



REPLY TO
ATTENTION OF

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

CESPD-PDC

26 July 2012

MEMORANDUM FOR Commander, Sacramento District US Army Corps of Engineers, ATTN:

Subject: Review Plan Approval for Isabella Dam Safety Modification Study Review Plan
Isabella Dam, Kern River, California July 18, 2012

1. The attached Review Plan for the Isabella Dam Safety Modification Study, Isabella Dam, Kern River, California dated July 18, 2012 has been prepared in accordance with EC 1165-2-209. The Review Plan has been coordinated internally within the DST (per attached e-mail) and with the PCX. The CESPD-RBT will serve as the RMO.
2. The Review Plan does include independent external peer review.
3. I hereby approve this Review Plan, which is subject to change as 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. For any additional information or assistance, contact Karen Berresford, District Support Team Lead, (415) 503-6557, Karen.G.Berresford@usace.army.mil.

FOR THE COMMANDER:

ALAN FEISTNER
Director Regional Business

Encl

ISABELLA DAM SAFETY MODIFICATION STUDY

REVIEW PLAN

ISABELLA DAM, KERN RIVER, CALIFORNIA

July 18, 2012



**US Army Corps
of Engineers** ®
Sacramento District

**REVIEW PLAN
DAM SAFETY MODIFICATION STUDY**

ISABELLA LAKE DAM, KERN RIVER, CALIFORNIA

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1. PURPOSE AND REQUIREMENTS

a. Purpose

This review plan defines the scope and level of peer review for the Isabella Dam Safety Modification Study, California, Dam Safety Modification Report.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 January 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 March 2010
- (3) Engineer Regulation (ER) 1110-2-12, Quality Management, 30 September 2006
- (4) CESP Reg. 1110-1-8, Quality Management Plan, 30 December 2002
- (5) Lake Isabella Dam Project Management Plan, July 2010
- (6) Engineering Regulation (ER) 1110-2-1156, Safety of Dams – Policy and Procedure, 28 October 2011
- (7) ER 1105-2-100 , Planning Guidance Notebook, 22 April 2000
- (8) Isabella DSMS Quality Management Plan, July 2010

c. Requirements

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

A value engineering process was completed during the preliminary phase of alternative development at a workshop that took place in Kernville, CA in March 2010. Another VE Study will be completed on the project during the PED phase on the engineering, design and construction methods and sequencing. This process will be discussed in the review and quality management plan for the PED Phase.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

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

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

The RMC will be the (RMO) on technical issues dealing with review of scope and the ATR team composition. The ATR team will be comprised of individuals from outside the home district that have not been involved in the development of the decision document and will be chosen based on expertise, experience, and/or skills.

The RMC, in cooperation with the PDT, and vertical team, will determine the final make-up of the ATR team.

3. STUDY INFORMATION

a. Decision Document

The decision documents for the Isabella DSMS will consist of a Dam Safety Modification Report (DSMR), an Environmental Impact Statement (EIS), a Real Estate Design Memorandum (REDM), and any other supporting document needed for approval. The DSMR will identify the significant failure modes that could lead to a dam failure and will identify risk management measures and plans to remediate for the significant failure modes. Action is needed because of the hydrologic, seismic, and seepage deficiencies identified, which negatively affect the integrity of the Main and Auxiliary Dams at Isabella. These deficiencies increase the life safety risk to the downstream communities and are intolerable according to Corps guidelines. These concerns contributed to its classification by the USACE Screening for Portfolio Risk Assessment (SPRA) as a Dam Safety Action Class I – urgent and compelling project. Remediation is needed to correct these deficiencies to minimize the likelihood for catastrophic failure of the dams. The decision document will present planning, engineering, real estate, and implementation details of the recommended plan to allow design and construction to proceed subsequent to the approval of the recommended plan.

A Cost and Schedule Risk Analysis is scheduled prior to the Agency Technical Review in FY12. This analysis will be performed by Sacramento and Walla Walla Districts.

b. Study/Project Description

The Isabella Reservoir is located approximately 1 mile below the confluence of the North and South Forks of the Kern River in Kern County, California (see Figure 1 for project location and Figure 2 for site plan). The project consists of a 185-foot-high rolled earth fill Main Dam (see Figure 3 for cross section) across the Kern River, and a 100-foot-high rolled earth fill Auxiliary Dam (see Figure 4 for cross section) across Hot Springs Valley about ½ mile east of the Main Dam. The project provides flood risk reduction, irrigation, hydroelectric, and recreational benefits to the Tulare Lake Watershed. Dam Safety studies were initiated in 2006 and have identified seismic, hydrologic (potential overtopping in a flood), and seepage deficiencies. The seepage and seismic issues have led to the reservoir's allowable maximum capacity to be reduced to 63% of normal capacity. This capacity restriction is an interim risk reduction measure (IRRM) that will remain in place until a permanent modification is constructed. The other dams in this watershed are Pine Flat Dam on the Kings River, Terminus Dam (and auxiliary) on the Kaweah River, and Success Dam (and auxiliary) on the Tule River, all operated by the Sacramento District, U.S. Army Corps of Engineers (Corps).

