



REPLY TO  
ATTENTION OF

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

19 Feb 14

CESPD-RBT

MEMORANDUM FOR Commander, Los Angeles District

Subject: Santa Ana River Mainstem, CA, Lower Santa Ana River, including Santiago Creek, (Weir Canyon Road to Prado Dam), Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A, 2B, 3, 4 and 5A Review Plan (Addendum No. 01) Approval

1. Santa Ana River Mainstem, CA, Lower Santa Ana River, including Santiago Creek, (Weir Canyon Road to Prado Dam), Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A, 2B, 3, 4 and 5A Review Plan (Addendum No. 01) 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 subject Santa Ana River Mainstem Review Plan (Addendum No. 01).
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 Type II Safety Assurance Review (SAR).
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. Points of contact for this action are Mr. Marc Goodhue, CESPD-RBT, 415-503-6568, [marc.j.goodhue@usace.army.mil](mailto:marc.j.goodhue@usace.army.mil) and Mr. Paul Bowers, CESPD-PDC, 415-503-6556, [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil).

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

Encl

C. DAVID TURNER  
Brigadier General, USA  
Commanding

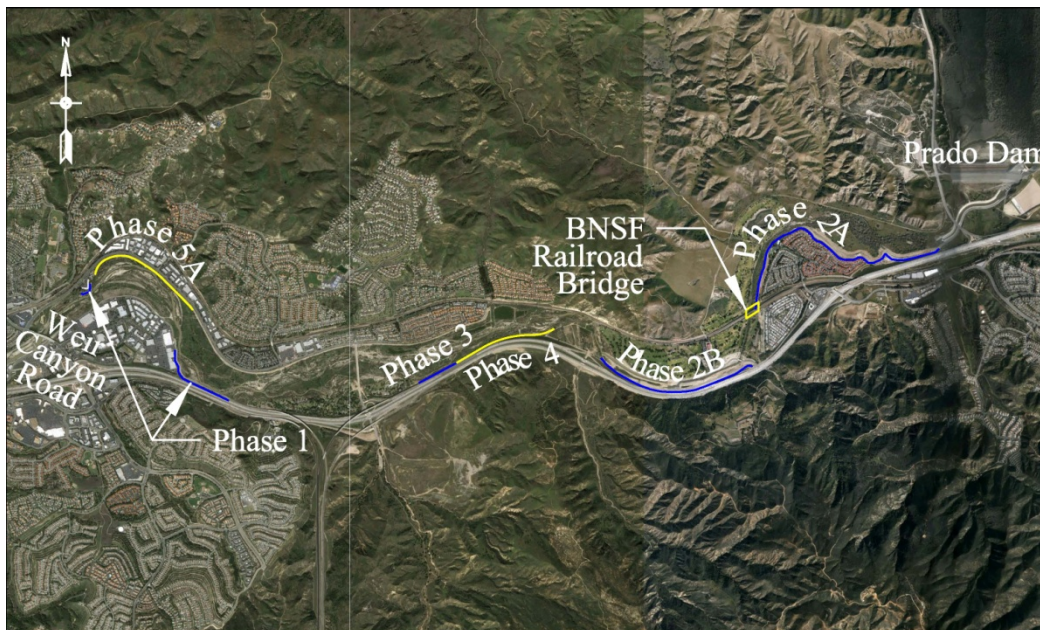


**US Army Corps  
of Engineers**  
Los Angeles District

SANTA ANA RIVER MAINSTEM  
Orange and Riverside Counties, California

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## Review Plan (Addendum No. 01)



Santa Ana River Mainstem,  
Including Santiago Creek, California  
Lower Santa Ana River  
(Weir Canyon Road to Prado Dam)  
Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A,  
2B, 3, 4 and 5A

15 November 2013

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REVIEW PLAN (Addendum No. 01)  
SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA  
Lower Santa Ana River  
(Weir Canyon Road to Prado Dam)  
Reach 9 – EDR, BNSF Railroad Bridge Phases 1, 2A, 3, 4, and 5A

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APPENDIX D – BNSF RAILROAD BRIDGE PIER NOSE EXTENSION, SANTA ANA RIVER, RIVERSIDE AND SAN BERNARDINO COUNTIES, CALIFORNIA, QUALITY CONTROL PLAN, DATED JULY 2013 (PREPARED BY URS GROUP, INC.)

ATTACHMENT:

REVIEW PLAN: SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA, Lower Santa Ana River, (Weir Canyon Road to Prado Dam) Reach 9 - Phase 2A, 2B and Phase 3, Dated 03 June 2011 (APPROVED ON 10 JUNE 2011).

In compliance with the U.S. Army Corps of Engineers' Circular No. 1165-2-214, some information in this report has been redacted.

REVIEW PLAN (Addendum No. 01)

SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA  
Lower Santa Ana River  
(Weir Canyon Road to Prado Dam)  
Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A, 2B, 3, 4, and 5A

15 November 2013

1. INTRODUCTION

1.1 Purpose

This Review Plan (RP) (Addendum No. 01) is an updated version of the RP dated 03 June 2011 that was approved on 10 June 2011 (attached for reference). The original RP described the levels of reviews required during the development of the engineering documents and the construction oversight required for the Reach 9 – Phases 2A, 2B and Phase 3 projects. The levels of reviews for those projects remain as they are described in the original RP. This updated RP (Addendum No. 01) provides the current information of the previous project features; separates the BNSF Railroad Bridge piers and abutment protection feature (BNSF Railroad Bridge) from the previous Phase 2A feature; includes new project bank protection features for Phase 4 and Phase 5A; and defines the levels of reviews required during the development of the engineering documents and the construction oversight required for the Reach 9 – BNSF Railroad Bridge, Phase 4, and Phase 5A projects.

1.2 References

Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 December 2012.  
Engineering Regulation (ER) 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999.  
ER 1110-1-12, Engineering and Design Quality Management, 21 Jul 2006.  
Engineering and Construction Bulletin No. 2013-18 - Use of Certified Engineering and Construction Community of Practice Members for Agency Technical Reviews on Civil Works projects, 24 September 2013.  
WRDA 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007.  
Army Regulation 15-1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements).  
National Academy of Sciences, Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, May 2003.

1.3 Review Requirements

This updated RP (Addendum No. 01) was developed in accordance with EC 1165-2-214, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision documents, implementation documents, and construction oversight through independent review. This updated RP (Addendum No. 01) describes the scope of review



for the current and future implementation phases of the subject projects. Each implementation phase for the subject projects require various levels of reviews include District Quality Control (DQC), Agency Technical Review (ATR), and may include Type II Independent External Peer Review, Safety Assurance Review (IEPR SAR). In addition, the updated RP (Addendum No. 01) identifies the most important skill sets needed in the reviews, the objective of the review, and the specific advice sought; thus, setting the appropriate scale and scope of review for the individual project. The USACE organization managing a particular review effort is designated as the Review Management Organization (RMO) for that effort. The DQC review will be managed within the home district, USACE Los Angeles District (District). The ATR and SAR will be managed outside of the home district.

## 2. PROJECT DESCRIPTION

### 2.1 Project Authority

The construction of Prado Dam, a feature of the Santa Ana River Mainstem Flood Risk Management Project (SARM Project) was authorized by the Water Resources Development Act of 1986, P.L. 99-662 substantially in accordance with the plans and recommendations of the Chief of Engineers contained in his reports dated 15 January 1982 and 9 July 1987.

The full authorization language is presented in the Main Report of Design Memorandum (DM) No. 1 entitled “Phase II GDM on the Santa Ana River Mainstem, including Santiago Creek” Volume 3, dated August 1988.

### 2.2 General History

The Santa Ana River flows through Orange, Riverside and San Bernardino Counties in California. Several major improvements to flood risk management features were approved as part of the District’s SARM Project. The purpose of the overall SARM Project is to extend the flood risk management to areas within the watershed that are susceptible to flooding during storm events ranging from 100-year through 190-year frequencies. It is estimated that millions of people, numerous businesses and valuable infrastructure will benefit from the project’s improvements.

The segment of the Santa Ana River between the mouth of the river at the Pacific Ocean and Prado Dam - approximately 30.5 miles in length - is known as the Lower Santa Ana River channel (LSAR). The LSAR is divided into ten reaches: Reach 1, Reach 2, Reach 3, Reach 4, Reach 5, Reach 6, Reach 7, Reach 8, Reach 9, and Reach 10. Reach 1 begins at the Pacific Ocean and Reach 9 ends at the Prado dam outlet works.

The Reach 9 segment of the river extends approximately 8.1 miles and is located between Weir Canyon Road and Prado Dam, refer to Appendix A. The bank protection projects identified within Reach 9 have been divided into the following phases: Phase 1, Phase 2A, BNSF Railroad Bridge, Phase 2B, Phase 3, Phase 4, Phase 5A, and Phase 5B.

There are various features of the SARM Project that remain to be constructed within the Prado Basin and within Reach 9. Most of the features were addressed in the Phase II General Design Memorandum (GDM) and the 1988 Phase II GDM Supplemental Environmental Impact Statement (SEIS). However, since the GDM was written, some of the approved flood risk management features have been revised and others have been added based on refined evaluations of existing conditions and an updated scour study.

The various project features within the Prado Dam Basin and along LSAR are part of the SARM flood risk management system to increase the storage capacity within the Prado basin; release higher flows through the dam's outlet works; convey higher flows through the LSAR; and provide additional bank protection, as required, to withstand the erosion forces caused by flow impingement and higher velocities.

There are several projects within the Prado Dam basin, including raising the Prado Dam's crest; construction of a new outlet works; construction of interior dikes within the basin; and raising the dam's spillway. The project to raise the Prado Dam crest and build the new outlet works was completed in 2008. The projects to construct various dikes within the basin are on-going and were addressed in separate RPs. The project to raise the spillway has not been undertaken and will be addressed in a separate RP.

The bank protection projects for Reach 1 through Reach 8 and Reach 10 were completed prior to the implementation of EC 1165-2-214. Of the projects within Reach 9, the Phase 1 was completed prior to the implementation of EC 1165-2-214. Construction of Phases 2A, 2B and 3 projects is on-going and was addressed in the original Reach 9 RP. The BNSF Railroad Bridge is in the early stages of design and was previously included in the original RP under Phase 2A and has been updated in this updated RP (Addendum No. 01). The BNSF Railroad Bridge, Phase 4 and Phase 5A projects are in the early stages of design and are addressed in this updated RP (Addendum No. 01).

In addition, a Supplemental Environmental Assessment (SEA) report is currently being finalized and will document the environmental impacts and mitigation associated with the new features within Reach 9 since the GDM was written.

A Value Engineering (VE) study for the Santa Ana River basin, which includes the LSAR, was the vehicle used to evaluate alternatives and was the basis for selection of the preferred alternatives. The VE study team proposed specific methods of improvements for each of the various reaches of the LSAR, as described in the GDM. A full discussion of the VE study is available in the report titled Santa Ana River Basin, California, Phase I VE Study: Lower Santa Ana, Oak Street Drain, San Timoteo, Volume 1, dated February 1989.

A separate VE study was conducted for Phase 4 and Phase 5A in May 2013. The report analyzed various alternatives for each project based on the individual project's parameters and restrictions. The report recommended a soil cement revetment for both projects.

A separate VE study was also performed on the BNSF Railroad Bridge protection in August 2013. The alternatives evaluated include streamlining of the protection walls, different wall

types and lower wall heights to reduce impact to existing railroad structures and decrease project cost.

### 2.3 Description of Projects in Reach 9

#### 2.3.1 Phase 1

The Phase 1 bank protection project is divided into two segments. The first segment of Phase 1 is on the right bank, it begins approximately 0.4 miles upstream of Weir Canyon Road and extends approximately 600 feet upstream. The second segment of Phase 1 is on the left bank, it begins approximately 1.3 miles upstream of Weir Canyon Road and extends approximately 2,780 feet upstream. The low flow channel along segment 1 runs parallel and is adjacent to La Palma Avenue. The low flow channel along segment 2 runs parallel and is adjacent to State Route (SR)-91.

Prior to the Phase 1 project, a bluff located within segment 1 was subject to bank erosion caused by moderate flows impinging on the channel bank. An established commercial center located at the top of the bluff would have become vulnerable if the bank continued to erode. Similarly, the channel bank along segment 2 was subject to erosion caused by moderate flows impinging on the channel bank. The unimpeded and continued bank erosion could potentially impact SR-91. In addition, it was determined that the channel banks at both locations, prior to the Phase 1 project, would not withstand the future design flows from the SARM project.

The improvements to both segments were completed in 2006. The improvement to segment 1 included grouted stone, riprap, and derrick stone. The improvement to segment 2 included grouted stone, riprap, and sheet pile with tiebacks.

Both segments of Phase 1 were constructed prior to the implementation of EC 1165-2-214. The review process through the life of this project followed the recommendations in the superseded independent technical review.

#### 2.3.2 Phase 2A

The Phase 2A bank protection project is on the left bank, it is approximately 6,350 feet in length and ends at the Prado Dam Outlet works. The low flow channel runs parallel and adjacent to the Green River Home Owners Association (GRHOA) property at the downstream of the project and runs adjacent to the SR-91 near the upstream end of the project.

Prior to the Phase 2A project, a levee built by Caltrans to protect SR-91 would be susceptible to erosion because of the future design releases due to the SARM project. The levee is located at the end of the Prado Dam outlet channel; therefore, high releases would have a direct impact on the levee. The levee had a riprap revetment but the protection was determined to be inadequate to protect against the future design releases. In addition, the higher releases would result in greater scour adjacent to the GRHOA; therefore, additional protection along the left channel bank was required to reduce the flood risk of the development.

The project was awarded in 2011 and is currently under construction. The major features in the project include approximately 2,000 linear feet of grouted stone bank protection combined with derrick stone at the toe along SR-91; approximately 3,600 linear feet of grouted stone on the slope of the GRHOA bank combined with derrick stone at the toe; approximately 1,000 linear feet of metal sheet pile with tie backs along the GRHOA; construction of new side drains and extension of existing side drains; utility relocations; and an access road.

A segment of the Phase 2A project includes bank protection on the left bank of the Santa Ana River along Green River Mobile Home Park (GRMHP) south of the BNSF Railroad Bridge. The low flow channel runs approximately 400 feet to 800 feet from the GRMHP. Approximately 1,100 feet of bank protection was constructed in 2010 northerly from Green River Road under a separate contract, including construction of the access to the maintenance road on top of the bank protection, a sheetpile cutoff wall at the downstream end of the bank protection, extension of the 60-inch side drain, fencing and concrete drainage gutter. The north end was extended another 300 feet in 2011 through a separate contract to the BNSF Railroad right-of-way. The bank protection consists of grouted stone combined with derrick stone at the toe.

The GRMHP segment was designed prior to the implementation of EC 1165-2-214. However, the project was subject to rigorous reviews as part of the former ITR process. The project is currently undergoing IEPR during the construction phase, per the recommendation included in the previously approved RP.

### 2.3.3 BNSF Railroad Bridge

The Burlington Northern & Santa Fe (BNSF) Railroad Bridge bisects the Phase 2A project limits. The GRHOA is north and the GRMHP is south of the railroad. Both residential areas are on the left bank of the river. The BNSF Railroad Bridge consists of 3 separate bridges – one track per bridge. The 1938 bridge piers were designed and built by the District as a relocation feature for original Prado Dam construction. The railroad had designed and constructed the 1938 bridge superstructure. The two other bridges and piers were designed and constructed by BNSF in 1995 immediately downstream of the 1938 bridge. The 1995 bridge piers were designed for the anticipated SARM project design flows but for lesser scour than the ultimate design scour for the current project.

Protection conceptual alternatives include utilizing reinforced concrete pier nose extension wall in the upstream direction on pile foundation, sheet pile wall enclosure around the piers, reinforced concrete diaphragm wall and tiebacks at the abutments, and widening of low flow channel. Additional grouted stone revetment would be needed to tie the upstream and downstream bank protections to the BNSF Railroad Bridge left abutment to protect against design high flow and scour erosion at both abutment fill slopes.

### 2.3.4 Phase 2B

The Phase 2B bank protection project is on the left bank, it is approximately 5,800 feet in length and is located immediately downstream of Phase 2A. The low flow channel runs parallel and is adjacent to SR-91.

Prior to the Phase 2B project, the left bank of the low flow channel ran along the toe of the SR-91 embankment and the right along the edge of the Green River Golf Course. The low flow was lined with soil cement and concrete on the left and right banks, respectively. The low flow channel was damaged in 2005 by flows estimated at 10,000 cubic feet per second (cfs). The concrete lining was destroyed and the soil cement revetment was determined to be inadequate to protect the SR-91 embankment against future design releases from Prado Dam.

The Phase 2B project was awarded in 2009. The bank protection has been constructed. However, restoration activities are currently in the final stages and are expected to be completed in November 2013. The major features in the project include approximately 200 linear feet of metal sheet pile wall with tiebacks at the downstream end of the project where the wall ties into existing high ground; approximately 5,550 linear feet of grouted stone over the channel bank combined with derrick stone at the toe; approximately 400 linear feet of riprap combined with derrick stone at the toe at the upstream end where it transitions into the grouted stone protection; construction of a bridge over the low flow channel; construction of new side drains and extension of existing side drains; utility relocations; and construction of a bike path segment.

The project was designed prior to the implementation of EC 1165-2-214. However, the project was subject to rigorous reviews as part of the former ITR process. The project is currently undergoing IEPR during the construction phase, per the recommendation included in the previously approved RP.

### 2.3.5 Phase 3

The Phase 3 bank protection project is on the left bank, it begins approximately 3.0 miles upstream of Weir Canyon Road and extends approximately 1,500 feet upstream. The low flow channel runs parallel to and is adjacent to SR-91.

Prior to the Phase 3 project, Orange County Flood Control District (OCFCD) performed a scour analysis of Reach 9 for the County's Santa Ana Regional Interceptor (SARI) line relocation design. The results of the analysis indicated that the protection along approximately 1,500 feet of the channel bank is not adequate to protect against impinging flows or deep enough to protect against the design scour condition. The District subsequently confirmed the inadequacy with a separate scour study.

The project's construction contract was awarded in September 2013. The construction is expected to be completed by December 2014. The major features of the project include approximately 1,500 linear feet of soil cement on the slope of the bank; extension of existing side drains; and construction of a bike path segment.

The project underwent DQC, ATR, and IEPR during design phase, as recommended in the previously approved RP. The project is in the initial stages of construction and will be undergoing IEPR SAR during the construction phase.

### 2.3.6 Phase 4

The Phase 4 bank protection project is on the left bank. The project is located immediately upstream of Phase 3 and extends approximately 3,150 feet in length. The low flow channel runs parallel to and is adjacent to SR-91.

The existing left channel bank within the proposed Phase 4 project limits is not armored. Previously, OCFCD constructed a rock groin in the river in the vicinity of the proposed Phase 4 project. The purpose of the groin is to protect the existing SARI line. In addition, the groin prevents the low flow channel from meandering and thus keeps the low flow channel from potentially impinging on the channel bank. However, the groin will be removed due to environmental requirements after the SARI line is relocated. After the groin is removed, the path of the low flow channel would be unrestricted and could impinge then erode the channel bank adjacent to SR-91. The District is developing a design to strengthen and protect the bank against impingement forces and accommodate the future design flows.

The project is in the initial stages of design and is scheduled for award in August 2014. The major features in the design are anticipated to include: approximately 3,150 linear feet of bank protection; extension of existing side drains; and construction of a bike path segment. The bank protection alternatives would include riprap, derrick stone, grouted stone, soil cement, or sheet pile with tiebacks.

### 2.3.7 Phase 5A

The Phase 5A bank protection project is on the right bank. The project is approximately 0.4 miles upstream of Weir Canyon Road and is located immediately upstream of the first segment of the completed Phase 1 bank protection. The project extends approximately 4,800 feet in length. The low flow channel runs parallel to and is adjacent to La Palma Avenue.

Previously, the OCFCD had constructed a riprap revetment over the channel bank in the area of the proposed Phase 5A project. The District determined that the riprap protection was inadequate to resist impingement forces and the future design flows. Additionally, the project area is located where the channel makes a sharp 90-degree bend, and therefore, has a higher potential for bank erosion. The District will develop a design to strengthen and protect the bank against impingement forces and accommodate the future design flows.

The project is in the initial stages of design and scheduled for award in March 2015, after the Phase 4 project, depending on the availability of funds. The major features in the design are anticipated to include: approximately 4,800 linear feet of bank protection; extension of existing side drains; water diversion; and replacement of a bike path segment. The bank protection alternatives would include of riprap, derrick stone, grouted stone, soil cement, or sheet pile with tiebacks.

### 2.3.8 Phase 5B

The Phase 5B bank protection project is on the right bank. The project is located immediately upstream of Phase 5A. The terminus of the project has not been finalized; however, it is expected to extend approximately 2.75 miles and run parallel to La Palma Avenue. The Phase 5B project will be addressed in the future when more information is available and will be covered in a separate RP - Addendum No. 02 of the RP prepared for Reach 9. No other references will be made to Phase 5B in this document.

## 3. PROJECT WORK PRODUCTS

### 3.1 Description of Work Products

The work products related to this RP (Amendment 01) include an EDR for Reach 9; DDR and P&S for the BNSF Railroad Bridge, Phase 4, and Phase 5A projects; and updates to the O&M manuals.

#### 3.1.1 Engineering Documentation Report (EDR)

The primary purpose of the EDR is to document minor changes to the SARM Reach 9 feature that was not included in the original scope for project authorization. Therefore, all phases of Reach 9 require an updated explanation of how the design was chosen and how the upstream and downstream limits were determined. Engineering Regulation 1110-2-1150 states that the EDR should follow the format of a DDR and include updated economic analysis.

#### 3.1.2 Design Documentation Report – BNSF Railroad Bridge

The District's 2011 hydraulic analysis revealed potential impacts to the existing BNSF Railroad Bridge pier and abutment foundations. Scour estimates included local pier scour and abutment scour in addition to long term general scour that could expose the foundation to an unacceptable level and result in bridge stability concerns. Due to the anticipated lengthy coordination process for review and approval of the special protection design for bridge pier and abutments, consideration of environmental constraints for protection design measures, and preparation of acquisition agreement for railroad right-of-way, the BNSF Railroad Bridge project will have a separate DDR. The DDR documents will be prepared by the District with the Geotechnical Appendix to be prepared by an A-E Contractor.

#### 3.1.3 Design Documentation Report – Phase 4 and 5A

The 2011 hydraulic analysis also revealed that bank protection is required along the two additional segments within Reach 9 – now identified as Phase 4 and Phase 5A. These phases were not part of the Reach 9 DDR; therefore, the basis of design for these phases will be documented in a separate DDR. The DDR will contain a full record of design decisions, assumptions, and methods made during the initial phases of design. It will also serve as a summary of the design used by the project delivery team PDT. The DDR will be prepared by the District.

### 3.1.4 Plans and Specifications

The P&S for BNSF Railroad Bridge protection will be prepared by the District. Geotechnical analysis and technical support will be provided by an A-E Contractor on the pier nose extension wall foundation design and diaphragm wall design.

The P&S for Phase 4 and Phase 5A will be prepared by the District and are scheduled for completion in June 2014. The major features for Phase 4 and Phase 5A projects may include bank protection consisting of riprap, derrick stone, grouted stone, soil cement, or sheet pile with tiebacks; extending existing drainage structures; constructing a temporary and permanent bike path; temporary diversion of water; and other minor features of work.

