechnical, and civil and/or structural engineering, depending on the measures and alternatives developed for potential modifications to the existing project. All candidates will be licensed or registered Professional Engineers. 1. Hydrology & Hydraulics engineering. The panel member will have, at a minimum, a Masters degree, and demonstrate expertise in the analysis and modeling of multi-purpose reservoirs and riverine hydrology and hydraulics. Candidates should have a thorough understanding of multi-purpose reservoir operations, open channel dynamics, flood routing, and watershed hydrology. Candidates should have an understanding of computer modeling techniques that will be used for this study (e.g. HEC-ResSim, HEC-RAS, HMS, etc.). 2. Geotechnical engineering. The panel member must have extensive experience in geotechnical evaluation of flood risk management structures such as static and dynamic slope stability evaluation, evaluation of the seepage through earthen embankments and underseepage through the foundation of the flood risk management structures, including dam and levee embankments, floodwalls, closure structures and other pertinent features, and in settlement evaluation of the structure. 3. Civil or structural engineering The panel member must demonstrate expertise in the design and construction of critical infrastructure related to dams, water conservation and ecosystem

	restoration project features. Specific requirements will be refined as the study alternatives are developed.
Civil Works Planning	The panel member will have, at a minimum, a Master's degree in water resources engineering or a related planning field and must demonstrate expertise in the plan formulation process with respect to large, complex civil works projects with high public and interagency interests. . The panelist should be familiar with evaluation of alternative plans for ecosystem restoration and water conservation projects. Candidates should be familiar with the development and evaluation of alternative plans for water supply for municipal industrial and agricultural uses, to include surface and groundwater sources. Preference will be given to candidates with experience in the USACE planning process as outlined in ER-1105-2-100, Planning Guidance Notebook.

The SAR will occur during the implementation phase and is estimated to cost approximately $250,000 to $500,000.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

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

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

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The

selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

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

a. **Planning Models.** Modeling is an important tool in the planning and engineering of alternatives. For purposes of costs of model certification for this study, the assumption is that all models will be regional models. However, this assumption will be reviewed at the study initiation to verify if they should be regional or individual models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.5 (Flood Damage Analysis)	*The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Wild River near River City to aid in the selection of a recommended plan to manage flood risk.*	Certified
Risk-Based Model	The Risk –Based Model (water supply benefits model) provides the capability to compute the projected water supply cost and the benefits for without- and with-project conditions.	Certification Required
IWR Plan Model	The IWR Plan provides the capability of establishing the environmental conditions on the background information on the project; and Baseline Feasibility Report preparation including Existing Conditions and Without Project Future conditions for all resources of concern.	Certified
CHAP Model	The Combined Habitat Assessment Protocols (CHAP) and the California Rapid Assessment Method (CRAM)s Model provide the capability to assess environmental habitat value. CHAP is a simple accounting and appraisal tool that is a scientifically advanced methodology used to measure habitat quality by evaluating biodiversity within a habitat type and/or structural condition. The CHAP results in a Habitat and Biodiversity (HAB) metric that produces a per acre value for each homogeneous polygon delineated. Species, habitats and functions are used to develop values for the different sites and	Certification Required – Currently pending Regional Certification

	management actions.	
CRAM Model	CRAM is a standardized, cost-effective riparian habitat assessment tool. CRAM is used to establish baseline and alternative project conditions assessments or values within watersheds in a state. CRAM is often used to assess compensatory mitigation performance. This is especially useful for regulatory compliance. This scientific habitat evaluation method is acceptable to the USACE, U.S. Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG).	Certification Required
RECONS	RECONS is an input-output model for computing regional economic development benefits	Certified

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-SSP	The Hydrologic Engineering Center's Statistical System Package (HEC-SSP) provides the capability to perform flood flow frequency analysis based on Bulletin 17B, "Guidelines for Determining Flood Flow Frequency "(1982). Also, hydrologic data and volume frequency analysis on high and low flows, duration analysis, a coincident frequency analysis and curve combination analysis. Program provides the capability to compile existing discharge-frequency information for inflow to Prado Basin. Estimate the contributions from Chino Creek, Mill Creek, Temescal Creek, and the Santa Ana River as well as other inflow locations.	CoP Preferred Model in the current SET list.
HEC-RAS 4.0 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project conditions along Chino Creek, Mill Creek, Santa Ana River and Temescal Creek.	HH&C CoP Preferred Model
HEC-GeoRAS	The Hydrologic Engineering Center's Geospatial River Analysis System (HEC-GeoRAS) program provides the capability to process geospatial data in ArcGIS using a graphical user interface (GUI). The interface allows the preparation of geometric data for import into HEC-RAS. The program will be used for geospatial data to evaluate the future without- and with-project conditions along Chino Creek, Mill Creek, Santa Ana River and Temescal Creek.	HH&C CoP Preferred Model
HEC -ResSim	The Hydrologic Engineering Center's Reservoir System	CoP Preferred