The existing Isabella dams were authorized for construction by the Flood Control Act of 1944 (Public Law 78-534, Chapter 665, Section 10, page 901), December 22, 1944, and became fully operational in 1953. Currently, the reservoir is not fully able to provide the benefits for which it was authorized and constructed. A screening-level Portfolio risk assessments was completed by HQUSACE on 26 July 2005 which subsequently classified Isabella Dam as a Dam Safety Action Classification (DSAC) I (highest risk) dam due to seismic, hydrologic (inadequate spillway capacity), and seepage issues, combined with a large population at risk (PAR) located downstream within the dam failure inundation zone.

Remediation is necessary to address the dam safety deficiencies at Isabella Dam. Currently, a reservoir restriction is in effect. The restriction has resulted in economic loss to water users. In 2006, seismic, seepage, hydrologic, and hydraulic investigations and studies began at both dams to characterize the site conditions and evaluate the risk. Investigations have continued through 2012. Results from these investigations and studies will culminate in an array of potential risk management plans.

The construction of the selected risk management plan is expected to cost in the tens to hundreds of million dollars.

Figure 1: Vicinity Map of Isabella Lake

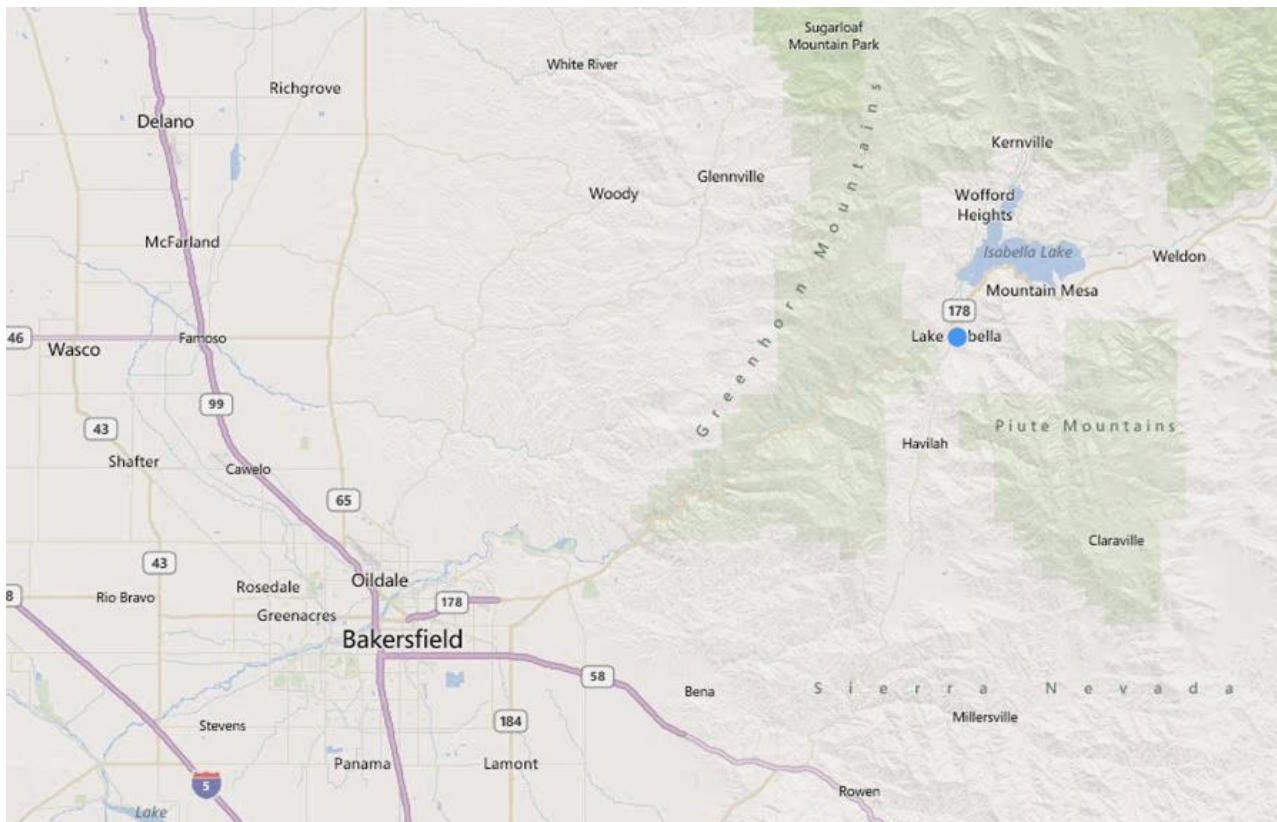


Figure 2: Site Plan of Isabella Lake



Figure 3: Typical Cross Section of Main Dam

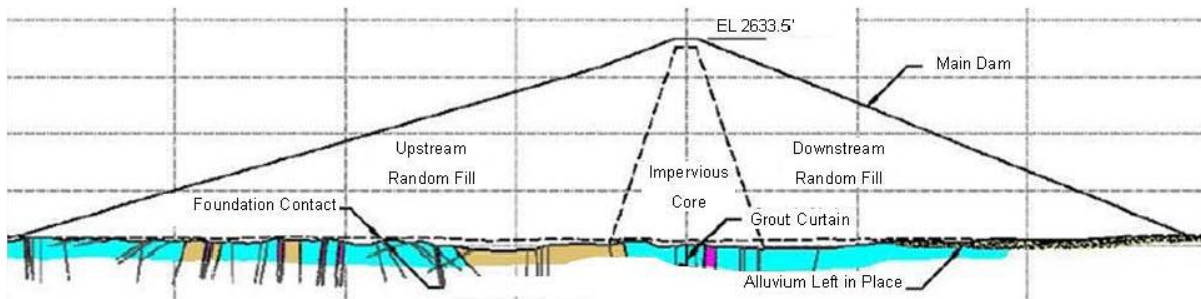
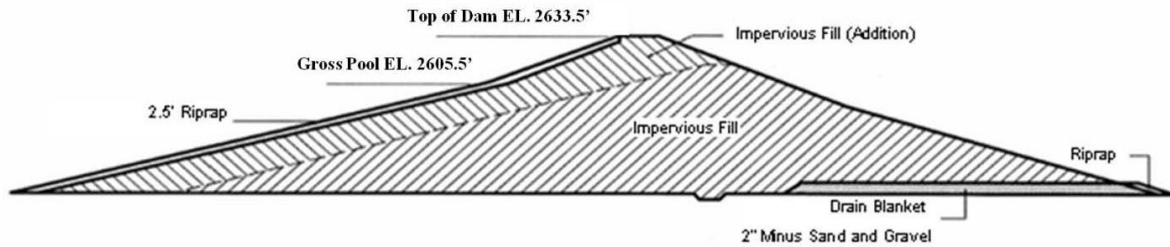


Figure 4: Typical Cross Section of Auxiliary Dam



c. Dam Safety Issues

The Isabella Dams have been classified as a DSAC I (refer to Glossary) by HQUSACE. Studies conducted since 2006 have determined that the existing dams at Isabella are at an unacceptably high likelihood of failure due to seismic issues, hydrologic issues, and seepage issues.

- i. Foundation seepage and piping: The risk associated with foundation seepage beneath the downstream toe of the Auxiliary Dam is higher than desired.
- ii. Foundation seepage and piping: Suspected seepage paths along the outlet conduit of the Borel Canal.
- iii. Spillway inadequacy: The spillway cannot accommodate the Probable Maximum Flood (PMF).
- iv. Seismicity: The Kern Canyon Fault, which passes under the right abutment of the Auxiliary Dam, is classified as active (capable). Fault rupture could lead to the dam's failure.
- v. Seismic stability: The presence of potentially liquefiable soils in the foundation of the Auxiliary Dam could result in seismic induced embankment instability under strong ground motion.

d. Factors Affecting the Scope and Level of Review

The following factors will affect the project study and level of review:

- (1) Many aspects of the project will be challenging. Below is a list of the challenges that may be an issue during the study or construction:
 - a. Real Estate Requirements
 - b. Soil and Seismicity
 - c. Developing Borel Canal Measures
 - d. Probabilistic versus deterministic design
 - e. Hydrology (Probable Maximum Flood)
 - f. Non-failure Risk
- (2) There will be major environmental impacts from construction of the project. There will be effects to health and safety (noise and air quality), riparian habitat, and listed species. The project is also likely to have significant economic impacts. Economic and social impacts may occur as a result of decreased recreation opportunities and effects on noise and air quality. Because of health and safety issues due to impacts on noise and air quality, residents living in close proximity may have to be temporarily relocated. The project is unlikely to have further social impacts unless prehistoric Native American remains are discovered. These impacts of the

project will be discussed in detail in the EIS.

- (3) The study has local, state, and Federal interest. The reservoir recreation and lands are owned and managed by the US Forest Service. The US Bureau of Land Management also owns surrounding lands that may be used for borrow sources for construction efforts.
- (4) The project presents a threat to human life/safety because of its high likelihood of failure under an extreme event and the large population at risk downstream.
- (5) The project has the potential for public controversy due to reservoir management for flood control, water supply, and recreation.
- (6) Isabella DSMS has the potential for setting precedence in disciplines such as hydrology and seismology.
- (7) There are study risks associated with the evaluation of the complex seismic and hydrology problems. The methods used to investigate and analyze these two areas of disciplines for Isabella DSMS could be controversial and have impacts to the project design, cost estimates, and schedule.

d. In-Kind Contributions

The In-Kind Contributions for this project are uncertain at this time.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP).

a. Documentation of DQC

The DQC will be managed by the Sacramento District in accordance with ER 1110-1-12 and the South Pacific Division (Reference 4) and Sacramento District (Reference 8) Quality Management Plans. The DQC will be documented using Dr. Checks. A list of the DQC team roster is provided in Table 8. The DQC team members represent the following disciplines: Planning, Economics, Geotechnical, Structural Engineering, Hydraulic Engineering, Hydrology, Construction, Cost Estimating, Environmental Planning/NEPA, Materials, Seismic, and Real Estate, Geology, Mechanical Engineering, Electrical Engineering, HTRW, and Cultural Resources.