### 3.1.5 Operation and Maintenance Manuals

There is an existing Lower Santa Ana River O&M manual that includes Reach 1 through Reach 9 and Reach 10. The section of the O&M manual for Reach 9 will be amended after each phase is constructed. Phase 3, Phase 4, Phase 5A and a portion of Phase 2B are the phases in Reach 9 that are within Orange County. The District will prepare a separate O&M manual for the phases in Reach 9 that are in Riverside County which include Phase 2A and the remaining portion of Phase 2B, and BNSF Railroad Bridge protection.

## 3.2 Required Level of Review

### 3.2.1 Engineering Documentation Report

The EDR will undergo DQC and ATR reviews. The District determined that a Type II IEPR on the EDR will not be required because the primary purpose of the EDR is to document minor changes to the SARM Reach 9 feature that were not part of the original scope for project authorization. The EDR is neither a decision document nor an implementation document. A risk informed decision was made to not undergo a Type I or Type II IEPR SAR as noted in Section 4.2.2.1. The basis of design for each feature of work will be documented in the corresponding DDR. Each DDR will undergo Type II IEPR at the appropriate time.

### 3.2.2 Design Documentation Report

The DDR for Phases 4 and 5A will undergo DQC and ATR. In addition, the DDR will require Type II IEPR SAR because it is an implementation document and because the project purpose is flood risk management where potential hazards would pose a significant threat to human life and public safety.

### 3.2.3 Plans and Specifications

The P&S for BNSF Railroad Bridge, Phase 4, and Phase 5A will undergo DQC and ATR. In addition, the P&S will require Type II IEPR SAR because they are implementation documents and because the projects' purpose is flood risk management where potential hazards would pose



a significant threat to human life and public safety. The Type II IEPR SAR will continue through the end of construction for each phase.

### 3.2.4 Operations and Maintenance Manuals

O&M manuals will undergo DQC and ATR. Additionally, an external review is required for both O&M manuals because the projects' purpose is flood risk management and failure to adequately maintain critical features in the projects would potentially pose a significant threat to human life and public safety. The O&M manuals are implementation documents and will therefore undergo a Type II IEPR SAR.

### 3.3 Reference Materials

Electronic versions of all pertinent documents, including, DDRs, P&S, O&M manuals, and all other relevant information available shall be distributed in Adobe Acrobat PDF format to the ATR and IEPR members at the appropriate time.

## 4. SCOPE OF REVIEW

### 4.1 District Quality Control

Per the District's Quality Manual, the DQC activities for the EDR, DDRs, P&S, and O&M manuals will consist of Quality Checks and Reviews; supervisory reviews; PDT reviews including input from the local sponsor, if applicable; and biddability, constructability, operability, environmental and sustainability (BCOES) reviews, as required by the District Quality Manual.

### 4.2 Agency Technical Review

The ATR team will review the EDR, DDRs, P&S, and O&M manuals. General review guidelines for the ATR team are described below, followed by the points of emphasis for each document.

#### 4.2.1 General Review Guidelines

ATR is undertaken to "ensure the quality and credibility of the government's scientific information" in accordance with ER 1110-1-12. In order to ensure incorporation of USACE national experience for Flood Risk Management Projects (as updated per post-Katrina investigation), and in addition to the DQC, an ATR will also be performed. Moreover, all provisions and checklists for SAR contained in EC 1165-2-214 will be incorporated into the charge to the ATR team.

##### 4.2.1.1 ATR Team Responsibilities.

Reviewers shall review project authorization material, design documents and National Environmental Policy Act (NEPA) documents to confirm that work was done in accordance with established professional principles, practices, codes, and criteria and for compliance with laws

and policy. Comments on the design documents shall be submitted into Document Review and Checking System (DrChecks).

Reviewers shall pay particular attention to one's discipline, but may also comment on other aspects, as appropriate. Reviewers that do not have any significant comments pertaining to their assigned discipline shall provide a comment stating this.

Grammatical and editorial comments shall not be submitted into DrChecks. Comments shall be submitted to the ATR manager via electronic mail using the "Tracked Changes" feature in the Microsoft Word document or as a hard copy mark-up. The ATR manager shall provide these comments to the Study Manager.

The appropriate structure of the review comments is described in the charge.

The "Critical" comment flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Technical Project Leader first.

#### 4.2.1.2 PDT Responsibilities

The team shall review comments provided by the ATR team in DrChecks and provide responses to each comment using "Concur," "Non-Concur," or "For Information Only." Concur responses shall state what action was taken and provide revised text from the report, if applicable. Non-Concur responses shall state the basis for the disagreement or clarification of the concern and suggest actions to negotiate the closure of the comment.

Team members shall contact the PDT and ATR managers to discuss any "Non-Concur" responses prior to submission.

#### 4.2.2 Emphasis of Review for Work Products

##### 4.2.2.1 Engineering Documentation Report

A Type II SAR is not required because the EDR is neither a decision document nor an implementation document. The primary purpose of the EDR is to document minor changes to the SARM Reach 9 feature that were not part of the original scope for SARM project authorization. The document will clearly define why the changes are required. The ATR team should review the rationale for defining the proposed design changes, ensuring that the document uses consistent rationale for each phase. The horizontal and vertical limits need to be checked for consistent levels of protection for the various armoring designs throughout Reach 9. The review will verify that the roadways, bridges, railroads, and adjacent infrastructures are provided with a consistent level of protection based on the latest approved scour study prepared by the District.

##### 4.2.2.2 Design Documentation Reports

When reviewing the DDRs, the ATR team shall verify that they are sufficiently detailed for each technical specialty. In this way, the criteria that were used, the critical assumptions which were made, and the analytical methods that were used will be evident in the proposed review and for historical documentation. In addition, the team shall verify that the documents contain summaries of important calculation results and selected example calculations for all critical elements of the design.

#### 4.2.2.3 Plans and Specifications

When reviewing the P&S, the ATR team shall verify that the P&S are prepared in accordance with ER 1110-2-1200 and the Architect/Engineering/Construction CADD Standards along with Tri-Service Spatial Data Standards. The team will verify that the P&S contain all necessary information required to bid and construct the plan detailed in the engineering appendix and documented in the DDR. In addition, the team shall review the BCOES aspects of the design.

#### 4.2.2.4 O&M Manuals

When reviewing the O&M manuals, the ATR team will verify that the requirements included in the O&M for the maintenance of the features within each phase will adequately maintain the conditions assumed during the design and validated during construction. The team will also verify that the proposed project monitoring methods will adequately reveal any deviations from the assumptions made for performance. Finally, the team will verify that adequate guidance is included to acquire the permits required to undertake repair work in accordance with ER 1110-2-401.

### 4.3 Type II, Independent External Peer Review (Safety Assurance Review)

The DDRs, P&S, and the O&M manuals shall undergo a Type II IEPR SAR during the design and construction phases. General review guidelines for the Type II IEPR SAR team are described below followed by the points of emphasis for each phase of work.

#### 4.3.1 Charges

The RMO will develop the charges for the review, per EC 1165-2-214. The charges will contain the instructions regarding the objective of the peer review and the specific advice sought. Reviewers shall be charged with reviewing scientific and technical matters, leaving policy determination for the USACE and the Army. The charge will specify the structure of the review comments to fully communicate the reviewer's intent by including: the comments, why it is important, any potential consequences if issue is not addressed, and suggestions on how to address the comment. It will include specific technical questions while also directing reviewers to offer a broad evaluation of the overall document. The charge will be determined in advance of the selection of the reviewers.

#### 4.3.2 General Review Guidelines

Panel members will address all underlying planning, safety assurance, engineering, economic,

and environmental analyses, not just one aspect of the project.

#### 4.3.2.1 Design Phase

During the design phase, panel members shall evaluate and review the design submittals and provide their comments in DrChecks. The design submittals will be at various stages of completion, as defined in the Section 7 of the updated RP (Addendum No. 01). Panel members will address key features and components to validate the state of the art approach being used to design and construct the system.

#### 4.3.2.2 Construction Phase

During the construction phase, a minimum of one 1-day site visit shall be scheduled for each project where the panel shall evaluate and review on-going construction activities. The appropriate peer reviewers will monitor the progress of construction and review critical construction operations during each visit. The visit should coincide with about the mid-point of construction operations. Each visit will terminate with an exit briefing, which will be scheduled by the Project Manager and will be conducted at the Prado Dam Field Office. Each reviewer shall document each site visit with a Field Visit report. The Field Visit reports will include a check list; photographs of features observed; a summary of the observations made for each feature; and other relevant information. The Field Visit Reports shall be included in the Construction Final Report as an appendix.

### 4.3.3 Emphasis of Review for Work Products

#### 4.3.3.1 Design Phase

During the design phase, the key features and components to be evaluated and reviewed are the soil material characteristics, scour analysis, and the structural design of the sheet pile, where applicable. When reviewing the addendums to the DDR and P&S, the IEPR panel will verify that the assumptions made in the engineering documents are sound.

#### 4.3.3.2 Construction Phase

During the construction phase, the panel shall verify assumptions made during the design are still valid through construction. Depending on type of protection that is selected, the panel shall verify that the stone is properly placed and grouted; the soil cement is properly mixed, constructed, cured; the side drains are properly extended, constructed and tested; the panel shall verify that the sheet piles and tie-backs are properly driven, installed and checked; and utilities are properly protected or relocated.

#### 4.3.3.3 Post Construction

When reviewing the O&M manuals, the panel will verify that the requirements specified in the O&M manual will maintain the conditions anticipated for the project to function properly in the future.

## 5. PROJECT DELIVERY TEAM AND REVIEW TEAMS

### 5.1 Project Delivery Team

See Appendix B for PDT

### 5.2 Review Teams

#### 5.2.1 District Quality Control/Assurance

See Appendix B for DQC roster

#### 5.2.2 Agency Technical Review

An ATR team was established for the Reach 9 – Phase 2A, Phase 3 projects, per ER 1110-1-12 and EC 1165-2-214. In order to maximize project continuity, the District proposes to use the same ATR team for the BNSF Railroad Bridge, Phase 4, and Phase 5A projects, if possible. The ATR was managed by the RMC. The ATR was conducted by individuals and organizations that are separate and independent from those that accomplished the work, in accordance with policy. The RMC was responsible to select the ATR lead and identifying the other ATR team members. All potential ATR members are in conformance with the requirements for Corps of Engineers Reviewers Certification Access Program (CERCAP) and are regional technical specialists; appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; appointed SME or senior level experts from the responsible district; experts from other Corps commands; or a combination of the above. The ATR lead is an USACE employee outside the South Pacific Division. Appendix B will be updated to include the names of the reviewers after the selection process is completed.

#### 5.2.3 Type II IEPR Panel

An RMC contract was utilized to acquire the services of Schnabel Engineering, a qualified outside eligible organization (OEO), to manage the IEPR for the Phase 2A, Phase 2B, and Phase 3 projects. In order to maximize project continuity, the District proposes to use the same IEPR team for the BNSF Railroad Bridge, Phase 4, and Phase 5A projects. The disciplines required for the Type II IEPR SAR and the expertise required within each disciplines is identified in Appendix B.

## 6. PUBLIC COMMENT

To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, this Review Plan will be published on the district's public internet site following approval by SPD at <http://www.spl.usace.army.mil/Missions/CivilWorks/ReviewPlans.aspx>.

This is not a formal comment period and there is no set timeframe for the opportunity for public comment. If and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. The public is invited to review and submit comments on the plan as described on the web site.

## 7. REVIEW SCHEDULE

### 7.1 General

Based on SPL's commitment to execute the schedule for the completion of the DDRs, P&S and construction for the BNSF Railroad Bridge, Phase 4, and Phase 5A bank protection projects, the milestones for the DQC, ATR, and IEPR, SAR processes have been established and are documented below.

### 7.2 Funding

#### 7.2.1 District Quality Control

It is anticipated that the total cost for all the DQC efforts described in the updated RP (Addendum No. 01) will be approximately \$200,000. DQC efforts will be funded with project labor codes.

#### 7.2.2 Agency Technical Review

It is anticipated that the total cost for all the ATR efforts described in the updated RP (Addendum No. 01) and in the original RP will be approximately \$400,000. The District will provide labor funding by cross charge labor codes. If travel is required, then funding will be provided by way of a government order. The Project Manager will work with the ATR lead to ensure that adequate funding is available and is commensurate with the level of review needed. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring.

The ATR lead shall provide organization codes for each team member and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes. Reviewers shall monitor individual labor code balances and alert the ATR lead, in advance, of any possible funding shortages.

#### 7.2.3 Type II IEPR

It is anticipated that the total cost for all the IEPRs efforts described in the updated RP (Addendum No. 01) and in the original RP will be approximately \$450,000. The cost for Type II IEPR, will be shared in accordance with the project purpose(s). RMC will transfer SAR contract capacity to the MSC/District for completion of the SAR.

7.3 Schedules

Engineering Documentation Report Milestones:	
Submit Draft EDR for DQC	08 Jan 2014
PDT Review Completed	22 Jan 2014
Submit Final Draft EDR for DQC	05 Feb 2014
Submit Final Draft EDR for ATR	05 Mar 2014
ATR Certification	16 Apr 2014
EDR Approval	30 Apr 2014

Phase 4 and 5 DDR Milestones:	
Review Plan Approval by SPD	01 Jan 2014
Submit Draft DDR for DQC	01 Oct 2013
PDT Review Completed	01 Jan 2014
Submit Final Draft DDR for DQC	01 Feb 2014
Submit Final Draft DDR for ATR and SAR	01 Mar 2014
ATR Certification	15 May 2014
SAR Report Approval by SPD	01 Jun 2014
DDR Approval	01 Jun 2014

Phase 4 Plans and Specifications Milestones:	
Submit Final Draft of P&S for DQC	01 Apr 2014
Submit Final Draft of P&S for ATR and SAR	01 May 2014
ATR Certification	01 Jun 2014
SAR Report Approval by SPD	01 Jun 2014
BCOES Review Certification	01 Jul 2014
P&S Approval	01 Aug 2014

Phase 4 Construction Contract Milestones:	
Pre-Advertise Notice Published (30 days before RTA)	01 Jun 2014
Contract Ready to Advertise	30 Jun 2014
Construction Contract Advertisement	15 Jul 2014
Bid Opening	15 Aug 2014
Construction Contract Award	01 Sep 2014

Phase 5A Plans and Specifications Milestones:	
Submit Final Draft of P&S for DQC	17 Mar 2014
Submit Final Draft of P&S for ATR and SAR	07 May 2014
ATR Certification	22 Jul 2014
SAR Report Approval by SPD	12 Aug 2014
BCOES Review Certification	18 Aug 2014
P&S Approval	22 Aug 2014

Phase 5A Construction Contract Milestones:	
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**REVIEW PLAN (ADDENDUM NO. 01) SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA  
LOWER SANTA ANA RIVER (WEIR CANYON ROAD TO PRADO DAM)  
REACH 9 – EDR, BNSF RAILROAD BRIDGE AND PHASES 1, 2A, 2B, 3, 4, AND 5A**

Pre-Advertise Notice Published (30 days before RTA)	15 Jul 2014
Contract Ready to Advertise	22 Aug 2014
Construction Contract Advertisement	22 Aug 2014
Bid Opening	22 Sep 2014
Construction Contract Award	30 Sep 2014

**BNSF Railroad Bridge DDR Milestones:**

Original Review Plan Approval by SPD	11 Jun 2011
Submit Draft DDR for DQC	02 Dec 2013
PDT Review Completed	31 Dec 2013
Submit Final Draft DDR for DQC	21 Jan 2014
Submit Final Draft DDR for ATR and SAR	18 Mar 2014
ATR Certification	10 Jun 2014
SAR Report Approval by SPD	01 Sep 2014
DDR Approval	10 Jun 2014

**BNSF Railroad Bridge Plans and Specifications Milestones:**

Submit Final Draft of P&S for DQC	14 Jan 2014
Submit Final Draft of P&S for ATR and SAR	21 Apr 2014
ATR Certification	10 Jun 2014
SAR Report Approval by SPD	01 Sep 2014
BCOES Review Certification	11 Jul 2014
P&S Approval	10 Jun 2014

**BNSF Railroad Bridge Construction Contract Milestones:**

Pre-Advertise Notice Published (30 days before RTA)	14 Jun 2014
Contract Ready to Advertise	14 Jul 2014
Construction Contract Advertisement	14 Jul 2014
Bid Opening	24 Aug 2014
Construction Contract Award	09 Sep 2014

## 8. DOCUMENTATION OF REVIEWS

### 8.1 District Quality Control/Assurance

The engineering documents will be distributed to the appropriate reviewers, including peer reviewers, supervisors, sponsors and may include other stakeholders. All comments will be documented in DrChecks.

### 8.2 ATR

#### 8.2.1 ATR Communication and Documentation

The ATR team will use DrChecks to document the review process. The Technical Project Leader will facilitate the creation of a project portfolio in the system to allow access by all PDT and



ATR team members. An electronic version of the documents, appendices, and any significant and relevant public comments will be sent to the ATR lead via a secured file transfer program (ftp) site at least one business day prior to the start of the review period. The ATR lead will then distribute the documents to all reviewers via a secure ftp site.

The PDT will help to orient the ATR team by hosting virtual kick-off meeting, if travel is not viable, during the first week of the review period. The PDT will prepare a presentation on the project. The presentation will include photos of the site, identify special features and provide overall information on the project.

The Technical Project Leader shall inform the ATR lead when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

A revised electronic version of the documents with the comments incorporated shall be sent to the ATR lead via a secured ftp site. The ATR lead will forward the documents, via a secure ftp site, to the other reviewers for use during the back check period.

PDT members shall contact ATR team members, as appropriate, to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions shall be provided in the system.

Reviewers will be encouraged to contact PDT members directly via email or phone to clarify any confusion. DrChecks shall not be used to post questions needed for clarification.

### 8.2.2 ATR Resolution

Reviewers shall back check PDT responses then either close the comment or attempt to resolve any disagreements. Conference calls shall be used to resolve any conflicting comments and responses.

Reviewers and PDT members may “agree to disagree” on certain comments. The comment may be closed with a detailed explanation. If reviewer and responder cannot resolve a comment, it shall be brought to the attention of the ATR lead. If the ATR lead is unable to resolve the issue, the ATR lead will implement the guidelines as described below in the paragraph on Dispute Resolution.

The ATR team will identify significant issues that they believe are not satisfactorily resolved and will note these concerns in the Agency Technical Review Certification documentation. The ATR team will prepare a Review Report which includes a summary of each unresolved issue. Review Reports will be considered an integral part of the ATR documentation. Annotated ATR comments will be provided to the RMC then the RMC will notify the District of closure of each phase of ATR or identify issues remaining for resolution.

Significant unresolved ATR concerns that are documented by the RMC will be forwarded through the MSC to the HQ USACE RIT, including basic research of Corps guidance and an

expression of the desired outcome, for further resolution in accordance with the policy issue resolution process described in ER 1110-2-12 or Appendix H, ER 1105-2-100, as appropriate. HQ USACE may choose to defer the issue to the policy compliance review process or address it directly. At this point the ATR documentation for the concern may be closed with a notation that the concern has been elevated for resolution by HQ USACE. Subsequent submittals of reports for MSC and/or HQ USACE review and approval shall include documentation of the issue resolution process.

### 8.2.3 ATR Certification

To fully document the ATR process, a statement of technical review will be prepared for each product reviewed. The ATR documentation will include the text of each ATR comment, the PDT response, a brief summary of the pertinent points in the ensuing discussion, including any vertical coordination, and the agreed upon resolution. Certification by the ATR lead and the Technical Project Leader will occur once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a certification statement (Appendix C).

## 8.3 IEPR

### 8.3.1 IEPR Communication and Documentation.

The IEPR will be documented in DrChecks. The Technical Project Leader will facilitate the creation of a project portfolio in the system to allow access to the PDT and OEO.

An electronic version of the engineering documents, appendices, and any significant and relevant public comments will be sent to the OEO via a secured ftp site at least one business day prior to the start of the comment period. The OEO will then distribute the documents to all reviewers via a secure ftp site. The IEPR team will review the appropriate engineering submittals then document any comments. The OEO will compile the comments, upload the comments onto DrChecks, and then notify the District when all of the comments have been uploaded.

The PDT will address the comments or consult outside sources, as necessary, to develop a proposed response to each comment. The PDT may or may not concur with a reviewer's comment. The PDT will upload the proposed responses onto DrChecks, and then the Technical Project Leader will notify the OEO when all responses have been uploaded. A revised electronic version of the documents with comments incorporated shall be sent to the OEO via a secured ftp site.

The OEO will distribute the proposed responses and revised documents to the reviewers for their use during the back check period. The Technical Project Leader and OEO may schedule a briefing to summarize responses and highlight any areas of disagreement. The reviewers will prepare final replies to the proposed responses. The OEO will upload the reviewers' replies onto DrChecks. The reviewers' final replies may or may not concur with the USACE's proposed responses. The reviewers' final replies will indicate concurrence or briefly explain what issues are blocking concurrence. There will be no final closeout iteration.

The District will consult the vertical team and outside resources to prepare an agency response to each outstanding comment. The reviewers' initial comments, the District's proposed responses, the reviewers' final replies, and the final agency response will all be tracked and archived in DrChecks for the administrative record. However, only the initial reviewers' comments and the final agency responses will be posted. This process will continue to be refined as experience shows need for changes.

PDT members cannot contact the IEPR panel members directly. All communication shall occur through the OEO. The PDT may seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.

The IEPR panel shall produce final Review Reports, including documentation of the peer review of the Project Design and field visit reports on construction activities.

The SAR comments and recommendation letter must be provided to RMC as soon as they become available.

### 8.3.2 IEPR Resolution

The OEO shall review the products, comments, PDT responses and final back check replies then identify any outstanding disagreements between members of the PDT and the review panel. Resolution meetings must be set when resolution is not readily achievable. The RMC must attend the SAR comment resolution meetings with the panel and the meeting must be set with consideration of the RMC's schedule and with enough advanced notice to facilitate attendance. When resolutions are not readily achievable, the RMC should engage the PCX or MSC SMEs to help facilitate resolution, and they in turn may choose to engage HQ USACE SMEs. HQ USACE may choose to defer the issue to the policy compliance review process or address it directly. If a specific concern still remains unresolved, the USACE is to pursue resolution through the policy issue resolution processes described in Appendix H, ER 1105-2-100, ER 1110-1-12, or other applicable guidance.

### 8.3.3 IEPR Certification

The panel's comments, the PDT's responses, and the panel's final replies shall be provided to the RMC. RMC must concur with closure of the SAR.

## 9. POINTS OF CONTACT

Questions about this Review Plan may be directed to the Los Angeles District Project Delivery Team, Design Lead Supervisor, Mr. Robert Kwan, P.E. at (213) 452-3639; Project Manager for the Phase 4 project, Mr. Damien Lariviere at (213) 452-4015; Project Manager for the EDR, BNSF Railroad Bridge, and Phase 5A projects, Mr. Thomas Bucklew at (213) 280-9511; or the Chief of Engineering Division is Mr. Richard J. Leifield, P.E. at (213) 452-3629. Inquiries to the MSC will be directed to Paul Bowers at (415) 503-6556.

## 10. REVIEW PLAN APPROVAL

The RMO for all work products for the EDR, BNSF Railroad Bridge, Phase 4, and Phase 5A projects is the RMC, in close coordination with the SPD MSC and FMR-PCX.

The Los Angeles District will continue to comply with the review requirements as identified on the Review Plan for the Santa Ana River Mainstem, Including Santiago Creek, California, dated 03 June 2011 and approved on 10 June 2011.