	Simulation (HEC-ResSim) program provides the capability to perform water resources analysis in predicting the behavior operation plan releases in real-time during day-to-day and emergency operations.	Model in the current SET list
HEC-6	The Hydrologic Engineering Center's HEC-6 program provides the capability to provide analysis for upstream and downstream sediment modeling for the SAR review models and update the without-project condition based on updated hydrologic record.	Allowed for Use in current SET list

10. REVIEW SCHEDULES AND COSTS

Milestones	Date
Initiate Feasibility Study	Aug-12
Public/NEPA Scoping Meeting	Nov-12
Alternatives Milestone	Feb-13
TSP Milestone (Draft NEPA & Real Estate Plan)	Mar-14
Agency Technical Review	May-14
Public Review and IEPR	Jul-14
Agency Decision Milestone (Final Real Estate Plan)	Sep-14
Final Report Milestone	Jan-15
State and Agency Review	Mar-15
Chief's Report	Aug-15

Value Engineering Schedule and Cost. Value Engineering will be conducted as a part of plan formulation between the Alternatives and TSP milestones as shown on the above schedule. The Value Engineering Study will meet the requirements of ER 11-1-321 to ensure that potentially cost-effective alternatives are considered in the feasibility study and the Value Engineering certification can be provided to support the decision document produced by the study.

The estimated cost for the Value Engineering Study is $20,000.

a. ATR Schedule and Cost.

Review Schedule	
ATR Timeline Task	**Date**
ATR TSP Milestone Draft Feasibility Report and EIS	May 2014
ATR Draft Report Comments	May 2014
PDT Draft Report Responses	June 2014

Back Check	June 2014
ATR Certification Draft Report	July 2014
IEPR Final Report	July 2014
IEPR Final Report Comments	July 2014
PDT Final Report Responses	July 2014
Back Check	August 2014
IEPR Certification Final Report	August 2014
IEPR After Action Review	September 2014
Final District Report Review	September 2014

The total estimated cost for Agency Technical Review is $100,000.

b. Type I IEPR Schedule and Cost.

IEPR will be conducted for the final feasibility report and EIS starting in June 2015. The estimated cost for the IEPR is $100,000.

IEPR Final Report	July 2014
IEPR Final Report Comments	July 2014
PDT Final Report Responses	July 2014
Back Check	August 2014
IEPR Certification Final Report	August 2014
IEPR After Action Review	September 2014
Final District Report Review	September 2014

Activity	**Budget**
Independent External Peer Review of Draft Report	$100,000
PDT Responses to IEPR of Draft Report	$ 30,000
Sponsor Responses to IEPR of Draft Report	$ 30,000
TOTAL	$160,000

c. Model Certification/Approval Schedule and Cost.

• Risk-Based Model	August 2014	$60,000
• CRAM Model	August 2014	$30,000
• HEC-SSP	August 2014	$30,000
• HEC-RAS 4.0	August 2014	$30,000
• HEC-GeoRAS	August 2014	$30,000
• HEC-ResSim	August 2014	$30,000
• HEC-6	August 2014	$30,000

11. PUBLIC PARTICIPATION

A webpage for the study will be created within the Los Angeles USACE website where information about the study, including the Peer Review Plan and its approval will be published, with the public invited to

comment. A public scoping meeting and public workshop will tentatively be held in October 2011. A final public meeting for the draft EIS will be held in September 2013. USACE will coordinate with non-Federal agencies, non-governmental organizations and potentially private citizens during the study; and the public will have the opportunity to comment on the report.