b. Products to Undergo DQC

Phase I DQC

- Baseline Risk Assessment Report
- Baseline Risk Technical Appendices
- Hydrology Report

Phase II DQC

- Dam Safety Modification Report
- Dam Safety Modification Report Appendices
- MCACES and Risk Based Cost Estimates
- Draft Environmental Impact Statement

Phase III DQC

- Final Draft Environmental Impact Statement
- Real Estate Design Memorandum
- Real Estate Relocation Plan
- Project Partnership Agreement
- PED Project Management Plan

5. AGENCY TECHNICAL REVIEW

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

The ATR will be a three phased approach due to schedule constraints and the high priority associated with a DSAC I project. The goal is to have an approved DSM report by September 2012. The three phases are described below and have been accepted by the Risk Management Center, West Office. Mark Pabst is the ATR Lead out of the RMC West.

a. Documentation of ATR

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

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

In some situations, especially addressing incomplete or unclear information, commenters may seek clarification in order to then assess whether further specific concerns may exist. The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution.

If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

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

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

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

b. Products to Undergo ATR

Phase I ATR

- Baseline Risk Assessment Report
- Baseline Risk Technical Appendices
- Hydrology Report

Phase II ATR

- Dam Safety Modification Report
- Dam Safety Modification Report Appendices
- MCACES and Risk Based Cost Estimates
- Draft Environmental Impact Statement

Phase III ATR

- Final Draft Environmental Impact Statement

- Real Estate Design Memorandum
- Real Estate Relocation Plan
- Project Partnership Agreement
- PED Project Management Plan
- Water Control Manual
- Operation and Maintenance (O&M) Manual

c. Required ATR Team Expertise

Table 1: ATR Team Members

ATR Team Members/Disciplines	Expertise Required
ATR Lead Risk Management Center	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The ATR lead will also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline.
Planning	The Planning reviewer should be a regional technical specialist or senior planner with Civil Works experience in plan formulation with 10 years experience and a broad civil works experience in USACE CW program.
Consequences and Economics	The Economist should have at least 10 years of extensive experience working with risk models and disaster scenarios with regard to economic impacts for flood risk management projects. This reviewer should have experience with HEC-FIA models as well as dam safety modification projects.
Environmental Resources	The Environmentalist should have 5-10 years of experience and understand the requirements for and have experience with NEPA documentation.
Hydrology	The Hydrologist should have 10 years experience in water management especially with managing water outflows from a reservoir. Will also have experience with characterizing surface water flows in a watershed using inundation mapping software, HEC-HMS, HEC-ResSim, and other water-flow scenario development techniques.
Hydraulic Engineering	The Hydraulic engineer should have 10 years experience or equivalent education assessing hydraulic retention/detention structures. Will also have direct design or experience with dam rehabilitation projects especially with regard to spillways, stilling basins and drainage pipes. Shall also have modeling experience with Flo-2D models and HEC-RAS.
Geotechnical Engineering	The Geotechnical engineer should have 10-15 years of experience or equivalent education in soils engineering or related field; dam safety experience through participation in dam safety expert panels, risk evaluation/mitigation

	studies or similar experience with hydraulic retaining structures; direct experience with hydraulic retaining structure rehabilitation projects as either designer or construction project engineer; be adroit with the USACE risk informed approach to dam risk decision making; have experience with seismicity and seismic design.
Real Estate/Relocation Specialist	Team member should have 5-10 years of experience in federal civil works real estate laws, policies, and guidance.
Cost Engineering	Cost Engineer should have 5-10 years of extensive Corps' experience in the application of scientific principles and techniques to problems of cost estimating, cost control, business planning and management science, profitability analysis, project management, and planning and scheduling.
Geology and Rock Mechanics	Geologist should have at least 10 year of experience with extensive experience in and knowledge of engineering geology including geomorphology, geologic hazards, material properties, subsurface flow, foundation grouting, landslides and slope stability, soil and rock mechanics, tunneling, drilling and blasting, seismicity, and seismic design.
Structural Engineering	Team member should have at least 10 years of experience and expertise in the design and construction of large civil works projects utilizing steel, concrete and composite materials utilizing state of the art Computer modeling of both static and dynamic loading. This member shall also have experience with seismicity and seismic design.
Civil Engineering	Team member should have at least 10 years of experience and expertise in utility relocations, positive closure requirements, civil design, and non-structural flood damage reduction.
Water Manager	Team member should have at least 10 years of experience and expertise in reservoir management. Other expertise should include hydrologic modeling, reservoir operation, and knowledge of policy and guidance for USACE reservoirs.

The ATR team roster is listed in Table 9 below.

6. INDEPENDENT EXTERNAL PEER REVIEW

IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. The Risk Management Center (RMC) will oversee the IEPR effort. Any

work product, report, evaluation, or assessment that undergoes DQC and ATR also may be required to undergo IEPR under certain circumstances. A risk-informed decision, as described EC 1165-2-209, will be made as to whether IEPR is appropriate for that product. IEPR panels will be made up of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. IEPR teams are not expected to be knowledgeable of Army and administration policies, nor are they expected to address such issues. IEPR is divided into two types, Type I is generally for decision documents and Type II is generally for implementation documents.