In addition, the Los Angeles District will fully comply with all existing guidance, and conduct DQC, ATR, and Type II IEPR SAR in accordance with EC 1165-2-214 for the BNSF Railroad Bridge, Phase 4, and Phase 5A project features. However, the District has determined that an IEPR Type I or Type II SAR is not required for the EDR.

The approval of the updated RP (Addendum No. 01) for the Santa Ana River Mainstem, Including Santiago Creek, California, as outlined above, will help facilitate the District's completion of the BNSF Railroad Bridge, Phase 4 and Phase 5A projects within the authorized schedules. In order to ensure the updated RP (Addendum No. 01) is in compliance with the principles of EC 1165-2-214, the updated RP (Addendum No. 01) must be approved by the applicable MSC, in this case the Commander, South Pacific Division (SPD). Once the updated RP (Addendum No. 01) is approved, the District will post it on the district's public website and notify SPD. If necessary, any changes to the updated RP (Addendum No. 01) will be approved by following the process used for initially approving the plan.

The Los Angeles District requests that the South Pacific Division endorse the above recommendations and approve the updated RP (Addendum No. 01) as described in Appendix B of EC 1165-2-214

APPENDIX A

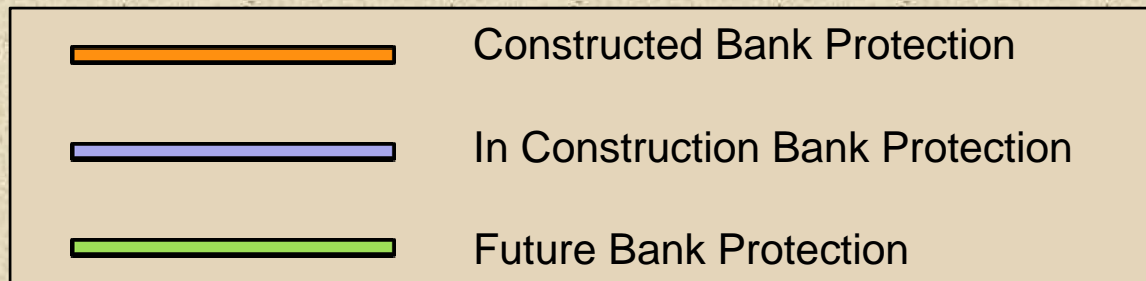
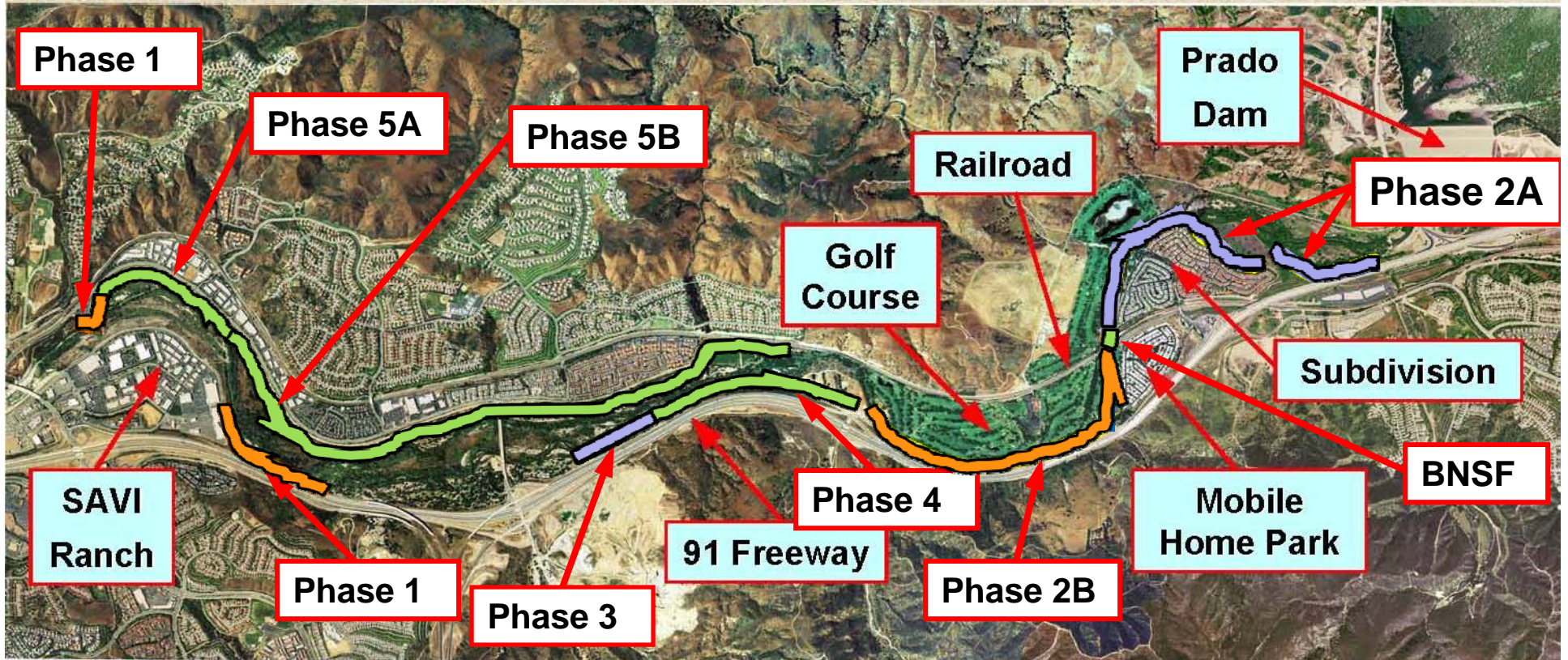
REACH 9 – PROJECT LOCATION MAP

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# Lower Santa Ana River

## Reach 9, Bank Erosion Protection



APPENDIX B

PDT, DQC, ATR ROSTERS

ATR AND IEPR REVIEWER QUALIFICATIONS



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BNSF Railroad

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

In addition to peer reviews, all engineering documents will include formal supervisory reviews during each level of completion.

District Quality Control – Supervisory Review

Name	Discipline	Agency/Office	Phone Number
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

ROSTERS AND QUALIFICATIONS OF ATR AND IEPR REVIEW TEAMS

POINTS OF CONTRACT

Office Name	Name	Phone Number
[REDACTED]	[REDACTED]	[REDACTED]
Vertical Team:		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]

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AGENCY TECHNICAL REVIEW MEMBERS (ATR)

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BNSF Railroad &  
Reach 9 EDR

Discipline	Name	Agency/Office	Phone Number
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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Phase 4 & 5A

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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ATR members for must have the minimum expertise listed below for the appropriate discipline:

ATR Team Leader. The ATR Team Leader should have 10 or more years of experience with Civil Works Projects and have performed ATR Team Leader duties on complex civil works projects.

Civil Engineering. The team member shall have 10 or more years of experience in design of flood control structures including levees, guide dikes and channels utilizing sandy soils (soft soils). Experience utilizing grouted stone, riprap, derrick stone, and concrete in design of levees, guide dikes and channels for large civil works projects is required. Demonstrated knowledge regarding site layout, surveying, 3-dimensional modeling, construction techniques, hydraulic structures, erosion control, and interior drainage is required.

Hydrology and Hydraulics. Team member should be a registered professional with 10 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood

risk management projects. Experience with all aspects of hydraulic engineering including: knowledge of analyses techniques of sediment and regime flows, forecasting of scour based on channel slope, sediment loads, sediment budget, geology, and basin/historic hydrology; hydraulic analyses and designs for outlet structures, diversion structures; and designing of the appropriate protection/launching apron dimensions and other river engineering structures; water velocities, pressures, directions, trajectories, and erosion potential; and hydraulic modeling is desired. Experience with the Dam or Levee Safety program is also desired. Active participation in related professional societies is encouraged. (Review work products, as necessary.)

Geotechnical Engineering. Team member shall have 20 or more years of experience in geotechnical engineering and shall be a recognized expert in the analysis, design and construction of embankment dams and levees on alluvial foundations with extensive experience in subsurface investigations, liquefaction analyses, earthquake induced embankment deformations, seepage and slope stability analysis, design and construction, and preparing plans and specifications for embankment dams and levees. The Geotechnical Engineer shall be a licensed professional engineer. Experience with the Dam or Levee Safety program is also desired. Active participation in related professional societies is encouraged. (Review work products, as necessary)

Structural Engineering. The team member shall have 10 or more years of experience in structural engineering. The Structural Engineer shall have extensive experience in design and evaluations of large complex hydraulic structures associated with flood risk management projects such as side drains constructed through levees. Experience with AASHTO and state road and bridge standards as well as practical knowledge of construction methods and techniques as it relates to structural portions of projects is encouraged. (Review work products, as necessary)

Cost Engineering. The team member should have 10 or more years demonstrated in the preparation of cost estimates, cost risk analyses and cost engineering. Experience is needed for complex Civil Works projects to include levee and floodwalls systems. Reviewer should be certified as a Cost Engineer by the Walla Walla DX which requires an 8 hour training and signed certificate. (Review work products, as necessary)

Geology. The team member shall have 10 or more years of experience in flood control projects assuring that the geologic factors affecting the location, design, construction, operation, maintenance of dams and levees, including the necessary investigations and testing are within the Corps current standards and criteria.

Construction Engineering/Operations. The team member should have 10 or more years of experience of construction management in complex large scale public works projects, including coordinating efforts in horizontal construction, specializing in earthwork, concrete work, floodwalls, roads and highways, relocations, paving and drainage.

Environmental. The team member should have 10 or more years of experience in NEPA compliance activities and preparation of Environmental Assessments and Environmental Impact Statements for complex civil/site work projects. Experience is needed for levee system projects. (Review work products, as necessary)

Real Estate. Team member will be experienced in federal civil works real estate laws, policies, and guidance. (Review work products, as necessary)

## TYPE II, INDEPENDENT EXTERNAL PEER REVIEW

The Type II IEPR panel will include the following disciplines: Civil, Hydrology and Hydraulics, Geotechnical, Structural and Environmental. To ensure that an appropriate level of review expertise is obtained, the following models are anticipated to be used in the design of the project. Civil 3-dimensional modeling will include: InRoads. H&H analyses will include the following models: CHANLPRO, HEC RAS, HEC 6T and HEC FDA. Geotechnical and structural analyses will include the following models: Seep/W, Slope/W, CLiq, CWALSSI, PILE BUCK, CUFRBC, CORTCUL and MATHCAD. In addition, Type II, IEPR panel members must have the minimum expertise listed below for the appropriate discipline:

Civil Engineering Panel Member. The Civil Engineer panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of flood control structures including levees, guide dikes and channels utilizing sandy soils (soft soils). Experience utilizing soil cement, riprap, grouted stone, and derrick stone in design of bank protection and channels for large civil works projects is required. Demonstrated knowledge regarding site layout, surveying, 3-dimensional modeling, construction techniques, grading, hydraulic structures, erosion control, interior drainage, road design and retaining walls is required.

Hydrology and Hydraulics (H&H) Panel Member. The H&H panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 15 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects. The panel member should be experienced in Flood Damage Reduction Projects, including large earth-fill, rock-fill, concrete or combination dams or systems of dams with their many hydraulic appurtenances such as gated and un-gated spillways, stilling basins, outlet works, control gates and valves, power intake structures, tunnels, conduits and approach and diversion channels and appurtenant control structures; and/or Local

Flood Damage Reduction Projects including levees; floodwalls; gravity outlet and gate closure structures; pumping stations; detention basins; storm drainage structures; lined and unlined flood control channels and improvement structures. Active participation in related professional societies is encouraged. (Review work products, as necessary)

Geotechnical Engineering Panel Member. Geotechnical Engineer panel member should be a registered professional geotechnical engineer from academia, a public agency, an Architect-Engineer or consulting firm with 20 years or more experience in geotechnical and earthquake engineering for critical flood risk management infrastructure and levee safety evaluations. It is preferred that panel member possess a PhD degree in geotechnical engineering, although an MS degree is acceptable. Panel member will be a recognized expert in the analysis, design and construction of embankment dams and levees on alluvial foundations with extensive experience in subsurface investigations; liquefaction analyses; earthquake induced embankment deformations; seepage and slope stability analysis; sheet pile analysis; design and construction of grouted stone embankments; and preparing plans and specifications for embankment dams and levees. (Review work products, as necessary.)

Structural Engineering Panel Member. Structural Engineer should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of hydraulic structures for large and complex civil works projects including in design of hydraulic structures such as side drains constructed through levees. Practical knowledge of construction methods and techniques as it relates to structural portions of projects is encouraged. (Review work products, as necessary)

Environmental – This Member should have a minimum of 10 years demonstrated experience in evaluating and conducting NEPA impact assessments, including cumulative effects analyses, for complex multi-objective public works projects with competing trade-offs. The panel member should have a minimum MS degree or higher in an appropriate field of study. Experience should encompass determining the scope and appropriate methodologies for impact assessment and analyses for a variety of projects and programs with high public and interagency



APPENDIX C

COMPLETION OF AGENCY TECHNICAL REVIEW  
CERTIFICATIONS

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**DEPARTMENT OF THE ARMY**  
LOS ANGELES DISTRICT, CORPS OF ENGINEERS  
P.O. Box 532711  
LOS ANGELES, CALIFORNIA 90053-2325

## COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the Engineering Documentation Report for the Lower Santa Ana River Mainstem Project, Reach 9 (Weir Canyon Road to Prado Dam) located in Orange and San Bernardino Counties, California. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing 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.

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Ronald G. Jansen  
ATR Team Leader  
CENWK-D-GC

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Date

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Oscar T. Bucklew, PE, PMP  
Project Manager  
CESPL-PM-C

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Date

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Nathan J. Snorteland  
Director of Risk Management Center  
CEIWR-RMC

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Richard J. Leifield, P.E.  
Chief, Engineering Division  
CESPL-ED

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Date

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Josephine R. Axt  
Chief, Planning Division  
CESPL-PD

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Date



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LOS ANGELES, CALIFORNIA 90053-2325

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the Design Documentation Report for the Lower Santa Ana River Mainstem Project, Reach 9 – BNSF Railroad Bridge located in Orange County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing 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.

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The Agency Technical Review (ATR) has been completed for the Plans and Specifications for the Lower Santa Ana River Mainstem Project, Reach 9 – BNSF Railroad Bridge Protection located in Orange County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing 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.

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**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the Design Documentation Report for the Lower Santa Ana River Mainstem Project, Reach 9 – Phase 4 (Gypsum Canyon Road to Coal Canyon Road) located in Orange County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing 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.

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**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the Design Documentation Report for the Lower Santa Ana River Mainstem Project, Reach 9 – Phase 5A (Weir Canyon Road to Gypsum Canyon) located in Orange County, California. The ATR was conducted as defined in the project’s Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer’s needs consistent with law and existing 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.

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APPENDIX D

BNSF RAILROAD BRIDGE PIER NOSE EXTENSION, SANTA ANA RIVER, RIVERSIDE AND SAN BERNARDINO COUNTIES, CALIFORNIA, QUALITY CONTROL PLAN, DATED JULY 2013  
(PREPARED BY URS GROUP, INC.)

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**U. S. ARMY CORPS OF ENGINEERS  
LOS ANGELES DISTRICT**

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**USACE Contract W912PL-10-D-0023  
Task Order 009**

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**BNSF Railroad Bridge Pier Nose Extension  
Santa Ana River, Riverside and San Bernardino Counties,  
California**

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***Quality Control Plan***

***July 2013***

**URS Project No. 29871609**

**Prepared by**

**URS GROUP, INC.  
2020 East First Street, Suite 400  
Santa Ana, CA 92705-4032  
Phone 714-835-6886  
Fax 714-973-4062**

# 1.0 QUALITY CONTROL PLAN

This plan delineates specific actions that will be taken to verify that all deliverables are thorough, complete and meet the professional standard of care. The URS Quality Management System (QMS) applies to this task order. All project deliverables will be detail-checked and reviewed according to the URS QMS and the quality documentation will be maintained in the Project Central File (PCF). The assigned checker and reviewer will have experience with the subject matter and will not have been involved in developing or preparing the work.

A completed Project Initiation Checklist (QMS Form 3-1) that identifies specific parts of the QMS that are expected to apply to this project is included in Attachment A and is filed in Quality folder *710 Proj Init Checklist* in the PCF. Blank copies of other forms needed for this task order are also included in Attachment A.

## 1.1 PROJECT SYNOPSIS

The Lower Santa Ana River Reach 9 – BNSF RR Bridge project is located at the transition between Reach 9, Phase IIA and Phase IIB channel improvements. These improvements will provide riverbank and scour protection for a reach of the Santa Ana River just upstream and downstream as well as under the BNSF RR Bridge. URS, is tasked with analysis of the existing bridge piers under long-term scour, geotechnical analysis of the foundation for the pier nose extension, determination of suitability of a diaphragm wall for abutment protection of the BNSF RR Bridge, and, if suitable, completion of the analysis of the diaphragm wall. URS is also tasked with preparation of the Geotechnical Appendix to the Design Document Report, attending a value engineering workshop, and presenting the design concept to BNSF officials in the Los Angeles area and in Kansas City, Missouri. URS will provide technical recommendations, reviews, and input to prepared construction specifications; prepare an engineer's cost estimate, for construction of the Pier Nose Extension Foundation and Diaphragm Wall scour protection, including a set of Quantity Calculations; and prepare design “concept level” plans associated with the diaphragm- wall scour protection

## 1.2 PROJECT INITIATION AUDIT

A Project Initiation Audit is required to be completed within 30 days of project initiation in the Time Sheet Collection System. The Project Manager is responsible for notifying the Division Quality Representative that his project requires a Project Initiation Audit.

## 1.3 APPLICABLE QMS ELEMENTS

Below is a minimum list of quality control elements and associated forms that will be used for this project. Refer to Volume 3 – *Quality Instructions* of the QMS for detailed instructions on completing the forms. A hard copy of the forms is included in Attachment A. Electronic copies of individual forms are included in the project directory in folder *701 Blank forms with job info*. When one of these electronic forms is used, it is acceptable to fill in as much information as possible electronically – in this case the

form should be saved using a modified name to enable easy retrieval and to preserve the original template.

- Detail Check—Calculations [Quality Form 3-3] – Required for each calculation
- Detail Check [Quality Form 3-4] – To be completed for each deliverable. The deliverables are listed in Attachment B. The deliverable will undergo a thorough review for correctness of content, completeness, technical accuracy and grammar; it may be necessary to use one checker for checking of grammar and style and another for checking of technical content.
- Independent Technical Review [Quality Form 3-5, Comments and Disposition Form, and 3-6, ITR Report] – An ITR of each deliverable will be completed to meet the schedule. Detail checking should be completed before the ITR. The ITR will review the deliverable for completeness, readability and compliance with scope requirements and the professional standard of care.

The ITR reviewers are assigned by the Project Manager. ITR reviewers are selected based on individual expertise and qualifications to perform the review and will participate in the planning of the Task Order execution and carry through the entire Task Order. ITR reviewers will review all aspects of the work. Attachment A contains the forms for documentation of ITRs. The completed and signed Forms 3-5 and 3-6 will be included in an appendix to the report reviewed as proof of completion of URS' Quality Control process.

Comments made by checkers and reviewers must be accepted or rejected by the responsible originator. Any differences of opinion will be resolved by the PM or PIC. Accepted comments and resolutions will be back-checked to insure they are appropriately incorporated.

Furthermore, the USACE will initiate the DrChecks electronic review comment and response process in ProjNet, and URS will document its responses to the USACE comments. Upon completion and approval by the USACE, the DrChecks process will be closed by the USACE Project Manager, certifying full compliance and satisfactory response to comments on the final work product. For reports, the complete set of comments, responses and closures of each comment will be including as an appendix to the report.

- Contract Closure [Project Closure Contract Closeout List URS Federal Gov FCA-3] – Required at the end of the project in order to close the project.

## 1.4 QUALITY GUIDELINES

The following Quality Guidelines available on the Quality page on the SoURSe will be followed:

- Guidelines for Statements of Limitations
- Guidelines for Project Reviews
- PIC Role from the QMS Standpoint
- Guidelines for Performing Independent Technical Reviews
- Guidelines for Color-coded Marking Procedures
- Guidelines for Preparing and Checking Calculations
- Guidelines for Preparing and Checking Drawings
- Guidelines for Preparing and Checking Technical Specifications
- Internal Quality Audit Tool User Guide

## 1.5 CALCULATIONS

Calculations performed shall be signed and stamped by a Registered Civil Engineer(s) who is duly licensed by the State of California. All calculations shall be neat, orderly, and reference appropriate important formulas, assumptions and procedures used.

## 1.6 QC STAFF

Messers Leo Handfelt and Melad Hanna, PhD, are designated to perform Independent Technical Reviews. Mr. Handfelt will geotechnical reviews and Mr. Hanna will perform structural reviews. The PM, Michael Smith, will assign calculations, checkers and detailed checkers as appropriate for the calculations being performed.

## 1.7 PROJECT REVIEW

Per Procedure 8 in the URS QMS, a Project Review will be required for this project. The PM will conduct the review after the Draft geotechnical appendix to the Design Documentation Report (DDR) has been submitted. The attendees will include (at a minimum) the Office Manager or designee, the PIC (who is also the Office Manager), the lead team member from each division with a significant role in the project, the Office Quality Officer (OQO) and the Engineering Manager. QMS Form 8-1 will be used to guide and document the Project Review process. Documentation of the review will be placed in the PCF.

## 1.8 TECHNICAL SOFTWARE

The definition and usage of technical software is governed by *Quality Instruction 3-6*. In most cases, technical software applications used on projects to help develop a deliverable must be verified. Before using a software application, confirm that the application is authorized for use and has been verified; refer to Section 1.14. If the software application (including the exact version) is not authorized for use or needs to be verified, talk to the PM and/or Discipline Lead Professional (DLP) about the software application. If verification is required, it must be completed according to *Quality Instruction 3-6* of the URS QMS before using the software application.

## 1.9 APPLICABLE STANDARD OPERATING PROCEDURES

No additional standard operating procedures are required.

## 1.10 OTHER REQUIRED QUALITY PLANS

The URS Quality Management System is sufficient for this project.

## 1.11 CLIENT FEEDBACK

Official USACE feedback is provided only through the ACASS system after the task order is completed. Client feedback provided in any form (orally or email message) should be recorded and put into the project records and manually entered in URS' On-line Client Survey System for use in the Project Review.

## 1.12 CORRECTIVE AND PREVENTIVE ACTIONS

When nonconformance or potential nonconformance is identified through audits or otherwise, the PM must prepare and implement Corrective Action or Preventive Action plans in a timely manner. Corrective Actions must be based on a root cause analysis and must be permanent and effective. The PM and PIC must work with the OQO or designee to identify potential improvement opportunities and implement them as appropriate.

## 1.13 RESOLUTION OF CONFLICTS

The PIC, PM and Technical Manager, as applicable, will meet to discuss and resolve any significant technical disagreements or differences.