12. REVIEW PLAN APPROVAL AND UPDATES

The South Pacific Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

Rhiannon Kucharski, Lead Planner
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Portland, OR 97208-2870
Phone503-808-3984
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ATTACHMENT 1: TEAM ROSTERS

First	Last	Discipline	Phone	Email
Raina	Fulton	Project Manager	213-452-3998	Raina.Fulton@usace.army.mil
Rhiannon	Kucharski	Plan Formulation	213-452-4296	Rhiannon.L.Kucharski@usace.army.mil
Chris	Jones	Biologist	213-304-6234	Christopher.T.Jones@usace.army.mil
Hayley	Lovan	Environmental Coordinator	213-452-3863	Hayley.Lovan@usace.army.mil
Jacob	Hensel	Economics	213-452-3103	Jacob.R.Hensel@usace.army.mil
Steve	Vaughn	Design	213-452-3654	Stephen.Vaughn@usace.army.mil
Van	Crisostomo	Hydrology & Hydraulics	213-452-3558	Vang.Crisostomo@usace.army.mil
Jon	Sweeten	Reservoir Regulations	213-452-3532	Jon.G.Sweeten@usace.army.mil
Doug	Dahncke	Geotechnical	213-452-3597	Douglas.Dahncke@usace.army.mil
Mike	Newman	Cost Estimating	213-452-3739	Michael.D.Newnam@usace.army.mil
Joe	Gatti	Asset Management	602-230-6966	Joseph.M.Gatti@usace.army.mil
Jim	Mace	Regulatory	951-898-6163	James.P.Mace@usace.army.mil
Mark	Weintraub	Office of Counsel	213-452-3930	Mark.M.Weintraub@usace.army.mil
Stephen	Dibble	Cultural Resources	213-452-3849	David.S.Dibble@usace.army.mil

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the integrated Feasibility Report and EIS/ROD*<type of product>* for the Prado Basin, CA located in Corona, CA.*<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

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

SIGNATURE _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE

Name
Chief, Planning Division
Office Symbol

Date

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition
AFB	Alternative Formulation Briefing
ARC	Alternatives Review Conference
ASA(CW)	Assistant Secretary of the Army for Civil Works
ATR	Agency Technical Review
BMP	Best Management Practices
CDFG	California Department of Fish and Game
CE/ICA	Cost Effectiveness/Incremental Cost Analysis
CEQA	California Environmental Quality Act
CHAP	Combined Habitat Assessment Protocols
CRAM	California Rapid Assessment Method
CWRB	Civil Works Review Board
DPR	Detailed Project Report
DQC	District Quality Control
DSAC	Dam Safety Action Classification
DX	Directory of Expertise
EA	Environmental Assessment
EC	Engineering Circular
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
ER	Engineering Regulation
FCSA	Federal Cost Share Agreement
FDR	Flood Damage Reduction
FEMA	Federal Emergency Management Agency
FRM	Flood Risk Management
FSM	Feasibility Scoping Meeting
GRR	General Reevaluation Report
GUI	Graphical User Interface
HAB	Habitat and Biodiversity
HEC-FDA	Hydrologic Engineering Center's Flood Damage Reduction Analysis
HEC-GeoRAS	Hydrologic Engineering Center's Geospatial River Analysis

Term	Definition
HEC-RAS	Hydrologic Engineering Center's River Analysis System
HEC-ResSim	Hydrologic Engineering Center's Reservoir System Simulation
HEC-SSP	Hydrologic Engineering Center's Statistical System Package
Home District/MSC	The District or MSC responsible for the preparation of the decision document
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IEPR	Independent External Peer Review
IPR	In-Progress Review
IRC	Interim Review Conference
LRR	Limited Reevaluation Report
MSC	Major Subordinate Command
NED	National Economic Development
NEPA	National Environmental Policy Act
NER	National Ecosystem Restoration
O&M	Operation and maintenance
OCWD	Orange Count Water District
OEO	Outside Eligible Organization
OMB	Office and Management and Budget
OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
OSE	Other Social Effects
PAC	Post Authorization Change
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PL	Public Law
PMP	Project Management Plan
QA	Quality Assurance
QC	Quality Control
QMP	Quality Management Plan
RED	Regional Economic Development
RMC	Risk Management Center
RMO	Review Management Organization
RTS	Regional Technical Specialist
SAR	Safety Assurance Review

Term	Definition
SARBOC	Santa Ana River Basins an Orange County Streams
SET	Scientific and Engineering Technology
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Services
WCM	Water Control Manual
WCP	Water Control Plan
WMRS	Water Management and Reallocation Studies
WRDA	Water Resources Development Act