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

a. Decision on Type I IEPR

Based on the factors from EC 1165-2-209 (shown in Table 2 below), Type I IEPR is required.

Table 1: Factors determining need for Type I IEPR

EC 1165-2-209 Criteria	Lake Isabella Dam Remediation Project
Is there significant threat to human life?	The project has the potential to pose a significant threat to human life.
Is the total project cost more than \$45 million?	The estimated project cost is predicted to cost more than \$45 million.
Has the Governor of California requested a Type I IEPR?	The Governor has not requested a Type I IEPR.
Has the head of a Federal or state agency charged with reviewing the project study requested a Type I IEPR?	Yes, per the USACE ER 1165-2-209 a Type I IEPR has been requested.
Will there be significant public controversy as to size, nature, or effects of the project?	Yes, the project has potential for public controversy.
Will there be significant public controversy as to the economic or environmental cost or benefit of the project?	Yes, the project has potential for public controversy regarding the economic and environmental cost/benefit of the project.

EC 1165-2-209 Criteria	Lake Isabella Dam Remediation Project
Will the study be based on information from novel methods, present complex challenges or interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices?	The study will not be based on information from novel methods; however the study may present complex challenges or interpretation, and also may contain precedent-setting methods or models.

b. Products to Undergo Type I IEPR

The products to undergo Type I IEPR will include:

- Baseline Risk Assessment Report
- Baseline Risk Technical Appendices
- Hydrology Report
- Dam Safety Modification Report
- Dam Safety Modification Report Appendices
- MCACES and Risk Based Cost Estimates
- Final Draft Environmental Impact Statement
- Real Estate Design Memorandum
- Real Estate Relocation Plan
- Project Partnership Agreement
- PED Project Management Plan

Type I IEPR panel members will be provided with ATR documentation and significant public comments made during public meetings and on the products under review. Arising issues between PDT and reviewers should be resolved with face-to-face resolution.

c. Required Type I IEPR Panel Expertise

The Type I IEPR members will be comprised of individuals that have not been involved in the development of the decision document, meet the National Academy of Sciences guidelines for independence, and will be chosen by an Outside Eligible Organization (OEO).

The OEO will determine the final participants on the Type I IEPR panel. The name, organization, contact information, credentials, and years of experience of each member will be identified at the time the review is conducted. Once the OEO designates the IEPR panel members, the review plan will be updated to reflect this selection. The following types of expertise may be represented on the Type I IEPR team:

(1) Geotechnical Engineering Panel Member(s)

It is preferred that the member(s) possess a PhD degree in geotechnical engineering, although an MS degree is acceptable with professional registration as a geotechnical engineer. Minimum 20 years experience in geotechnical seismic design, and embankment dam design and

evaluation. Additionally, at least 10 years experience in and piping and seepage failure mode analysis, and risk analysis of embankment dams, familiarity with USACE dam safety assurance policy and guidance, as well as competency in seismic modeling (preferably the finite difference model FLAC v6 commercially available through ITASCA). It is also desirable that the member(s) have some experience with DAMRAE (USACE risk analysis software).

(2) Geologist Panel Member(s)

It is preferred that the member(s) possess a PhD degree in geology, although an MS degree is acceptable with professional registration as a geologist. Minimum 20 years experience in engineering geology including geomorphology, geologic hazards, material properties, subsurface flow, foundation grouting, landslides and slope stability, soil and rock mechanics, tunneling, and drilling and blasting . Additionally, at least 10 years experience in and piping and seepage failure mode analysis, and risk analysis of embankment dams, familiarity with USACE dam safety assurance policy and guidance, as well as competency in seismic modeling (preferably the finite difference model FLAC v6 commercially available through ITASCA).

(3) Civil / Structural Engineer Panel Member (s)

It is preferred that this member possess a PhD degree in engineering science, although an MS degree acceptable with professional registration as a Civil Engineer or Structural Engineer. The member should have a minimum of 15 years experience in static and seismic design per industry code standards and USACE design regulations for Civil Works projects, dynamic site-specific response spectra analysis and evaluation, and soil-structure interaction evaluation and design.

(4) Hydraulic / Hydrology Engineering Panel Member(s)

The member(s) should be a registered professional engineer with a minimum MS degree or higher in engineering science. Member(s) should have 10-15 years experience in the analysis and design of outlet works and spillways for embankment dams and 5-10 years experience in physical and numerical modeling and have familiarity with USACE standard hydrologic and hydraulic computer models. The member(s) should be familiar with USACE application of risk and uncertainty analysis in flood damage reduction studies. The panel member(s) should be familiar with USACE application of risk and uncertainty analyses in flood damage reduction studies and a familiarity with standard USACE hydrologic and hydraulic computer models. It is expected that there will need to be two panel members to satisfy the above experience requirements.