## 1.14 SOFTWARE

The software listed in the following table is approved for use on this project, provided verification is completed or is not required:

Approved Software Application Name and Version <sup>(2)</sup>	Verification Required?
Word, part of Microsoft Office Professional Plus 2010	No, not <u>technical</u> software <sup>(3)</sup>
Portable document file (pdf) creators and readers – various, including Adobe and Nuance PDF Converter Professional	No, not <u>technical</u> software <sup>(3)</sup>
Outlook, part of Microsoft Office Professional Plus 2010	No, not <u>technical</u> software <sup>(3)</sup>
Adobe Photoshop Elements 10 or later	No, not <u>technical</u> software <sup>(3)</sup>
Microsoft Project Professional 2002	No, not <u>technical</u> software <sup>(3)</sup>
Microsoft Excel, part of Microsoft Office Professional Plus 2010	No, exempted by QI 3-6 <sup>(4)</sup>
Microstation V 8i	No, exempted by QI 3-6
AutoCAD V 2012 or later	No, exempted by QI 3-6
ArcGIS for Desktop	No, exempted by QI 3-6
Grapher v 9 (Golden Software)	No, exempted by QI 3-6
Microsoft Excel spreadsheets, also known as workbooks (involving calculations to support a deliverable, including Quantity Calculations and Engineer's Cost Estimate)	Yes
FLAC (Itasca Consulting Group)	No, exempted by QI 3-6 <sup>(4)</sup>
GeoStudio (including SlopeW, Seep/W)	No, exempted by QI 3-6
CPeT-IT (GeoLogismiki)	No, exempted by QI 3-6
CLiq (GeoLogismiki)	No, exempted by QI 3-6

1. V means version. QI means URS Quality Instruction.

2. Later versions are always acceptable.

3. Products (such as a pdf file) of non-technical software or graphs may be subject to Detail Checking.

4. Although programs such as Excel and MathCAD are exempted from verification, applications such as Excel workbooks or FLAC FISH routines written to run on these exempted programs are subject to verification if the results are used to support a deliverable directly.

Based on the above list of approved software applications, verification of Excel spreadsheets is expected to be required for this project. Additional programs and workbooks may be identified later by discipline leads and must be added to this QC Plan before being used. If the DLP (Michael Smith for the Geotechnical Division) indicates that verification is required, the technical software application will be

verified according to *Quality Instruction 3-6* of the URS QMS. QMS Form 3-9 will be used to document the verification and will be sent by the DLP to the OQO and will also be filed in the PCF. QMS Forms 3-9 will also be filed in the PCF for technical software that has been verified.



**ATTACHMENT A**

**QMS FORMS**



IE QMS - Americas

Project Planning Checklist

Project Name:	BNSF Railroad Bridge Pier Nose Extension	Project Number:	29871609
Project Location:	Riverside & San Bernardino Counties, CA	Client Name:	U.S. Army Corps of Engineers
PM Name:	Michael G Smith	PIC Name:	Richard Hart

Stage	Required or Done? (check if 'yes')	Activity Relevant to the Project	QMS Reference		
			Procedure	Instruction	Form(s)
Proposal	<input checked="" type="checkbox"/>	Review the RFP	2		
	<input type="checkbox"/>	Complete the Go/No Go Process	2		
	<input type="checkbox"/>	Complete the eMAR Process	2		
	<input checked="" type="checkbox"/>	Respond to the RFP	2		
	<input checked="" type="checkbox"/>	Review Proposal and Contract	2		2-1
Planning	<input checked="" type="checkbox"/>	Complete project accounting set up including the eWAF	3		
	<input checked="" type="checkbox"/>	Establish Project Central File and Document Control	1	1-1	
	<input type="checkbox"/>	Prepare Project Execution Plan	3	3-1	3-2, 3-2B, 3-2C
	<input checked="" type="checkbox"/>	Prepare standalone Project Quality Plan	3	3-1	
	<input type="checkbox"/>	Prepare project Health and Safety Plan or Safe Work Plan	3		
Performance and Monitoring - All Services	<input checked="" type="checkbox"/>	Conduct Project Kickoff Meeting	3		
	<input checked="" type="checkbox"/>	Verification and Control of Technical Software	3	3-6	3-9
	<input type="checkbox"/>	Review of Client-Provided Information	3	3-7	3-11
	<input type="checkbox"/>	Review of Subconsultant/Subcontractor/Supplier Information	3	3-2, 3-3	3-12
	<input type="checkbox"/>	Use of Monitoring and Measuring Devices	4		
	<input checked="" type="checkbox"/>	Conduct Detail Check: <input checked="" type="checkbox"/> Calculations <input checked="" type="checkbox"/> Cost Estimates <input checked="" type="checkbox"/> Specifications <input checked="" type="checkbox"/> Drawings <input checked="" type="checkbox"/> Studies and Reports	3	3-2	3-3, 3-4, 3-5
	<input checked="" type="checkbox"/>	Conduct Independent Technical Review	3	3-3	3-5, 3-6
	<input type="checkbox"/>	Prepare Design Directives	3		
	<input type="checkbox"/>	Conduct Coordination Review	3	3-4	3-7
	<input checked="" type="checkbox"/>	Conduct Constructability Review and/or Bidability Review	3	3-5	3-8
	<input checked="" type="checkbox"/>	Application of Statement of Limitations	3	3-7	
	<input checked="" type="checkbox"/>	Application of Electronic Media User Agreements	3	3-7	3-10
	<input checked="" type="checkbox"/>	Changing the Work Product	3		
	<input checked="" type="checkbox"/>	Conduct Project Closeout Meeting	3		
	<input checked="" type="checkbox"/>	Acquire and Respond to Client Feedback	5		5-1
<input checked="" type="checkbox"/>	Internal Quality Audits	6			
<input checked="" type="checkbox"/>	Conduct Project Review	8		8-1	



IE QMS - Americas

Project Planning Checklist

Performance and Monitoring - Construction-Related Services	<input type="checkbox"/>	PIC Review	3		8-1
	<input type="checkbox"/>	Construction Administration Log	3	3-9	
	<input type="checkbox"/>	Site Observations	3	3-10	
	<input type="checkbox"/>	Construction Schedule Reviews	3	3-11	
	<input type="checkbox"/>	Payment Tracking and Cost Reporting	3	3-12	
	<input type="checkbox"/>	Schedule Reporting	3	8-1	
	<input type="checkbox"/>	RFI/Submittal Management	3	3-14	
	<input type="checkbox"/>	Inspection Reports	3	3-15	
	<input type="checkbox"/>	Change Order Management and Dispute Resolution	3	3-16	
	<input type="checkbox"/>	Daily Reports	3	3-17	
	<input type="checkbox"/>	Safety Documents	3	3-18	
	<input type="checkbox"/>	Procurement Log	3	3-19	

APPROVAL and DISTRIBUTION

Signature on file

\_\_\_\_\_

Project Manager Signature

July 25, 2013

\_\_\_\_\_

Date

Signature on file

\_\_\_\_\_

Principal-in-Charge Signature

July 26, 2013

\_\_\_\_\_

Date

**Distribution:**

Project Central File - Quality File Folder

Other - Specify:



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Detail Check - Calculations

Project Name:	BNSF Railroad Bridge Pier Nose Extension	Project Number:	29871609
Project Location:	Riverside & San Bernardino Counties	Client Name:	U.S. Army Corps of Engineers
PM Name:	Michael G Smith	PIC Name:	Richard Hart

IDENTIFYING INFORMATION

(This section is to be completed by the Originator.)

Calculation Medium:  Electronic  Hard-copy  
 (Select as appropriate) File Name: Enter File Name.  
 Unique Identification: Enter Unique ID.  
 Number of pages (including cover sheet): Enter number of pages.

Discipline:	As needed.
Title of Calculation:	Brief title describing calculation.
Calculation Originator:	Name of primary originator.
Calculation Contributors:	If applicable, names of other contributors.
Calculation Checker:	Name of checker.

DESCRIPTION & PURPOSE

Briefly describe the calculation and its purpose. Document in greater detail, as needed in calculations.

BASIS / REFERENCE / ASSUMPTIONS

Briefly describe here. Document in greater detail, as needed, in calculations.

ISSUE / REVISION RECORD

Checker comments, if any, provided on:  hard-copy  electronic file  Form 3-5

No.	Description	P	S	F	Originator Initials	Date	Checker Initials	Date
0	Initial Issue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	XXX	Date.	XXX	Date.
1	Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	XXX	Date.	XXX	Date.
2	Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	XXX	Date.	XXX	Date.
3	Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	XXX	Date.	XXX	Date.

For a given Revision, indicate either P (Preliminary), S (Superseding) or F (Final). If there are no revisions to the Initial Issue, check F (Final).

APPROVAL and DISTRIBUTION

The below individuals assert that the Detail Check – Calculations is complete.

_____	Click here to enter a date.
Originator Signature	Date
_____	Click here to enter a date.
Checker Signature	Date
_____	Click here to enter a date.
Project Manager (or Designee) Signature	Date

Distribution:

Project Central File – Quality File Folder  
 Other – Specify: Enter names here.



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Detail Check

Project Name:	BNSF Railroad Bridge Pier Nose Extension	Project Number:	29871609
Project Location:	Riverside & San Bernardino Counties	Client Name:	U.S. Army Corps of Engineers
PM Name:	Michael G Smith	PIC Name:	Richard Hart

Identifying Information	<i>(This section is to be completed by the Project Manager or the PM's Designee.)</i>	
	Assigned Checker: Name of Checker.	Comments Required by: Click to enter due date.
	Work Product Originator: Name of primary originator.	
	Work Product to be Checked: Title of work product.	
	<input type="checkbox"/> This Detail Check is a check for correctness, completeness and technical accuracy.	
	<input type="checkbox"/> This Detail Check is only a technical edit for format, spelling, grammar, pagination and readability.	
	Specific Instructions: Enter specific instructions for the work product.	
	Submitted by: _____	
	Project Manager Signature	Date

Comments	<i>(This Section is to be completed by the Checker.)</i>	
	Select:	
	A. <input type="checkbox"/> Checker has no comments.	
	or	
	B. <input type="checkbox"/> Comments have been provided on:	
	<input type="checkbox"/> Marked directly on work product	
	<input type="checkbox"/> Comment and Disposition Form 3-5	
	<input type="checkbox"/> Other; Specify: Click here to enter text.	
	_____	_____
	Checker Signature	Date

Verification	<i>(This section is to be completed by the Checker after verification of comment incorporation, if box B is checked off above.)</i>	
	Select:	
	C. <input type="checkbox"/> Verification of comment incorporation has been performed by Checker. There are no outstanding issues.	
	or	
	D. <input type="checkbox"/> Verification of comment incorporation has been performed by Checker. Unresolved issues have been submitted to the Project Manager or Designee for final resolution.	
	and	
	E. <input type="checkbox"/> Checker asserts that the work product review is complete.	
	_____	_____
	Checker Signature	Date

**APPROVAL and DISTRIBUTION**

<input type="checkbox"/> Detail Check is complete.	Click here to enter a date.
_____	_____
Project Manager or Designee Signature	Date

**Distribution:**  
 Project Central File – Quality File Folder  
 Other – Specify: Enter names here.



Quality - It's Good Business



QMS Form 3-5 (MM)

Rev. 2013 QMS  
Date: 28 Feb 2013

IE QMS – Americas

Comment and Disposition Form

Project Name	BNSF Railroad Bridge Pier Nose Extension	Client	U.S. Army Corps of Engineers
Project Location	Riverside & San Bernardino Counties, CA	PM	Michael G Smith
Project Number	29871609	PIC	Richard Hart

- Detail Check     
  Calculation Check     
  Coordination Review     
  Bidability Review  
 Independent Technical Review     
  3<sup>rd</sup> Party or Subconsultant Review     
  Constructability Review     
  Other: Enter information here.

Name of Deliverable Being Checked or Reviewed: Identify Work Product.

No. <sup>a</sup>	Portion <sup>a</sup>	Comment <sup>a</sup>	Disposition <sup>b, c</sup>	Response <sup>b</sup>	Verification <sup>a</sup>
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification
Number	Reference	Enter comment.	Disposition	Enter response to comment.	Verification

<sup>a</sup> Entries by Checker or Reviewer.     
 <sup>b</sup> Entries by Originator.  
<sup>c</sup> Dispositions: A = Have Incorporated/Will Incorporate; B = Have Clarified/Will Clarify; C = Delete Comment; D = Will Incorporate in Next Submittal; E = Comment Not Incorporated

Checker or Reviewer Signature: \_\_\_\_\_ Date: [Click to enter date.](#)  
 Originator Signature: \_\_\_\_\_ Date: [Click to enter date.](#)

**Distribution:**  
 Project Central File – Quality File Folder     
 Other – Specify: Enter names here.



IE QMS - Americas

Independent Technical Review

Project Name:	BNSF Railroad Bridge Pier Nose Extension	Project Number:	29871609
Project Location:	Riverside & San Bernardino Counties, CA	Client Name:	U.S. Army Corps of Engineers
PM Name:	Michael G Smith	PIC Name:	Richard Hart

Identifying Information	<i>(This section is to be completed by the Project Manager or the PM's Designee.)</i>
	<p>Assigned Reviewer: Name of Reviewer. <span style="float: right;">Comments Required by: Click to enter due date.</span></p> <p>Work Product Originator: Name of primary originator.</p> <p>Work Product to be Reviewed: Title of work product.</p> <p>Review Scope: Include specific instructions on disciplines or elements to be reviewed, if any.</p> <p>Specific Instructions: Enter specific instructions for the work product.</p> <p>Submitted by: _____</p> <p style="text-align: center;">Project Manager Signature <span style="float: right;">Date</span></p>

Comments	<i>(This Section is to be completed by the Reviewer.)</i>
	<p>Select:</p> <p>A. <input type="checkbox"/> Reviewer has no comments.</p> <p>or</p> <p>B. <input type="checkbox"/> Comments have been provided on:</p> <p style="margin-left: 40px;"><input type="checkbox"/> Marked directly on work product</p> <p style="margin-left: 40px;"><input type="checkbox"/> Comment and Disposition Form 3-5</p> <p style="margin-left: 40px;"><input type="checkbox"/> Other; Specify: Click to enter text.</p> <p>_____</p> <p style="text-align: center;">Reviewer Signature <span style="float: right;">Date</span></p>

Verification	<i>(This section is to be completed by the Reviewer after verification of comment incorporation, if box B is checked off above.)</i>
	<p>Select:</p> <p>C. <input type="checkbox"/> Verification of comment incorporation has been performed by Reviewer. There are no outstanding issues.</p> <p>or</p> <p>D. <input type="checkbox"/> Verification of comment incorporation has been performed by Reviewer. Unresolved issues have been submitted to the Project Manager or Designee for resolution.</p> <p>and</p> <p>E. <input type="checkbox"/> Reviewer asserts that the work product ITR is complete.</p> <p>_____</p> <p style="text-align: center;">Reviewer Signature <span style="float: right;">Date</span></p>

APPROVAL and DISTRIBUTION

<input type="checkbox"/> ITR is complete.	
_____	Click here to enter a date.
Project Manager or Designee Signature	Date

**Distribution:**  
 Project Central File – Quality File Folder  
 Other – Specify: Enter names here.



IE QMS - Americas

**Technical Software Verification and Control Form**

**Software or Computer Program Name:** Provide a short, concise name.

**Version:** Enter unique identifier. **Type:**  1B  2 *See QI 3-6 for definitions.*

**Owner:** List Discipline Lead Professional (DLP).

**Version Date:** List version date.

**Verification Date:** List verification date.

**Principal Use**

*Be specific about the engineering or scientific discipline and provide a short description of what the software is used for.*

For example, "Used by seismologists and geotechnical engineers to compute pseudoacceleration response spectrum using all five of the Next Generation of Ground-Motion Attenuation (NGA) Relations and plots the results".

**Options**

List all software options.

**Parameters**

List all input parameters. If some are optional, identify them.

**Limitations**

*Be specific about any limitations in the application of the software or range of values for the inputs.*

For example, some input values may have to be positive numbers to have any physical meaning, or combinations of input values may have to have some relationship to avoid taking the square root of a negative number or dividing by zero.

**Status**

*Select one.*

Active

Inactive

Restricted

*See QI 3-6 for definitions.*

**Testing Method**

For example, comparison to published text book solution and/or check by hand calculation.

**Operating System & Development Software Version Used**

For example, Microsoft Windows XP Professional Version 2002 Service Pack 3 and Microsoft Office Excel 2010.

**Location of Electronic Files**

Identify office, department and location where the electronic files of the software are saved (including file name of key file, if appropriate).

**Documentation Package Location** (*Identify office, department and location where documentation is saved*)

Software Documentation	Location
Technical Description	Click here to enter text.
Test Data	Click here to enter text.
Verification Documents	Click here to enter text.
User Manual	Click here to enter text.
Source Code (Type 2)	Click here to enter text.

**APPROVAL and DISTRIBUTION**

**Prepared by:**

\_\_\_\_\_  
Software Responsible Professional Signature

\_\_\_\_\_  
URS Office

\_\_\_\_\_  
Date

**Approved by:**

\_\_\_\_\_  
Discipline Lead Professional Signature

\_\_\_\_\_  
URS Office

\_\_\_\_\_  
Date

**Distribution:**

Project Central File – Quality File Folder

Office Quality Officer

Other – Specify: Enter names here.





IE QMS - Americas

PIC Review Checklist

Project Name:	BNSF Railroad Bridge Pier Nose Extension	Project Number:	29871609
Project Location:	Riverside & San Bernardino Counties, CA	Client Name:	U.S. Army Corps of Engineers
PM Name:	Michael G Smith	PIC Name:	Richard Hart
PIC Review Date:	Click to enter date.	Next PIC Review:	Click to enter date.
PIC Review Conducted by:		Name of PIC or PIC's designee.	

TOPICS		PM*	C*	D*
1.	COST – Are there any potential issues that could impact the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
2.	SCHEDULE – Are there any potential schedule issues that could impact the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
3.	QUALITY OF THE WORK – Are there any quality issues that are not being corrected?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
4.	ISSUE RESOLUTION – Are issues being identified, tracked and resolved in a timely manner?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
5.	CHANGE MANAGEMENT – Do we know of any potential changes that could impact the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
6.	TEAM – Are there any potential issues related to team capacity or performance?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
7.	URS CONTRACT / FEE – Are there any contract or accounting issues that could impact URS?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
8.	CLIENT SATISFACTION – Is the client satisfied with the services we are providing?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			
9.	OTHER ISSUES – Are there other issues which impact our success?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/>	<input type="checkbox"/>
	Elaborate as appropriate.			

APPROVAL and DISTRIBUTION

Click here to enter a date.

\_\_\_\_\_  
Principal-in-Charge / Designee Signature

\_\_\_\_\_  
Date

**Distribution:**

Project Central File – Quality File Folder

Other – Specify: Enter names here.



**URS CORPORATION & SUBSIDIARIES  
FEDERAL GOVERNMENT CONTRACT  
CLOSEOUT CHECKLIST**

01/03

Rev. 0

1 of 2

**FCA-3**

Client Name:	U.S. Army Corps of Engineers
Client Contract Number:	W912PL-10-D-0023, TO 009
Contract Name:	BNSF Railroad Bridge Pier Nose Extension Santa Ana River, Riverside and San Bernardino Counties, California
Contracting Officer Name, Address, and Telephone Number: Patricia B. Bonilla 213-452-3255 USACE Los Angeles District, CESPLCT Contracting Division, P.O. Box 532711 Los Angeles, CA 90053-2325	
Contract Value:	\$333,608.00
Period of Performance:	18 July 2013 to 15 November 2013

The contract is complete when URS has completed all the requirements of the contract and the government has accepted the performance. The payment of the final invoice is the legal act that closes the contract. Completion of contract requirements include:

- Statement of Work completed
- Technical performance accepted
- All administrative closeout requirements are complete
  - Procurement
  - Financial tracking and invoicing
  - Government Property
  - Reporting
  - Document Control

**1. Procurement Requirements**

- Subcontracts:
  - Statement of Work complete
  - Final reports received
  - Final invoice received and processed
  - Final indirect rates applied
  - Release of claims received and processed
  - De-obligate remaining funding
  - Subcontract documents closed in accounting system and Procurement database
  - Subcontractor usage reports completed
  - Archive historical files in document control
- Purchase Orders:
  - All Purchase Order requirements complete
  - Final invoice received and processed
  - De-obligate remaining funding
  - Purchase Order closed in accounting system and Procurement database
  - Archive historical files in document control



**URS CORPORATION & SUBSIDIARIES  
FEDERAL GOVERNMENT CONTRACT  
CLOSEOUT CHECKLIST**

01/03

Rev. 0

2 of 2

**FCA-3**

**2. Administrative Requirements**

- Outstanding modifications and changes resolved
- Prepare Final Invoice to include:
  - All outstanding costs
  - Remaining fee
  - Outstanding retainage
  - Apply final indirect rates
- Outstanding invoices paid
- Process any funding de-obligations
- Issue Release of Claims
- Close contract (or delivery order) in accounting system and Federal Contract Compendium database
- Archive historical files in document control

**3. Government Property**

- Complete final physical inventory
- Prepare final inventory report and submit to Contracting Officer
- Disposal method:
  - Government takes possession of property
  - Transfer property to future contract
  - Surplus property per government instructions
- Close out internal property records
- Archive historical files in document control

**4. Reporting**

- Final Technical Progress Report submitted
- Final Administrative Progress Report submitted
- Subcontractor usage reports complete
- Government property inventory disposal report and final inventory complete
- Contract Brief (Form FCA-2) complete

**5. Document Control**

- Document control logs reviewed and complete
- All correspondence properly filed and listed in logs
- Control database complete and closed for contract
- URS working files (copies) retained per FAR retention regulations

Prepared By:

Date:

**ATTACHMENT B**  
**LIST OF DELIVERABLES**

## LIST OF DELIVERABLES

The deliverables and submittal dates are (based on 18 July 2013 authorization of services):

1. Draft Quality Control Plan
2. Final Quality Control Plan
3. Initial foundation calculations (by August 7, 2013)
4. Diaphragm Wall Memorandum (with the basic model setup, analysis approach, and analysis results)
5. Draft Geotechnical Appendix to the DDR (draft version by September 1, 2013)
6. Draft Design Calculations (by September 1, 2013)
7. Final Design Calculations (after all reviews have been completed, all review comments have been documented, and all review comments and issues have been resolved)
8. Final Geotechnical Appendix to the DDR (within 7 working days after all reviews have been completed, all review comments have been documented, and all review comments and issues have been resolved)
9. Engineer's Cost Estimate (by November 15, 2013)
10. Quantity Calculations (by November 15, 2013)
11. Plans (design "concept level" plans associated with the diaphragm-wall scour protection concept)

ATTACHMENT

REVIEW PLAN: SANTA ANA RIVER MAINSTEM, INCLUDING  
SANTIAGO CREEK, CALIFORNIA, Lower Santa Ana River, (Weir  
Canyon Road to Prado Dam) Reach 9 - Phase 2A, 2B and Phase 3,  
Dated 03 June 2011 (APPROVED ON 10 JUNE 2011)

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REPLY TO  
ATTENTION OF

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

10 June 2011

CESPD-PDC

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PM-C, Mr. Thomas Bucklew

SUBJECT: Review Plan Approval for the Santa Ana River Mainstem, including Santiago Creek, California

1. The enclosed Review Plan for Santa Ana River Mainstem, including Santiago Creek, California was prepared in accordance with EC 1165-2-209, dated 31 January 2010. The Review Plan will require Independent External Peer Review Type II Safety Assurance Review (SAR).
2. The Review Plan will be made available for public comment, and the comments received will be incorporated into the Review Plan.
3. I hereby approve this Review Plan, which is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.
4. The point of contact for this memorandum is Mr. Paul Bowers, 415-503-6556, [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil).

***Building Strong on the Cornerstone of the Southwest!***

A handwritten signature in black ink that reads "Andrew Constantaras".