(5) Economics Panel Member

The Economics Panel Member should possess a Bachelors degree or higher. Member must have at least ten years experience directly related to water resource economic evaluation or review, with a minimum MS degree or higher in economics. At least 5 years experience directly working for or with USACE is highly recommended. Five years experience directly dealing with HEC-FDA

is required, and the Panel Member must have two years experience in reviewing federal water resource economic documents justifying construction efforts.

(6) Environmental/NEPA Compliance/Planning Panel Member

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. This panel member should have experience working with project teams, to identify and evaluate measures and alternatives using appropriate planning methodologies to reduce life safety risk. Must have extensive experience reviewing the analysis in which the measures and alternatives were evaluated and that they are sufficiently comprehensive and complete to result in approval of a recommended alternative. 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.

The OEO will determine the final participants on the Type I IEPR panel. The name, organization, contact information, credentials, and years of experience of each member will be identified at the time the review is conducted and will be included in Attachment 1 of this Review Plan. Future revisions to these panel members will be made for PED, Construction, and Type II IEPR.

d. Documentation of Type I IEPR

The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. DrChecks review software will be used to document Type I IEPR comments and aid in the preparation of the Review Report. Comments should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. Type I IEPR comments should generally include the same four key parts as described for ATR comments. The OEO will be responsible for compiling and entering comments into DrChecks. The Type I IEPR panel will prepare a Review Report that will accompany the publication of the final report for the project and shall:

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

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not

adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. SAFETY ASSURANCE REVIEW (SAR)

A Type II IEPR and SAR are referred to as the same review and shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. This applies to new projects and to the major repair, rehabilitation, replacement, or modification of existing facilities. The requirement for Type II IEPR is based upon Section 2035 of WRDA 2007, the OMB Peer Review Bulletin and other USACE policy considerations. External panels will conduct reviews of the design and construction activities prior to the initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health, safety, and welfare. See Appendix E for further discussion of panels. The Review Management Office for Type II IEPR reviews is the USACE Risk Management Center (RMC). Panel members will be selected using the National Academies of Science (NAS) policy for selecting reviewers. See Appendix E of EC 1165-2-209 for further discussion of panels. Type II IEPRs are not exempted by statute from the Federal Advisory Committee Act (FACA). Type II IEPR procedures to follow are in Appendix E of EC 1165-2-209.

The District Chief of Engineering, as the Engineer-In-Responsible-Charge, is responsible for ensuring the Type II review is conducted in accordance with this Circular, and will fully coordinate with the Chief of Construction, the Chief of Operations, and the project manager through the Pre-Engineering and Design (PED) and construction phases. The project manager will coordinate with the RMO to develop the review requirements and to include them in the Review Plan. The RMO for Type II reviews is the USACE Risk Management Center.

Any project addressing hurricane and storm risk management or flood risk management or any other project where the Federal action is justified by life safety or the failure of the project would pose a significant threat to human life requires a Type II review. Other factors to consider for conducting a Type II review of a project or components of a project are:

- a. The project involves 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;
- b. The project design requires redundancy, resiliency, and robustness.
 - 1) Redundancy. Redundancy is the duplication of critical components of a system with the intention of increasing reliability of the system, usually in the case of a backup or fail-safe.
 - 2) Resiliency. Resiliency is the ability to avoid, minimize, withstand, and recover from the effects of adversity, whether natural or manmade, under all circumstances of use.
 - 3) Robustness. Robustness is the ability of a system to continue to operate correctly across a wide range of operational conditions (the wider the range of conditions, the more robust the system),

with minimal damage, alteration or loss of functionality, and to fail gracefully outside of that range.

- c. The project has 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.

For the PED or design phase, the SAR should focus on unique features and changes from the assumptions made and conditions that formed the basis for the design during the decision document phase. The SAR shall address the following questions:

1. Do the assumptions made during the decision document phase for hazards remain valid through the completion of design as additional knowledge is gained and the state-of-the-art evolves?
2. Do the project features adequately address redundancy, resiliency, or robustness with an emphasis on interfaces between structures, materials, members, and project phases?
3. Do the project features and/or components effectively work as a system?

For the construction phase, the SAR shall address the following questions:

1. Do the assumptions made during design remain valid through construction?
2. For O&M manuals, do the requirements adequately maintain the conditions assumed during design and validated during construction; and will the project monitoring adequately reveal any deviations from assumptions made for performance?

For establishing Type II – IEPR Panels the RMO is responsible for ensuring the panels are established in accordance with this Circular. To avoid potentially triggering the requirements of the Federal Advisory Committee Act (FACA), all Type II – IEPR panels shall be established in accordance with this circular. The following requirements do not apply to Type I -IEPR panels established pursuant to Section 2034 of WRDA 2007. The RMO shall define the required competencies for each of the panel members insuring a balance of perspectives and may specify a particular expertise as the team lead. It can recommend candidates for consideration.