Andrew Constantaras, P.E.  
Director, Regional Business Directorate

Encl





## **REVIEW PLAN**

# **SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA**

**Lower Santa Ana River  
Weir Canyon Road to Prado Dam  
Reach 9 - Phase 2A, 2B and Phase 3**

Prepared by:

U.S. Army Corps of Engineers Los Angeles District

June 3, 2011



**US Army Corps  
of Engineers** ®  
Los Angeles District

**SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK,  
CALIFORNIA**

**Lower Santa Ana River  
Weir Canyon Road to Prado Dam  
Reach 9 - Phase 2A, 2B and Phase 3**

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## **ATTACHMENTS**

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ATTACHMENT 1: QUALITY CONTROL PLAN FOR THE PREPARATION OF DESIGN DOCUMENTATION REPORT and PLANS, SPECIFICATIONS, & COST ESTIMATE LOWER SANTA ANA RIVER - REACH 9 Phase 1, 2A, 2B, AND 3 ORANGE COUNTY, CALIFORNIA

ATTACHMENT 2: QUALITY CONTROL PLAN FOR THE GEOTECHNICAL INVESTIGATION FOR THE LOWER SANTA ANA RIVER REACH 9 – PHASE IIA, RIVERSIDE AND SAN BERNARDINO COUNTIES, CALIFORNIA

## **APPENDICES**

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APPENDIX A – PROJECT LOCATION MAP

APPENDIX B – ROSTERS AND QUALIFICATIONS OF ATR and IEPR REVIEW TEAMS

APPENDIX C – REVIEW PLAN APPROVAL MEMO

APPENDIX D – COMPLETION OF AGENCY TECHNICAL REVIEW

# **REVIEW PLAN**

## **SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, CALIFORNIA**

### **Lower Santa Ana River**

### **Weir Canyon Road to Prado Dam**

### **Reach 9 - Phase 2A, 2B and Phase 3**

**June 3, 2011**

#### **1. INTRODUCTION.**

a. Purpose. This Review Plan (RP) defines the scope and level of quality management activities for the plans and specifications (P&S) of the following features of the SANTA ANA RIVER MAINSTEM (SARM), Project: Reach 9 - Phase 2A and Phase 3. The RP also defines the scope and level of quality management activities for the design documentation report (DDR) that includes the entire Reach 9 segment of the SARM Project. The Reach 9 segment includes the following features of the SARM Projects: Phase 1, Phase 2A, Phase 2B and Phase 3.

#### **b. References.**

1. EC 1165-2-209, Civil Works Review Policy, 31 Jan 2010
2. ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999
3. ER 1110-1-12, Engineering and Design Quality Management, 21 Jul 2006
4. EC 1105-2-410 Water Resources Policies and Authorities: Review of Decision Documents, 22 Aug 08
5. WRDA 2007 H. R. 1495 Public Law 110-114, 8 Nov 2007
6. Army Regulation 15-1, Committee Management, 27 November 1992 (Federal Advisory Committee Act Requirements)
7. National Academy of Sciences, Background Information and Confidential Conflict Of Interest Disclosure, BI/COI FORM 3, May 2003

c. Review Requirements. This RP was developed in accordance with EC 1165-2-209, which establishes the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE/Corps) decision documents, implementation documents, and construction oversight through independent review. This RP describes the scope of review for the current implementation phase of the project. The implementation phase requires the following three levels of review: District Quality Control (DQC), Agency Technical Review (ATR), and Type II Independent External Peer Review (IEPR). The RP identifies the most important skill sets needed in the reviews, the objective of the review, and the specific advice sought, thus setting the appropriate scale and scope of review for the individual project.

#### **2. PROJECT DESCRIPTION.**

a. Project Authority. The construction of the Prado Dam, a feature of the Santa Ana River Mainstem, including the Santiago Creek, California Project (hereinafter referred to as “the SARM Project”) was authorized by the Water Resources Development Act of 1986, P.L. 99-662 (hereinafter referred to as “the Act”) substantially in accordance with the plans and recommendations of the Chief of Engineers contained in his reports dated 15 January 1982 and 9 July 1987.

The full authorization language is presented in the Main Report of DM No. 1 entitled “Phase II GDM on the Santa Ana River Mainstem, including Santiago Creek” Volume 3, dated August 1988, provides that the 1986 authorized estimated of the first cost was \$809,000,000 in Federal funds for the SARM Project. Furthermore, the recent 2012 cost estimate is \$1,251,000,000 in Federal funds for the SARM Project.

b. Project Location. The Lower Santa Ana River Reach 9 is located between Prado Dam and Weir Canyon road, where all features of work are along the Santa Ana River within Riverside County and Orange County, California. Prado Dam is approximately 30.5 miles away from the Pacific Ocean; whereas, Reach 9 is approximately 7.5 miles long from the mouth of Prado Dam to Weir Canyon Road, Refer to Appendix A. The remaining features of work to complete the system, Phase 2A and Phase 3, begin at the mouth of Prado Dam; Phase 2A is approximately 1.2 miles within Reach 9. Phase 3 is further downstream from Prado Dam approximately 5.7 miles away from Prado Dam, which Phase 3 itself is approximately 1400 linear feet. Phase 2B, under construction, is approximately 5,800 linear feet located along the SR91 with optional 400 linear feet located along the upstream end of the mobile home park.

c. Project History. Major flood control improvements, including raising Prado Dam, have been approved as part of the U.S. Army Corps of Engineers (USACE) Santa Ana River Mainstem Flood Control Project (SARP or SARM). The purpose of the SARM is to provide flood protection to areas susceptible to floods ranging from 100-year to 190-year frequencies. The SARM project area ranges over the counties of San Bernardino, Riverside, and Orange Counties and includes millions of people and numerous business and structures.

A Value Engineering (VE) study for the Santa Ana River basin, which includes the Lower Santa Ana River, was the vehicle used to evaluate alternatives and the basis of selection of the preferred alternative. The VE study team proposed specific methods of improvements for the each of the various reaches of the Lower Santa Ana River. A full discussion of the VE study is available in the report titled Santa Ana River Basin, California, Phase I VE Study: Lower Santa Ana, Oak Street Drain, San Timoteo, Volume 1 dated February 1989.

There are various features of the SARM that remain to be constructed, primarily in the Prado Basin and the 7.5 mile Reach 9 of the Santa Ana River directly below the basin. All of the features were addressed in the Phase II General Design memorandum (GDM) and the 1988 Phase II GDM Supplemental Environmental Impact Statement (SEIS), which is presently being revised to the Supplemental Environmental Assessment report (SEA). However, since the GDM was written, several new flood protection features have been added, such as Phase 3, or the previously approved features have been modified, such as Phase 2A, based on changes to the baseline condition of the Santa Ana River Mainstem as well as subsequent value-engineering studies.

Another future project feature includes raising the Prado Dam Spillway, providing increased capacity. In conjunction with raising Prado Dam, the Orange County Flood Control District (OCFCD) is responsible for acquiring all property rights located between the 556-foot and the 566-ft elevation lines. This elevation band represents the added area that is susceptible to inundation during the Reservoir Design Flood (RDF). Directly upstream of Prado Basin, the 566-ft elevation line has been continually migrating due to erosion of the south bank of the Santa Ana River. The greatest amount of erosion has occurred during storm events when lateral migration of the Santa Ana River has caused erosion

undercutting of the toe of the bank, resulting in sloughing of the bank tops. The improvements for the Reach 9 component of the Santa Ana River project have resulted from further evaluations of the existing conditions that were identified in the Phase II GDM, which included raising Prado Dam and the potential releases of 30,000 cfs of water, which is the Prado Dam outflow design discharge for a 190 year event. It was determined that existing improvements along some sections of the river are not sufficient to protect adjacent homes, businesses, and infrastructure from such large releases of water. Now, in addition to the levee protecting the Green River Mobile Home Park, a part of Phase 2B (awarded 2009, see Appendix A on map), improvements in Reach 9 will include intermittent levee and bank protection along the approximately 7.5 miles of the Santa Ana River downstream from Prado Dam. The features are briefly described below:

1. SARM Project Reach 9 - Phase 1:

Past storm flows have damaged the existing bank protection located along the north side of SR-91 approximately midway between Gypsum Canyon Road and Weir Canyon Road. Low flows were impinging on the bank of lower highway 91 and the existing bank protection would not be able to protect against high releases from Prado Dam. North of Weir Canyon Road, there is a mini-mall on top of the bluff, where the low flow channel impinging on the bank was causing slope-failure. The USACE improved the banks with rip-rap and grouted stone in 2006.

2. SARM Project Reach 9 - Phase 2B:

The low-flow channel at Green River Golf Course was concrete lined with soil-cement on the slopes of the left bank. The existing soil cement embankment and toe protection were inadequate to protect the SR-91 Freeway from releases from Prado Dam. The improvement project included grouted stone, sheet pile, and derrick stone that were awarded in 2009 along with Green River Mobile Home Park and the Santa Ana River Interceptor Line (SARI Line) relocation.

3. SARM Project Reach 9 - Phase 2A:

To complete the system of protecting SARM Reach 9 - Phase 2A, this consists of sheet pile bank protection to address environmental concerns, grouted stone, and derrick stone. Also, bank protection at Phase 3 is required to protect portions of the SR-91 further downstream of the Green River Golf Course.

4. SARM Project Reach 9 - Phase 3:

The Orange County scour analysis of Reach 9 for the County's SARI Line relocation design concluded that 1,400 linear feet along the SR-91 freeway between Coal Canyon and Gypsum Canyon is also susceptible to high flows and releases from Prado Dam. USACE is currently designing bank protection for this area.

d. Project Description. The SARM Project Reach 9 - Phase 2A, Prado Dam to BNSF Railroad, which includes the Green River Housing Estates (GRHE/GRHOA) just upstream of the Burlington North Santa Fe (BNSF) railroad, Upper Highway 91 (SR-91), and the SARM Project Reach 9 - Phase 3. These areas

need to be protected from future high releases out of Prado Dam and the improvements will include grouted stone, derrick stone, and sheet pile.

- (1) SARM Project Reach 9 - Phase 2A - Approximately 2,000 linear feet of grouted stone protection along SR-91 that includes two side drains and an access road. Also approximately 3,600 linear feet of grouted stone and derrick stone and 1,000 linear feet of sheet pile along the GRHOA and protection of the BNSF railroad abutment piers. This project will include side drains, utility relocations and an access road.
- (2) SARM Project Reach 9 - Phase 3- Approximately 1,400 linear feet of grouted stone and/or soil cement along SR-91 between Coal Canyon Road and Gypsum Canyon.

### 3. PROJECT WORK PRODUCTS.

a. Description of Work Products. The work products for this project include a Design Documentation Report (DDR), Plans and Specifications, and O&M manuals upon completion.

- (1) Design Documentation Report (DDR). The DDR for the entire SARM Project Reach 9 will serve as a summary of the design to be used by the Project Delivery Team (PDT) during the development of the Plans & Specifications. An A-E Contractor, Tetra Tech, will incorporate the respective design disciplines technical appendices within SPL-ED. The A-E shall prepare a DDR for the entire Santa Ana River Reach 9 including Phase 1, (Weir Canyon Road to Gypsum Canyon Road), Phase 2B (Coal Canyon Road to Mobile Home Park), Phase 2A (Mobile Home Park to Prado Outlet), and Phase 3 (Gypsum Canyon Road to Coal Canyon Road). It shall contain a full record of design decisions, assumptions, and methods, subsequent to the GDM. Reference Tetra-Tech's Quality Control Plan, attachment 1.
- (2) Plans & Specification- The P&S for the SARM Project Reach 9 – 2A will be prepared by SPL-ED by 31 May 2011, which will include grouted stone, derrick stone, and sheet pile features of work. The P&S for the SARM Project Reach 9 – Phase 3 will be designed by an A-E Consultant, Tetra Tech, by September 2011. The A-E shall prepare Phase 3 final plans and specifications for solicitation of bids, including pre-construction contract services, and engineering during construction (EDC) services in accordance with this scope of work. The design work will consist of approximately 1400 linear feet of scour protection along the California State Route 91 and the Santa Ana Regional Interceptor (SARI) sewer line. The A-E shall determine all required geotechnical investigations and perform all investigations and laboratory testing. Additionally, the A-E URS is providing supplemental design to protect an existing 109" waterline and geotechnical investigation data. Reference URS Quality Control Plan, attachment 2.
- (3) Operation & Maintenance manual- SPL will prepare the O&M manual after each phase of construction for the SARM Project Reach 9 – Phase 2A, 2B, and Phase 3 completion.

b. Required Level of Review.

- The DDR for the SARM Project Reach 9 will undergo DQC and ATR. Per EC 1165-2-209,



external review of the DDR is also required because failure of the project would pose a significant threat to human life. The DDR is an implementation document and will therefore undergo a Type II IEPR (SAR).

- The P&S for the SARM Project Reach 9 - Phase 2A and Phase 3 will undergo DQC and ATR. Per EC 1165-2-209, external review of the P&S is also required because failure of the project would pose a significant threat to human life. The P&S are implementation documents and will therefore undergo a Type II IEPR (SAR). The Type II IEPR (SAR) will continue through the end of construction.
- The O&M manual for the SARM Project Reach 9 will undergo DQC and ATR. Per EC 1165-2-209, external review of the O&M manual is also required because failure to adequately maintain critical features in the project would potentially pose a significant threat to human life. The O&M manual is an implementation document and will therefore undergo a Type II IEPR (SAR).

c. Authorization & Reference Materials. Electronic versions of all pertinent documents, including, Design Documentation Report, Phase 2A and Phase 3 Plans & Specs, O&M manual, and all relevant information available shall be posted in Adobe Acrobat PDF format for both the ATR Reviewers and the IEPR panel to review at the appropriate time.

#### 4. SCOPE OF REVIEW.

a. District Quality Control Activities (DQC). DQC activities for the DDR, P&S, and O&M manual will consist of Quality Checks and Reviews, supervisory reviews, project Delivery Team (PDT) reviews, including input from the Local Sponsor, and biddibility, constructability, operability, and environmental (BCOE) reviews, as required by the District's Quality Manual.

b. Agency Technical Review (ATR). The ATR team will review the DDR, the SARM Project Reach 9 – Phase 2A and Phase 3 Plans & Specs, and O&M. A description of the points of emphasis for each document is below, followed by general review guidelines for the ATR team.

##### 1. Emphasis of Review for Work Products:

When reviewing the DDR, the ATR team should verify that it is sufficiently detailed for each technical specialty. In this way, the criteria that were used, the critical assumptions which were made, and the analytical methods that were used will be evident for purposed review and historical documentation. Verify that it contains summaries of important calculation results and selected example calculations for all critical elements of the design.

When reviewing the P&S, the ATR team should verify that are prepared in accordance with ER 1110-2-1200 and the Architect/Engineering/Construction CADD Standards along with Tri-Service Spatial Data Standards. The team should verify that the P&S contains all necessary information required to bid and construct the plan detailed in the engineering appendix and documented in the DDR. Review the design for biddibility, constructability, operability, and environmental (BCOE) aspects of the design.

When reviewing the O&M manual, the ATR team should verify all features of work within each phase are included to maintain, repair, monitor, inspect, and how to acquire

proper permits to complete work in accordance to ER 1110-2-401.

2. General Review Guidelines:

ATR is undertaken to “ensure the quality and credibility of the government’s scientific information” in accordance with ER 1110-1-12. In order to ensure incorporation of Corps national experience for Flood Risk Management Projects (as updated per post-Katrina investigation), and in addition to the DQC, an ATR will also be performed. Moreover, all provisions and checklists for SAR contained in EC 1165-2-209 will be incorporated into the charge to the ATR team.

a. ATR Team Responsibilities

- i. Reviewers shall review project authorization material, design documents and NEPA documents to confirm that work was done in accordance with established professional principles, practices, codes, and criteria and for compliance with laws and policy. Comments on the design documents shall be submitted into Document Review and Checking System (DrChecks).
- ii. Reviewers shall pay particular attention to one’s discipline, but may also comment on other aspects as appropriate. Reviewers that do not have any significant comments pertaining to their assigned discipline shall provide a comment stating this.
- iii. Grammatical and editorial comments shall not be submitted into DrChecks. Comments should be submitted to the ATR manager via electronic mail using tracked changes feature in the Word document or as a hard copy mark-up. The ATR manager shall provide these comments to the Study Manager.
- iv. Structure of Review comments is described in the charge.
- v. The “Critical” comments flag in DrChecks shall not be used unless the comment is discussed with the ATR manager and/or the Technical Project Leader first.

b. PDT Responsibilities

- i. The team shall review comments provided by the ATR Team in DrChecks and provide responses to each comment using “Concur,” “Non-Concur,” or “For Information Only.” Concur responses shall state what action was taken and provide revised text from the report if applicable. Non-Concur responses shall state the basis for the disagreement or clarification of the concern and suggest actions to negotiate the closure of the comment.

- ii. Team members shall contact the PDT and ATR managers to discuss any “Non-Concur” responses prior to submission.

c. Type II, Independent External Peer Review (Safety Assurance Review). The DDR, SARM Project Reach 9 – Phase 2A and Phase 3 P&S, along with the O&M manual shall undergo a Type II IEPR, SAR during the Design and Construction Phases. A brief identification of the points of emphasis for each phase of work is below; followed by general review guidelines for the Type II IEPR, SAR team.

1. Charges

The Review Management Organization (RMO) will develop the charges for the review, per EC 1165-2-209. The charges will contain the instructions regarding the objective of the peer review and the specific advice sought. Reviewers shall be charged with reviewing scientific and technical matters, leaving policy determination for USACE and the Army. The charge should specify the structure of the review comments to fully communicate the reviewer’s intent by including: the comments, why it is important, any potential consequences of failure to address, and suggestions on how to address the comment. It should include specific technical questions while also directing reviewers to offer a broad evaluation of the overall document. The charge should be determined in advance of the selection of the reviewers.

2. Emphasis of Review for Work Product: During the Design Phase, key features and components to be evaluated and reviewed are the soil material/characteristics, scour analysis, and the structural design of the sheet pile. When reviewing the DDR and P&S, the IEPR team should verify that the assumptions made are sound.

During the construction phase, the panel should verify assumptions made during the design are still valid through construction. Verifying sheet piling/tie-backs are constructed properly and checked and protection of utilities.

When reviewing the O&M manual, the IEPR team should verify that the requirements specified maintain the conditions anticipated for the project to function properly in the future.

3. General Review Guidelines

Panel members will address all underlying planning, safety assurance, engineering, economic, and environmental analyses, not just one aspect of the project.

During the Design Phase, panel members shall evaluate and review the design submittals and provide their comments in DrChecks. The design submittals will be at various stages of completion, as defined in the Section 7 of this RP. Panel member will address key features and components to validate the state of the art approach being used to design and construct the system.

During the Construction Phase, a 2-day site visit shall be scheduled for the panel to evaluate and review construction activities. During the visit; the appropriate peer reviewers will monitor the progress of construction and review critical construction operations. The visit should coincide with the mid-point of construction operations and shall terminate with an exit briefing, which

will be scheduled by the Project Manager and will be conducted at the Prado Dam Field Office. Each reviewer shall document each site visit with a Field Visit report. The Field Visit reports will include a check list, photographs and text summarizing observations and information noted during each site visit. The Field Visit Reports shall be included in the Construction Final Report as an appendix.

d. Policy and Legal Compliance Reviews. 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 to higher authority.

5. REVIEW TEAM. In addition to the A-E's, Tetra Tech, own independent reviewers for the DDR, the PDT team and in-house DQC's that had reviewed the design and P&S for the SARM Project Reach 9 – Phase 2A project deliverables are also reviewed by Riverside County Flood Control District, utilities companies (Edison, Metropolitan Water District (MWD), City of Corona, Green River Home Owners Association (HOA)), Coordination's with Stakeholders (State Parks, BNSF railroad, Orange County Flood Control District, State of California Department of Transportation District 8 and 12), maintenance departments, and SPL staff from Engineering, Planning, and Construction divisions (BCOE). Phase 2A underwent several Independent Technical Reviews (ITR) in 2006, 2007, and 2010; current team will be listed due to members have retired, passing away, or no longer working for SPL. Phase 3 is currently being designed. The following is a list of the current review team members:

A. Project Delivery Team.

Name	Discipline	Agency/Office	Phone No.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

B. Tetra Tech Design Team (A-E Team).

Name	Discipline	Phone No.
[REDACTED]	[REDACTED]	[REDACTED]

C. Los Angeles District Quality Control (DQC) Review Team

Name	Discipline	Agency/Office	Phone No.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

- a. Review Management. The DQC review is managed within SPL. The RMC will be the RMO for this project, and will be in close coordination with the SPD MSC and FRM PCX, for all work products.
- b. District Quality Control. Reference is made to the Quality Management Plan that identifies the activities, roles and responsibilities for the DQC of the SARM Project Reach 9 – the Phase 2A, Phase 2B and Phase 3 embankment protection.
- c. Agency Technical Review. The ATR team will be established per ER 1110-1-12 and EC 1165-2-209. The Corps will manage the ATR internally and it will be conducted by individuals and organizations that are separate and independent from those that accomplished the work, in accordance with policy. As stipulated in EC 1165-2-209, the RMC serves as the RMO for Dam and Levee Safety Modification projects, and will be responsible for selecting the ATR Lead and identifying the other ATR Team members. ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; appointed SME or senior level experts from the responsible district; experts from other Corps commands; contractors; academic or other technical experts; or a combination of the above. The ATR Team Leader will be a Corps of Engineers employee outside the South Pacific Division.
- d. Type II IEPR Panels and Members. An RMC contract will be utilized to acquire the services of an OEO to manage the IEPR. Colin Krumdieck is the RMC POC. The disciplines required for the Type II IEPR SAR, and the expertise required within each disciplines, is included in Appendix B.

6. PUBLIC COMMENT. To ensure that the peer review approach is responsive to the wide array of stakeholders and customers, both within and outside the Federal Government, SPL will provide an opportunity for public comment by posting the approved RP on its public website,

[http://spl.usace.army.mil/review\\_plans](http://spl.usace.army.mil/review_plans), for 30 calendar days. This is not a formal comment period; however, if and when comments are received, the PDT will consider them and decide if revisions to the review plan are necessary. If significant and relevant comments are made, the comments will be provided to the reviewers before they conduct their review.

**7. REVIEW SCHEDULE.**

a. General: Based on SPL’s commitment to executing the SARM Project Reach 9 – Phase 2A, Phase 2B and Phase 3 embankment protection projects schedule for DDR, P&S and construction, milestones for the DQC, ATR, and IEPR, (SAR) process have been determined and are documented in the below.