For the review team led by and composed of contractors, the contractor can be used to carry out these panels, including selecting panel members for the Type II-IEPR panel. Type II IEPR panels established by USACE personnel may require compliance with FACA and should only be established after consultation with local counsel. Unlike Type I – IEPR panels, competition for Type II – IEPR contractors may not be limited to OEOs. The solicitation for such a contract should include the minimum professional requirements for panel members, but should not be so narrowly written that only specific persons may be selected. Due to potential organizational conflicts of interest and the potential for contractors to have access to other contractors’ information, contracting officers must be particularly aware of

potential conflicts of interest and avoid or mitigate them in accordance with FAR Part 9 when procuring Type II – IEPR panel services. In addition, solicitations must include non-disclosure agreements and language analogous to that found in the Army Source Selection manual for contractors who assist in evaluations of proposals to ensure that contractor information is protected from disclosure by reviewing contractors. If an existing contract is considered for use, the Contracting Officer must determine that this work would be in scope of the contract scope and determine, if nondisclosure agreements and organizational conflict of interest language is not included in the contract, whether they could be added to the contract as an in scope modification before the existing contract may be used for a Type II – IEPR panel.

a. Guidance for the Contractor (or USACE) for Establishing Review Plans

1. If the panel meetings will be closed to the public, then the contractor should establish a process for members of the public to apply for membership on the panel. The contractor, however, is not under any obligation to select any of these public applicants.
2. The RMO and other USACE officials may approve the panel members selected by the contractor, but should not participate in the vetting or selection of members. Moreover, USACE officials should not veto or disapprove of a selected panel member unless the selected panel member does not meet the objective criteria for panel members provided to the contractor.
3. The contractor shall be required in the solicitation and instructions to apply the National Academy of Science’s policy for selecting reviewers to ensure the panel members have no conflict of interest with the project being reviewed. The following website provides academy guidance for assessing composition and the appropriate forms for prospective panel members in General Scientific and Technical Studies: <http://www.nationalacademies.org/coi/index.html>. The contractor shall also develop criteria for determining if review panels are properly balanced, as defined by criteria in the contract, both in terms of professional expertise as well as in points of view on the study or project at hand. If necessary, the contractor shall remove and replace panel members during a review if a conflict arises.
4. In developing a solicitation package for Type II IEPR review services, the District should consider the following considerations presented in *Review Procedures for Water Resources Project Planning*, National Research Council of the National Academies, 2002:
 - a. All potential reviewers carry professional and personal biases, and it is important that these biases be disclosed when reviewers are considered and selected. The contractor leading the review shall determine which biases, if any, will disqualify prospective reviewers. It should also develop criteria for determining if review panels are properly balanced, both in terms of professional expertise as well as in points of view on the study or project at hand.
 - b. There is also a challenge of selecting review panels that are viewed as credible and balanced, but that also have adequate knowledge of USACE’s often highly complex guidance and analytical methods.
 - c. The most important considerations in selecting reviewers are the credentials of the reviewers (which include affiliations as well as expertise) and the absence of conflict of interest.

5. The contractor shall be responsible for adjusting the panel membership as necessary to maintain the skill set necessary as the project progresses and the need for different expertise arises.
6. USACE officials may attend panel meetings, but may not participate in the management or control of the group. In other words, USACE can't be a voting member of the group, may not direct activities at the meetings, and may not develop the agenda for the meetings.
7. USACE officials must refrain from participating in the development of any reports or final work product of the group.
8. The peer review panel can take the form of a panel of consultants, but the members are limited to reviewing and commenting on the work being done by others. The peer review can work concurrent with on-going work, be interactive as needed, and provide real time over the shoulder input. Timely input on the appropriateness of hazard analyses, models and methods of analysis used, and the assumptions made is critical to maintaining project schedules.
9. At a minimum, one member is required, but the panel composition shall be a size appropriate for the size and complexity of the project. Composition of the panel can change depending on the need of the particular phase of review.

b. Products to Undergo Type II IEPR (SAR)

The products to undergo Type II IEPR will include:

- Auxiliary Dam Buttress Design and Construction Drawings
- Main Dam Buttress Design and Construction Drawings
- Spillway Design and Construction Drawings
- Borel Canal Design and Construction Drawings
- Additional Design and Construction Drawings for Mitigation
- Water Control Manual
- Operation and Maintenance (O&M) Manual

c. Panel Requirements for Type II IEPR (SAR)

The panel of experts established for a review for a project shall:

- Conduct the review for the subject project in a timely manner in accordance with the study and RP schedule;
- Follow the "Charge", but when deemed appropriate by the team lead, request other products relevant to the project and the purpose of the review.
- Receive from USACE any public written and oral comments provided on the project;
- Provide timely written and oral comments throughout the development of the project, as requested; and

- Assure the review avoids replicating an ATR and focuses on the questions in the “Charge”, but the panel can recommend additional questions for consideration. The SAR panel may recommend to the RMO additional or alternate questions.
- Offer any lessons learned to improve the review process.
- Submit reports in accordance with the review plan milestones.
- The team panel lead shall be responsible for insuring that comments represent the group, be non-attributable to individuals, and where there is lack of consensus, note the non-concurrence and why.

d. Required Type II IEPR (SAR) Panel Expertise

This required panel expertise will be updated once the design is at a level in which the expertise can be better defined. The following panel members are expected for the SAR:

(1) Geotechnical Engineering Panel Member(s)

(2) Geologist Panel Member(s)