**SARM Project Reach 9 Design Documentation Report Milestones**

<b>Review Plan Approval by SPD</b>	<b>20 May 2011</b>
<b>Submit Draft DDR for DQC</b>	2 May 2011
<b>PDT Review Completed</b>	16 May 2011
<b>Submit Final Draft DDR for DQC</b>	7 June 2011
<b>Submit Final Draft DDR for ATR and SAR</b>	7 June 2011
<b>ATR Certification</b>	29 July 2011
<b>SAR Report Approval by SPD</b>	29 July 2011
<b>DDR Approval</b>	1 Aug 2011

**SARM Project Reach 9 - Phase 2A Plans and Specifications Milestones**

<b>Submit Final Draft P&amp;S for DQC</b>	<b>2 May 2011</b>
<b>Submit Final Draft P&amp;S for ATR and SAR</b>	31 May 2011
<b>ATR Certification</b>	29 July 2011
<b>SAR Report Approval by SPD</b>	29 July 2011
<b>BCOE Review Certification</b>	29 July 2011
<b>P&amp;S Approval</b>	3 Aug 2011

**SARM Project Reach 9 - Phase 3 Plans and Specifications Milestones**

<b>Submit Final Draft P&amp;S for DQC</b>	<b>30 June 2011</b>
<b>Submit Final Draft P&amp;S for ATR and SAR</b>	27 July 2011
<b>ATR Certification</b>	22 Sept 2011
<b>SAR Report Approval by SPD</b>	22 Sept 2011
<b>BCOE Review Certification</b>	22 Sept 2011
<b>P&amp;S Approval</b>	26Sept2011

**SARM Project Reach 9 - Phase 2A Construction Contract Milestones**

<b>Pre-Advertise notice published (15 days before RTA)</b>	<b>19 July 2011</b>
<b>Contract Ready to Advertise</b>	3 Aug 2011
<b>Construction Contract Advertise</b>	4 Aug 2011

<b>BID Opening</b>	6 Sept 2011
<b>Construction Contract Awarded</b>	16 Sept 2011

SARM Project Reach 9 - Phase 3 Construction Contract Milestones

<b>Pre-Advertise notice published (15 days before RTA)</b>	<b>14 Sept 2011</b>
<b>Contract Ready to Advertise</b>	29 Sept 2011
<b>Construction Contract Advertise</b>	3 Oct 2011
<b>BID Opening</b>	4 Nov 2011
<b>Construction Contract Awarded</b>	18 Nov 2011

b. Funding ATR. It is anticipated that the total cost for the ATR efforts described in this plan will be approximately \$200,000. The Los Angeles District will provide labor funding by cross charge labor codes. Funding for travel, if needed, will be provided by way of a government order. The Project Manager will work with the ATR team leader to ensure that adequate funding is available and is commensurate with the level of review needed. Any funding shortages will be negotiated on a case by case basis and in advance of a negative charge occurring.

The ATR team leader shall provide organization codes for each team member and a responsible financial point of contact (CEFMS responsible employee) for creation of labor codes. Reviewers shall monitor individual labor code balances and alert the ATR team leader to any possible funding shortages.

c. Funding IEPR. It is anticipated that the total cost for the IEPRs identified within this plan will be approximately \$400,000. The cost of panels for Type II IEPR, will be shared in accordance with the project purpose(s). RMC will transfer SAR contract capacity to the MSC/District for completion of the SAR

8. DOCUMENTATION OF REVIEW.

a. ATR Communication and Documentation. The communication and documentation plan for the ATR is as follows:

(1) The team will use DrChecks to document the ATR process. The Technical Project Leader will facilitate the creation of a project portfolio in the system to allow access by all PDT and ATR team members. An electronic version of the documents, appendices, and any significant and relevant public comments shall be posted in Adobe Acrobat PDF format at: <ftp://ftp.usace.army.mil/pub/> at least one business day prior to the start of the comment period.

(2) The PDT shall host an ATR kick-off meeting virtually to orient the ATR team during the first week of the comment period. If funds are not available for an on-site meeting, the PDT shall provide a presentation about the project, including photos of the site, for the team.

(3) The Technical Project Leader shall inform the ATR team leader when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

(4) A revised electronic version of the documents with comments incorporated shall be posted at <ftp://ftp.usace.army.mil/pub/> for use during back checking of the comments.

(5) PDT members shall contact ATR team members or leader as appropriate to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.

(6) Reviewers will be encouraged to contact PDT members directly via email or phone to clarify any confusion. DrChecks shall not be used to post questions needed for clarification.

b. ATR Resolution.

(1) Reviewers shall back check PDT responses to the review comments and either close the comment or attempt to resolve any disagreements. Conference calls shall be used to resolve any conflicting comments and responses.

(2) Reviewers may "agree to disagree" with any comment response and close the comment with a detailed explanation. If reviewer and responder cannot resolve a comment, it should be brought to the attention of the ATR team leader. If the ATR team leader is unable to resolve the issue, the ATR team leader will implement the guidelines as described below in the paragraph on Dispute Resolution.

(3) The ATR team will identify significant issues that they believe are not satisfactorily resolved and will note these concerns in the Technical Review Certification documentation. The ATR team will prepare a Review Report which includes a summary of each unresolved issue. Review Reports will be considered an integral part of the ATR documentation. Annotated ATR comments will be provided to the RMC and the RMC will notify the District of closure of each phase of ATR or identify issues remaining for resolution.

(4) Significant unresolved ATR concerns that are documented by the RMC will be forwarded through the MSC to the HQ USACE RIT, including basic research of Corps guidance and an expression of desired outcome, for further resolution in accordance with the policy issue resolution process described in ER 1110-2-12 or Appendix H, ER 1105-2-100, as appropriate. HQ USACE may choose to defer the issue to the policy compliance review process or address it directly. At this point the ATR documentation for the concern may be closed with a notation that the concern has been elevated for resolution by HQ USACE. Subsequent submittals of reports for MSC and/or HQ USACE review and approval shall include documentation of the issue resolution process.

c. ATR Certification. To fully document the ATR process, a statement of technical review will



be prepared for each product reviewed. The ATR documentation will include the text of each ATR comment, the PDT response, a brief summary of the pertinent points in the ensuing discussion, including any vertical coordination, and the agreed upon resolution. Certification by the ATR team leader and the Technical Project Leader will occur once issues raised by the reviewers have been addressed to the review team's satisfaction. Indication of this concurrence will be documented by the signing of a certification statement (Appendix C).

d. IEPR Communication and Documentation. The communication and documentation plan for the IEPR is as follows:

(1) The panel will use DrChecks to document the IEPR process. The Technical Project Leader will facilitate the creation of a project portfolio in the system to allow access by all PDT and the outside eligible organization (OEO). An electronic version of the documents, appendices, and any significant and relevant public comments shall be posted at: <ftp://ftp.usace.army.mil/pub/> at least one business day prior to the start of the comment period.

The OEO will compile the comments of the IEPR panelists, enter them into DrChecks, and forwards the comments to the District. The District will consult the PDT and outside sources as necessary to develop a proposed response to each panel comment. The District will enter the proposed response to DrChecks, and then return the proposed response to the panel. The panel will reply to the proposed response through the OEO, again using DrChecks. This final panel reply may or may not concur with the District's proposed response and the panels final response will indicate concurrence or briefly explain what issue is blocking concurrence. There will be no final closeout iteration. The District will consult the vertical team and outside resources to prepare an agency response to each comment. The initial panel comments, the District's proposed response, the panels reply to the District's proposed response, and the final agency response will all be tracked and archived in DrChecks for the administrative record. However, only the initial panel comments and the final agency responses will be posted. This process will continue to be refined as experience shows need for changes.

(2) The Technical Project Leader shall inform the IEPR panel when all responses have been entered into DrChecks and conduct a briefing to summarize comment responses to highlight any areas of disagreement.

(3) A revised electronic version of the documents with comments incorporated shall be posted at <ftp://ftp.usace.army.mil/pub/> for use during back checking of the comments.

(4) PDT members shall contact IEPR panel members as appropriate to seek clarification of a comment's intent or provide clarification of information in the report. Discussions shall occur outside of DrChecks but a summary of discussions may be provided in the system.

(5) The IEPR panel shall produce final Review Reports, including documentation of the peer review of the Project Design and field visit reports on construction activities.

(6) The SAR comments and recommendation letter must be provided to RMC as soon as they become available.

e. Dispute Resolution. The IEPR manager shall review the products and comments, PDT responses and back check of responses to reviewer's comments to identify any outstanding disagreements between members of the PDT and the review panel. Resolution meetings must be set when resolution is not readily achievable. The RMC must attend the SAR comment resolution meetings with the panel and the meeting must be scheduled with consideration of the RMC schedules and with enough notice to facilitate attendance. When resolutions are not readily achievable, the RMC should engage the PCX or MSC subject matter experts (SMEs) to help facilitate resolution, and they in turn may choose to engage HQ USACE SMEs. HQ USACE may choose to defer the issue to the policy compliance review process or address it directly. If a specific concern still remains unresolved, the district is to pursue resolution through the policy issue resolution processes described in Appendix H, ER 1105-2-100, ER 1110-1-12, or other applicable guidance.

f. IEPR Certification. The responses to the SAR comments must be provided to the RMC. RMC must concur with closure of the SAR

9, POINTS OF CONTACT. Questions about this Review Plan may be directed to the Los Angeles District Project Delivery Team, Design Lead Supervisor, Mrs. Emili Kolevski, P.E at (213) 452-3659, or to the Project Manager for The SARM Project Reach 9 – Phase 2A, Phase 2B and Phase 3, Mr. Thomas Bucklew at (213) 280-9511. The Chief, Engineering Division is Mr. Richard J. Leiffield, P.E at (213) 452-3629. Inquiries to the MSC should be directed to Paul Bowers at (415) 503-6556.

10. REVIEW PLAN APPROVAL. The Review management Office (RMO) for all work products of SARM Project Reach 9 - Phase 2A, Phase 2B and Phase 3 is the RMC, with in close coordination with the SPD MSC and FMR-PCX.

In summary, the Los Angeles District proposes to fully comply with all existing guidance, and conduct DQC, ATR, and Type II IEPR (Safety Assurance Review) in accordance with EC 1165-2-209. Approval of this RP as outlined above will help facilitate the District's completion of the SARM Project Reach 9 - Phase 2A, Phase 2B and Phase 3 features to complete the within the authorized schedule. In order to ensure the RP is in compliance with the principles of EC 1165-2-209, the RP must be approved by the applicable MSC, in this case the Commander, South Pacific Division (SPD). Once the RP is approved, the District will post it to its district public website and notify SPD. If necessary, any changes to the review plan will be approved by following the process used for initially approving the plan.

The Los Angeles District requests that the South Pacific Division endorse the above recommendations and approve this RP as described in Appendix B of EC 1165-2-209.

ATTACHMENT 1

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**QUALITY CONTROL PLAN FOR THE  
PREPARATION OF DESIGN DOCUMENTATION  
REPORT and PLANS, SPECIFICATIONS, &  
COST ESTIMATE  
LOWER SANTA ANA RIVER - REACH 9  
Phase 1, 2A, 2B, AND 3  
ORANGE COUNTY, CALIFORNIA**

*Prepared by:*



17885 Von Karman Avenue, Suite 500  
Irvine, CA 92614

**June 2010**

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## LIST OF TABLES

**Error! No table of figures entries found.**

## 1. DESCRIPTION OF THE PROJECT

Lower Santa Ana River Reach 9 is located in Orange County downstream of Prado Dam. This task order pertains to Reach 1 Phase 1, (Weir Canyon Road to Gypsum Canyon Road), Phase 2A (Mobile Home Park to Prado Outlet), Phase 2B (Coal Canyon Road to Mobile Home Park), and Phase 3 (Gypsum Canyon Road to Coal Canyon Road).

Construction is complete on Phase 1 and is underway for Phase 2A. Design is nearing completion on Phase 2B. Phase 3 design and construction has not begun.

## 2. PRODUCTS TO BE DEVELOPED

Tetra Tech has been retained to prepare a Design Documentation Report (DDR) for the entire Santa Ana River Reach 9 including Phase 1, Phase 2B, Phase 2A, and Phase 3, and Phase 3 final plans and specifications for solicitation of bids, including pre-construction contract services, and engineering during construction (EDC) services. The design work includes approximately 1400 linear feet of scour protection along the California State Route 91 and the Santa Ana Regional Interceptor (SARI) sewer line.

## 3. NAME AND LOCATION OF THE CLIENT

- a. Tetra Tech's client for this project is:

U.S. Army Corps of Engineers  
Design Branch  
Engineering Division  
911 Wilshire Street  
Los Angeles, CA 90017

- b. The Los Angeles District's client and end user of the project when construction is complete is:

Orange County Public Works

## 4. MANAGEMENT PHILOSOPHY

- a. Reference Tetra Tech, Inc., *Quality Assurance and Quality Control Standard Operating Procedures*.
- b. A primary objective and commitment of Tetra Tech is to produce high-quality products responsive to the client's needs. Systematic quality assurance and quality

control is a key aspect of the company's management system. The company builds into its cost proposals a requirement to conduct full independent technical reviews of all critical products, and all product deliverables to the Corps of Engineers.

- c. Our quality control program is based upon a team approach to assure the most efficient use of staff resources and the highest levels of internal independent technical review. Our quality control manager assures the appropriate reviewers are assigned and they conduct thorough reviews.

## **5. MANAGEMENT APPROACH**

- a. This Quality Control Plan, prepared and approved in accordance with reference 4.a., is an important tool for achieving the quality objective. It defines the process to be used in the development of the project, with particular emphasis on reviews. The plan also identifies the members of the development and review teams and summarizes their qualifications.
- b. The elements of this quality control plan will include the following:
  - 1. Actively involve all elements of project management
  - 2. Ensure that quality control is an integral part of the project and not just an "end of job" review
  - 3. Consider quality objectives and standards as equal or superior to budget and schedule considerations in all project management decisions
  - 4. Ensure that the scope of work is technically complete and workable in consideration of budgetary and scheduling constraints
  - 5. Commit necessary resources to achieve the project objectives
  - 6. Ensure frequent communication on progress of the work and problems and accomplishments
  - 7. Provide periodic review of project performance related to the planned schedule and budget goals

## 6. INDEPENDENT TECHNICAL REVIEW (ITR) GUIDELINES

The ITR will be conducted as outlined in reference 4.a. Independent technical reviewers have been assigned who, collectively, have expertise in all of the same technical disciplines required on the Technical Development Team for the preparation of the products. The Project Manager, acting as the Technical Development Team Leader (TDTL), will be the principal coordinator between the development team and the reviewing team. As each product is completed, copies will be provided by the TDTL to the appropriate independent reviewers. The reviewers will review the product and provide comments. The TDT members will revise the product accordingly. The written comments and responses for all ITRs will be maintained until the project is completed. After the ITR is completed, the reviewers will sign a certification form indicating completion of their reviews and satisfactory resolution of their comments. The TDTL will maintain the originals of the certifications and provide copies to the Tetra Tech Quality Assurance Manager.

## 7. OTHER REVIEWS

- a. Calculation Checking. Calculations performed by hand and calculator will be spot-checked. Formulas developed to perform calculations by spreadsheet or database will be checked, and the results from the spreadsheet or database will be spot-checked. Calculations performed by standard or routinely used computer programs will not be checked, but the checker will verify that the program used is appropriate (verification signified by no comment) and spot-check the input data and results for reasonableness.
- b. Technical Oversight Reviews. Whenever a technical product is produced by an assistant under the technical direction of a senior technical specialist, the senior specialist will review the product prior to its submission for ITR.
- c. Quality Assurance. Tetra Tech will perform the necessary quality assurance activities to insure that the appropriate quality control monitoring activities are carried out and documented, but Tetra Tech will not conduct quality assurance reviews. The Corps of Engineers (COE) will perform quality assurance reviews, as they deem necessary.

## 8. TECHNICAL DEVELOPMENT TEAM (TDT)

The TDT members, their areas of expertise, and their years of experience are listed in Table 1.



**Table 1. Technical Development Team**

<b>Name</b>	<b>Expertise</b>	<b>Years of Experience</b>
Patti Sexton, PE	Water Resources	18
Yen-Hsu Chen, PE	Civil Design	33
Thad Watkins, PE	Civil Design	8
Dave Pizzi, PE	Hydraulics, Sediment	10
Chitta Gangopadhyay, PE	Structural	20
Joe Roe, CEG	Geotechnical	10

## 9. INDEPENDENT TECHNICAL REVIEWERS

The independent technical reviewers assigned to the project, their areas of expertise, and their years of experience are listed in Table 2.

**Table 2. Independent Technical Review Team**

<b>Functional Responsibility</b>	<b>Name</b>	<b>Experience in Function</b>
Civil	Bob Hall, P.E.	40 years
Hydraulics / Scour	Bill Fullerton, P.E.	30 years
Geotechnical	Tom Chapel, CPG, P.E.	32 years

## 10. DESIGN TOOLS

The design will be prepared using three-dimensional Microstation V8-XM. Plots are produced on an HP DesignJet 4000PS. The cost estimates will be prepared using Microcomputer Aided Cost Estimating System, 2nd Generation (MCACES-Mii). We also use Microsoft Word, Excel, PowerPoint, and Project.

## 11. MAJOR MILESTONES

Submit Intermediate (50%) DDR and Design Material to COE	24 Nov 10
Submit Final (100%) DDR and Design Material to COE	24 Mar 11

## 12. CONSTRUCTION COST ESTIMATE CONTROL

An MCACES (Mii) cost estimate will be provided with the Intermediate and Final Plans and Specifications. At each stage the contingencies will be adjusted to reflect the degree

of accuracy of the data supporting the estimate. As details are finalized, the MCACES estimates will more closely reflect the actual construction costs. The final cost estimate will have a contingency of 5%. The final engineer's estimate will require confidentiality. The costs will be presented in MCACES (Mii) format and will be summarized in a spreadsheet for the bid schedule.

### **13. COMMUNICATIONS**

- a. Internal communications within Tetra Tech will be conducted on a regular basis as the work is being performed. Extensive communications will be required between the civil designers, the structural designers, geotechnical engineers and the cost estimating designers. External communication for development of the plans and specifications is also required with the environmental specialists (COE), and the SARI line owners (OCSD).
- b. Formal communications with the Corps of Engineers will be done between the Tetra Tech project manager, Patti Sexton, and the COE project engineer, Frank Malette. Communications of a routine nature will be conducted between any of the parties as needed. For communications with the local sponsor of other than a routine nature, Tetra Tech will go through the COE Project Engineer. Project meetings will be held with the COE, the sponsor, and Tetra Tech for the purpose of discussing issues and providing status.
- c. Requests for modifications to the contract will be initiated by the Tetra Tech project manager to the COE project engineer.

### **14. RISKS INHERENT IN THE PROJECT**

- a. The project is to be designed to provide protection from the design outflow from Prado Dam (30,000 cfs). Floods exceeding the design level may escape or damage the river banks and cause flood damage adjacent to the river.
- b. Flows within the design ranges (i.e. up to 30,000 cfs) are expected to result in vertical scour to the channel bed and lateral movement of the channel alignment. The bank protection will be designed with the expectation that while the channel is dynamic, the bank protection will be able to withstand that horizontal and vertical movement over a 100 year period of time.

- c. Plantings of native species will require special attention to assure successful establishment. This will be the responsibility of the COE.

## 15. GOVERNMENT FURNISHED ITEMS

The Government will furnish:

- Survey CADD files
- SARI Scour Study
- DGN files of reaches 1, 2A, and 2B
- Environmental Appendix for DDR
- IGE for Phase 2A and 2B
- Specifications for Phase 1, 2A, and 2B
- Supplemental geology report prepared to support sheetpile option
- EC&IFP for Phase 1, 2A, and 2B

## 17. DOCUMENTS TO BE REVIEWED BY THE ITRT

- a. Intermediate (50%) DDR and Design Material
- b. Final (100%) DDR and Design Material
- c. Final ECIF

## 18. PARTNERING AND CONFLICT RESOLUTION PROCEDURES

- a. Between Tetra Tech and the COE. Routine questions and issues arising during the development of the project will be discussed and resolved, if possible, between Tetra Tech's Ms. Patti Sexton and the COE Project Engineer, Mr. Frank Mallette. Any issues that cannot be reconciled at this working level will be escalated to the appropriate levels in the two organizations. Ms. Sexton and Mr. Mallette will coordinate within their respective organizations to determine the appropriate decision-makers to address the issues and will schedule a meeting between the decision-makers and their support staffs to address and resolve the issues.
- b. Between the COE Local Sponsor and Tetra Tech. Any partnering with Orange County Public Works for this project will be under COE auspices. Tetra Tech will attend partnering meetings with the sponsor as a COE technical resource and only at the express invitation of the COE.

**19. PROJECT CONSTRAINTS**

The project will be designed to provide protection from a 30,000 cfs release from Prado Dam.

**20. REVIEW OF GOVERNMENT FURNISHED ITEMS**

The COE will provide the Draft Design Documentation Report and Appendices for Tetra Tech's use in developing the project documents. Any discrepancies between the Government-furnished documents and actual site conditions noted by Tetra Tech personnel during the development of the project will be reported to the COE.

*Patti Sexton*

June 14, 2010

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Patti Sexton, P.E.  
Technical Development Team Leader

(Date)

Approved by:

*Bob Hall*

June 14, 2010

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Bob Hall, P.E.  
Quality Assurance Manager

(Date)

ATTACHMENT 2



**U. S. ARMY CORPS OF ENGINEERS  
LOS ANGELES DISTRICT**

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**USACE Contract W912PL-10-D-0023  
Task Order 003**

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**Geotechnical Investigation for the  
Lower Santa Ana River Reach 9 – Phase IIA  
Riverside and San Bernardino Counties, California**

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***Quality Control Plan***

***January 2011***

**URS Project No. 29871603**

**Prepared by**

**URS GROUP, INC.**

**2020 East First Street, Suite 400**

**Santa Ana, CA 92705-4032**

**714-835-6886**

**Fax 714-973-4062**

# 1.0 QUALITY CONTROL PLAN

This plan delineates specific actions that will be taken to verify that all deliverables are thorough, complete and meet the professional standard of care. The URS QMS applies to this task order. All project deliverables will be detail-checked and reviewed according to the URS QMS and the quality documentation will be maintained in the PCF. The assigned checker and reviewer will have experience with the subject matter and will not have been involved in developing or preparing the work.

A completed Project Initiation Checklist (QMS Form 3-1) that identifies specific parts of the QMS that are expected to apply to this project is included in Attachment A and is filed in the Quality folder *710 Proj Init Checklist* in the PCF. Blank copies of other forms needed for this task order are also included in Attachment A.

## 1.1 PROJECT INITIATION AUDIT

A Project Initiation Audit is required to be completed within 30 days of project initiation in the Time Sheet Collection System. The Project Manager is responsible for notifying the Division Quality Representative that his project requires a Project Initiation Audit.

## 1.2 APPLICABLE QMS ELEMENTS

Below is a minimum list of quality control elements and associated forms that will be used for this project. Refer to Volume 3 – *Quality Instructions* of the QMS for detailed instructions on completing the forms. A hard copy of the forms is included in Attachment A. Electronic copies of individual forms are included in the project directory in folder *701 Blank forms with job info*. When one of these electronic forms is used, it is acceptable to fill in as much information as possible electronically – in this case the form should be saved using a modified name to enable easy retrieval and to preserve the original template.

- Calculation Cover Sheet [Quality Form 3-3] – Required for each calculation
- Detail Check [Quality Form 3-4] – To be completed for each deliverable. The deliverables are listed in Attachment B. The deliverable will undergo a thorough review for correctness of content, completeness, technical accuracy and grammar; it may be necessary to use one checker for grammar and style review and another for other checking.
- Independent Technical Review [Quality Form 3-6] – An ITR of each deliverable will be completed to meet the schedule. Detail checking should be completed before the ITR. The ITR will review the deliverable for completeness, readability and compliance with scope requirements and the professional standard of care.

The ITR reviewers are assigned by the Project Manager. ITR reviewers are selected based on individual expertise and qualifications to perform the review and will participate in the planning of the Task Order execution and carry through the entire Task Order. ITR reviewers will review all aspects of the work. Attachment A contains the forms for documentation of ITRs.

Comments made by checkers and reviewers must be accepted or rejected by the responsible originator. Any differences of opinion will be resolved by the TOM, PM or PIC. Accepted comments and resolutions will be back-checked to insure they are appropriately incorporated.

Furthermore, the USACE will initiate the DrChecks electronic review comment and response process, and URS will document its responses to the USACE comments. Upon completion and approval by the USACE, the DrChecks process will be closed by the USACE Project Manager, certifying full compliance and satisfactory response to comments on the final work product.

### 1.3 QUALITY GUIDELINES

The following Quality Guidelines available on the Quality page on the SoURSe will be followed:

- Guidelines for Statements of Limitations
- Guidelines for Project Reviews
- Guidelines for Color-coded Marking Procedures
- Guidelines for Preparing & Checking Calcs
- Guidelines for Preparing & Checking Drawings

### 1.4 QC STAFF

Messers Michael Luebbers, Fahim Hakemi, and Leo Handfelt are designated to perform Independent Technical Reviews. Messers Luebbers and Handfelt for Geotechnical and Mr. Hakemi for Structural. The Task Order Manager Michael Smith will assign calculations, checkers and detailed checkers as appropriate for the calculations being performed.

### 1.5 PROJECT REVIEW

Per Procedure 8 in the URS QMS, a Project Review will be required for this project. The TOM will conduct the review after the Draft GDDR has been submitted. The attendees will include (at a minimum) the Office Manager or designee, the TO PIC, the lead team member from each division with a significant role in the project, the Office Quality Officer and the Engineering Manager. QMS Form 8-1 will be used to guide and document the Project Review process. Documentation of the review will be placed in the PCF.

### 1.6 TECHNICAL SOFTWARE

The definition and usage of technical software is governed by *Quality Instruction 3-6*. In most cases, technical software applications used on projects to help develop a deliverable must be verified. Before using a software application, confirm that the application is listed in Section 4.3 as being authorized for use and as having been verified. If the software application (including the exact version) is not authorized for use or needs to be verified, talk to the Project Manager and/or Discipline Lead Professional (DLP)



about the software application. If verification is required, it must be completed according to *Quality Instruction 3-6* of the URS QMS before using the software application.

## **1.7 APPLICABLE STANDARD OPERATING PROCEDURES**

No additional standard operating procedures are required.

## **1.8 OTHER REQUIRED QUALITY PLANS**

The URS Quality Management System is sufficient for this project.

## **1.9 CLIENT FEEDBACK**

Client feedback will be requested prior to the Project Review, with the expectation that the feedback will be available for the review. Either the Online Client Survey System (OCSS) will be used or a hard copy of QMS Form 5-1 Client Feedback Survey will be mailed to solicit feedback. The TOM will notify the client that a survey request will be sent and the TO PIC will follow up with the client after the survey has been completed.

## **1.10 CORRECTIVE AND PREVENTIVE ACTIONS**

When nonconformance or potential nonconformance is identified through audits or otherwise, the TOM must prepare and implement Corrective Action or Preventive Action plans in a timely manner. Corrective Actions must be based on a root cause analysis and must be permanent and effective. The TOM and TO PIC must work with the Office Quality Officer or designee to identify potential improvement opportunities and implement them as appropriate.

## **1.11 RESOLUTION OF CONFLICTS**

The PIC, PM and Technical Manager, as applicable, will meet to discuss and resolve any significant technical disagreements or differences.

## **1.12 SOFTWARE**

The software listed in the following table is approved for use on this project, provided verification is completed or is not required:

<b>Approved Software Application Name and Version<sup>(2)</sup></b>	<b>Verification Required?</b>
Microsoft Office Word 2003 with Service Pack 3	No, not <u>technical</u> software <sup>(3)</sup>
Portable document file (pdf) creators and readers – various, including Nuance PDF Converter Processional V 5, pdf995, Nitro and Adobe	No, not <u>technical</u> software <sup>(3)</sup>
Lotus Notes V 6.5	No, not <u>technical</u> software <sup>(3)</sup>
Adobe Photoshop Elements 8	No, not <u>technical</u> software <sup>(3)</sup>
Microsoft Project Professional 2002	No, not <u>technical</u> software <sup>(3)</sup>
Microsoft Office Excel 2003 with Service Pack 3	No, exempted by QI 3-6 <sup>(4)</sup>
Microstation V 8	No, exempted by QI 3-6 <sup>(4)</sup>
AutoCAD V 2008	No, exempted by QI 3-6 <sup>(4)</sup>
ArInfo	No, exempted by QI 3-6 <sup>(4)</sup>
Microsoft Excel workbooks (involving calculations to support a deliverable)	None identified
SlopeW	No, exempted by QI 3-6 <sup>(4)</sup>
CPet-IT	No, exempted by QI 3-6 <sup>(4)</sup>
CLiq	No, exempted by QI 3-6 <sup>(4)</sup>

1. V means version. QI means URS Quality Instruction.
2. Later versions are always acceptable.
3. Products (such as a pdf file) of non-technical software or graphs may be subject to Detail Checking.
4. Although programs such as Excel and MathCAD are exempted from verification, applications such as Excel workbooks written to run on these exempted programs are subject to verification if the results are used to support a deliverable directly.

Based on the above list of approved software applications, verification of technical software applications is not expected to be required for this project. However, additional programs and workbooks may be identified later by discipline leads and must be added to this PXP before being used. If the Discipline Lead Professional (DLP) (Michael Smith for the Geotechnical Division) indicates that verification is required, the technical software application will be verified according to *Quality Instruction 3-6* of the URS QMS. QMS Form 3-9 will be used to document the verification and will be sent by the Discipline Lead Professional to the Office Quality Officer (OQO) and will also be filed in the PCF. QMS Forms 3-9 will also be filed in the PCF for technical software that has been verified.

**ATTACHMENT A**

**QMS FORMS**

# Project Planning Checklist

<b>Project Name:</b>		<b>Project Number:</b>			
<b>Project Location:</b>		<b>Client Name:</b>			
<b>PM Name:</b>		<b>PIC Name:</b>			
Stage	Required or Done? (check if 'yes')	Activity Relevant to the Project	QMS Reference		
			Procedure	Instruction	Form(s)
<b>Proposal</b>	<input type="checkbox"/>	Review the RFP	2		
	<input type="checkbox"/>	Complete the Go/No Go Process	2		
	<input type="checkbox"/>	Complete the MAR Process	2		
	<input type="checkbox"/>	Respond to the RFP	2		
	<input type="checkbox"/>	Review Proposal and Contract	2		2-1
<b>Planning</b>	<input type="checkbox"/>	Complete project accounting set up including the WAF	3		
	<input type="checkbox"/>	Establish Project Central File/Document Control	1	1-1	
	<input type="checkbox"/>	Prepare Project Execution Plan	3	3-1	3-2S, 3-2L, 3-2B, 3-2C
	<input type="checkbox"/>	Prepare Standalone Project Quality Plan	3	3-1	
	<input type="checkbox"/>	Prepare Project Health and Safety Plan	3		
<b>Performance and Monitoring - All Services</b>	<input type="checkbox"/>	Conduct Project Kickoff Meeting	3		
	<input type="checkbox"/>	Verification and Control of Technical Software	3	3-6	3-9
	<input type="checkbox"/>	Review of Client-Provided Information	3	3-7	3-11
	<input type="checkbox"/>	Review of Subconsultant/Subcontractor/Supplier Information	3	3-2, 3-3	3-12
	<input type="checkbox"/>	Use of Monitoring and Measuring Devices	4		
	<input type="checkbox"/>	Conduct Detail Check: <input type="checkbox"/> Calculations <input type="checkbox"/> Cost Estimates <input type="checkbox"/> Specifications <input type="checkbox"/> Drawings <input type="checkbox"/> Studies and Reports	3	3-2	3-3, 3-4, 3-5
	<input type="checkbox"/>	Conduct Independent Technical Review	3	3-3	3-5, 3-6
	<input type="checkbox"/>	Prepare Design Directives	3		
	<input type="checkbox"/>	Conduct Coordination Review	3	3-4	3-7
	<input type="checkbox"/>	Conduct Constructability Review and/or Bidability Review	3	3-5	3-8
	<input type="checkbox"/>	Application of Statement of Limitations	3	3-7	
	<input type="checkbox"/>	Application of Electronic Media User Agreements	3	3-7	3-10
	<input type="checkbox"/>	Changing the Work Product	3		
	<input type="checkbox"/>	Conduct Project Closeout Meeting	3		
	<input type="checkbox"/>	Acquire and Respond to Client Feedback	5		5-1
<input type="checkbox"/>	Internal Quality Audits	6		6-1	
<input type="checkbox"/>	Conduct Project Review	8		8-1	
<b>Performance and Monitoring - Construction-related Services</b>	<input type="checkbox"/>	PIC Review	3		3-13
	<input type="checkbox"/>	Construction Administration Log	3	3-9	
	<input type="checkbox"/>	Site Observations	3	3-10	
	<input type="checkbox"/>	Construction Schedule Reviews	3	3-11	
	<input type="checkbox"/>	Payment Tracking and Cost Reporting	3	3-12	
	<input type="checkbox"/>	Schedule Reporting	3	3-13	
	<input type="checkbox"/>	RFI/Submittal Management	3	3-14	
	<input type="checkbox"/>	Inspection Reports	3	3-15	
	<input type="checkbox"/>	Change Order Management and Dispute Resolution	3	3-16	
	<input type="checkbox"/>	Daily Reports	3	3-17	
	<input type="checkbox"/>	Safety Documents	3	3-18	
<input type="checkbox"/>	Procurement Log	3	3-19		

# Project Planning Checklist

<b>Project Name:</b>		<b>Project Number:</b>	
<b>Project Location:</b>		<b>Client Name:</b>	
<b>PM Name:</b>		<b>PIC Name:</b>	

## APPROVAL and DISTRIBUTION

\_\_\_\_\_

**Project Manager Signature**

\_\_\_\_\_

**Date**

\_\_\_\_\_

**Principal-in-Charge Signature**

\_\_\_\_\_

**Date**

***Distribution:***

Project Central File – Quality file folder

Other Specify: \_\_\_\_\_

<b>Project Name:</b>		<b>Project Number:</b>	
<b>Project Location:</b>		<b>Client Name:</b>	
<b>PM Name:</b>		<b>PIC Name:</b>	

### IDENTIFYING INFORMATION

*(This section is to be completed by the Originator.)*

Calculation Medium:  Electronic File Name: \_\_\_\_\_  
*(Select as appropriate)*  Hard-copy Unique Identification: \_\_\_\_\_  
 Number of pages  
*(including cover sheet):*

Discipline: [As needed]  
 Title of Calculation: [Brief title describing calculation]  
 Calculation Originator: [Name of primary originator]  
 Calculation Contributors: [If applicable, names of other contributors]  
 Calculation Checker: [Name of Checker]

### DESCRIPTION & PURPOSE

[Briefly describe calculation and its purpose. Document in greater detail, as needed in calculations.]

### BASIS / REFERENCE / ASSUMPTIONS

[Briefly describe here. Document in greater detail, as needed, in calculations.]

### ISSUE / REVISION RECORD

Checker comments, if any, provided on:  hard-copy  electronic file  Form 3-5 (MM)

No.	Description	P	S	F	Originator Initials	Date	Checker Initials	Date
0	Initial Issue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[ ]	[ ]	[ ]	[ ]
1		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[ ]	[ ]	[ ]	[ ]
2		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[ ]	[ ]	[ ]	[ ]
3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	[ ]	[ ]	[ ]	[ ]

*Note: For a given Revision No. Check off either P (Preliminary), S (Superseding) or F (Final). If there are no revisions to the Initial Issue check off F (Final). Comments may be provided on the hard-copy calculations, electronic file or on Form 3-5 (MM).*

### APPROVAL and DISTRIBUTION

The calculations associated with this Cover Sheet have been checked.

_____	_____
Originator Signature	Date
_____	_____
Checker Signature	Date
_____	_____
Project Manager Signature	Date

**Distribution:**

Project Central File – Quality file folder  
 Other Specify: \_\_\_\_\_

<b>Project Name:</b>	<b>Project Number:</b>
<b>Project Location:</b>	<b>Client Name:</b>
<b>PM Name:</b>	<b>PIC Name:</b>

<b>Identifying Information</b>	<i>(This section is to be completed by the Project Manager.)</i>
	Assigned Checker: _____ Checker's Comments Required by: _____ Work Product Originator: _____ Work Product to be Checked: _____ <input type="checkbox"/> This Detail Check is a check for correctness, completeness and technical accuracy. <input type="checkbox"/> This Detail Check is a technical edit for format, spelling, grammar, pagination and readability. Submitted by: _____ <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span><b>Project Manager Signature</b></span> <span><b>Date</b></span> </div>

<b>Detail Check – Part 1: Comments</b>	<i>(This Section is to be completed by the Checker.)</i>
	Check box A <b>or</b> B: A. <input type="checkbox"/> All items have been found to be correct. Checker has no comments. <b>or</b> B. <input type="checkbox"/> Checker's comments have been provided on: <div style="display: flex; justify-content: flex-end; margin-right: 20px;"> <input type="checkbox"/> Marked directly on Work Product  <input type="checkbox"/> Comment and Disposition Form (Form 3-5 (MM))  <input type="checkbox"/> Other Specify: _____             </div> <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span>_____</span> <span>_____</span> </div> <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span><b>Checker Signature</b></span> <span><b>Date</b></span> </div>

<b>Detail Check – Part 2: Verification</b>	<i>(This section is to be completed by the Checker after verification of comment resolution, if box B is checked off above.)</i>
	Check box C <b>or</b> D <b>and</b> then E: C. <input type="checkbox"/> Verification of comment resolution has been performed by Checker AND any significant issues have been resolved between Originator and Checker. <b>or</b> D. <input type="checkbox"/> Verification of comment resolution has been performed by Checker AND unresolved issues have been submitted to the Project Manager, Principal-in-Charge or designee for resolution. <b>and</b> E. <input type="checkbox"/> Verification of correct incorporation of resolved comments into final Work Product is complete. <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span>_____</span> <span>_____</span> </div> <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span><b>Checker Signature</b></span> <span><b>Date</b></span> </div>

<b>APPROVAL and DISTRIBUTION</b>	
<i>(To be signed after box A <b>or</b> E are completed.)</i>	
<input type="checkbox"/> The Detail Check is complete. Significant issues not resolved between the Checker and the Originator, if any, have been resolved by the Approver. <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span>_____</span> <span>_____</span> </div> <div style="display: flex; justify-content: space-between; width: 80%; margin-left: auto; margin-right: auto;"> <span><b>Project Manager, Principal-in-Charge or Designee Signature</b></span> <span><b>Date</b></span> </div>	
<b>Distribution:</b> Project Central File – Quality file folder Other Specify: _____	

<b>Project Name:</b>	<b>Project Number:</b>
<b>Project Location:</b>	<b>Client Name:</b>
<b>PM Name:</b>	<b>PIC Name:</b>

<b>Identifying Information</b>	<i>(This section is to be completed by the Project Manager.)</i>
	Assigned Independent Technical Reviewer: _____ Reviewer's Comments required by: _____ Work Product Originator: _____ Work Product to be Reviewed: _____ Review Scope: [Include specific instructions on disciplines or elements to be reviewed, if any.] Submitted by: _____ <div style="display: flex; justify-content: space-around; width: 100%;"> <span>_____ <b>Project Manager Signature</b></span> <span>_____ <b>Date</b></span> </div>

<b>Independent Technical Review - Part 1: Comments</b>	<i>(This section is to be completed by the Reviewer.)</i>
	Check box A <b>or</b> B: A. <input type="checkbox"/> Reviewer performed review and has no comments. <b>or</b> B. <input type="checkbox"/> The Reviewer's comments have been provided on: <div style="display: flex; justify-content: flex-end; margin-top: 10px;"> <input type="checkbox"/> Marked directly on Work Product  <input type="checkbox"/> Comment and Disposition Form (Form 3-5 (MM))  <input type="checkbox"/> Other Specify: _____             </div> <div style="display: flex; justify-content: space-around; width: 100%; margin-top: 20px;"> <span>_____ <b>Reviewer Signature</b></span> <span>_____ <b>Date</b></span> </div>

<b>Independent Technical Review - Part 2: Verification</b>	<i>(This section is to be completed by the Reviewer after verification of comment resolution, if box B is checked off above.)</i>
	Check box C <b>or</b> D <b>and</b> then E: C. <input type="checkbox"/> Verification of comment resolution has been performed by Reviewer AND any significant issues have been resolved between Originator and Reviewer. <b>or</b> D. <input type="checkbox"/> Verification of comment resolution has been performed by Reviewer AND unresolved issues have been submitted to the Project Manager, Principal-in-Charge or designee for resolution. <b>and</b> E. <input type="checkbox"/> Verification of correct incorporation of resolved comments into final Work Product is complete. <div style="display: flex; justify-content: space-around; width: 100%; margin-top: 20px;"> <span>_____ <b>Reviewer Signature</b></span> <span>_____ <b>Date</b></span> </div>

**APPROVAL and DISTRIBUTION**

<i>(To be signed after box A or E are completed.)</i>
<input type="checkbox"/> The review is complete. Significant issues not resolved between the Reviewer and the Originator, if any, have been resolved by the Approver. <div style="display: flex; justify-content: space-around; width: 100%; margin-top: 20px;"> <span>_____ <b>Project Manager, Principal-in-Charge or Designee Signature</b></span> <span>_____ <b>Date</b></span> </div>

**Distribution:**  
 Project Central File – Quality file folder  
 Other Specify: \_\_\_\_\_



**ATTACHMENT B**  
**LIST OF DELIVERABLES**

## LIST OF DELIVERABLES

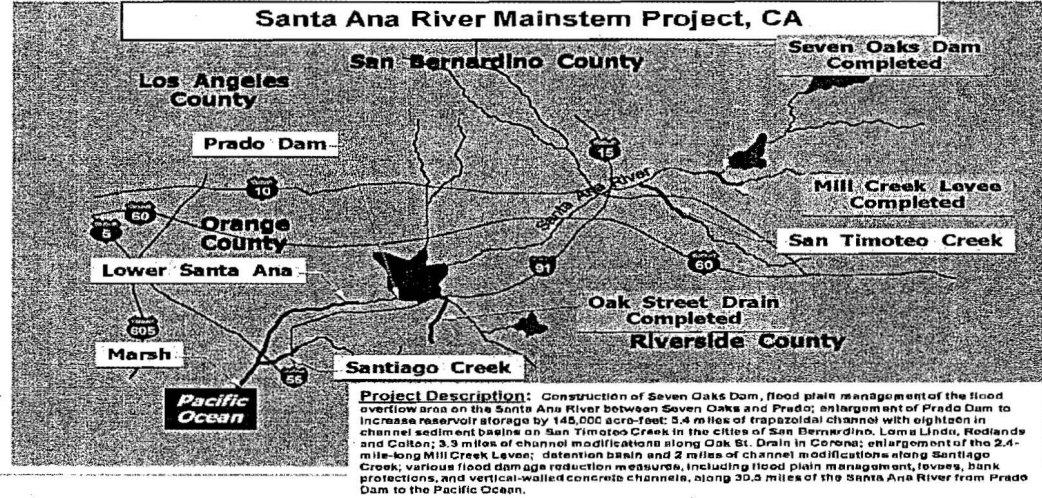
1. Draft and Final Geotechnical Appendix, Design Documentation Report
2. Draft and Final Geotechnical Memo MWD 119” feeder protection
3. Design plans for MWD feeder protection Structure
4. Review of selected technical specifications
5. Review of bank protection

**APPENDIX- A**

**PROJECT LOCATION MAP**

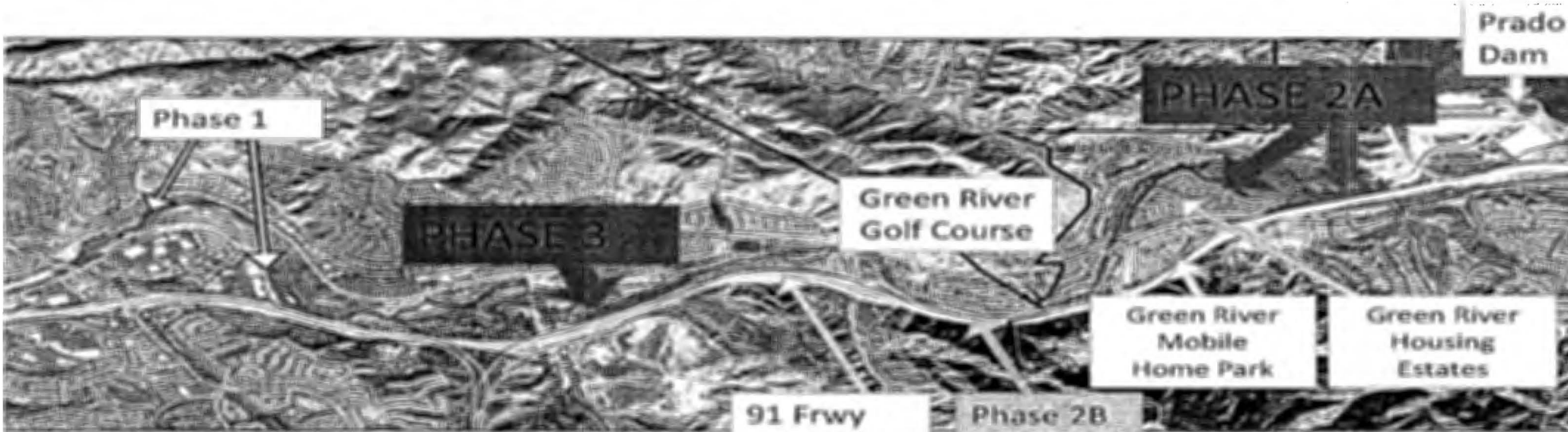


**Project Location:** The project is located along a 75-mile reach of the Santa Ana River in Orange, San Bernardino and Riverside Counties, southeast of and adjacent to metropolitan Los Angeles, California.



# SANTA ANA RIVER MAINSTEM, INCLUDING SANTIAGO CREEK, California

## Lower Santa Ana River Weir Canyon Road To Prado Dam Reach 9 – Phase 2A and Phase 3



- Constructed Bank Protection – Phase 1 (Completed 2006)
- Future Bank Protection – Phase 2A and Phase III
- Bank Protection – Phase 2B (Awarded 2009)

**APPENDIX- B**

**ATR AND TYPE II - IEPR**

**REVIEW TEAM ROSTER**

POINTS OF CONTACT

POINTS OF CONTACT		
OFFICE NAME	Name	Phone No.
[REDACTED]		
[REDACTED]		
Vertical Team:		
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]		
Outside Eligible Organization (OEO)		

AGENCY TECHNICAL REVIEW

AGENCY TECHNICAL REVIEW (ATR)			
ATR Discipline	Name	Agency/Office	Phone No.
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

ATR members for must have the minimum expertise listed below for the appropriate discipline:

ATR Team Leader. The ATR Team Leader should have 10 or more years of experience with Civil Works Projects and have performed ATR Team Leader duties on complex civil works projects.

Civil Engineering. The team member shall have 10 or more years of experience in design of flood control structures including levees, guide dikes and channels utilizing sandy soils (soft soils). Experience utilizing grouted stone, riprap, derrick stone, concrete and sheet pile in design of levees, guide dikes and channels for large civil works projects is required. Demonstrated knowledge regarding site layout, surveying, 3-dimensional modeling, construction techniques, hydraulic structures, erosion control, interior drainage is required.

Hydrology and Hydraulics. Team member should be a registered professional with 10 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects. Experience with all aspects of hydraulic engineering including: knowledge of analyses techniques of sediment and regime flows, forecasting of scour based on channel slope, sediment loads, sediment budget, geology, and basin/historic hydrology; hydraulic analyses and designs for outlet structures, diversion structures; and designing of the appropriate protection/launching apron dimensions and other river engineering structures; water velocities, pressures, directions, trajectories, and erosion potential; and hydraulic modeling is desired. Experience with the Dam or Levee Safety program is also desired. Active participation in related professional societies is encouraged. (Review work products, as necessary.)

Geotechnical Engineering. Team member shall have 20 or more years of experience in geotechnical engineering and shall be a recognized expert in the analysis, design and construction of embankment dams and levees on alluvial foundations with extensive experience in subsurface investigations, liquefaction analyses, earthquake induced embankment deformations, seepage and slope stability analysis, sheet pile analysis, design and construction, and preparing plans and specifications for embankment dams and levees. The Geotechnical Engineer shall be a licensed professional engineer. Experience with the Dam or Levee Safety program is also desired. Active participation in related professional societies is encouraged. (Review work products, as necessary)

Structural Engineering. The team member shall have 10 or more years of experience in structural engineering. The Structural Engineer shall have extensive experience in design and evaluations of large complex hydraulic structures associated with flood risk management projects such as deep sheet pile walls subject to erosion and undermining by direct high flows and meandering action. Also experience in design of hydraulic structures such as side drains constructed through levees. Experience with AASHTO and state road and bridge standards as well as practical knowledge of construction methods and techniques as it relates to structural portions of projects is encouraged. (Review work products, as necessary)

Cost Engineering. The team member should have 10 or more years demonstrated in the preparation of cost estimates, cost risk analyses and cost engineering. Experience is needed for complex Civil Works projects to include levee and floodwalls systems. Reviewer should be

certified as a Cost Engineer by the Walla Walla DX which requires an 8 hour training and signed certificate. (Review work products, as necessary)

Geology. The team member shall have 10 or more years of experience in flood control projects assuring that the geologic factors affecting the location, design, construction, operation, maintenance of dams and levees, including the necessary investigations and testing are within the Corps current standards and criteria.

Construction Engineering/Operations. The team member should have 10 or more years of experience of construction management in complex large scale public works projects, including coordinating efforts in horizontal construction, specializing in earthwork, concrete work, drilled piles, floodwalls, roads and highways, relocations, paving and drainage.

Environmental. The team member should have 10 or more years of experience in NEPA compliance activities and preparation of Environmental Assessments and Environmental Impact Statements for complex civil/site work projects. Experience is needed for levee system projects. (Review work products, as necessary)

Real Estate. Team member will be experienced in federal civil works real estate laws, policies, and guidance. (Review work products, as necessary)

#### TYPE II, INDEPENDENT EXTERNAL PEER REVIEW

The Type II IEPR panel will include the following disciplines: Civil, Hydrology and Hydraulics, Geotechnical, Structural and Environmental. To ensure that an appropriate level of review expertise is obtained, the following models are anticipated to be used in the design of the project. Civil 3-dimensional modeling will include: InRoads. H&H analyses will include the following models: CHANLPRO, HEC RAS, HEC 6T and HEC FDA. Geotechnical and structural analyses will include the following models: Seep/W, Slope/W, CLiq, CWALSSI, PILE BUCK, CUFRBC, CORTCUL and MATHCAD. In addition, Type II, IEPR panel members must have the minimum expertise listed below for the appropriate discipline:

Civil Engineering Panel Member. The Civil Engineer panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of flood control structures including levees, guide dikes and channels utilizing sandy soils (soft soils). Experience utilizing riprap, grouted stone, derrick stone and sheet pile in design of bank protection and channels for large civil works projects is required. Demonstrated knowledge regarding site layout, surveying, 3-dimensional modeling, construction techniques, grading, hydraulic structures, erosion control, interior drainage, road design and retaining walls is required.



Hydrology and Hydraulics (H&H) Panel Member. The H&H panel member should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 15 or more years of experience in conducting and evaluating hydrologic and hydraulic analyses for flood risk management projects. The panel member should be experienced in Flood Damage Reduction Projects, including large earth-fill, rock-fill, concrete or combination dams or systems of dams with their many hydraulic appurtenances such as gated and un-gated spillways, stilling basins, outlet works, control gates and valves, power intake structures, tunnels, conduits and approach and diversion channels and appurtenant control structures; and/or Local Flood Damage Reduction Projects including levees; floodwalls; gravity outlet and gate closure structures; pumping stations; detention basins; storm drainage structures; lined and unlined flood control channels and improvement structures. Active participation in related professional societies is encouraged. (Review work products, as necessary)

Geotechnical Engineering Panel Member. Geotechnical Engineer panel member should be a registered professional geotechnical engineer from academia, a public agency, an Architect-Engineer or consulting firm with 20 years or more experience in geotechnical and earthquake engineering for critical flood risk management infrastructure and levee safety evaluations. It is preferred that panel member possess a PhD degree in geotechnical engineering, although an MS degree is acceptable. Panel member will be a recognized expert in the analysis, design and construction of embankment dams and levees on alluvial foundations with extensive experience in subsurface investigations; liquefaction analyses; earthquake induced embankment deformations; seepage and slope stability analysis; sheet pile analysis; design and construction of grouted stone embankments; and preparing plans and specifications for embankment dams and levees. (Review work products, as necessary.)

Structural Engineering Panel Member. Structural Engineer should be a registered professional from academia, a public agency, or an Architect-Engineer or consulting firm with 10 or more years of experience in design of hydraulic structures for large and complex civil works projects including deep sheet pile walls subject to erosion and undermining by direct high flows and meandering action, design of sheet pile in shallow bedrock. Also experience in design of hydraulic structures such as side drains constructed through levees. Practical knowledge of construction methods and techniques as it relates to structural portions of projects is encouraged. (Review work products, as necessary)

Environmental – This Member should have a minimum of 10 years demonstrated experience in evaluating and conducting NEPA impact assessments, including cumulative effects analyses, for complex multi-objective public works projects with competing trade-offs. The panel member should have a minimum MS degree or higher in an appropriate field of study. Experience should encompass determining the scope and appropriate methodologies for impact assessment and analyses for a variety of projects and programs with high public and interagency

interests and having project impacts to nearby sensitive habitats. (Review work products, as necessary).

**APPENDIX- C**

**Review Plan Approval Memo**



REPLY TO  
ATTENTION OF

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

10 June 2011

CESPD-PDC

MEMORANDUM FOR Commander, Los Angeles District, ATTN: CESPL-PM-C, Mr. Thomas Bucklew

SUBJECT: Review Plan Approval for the Santa Ana River Mainstem, including Santiago Creek, California

1. The enclosed Review Plan for Santa Ana River Mainstem, including Santiago Creek, California was prepared in accordance with EC 1165-2-209, dated 31 January 2010. The Review Plan will require Independent External Peer Review Type II Safety Assurance Review (SAR).
2. The Review Plan will be made available for public comment, and the comments received will be incorporated into the Review Plan.
3. I hereby approve this Review Plan, which is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from this office.
4. The point of contact for this memorandum is Mr. Paul Bowers, 415-503-6556, [paul.w.bowers@usace.army.mil](mailto:paul.w.bowers@usace.army.mil).

***Building Strong on the Cornerstone of the Southwest!***

A handwritten signature in black ink that reads "Andrew Constantaras".

Andrew Constantaras, P.E.  
Director, Regional Business Directorate

Encl

**APPENDIX- D**

**ATR CERTIFICATION**



**DEPARTMENT OF THE ARMY**  
LOS ANGELES DISTRICT, CORPS OF ENGINEERS  
P.O. Box 532711  
LOS ANGELES, CALIFORNIA 90053-2325

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the **Plans and Specifications and DDR for the Lower Santa Ana River Reach 9 Phase 2A, Riverside County and Orange County, California**. 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.

---

Jacob W. Owen  
ATR Team Leader  
CENWK-ED-DT

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Date

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Oscar T. Bucklew  
Project Manager  
CESPL-PM-C

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Date

---

Arthur Y. Jung, P.E.  
Chief, Design Branch  
CESPL-ED-D

---

Date

## **CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows:

All comments were resolved to the satisfaction of the reviewers.

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

\_\_\_\_\_  
Richard J. Leifield, P.E.  
Chief, Engineering Division  
CESPL-ED

\_\_\_\_\_  
Date



**DEPARTMENT OF THE ARMY**  
LOS ANGELES DISTRICT, CORPS OF ENGINEERS  
P.O. Box 532711  
LOS ANGELES, CALIFORNIA 90053-2325

**COMPLETION OF AGENCY TECHNICAL REVIEW**

The Agency Technical Review (ATR) has been completed for the **Plans and Specifications and DDR for the Lower Santa Ana River Reach 9 Phase 3, Riverside County and Orange County, California**. 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.

---

Jacob W. Owen  
ATR Team Leader  
CENWK-ED-DT

---

Date

---

Oscar T. Bucklew  
Project Manager  
CESPL-PM-C

---

Date

---

Arthur Y. Jung, P.E.  
Chief, Design Branch  
CESPL-ED-D

---

Date



## **CERTIFICATION OF AGENCY TECHNICAL REVIEW**

Significant concerns and the explanation of the resolution are as follows:

All comments were resolved to the satisfaction of the reviewers.

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

---

Richard J. Leifield, P.E.  
Chief, Engineering Division  
CESPL-ED

---

Date

ENCLOSURE 2

RP CHECKLIST  
15 NOVEMBER 2013

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## Section II - Implementation Documents

### Review Plan Checklist For Implementation Documents

**Date:** 15 November 2013

**Originating District:** Los Angeles

**Project/Study Title:** Santa Ana River Mainstem, Including Santiago Creek, California Lower Santa Ana River (Weir Canyon Road to Prado Dam) Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A, 2B, 3, 4, and 5A

**PWI #:** 104779

**District POC:** Oscar T. Bucklew

**PCX Reviewer:** Paul Bowers

Please fill out this checklist and submit with the draft Review Plan when coordinating with the appropriate RMO. For DQC, the District is the RMO; for ATR of Dam and Levee Safety Studies, the Risk Management Center is the RMO; and for non-Dam and Levee Safety projects and other work products, SPD is the RMO; for Type II IEPR, the Risk Management Center is the RMO. Any evaluation boxes checked 'No' indicate the RP possibly may not comply with EC 1165-2-209 and should be explained. Additional coordination and issue resolution may be required prior to MSC approval of the Review Plan.

REQUIREMENT	REFERENCE	EVALUATION
<b>1. Is the Review Plan (RP) a standalone document?</b>	EC 1165-2-209, Appendix B Para 4a	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it include a cover page identifying it as a RP and listing the project/study title, originating district or office, and date of the plan?		a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
b. Does it include a table of contents?		b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
c. Is the purpose of the RP clearly stated and EC 1165-2-209 referenced?	EC 1165-2-209 Para 7a	c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
d. Does it reference the Project Management Plan (PMP) of which the RP is a component including P2 Project #?	EC 1165-2-209 Para 7a (2)	d. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Project was authorized before implementation of PMP requirement
e. Does it include a paragraph stating the title, subject, and purpose of the work product to be reviewed?	EC 1165-2-209 Appendix B Para 4a	e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
f. Does it list the names and disciplines in the home district, MSC and RMO to whom inquiries about the plan may be	EC 1165-2-209, Appendix B, Para 4a	f. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>

<p>directed?*</p> <p><i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i></p>		
<p><b>2. Documentation of risk-informed decisions on which levels of review are appropriate.</b></p>	<p>EC 1165-2-209, Appendix B, Para 4b</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it succinctly describe the three levels of peer review: District Quality Control (DQC), Agency Technical Review (ATR), and Independent External Peer Review (IEPR)?</p> <p>b. Does it contain a summary of the CW implementation products required?</p> <p>c. DQC is always required. The RP will need to address the following questions:</p> <p>i. Does it state that DQC will be managed by the home district in accordance with the Major Subordinate Command (MSC) and district Quality Management Plans?</p> <p>ii. Does it list the DQC activities (for example, 30, 60, 90, BCOE reviews, etc)</p> <p>iii. Does it list the review teams who will perform the DQC activities?</p> <p>iv. Does it provide tasks and related resource, funding and schedule showing when the DQC activities will be performed?</p> <p>d. Does it assume an ATR is required and if an ATR is not required does it provide a risk based decision of why it is not required? If an ATR is required the RP will need to address the following questions:</p> <p>i. Does it identify the ATR District, MSC, and RMO points of contact?</p>	<p>EC 1165-2-209 7a</p> <p>EC1165-2-209 Para 15</p> <p>EC1165-2-209 Para 15a</p> <p>EC1165-2-209 Para 8a</p> <p>EC 1165-2-209 Appendix B (1)</p> <p>EC 1165-2-209 Appendix B 4g</p> <p>EC 1165-2-209 Appendix B Para 4c</p> <p>EC1165-2-209 Para 15a</p> <p>EC 1165-2-209 Para 7a</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>ii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iv. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

<p>ii. Does it identify the ATR lead from outside the home MSC?</p> <p>iii. Does it provide a succinct description of the primary disciplines or expertise needed for the review (not simply a list of disciplines)? If the reviewers are listed by name, does the RP describe the qualifications and years of relevant experience of the ATR team members?*</p> <p>iv. Does it provide tasks and related resource, funding and schedule showing when the ATR activities will be performed?</p> <p>v. Does the RP address the requirement to document ATR comments using Dr Checks?</p>	<p>EC 1165-2-209 Para 9c</p> <p>EC 1165-2-209 Appendix B 4g</p> <p>EC 1165-2-209 Appendix C Para 3e</p> <p>EC 1165-2-209 Para 7d (1)</p>	<p>ii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iv. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>v. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p><i>*Note: It is highly recommended to put all team member names and contact information in an appendix for easy updating as team members change or the RP is updated.</i></p>		
<p>e. Does it assume a Type II IEPR is required and if a Type II IEPR is not required does it provide a risk based decision of why it is not required including RMC/ MSC concurrence? If a Type II IEPR is required the RP will need to address the following questions:</p> <p>i. Does it provide a defensible rationale for the decision on Type II IEPR?</p> <p>ii. Does it identify the Type II IEPR District, MSC, and RMO points of contact?</p> <p>iii. Does it state that for a Type II IEPR, it will be contracted with an A/E contractor or arranged with another government agency to manage external to the Corps of Engineers?</p> <p>iv. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be made up of independent,</p>	<p>EC1165-2-209 Para 15a</p> <p>EC 1165-2-209 Para 7a</p> <p>EC 1165-2-209 Appendix B Para 4a</p> <p>EC 1165-2-209 Appendix B Para 4k (4)</p> <p>EC 1165-2-209 Appendix B, Para 4k(1) &amp;</p>	<p>e. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> All work products require a Type II IEPR except for the Engineering Documentation Report</p> <p>i. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>ii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>iv. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

<p>recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of expertise suitable for the review being conducted?</p> <p>v. Does it state for a Type II IEPR, that the selection of IEPR review panel members will be selected using the National Academy of Science (NAS) Policy which sets the standard for “independence” in the review process?</p> <p>vi. If the Type II IEPR panel is established by USACE, has local (i.e. District) counsel reviewed the Type II IEPR execution for FACA requirements?</p> <p>vii. Does it provide tasks and related resource, funding and schedule showing when the Type II IEPR activities will be performed?</p> <p>viii. Does it establish a milestone schedule aligned with critical features of the project design and construction?</p> <p>ix. Does the project address hurricane and storm risk management or flood risk management or any other aspects where Federal action is justified by life safety or significant threat to human life?</p> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i>  <i>If yes, Type II IEPR must be addressed.</i></p> <p>x. Does the RP address Type II IEPR factors?</p> <p>Factors to be considered include:</p> <ul style="list-style-type: none"> <li>• Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent setting methods or models, or presents conclusions that are likely to change prevailing practices?</li> <li>• Does the project design require</li> </ul>	<p>Appendix E, Para’s 1a &amp; 7</p> <p>EC 1165-2-209 Para 6b (4) and Para 10b</p> <p>EC1165-2-209 Appendix E, Para 7c(1)</p> <p>EC1165-2-209 Appendix E, Para 5a</p> <p>EC1165-2-209 Appendix E, Para 6c</p> <p>EC1165-2-209 Appendix E Para 2</p>	<p>v. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>vi. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>vii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>viii. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>ix. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>x. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
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<p>redundancy, resiliency and robustness</p> <ul style="list-style-type: none"> <li>Does the project have unique construction sequencing or a reduced or overlapping design construction schedule; for example, significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems.</li> </ul> <p><i>Is it likely? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></i>  <i>If yes, Type II IEPR must be addressed.</i></p> <p>g. Does it address policy compliance and legal review? If no, does it provide a risk based decision of why it is not required?</p>	<p>EC 1165-2-209          Para 14</p>	<p>g. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>
<p><b>3. Does the RP present the tasks, timing, and sequence of the reviews (including deferrals)?</b></p>	<p>EC 1165-2-209,          Appendix B,          Para 4c</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p>a. Does it provide an overall review schedule that shows timing and sequence of all reviews?</p> <p>b. Does the review plan establish a milestone schedule aligned with the critical features of the project design and construction</p>	<p>EC 1165-2-209,          Appendix C,          Para 3g</p> <p>EC 1165-2-209,          Appendix E,          Para 6c</p>	<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p><b>4. Does the RP address engineering model certification requirements?</b></p>	<p>EC 1165-2-209,          Appendix B,          Para 4i</p>	<p>Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>
<p>a. Does it list the models and data anticipated to be used in developing recommendations?</p> <p>b. Does it indicate the certification /approval status of those models and if certification or approval of any model(s) will be needed?</p> <p>c. If needed, does the RP propose the appropriate level of certification?? /approval for the model(s) and how it will be accomplished?</p>		<p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p> <p>c. Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>



<b>5. Does the RP explain how and when there will be opportunities for the public to comment on the study or project to be reviewed?</b>	EC 1165-2-209, Appendix B, Para 4d	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it discuss posting the RP on the District website?		a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
b. Does it indicate the web address, and schedule and duration of the posting?		b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>6. Does the RP explain when significant and relevant public comments will be provided to the reviewers before they conduct their review?</b>	EC 1165-2-209, Appendix B, Para 4e	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
a. Does it discuss the schedule of receiving public comments?		a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
b. Does it discuss the schedule of when significant comments will be provided to the reviewers?		b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>7. Does the RP address whether the public, including scientific or professional societies, will be asked to nominate professional reviewers?*</b>	EC 1165-2-209, Appendix B, Para 4h	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
a. If the public is asked to nominate professional reviewers then does the RP provide a description of the requirements and answer who, what, when, where, and how questions?  * Typically the public will not be asked to nominate potential reviewers		a. Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
<b>8. Does the RP address expected in-kind contributions to be provided by the sponsor?</b>	EC 1165-2-209, Appendix B, Para 4j	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
a. If expected in-kind contributions are to be provided by the sponsor, does the RP list the expected in-kind contributions to be provided by the sponsor?		a. Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>

<p><b>9. Does the RP explain how the reviews will be documented?</b></p> <p>a. Does the RP address the requirement to document ATR comments using Dr Checks and Type II IEPR published comments and responses pertaining to the design and construction activities summarized in a report reviewed and approved by the MSC and posted on the home district website?</p> <p>b. Does the RP explain how the Type II IEPR will be documented in a Review Report?</p> <p>c. Does the RP document how written responses to the Type II IEPR Review Report will be prepared?</p> <p>d. Does the RP detail how the district/PCX/MSC and CECW-CP will disseminate the final Type II IEPR Review Report, USACE response, and all other materials related to the Type II IEPR on the internet?</p>	<p>EC 1165-2-209, Para 7d</p> <p>EC 1165-2-209 Appendix B Para 4k (14)</p> <p>EC 1165-2-209 Appendix B Para 4k (14)</p> <p>EC 1165-2-209 Appendix B Para 5</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>a. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>b. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>c. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>d. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
<p><b>10. Has the approval memorandum been prepared and does it accompany the RP?</b></p>	<p>EC 1165-2-209, Appendix B, Para 7</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>

ENCLOSURE 3

CESPD SUPPLEMENTAL RP CHECKLIST  
15 NOVEMBER 2013

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### CESPD Supplemental Review Plan Checklist

Review Plan: Santa Ana River Mainstem, Including Santiago Creek, California. Lower Santa Ana River (Weir Canyon Road to Prado Dam) Reach 9 – EDR, BNSF Railroad Bridge and Phases 1, 2A, 2B, 3, 4, and 5A

Date of review: 15 November 2013

Reviewed by: Juan Ureña

References: CESPD R 1110-1-8, Appendix C, Planning; EC 1165-2-209, Civil Works Review Policy

Note: Any “No” answer requires explanation in the comment field.

	Item	Yes	No	Comment
1	Is there a Technical Review Strategy Session identified early in the study process? (See Appendix C paragraph 8.2,)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	In lieu of Technical Strategy Sessions there will be kick-off meeting with DQC, ATR and SAR teams
2	Are potential Continuing Authority Program (CAP) “spinoffs” identified, along with the appropriate QCP identified for them?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	No CAP projects are anticipated
3	Are the review costs/schedules identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	For District Quality Control (DQC)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	ATR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Independent External Peer Review (IEPR)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Safety Assurance Review (SAR)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
4	Does the RP identify seamless DQC technical review (8.4), including supervisory oversight of the technical products? (See Appendix C paragraph 8.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
5	Does the RP identify the recommended review comment content and structure? (See Appendix C paragraph 8.5.4)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
6	Does the RP encourage face-to-face resolution of issues between the PDT and reviewers? (See Appendix C paragraph 8.5.5)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
7	If issues remain, does the RP identify an appropriate dispute resolution process? (See Appendix C paragraph 8.6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
8	Does the RP require documentation of all significant decisions, and leave a clear audit trail? (See Appendix C paragraph 8.5.6)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Significant design decisions will be documented in the DDR
9	Does the RP identify all requirements for technical certifications? (See Appendix C paragraph 8.5.7)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
10	Does the RP identify the requirement that without-project hydrology will be certified by the Feasibility Scoping Meeting (or equivalent depending upon project development phase)? (See Appendix C paragraph 8.5.8)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The project is beyond the planning phase
11	Does the RP fully address products developed by contractors? (See Appendix C paragraph 8.10)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	AE Geotechnical contracts will supplement in-house designs
12	Is the need for a VE study identified, and incorporated into the review process, after the feasibility scoping meeting? (See Appendix C paragraph 8.11)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	VE studies are identified
13	Does the RP include a Feasibility Alternative Review Milestone to obtain CESPD approval of the tentatively recommended plan? (See Appendix C paragraph 12.1)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The project is beyond the planning phase

CESPD Supplemental Review Plan Checklist

	<b>Item</b>	<b>Yes</b>	<b>No</b>	<b>Comment</b>
<b>14</b>	Does the RP identify the final public meeting milestone? (See Appendix C, Enclosure 1, SPD Milestones)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	The project is beyond the planning phase
<b>15</b>	Does the RP identify the report approval process, and if there is a delegated approval authority?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>16</b>	Does the RP reference CESPD milestones, along with USACE required (PGN) milestones?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>17</b>	Have regional Indefinite Delivery/Indefinite Quantity (IDIQ) contracts been surveyed for potential AE support in the Review Plan process?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	AE Geotechnical contracts will supplement in-house designs; independent review team (SAR) is under contract
<b>18</b>	Did you confirm that the PED agreement is consistent with the engineering scopes of work for the Design Documentation Reports (DDR's) and Engineering Documentation Reports (EDR's) if applicable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DDR will be developed. PED products will be consistent with DDR
<b>19</b>	Has the PED agreement been revisited/scheduled for discussion with Engineering Division (and others) after the AFB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Project is beyond planning phase