(3) Civil Engineer Panel Member (s)

(4) Hydraulic Structures Engineering Panel Member(s)

(5) Blasting Engineering Panel Member(s)

(6) Seismic Engineering Panel Member

(7) Environmental/Mitigation Panel Member

e. Documentation of Type I IEPR

The review team will prepare a review report. All review panel comments shall be entered as team comments that represent the group and be non-attributable to individuals. The team lead is to seek consensus, but where there is a lack of consensus, note the non-concurrence and why. A suggested report outline is an introduction, the composition of the review team, a summary of the review during design, a summary of the review during construction, any lessons learned in both the process and/or design and construction, and appendices for conflict of disclosure forms, for comments to include any appendices for supporting analyses and assessments of the adequacy and acceptability of the methods, models, and analyses used. All comments in the report will be finalized by the panel prior to their release to USACE for each review plan milestone.

The host district Chief of Engineering is responsible for coordinating with the RMO, for attending review meetings with the SAR review panel, communicating with the agency or contractor selecting the panel members, and for coordinating the approval of the final report with the MSC Chief of Business Technical Division.

After receiving a report on a project from the peer review panel, the District Chief of Engineering, with full coordination with the Chiefs of Construction and Operations, shall consider all comments contained in the report and prepare a written response for all comments and note concurrence and subsequent

action or non-concurrence with an explanation. The District Chief of Engineering shall submit the panel's report and the Districts responses shall be submitted to the MSC for final MSC Commander Approval and then make the report and responses available to the public on the District's website

8. POLICY AND LEGAL COMPLIANCE REVIEW

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

9. MSC APPROVAL

The MSC is South Pacific Division and is responsible for approving the review plan. Approval is provided by the MSC Commander. The commander's approval should reflect vertical team input (involving district, MSC, RMC, PCX, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the review plan is a living document and may change as the study progresses. Changes to the review plan should be approved by following the process used for initially approving the plan. In all cases the MSCs will review the decision on the level of review and any changes made in updates to the project.

The RP is a "living document" and shall be updated as needed during the study process. The RMC shall be provided an electronic copy of any revised approved RP. The PDT shall follow their DST's guidance for processing revised RPs for their respective MSCs.

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

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

11. MODEL CERTIFICATION AND APPROVAL

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

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

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

Table 3: Models Used for Dam Safety

Model Name	Model Description	Model Type
HEC-FIA	Economic model used to calculate estimated economic damages and loss of life corresponding to floodplain mapping.	Planning
DAMRAE (DAM Safety Risk Analysis Engine)	This is a generalized event tree analysis tool that includes a graphical interface for developing and populating an event tree, and a tool for calculating and post-processing an event tree risk model for dam safety risk assessment.	Engineering
HEC-HMS	By applying this model the PDT is able to: <ul style="list-style-type: none"> a. Define the watersheds’ physical features b. Describe the metrological conditions c. Estimate parameters d. Analyze simulations e. Obtain GIS connectivity 	Engineering
HEC-ResSim	This model predicts the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations. The following describes the major features of HEC-ResSim <ul style="list-style-type: none"> a. Graphical User Interface b. Map-Based Schematic c. Rule-Based Operations 	Engineering
HEC-RAS	Unsteady 1-dimensional flow model used to simulate the channel hydraulics of the Kern River channel.	Engineering

Model Name	Model Description	Model Type
FLO-2D	Unsteady 2-dimensional flow model used to simulate wide alluvial fan floodplain inundation, and produce corresponding floodplain mapping.	Engineering
Groundwater Modeling System (GMS)	This model is used to conduct seepage analysis	Engineering
UTEXAS4	This model is used to conduct slope stability analysis	Engineering
FLAC-UBCSAND	This is a numerical deformation model used for seismic stability and deformation analysis	Engineering
SEEP2D	This is a finite element model used for seepage analyses for earth embankments and foundations.	Engineering
MCACES or MII	These are cost estimating models. This is a cost estimating model that was developed by Building Systems Design Inc. Crystal Ball risk analysis software will also be used.	Cost Estimating

12. REVIEW SCHEDULE COST

1) DQC Review Schedule and Cost

The Sacramento District shall provide labor funding by cross charge labor codes. The Project Manager will work with the DQC 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 DQC 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 DQC team leader to any possible funding shortages. DQC review is estimated to be \$50,000 for the study.

Table 4. DQC Schedule

Task	Date
DQC team identified	Completed May 2011
Baseline Risk Assessment Report and technical appendices	June 2011

Task	Date
Hydrology Report	January 2012
Draft Environment Impact Statement	February/March 2012
Draft DSMR and appendices	April/May 2012
Real Estate Design Memorandum and Relocation Plan	June/July 2012
Final Draft Environmental Impact State	July/August 2012

2) ATR Review Schedule and Cost

The Sacramento District shall provide labor funding by cross charge labor codes. Funding for travel will be provided through government order, if needed. 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. ATR review is estimated to be \$130,000 for the study.

Table 5. ATR Schedule

Task	Date
ATR team identified	Completed May 2011
Baseline Risk Assessment Report and technical appendices	June 2011
Hydrology Report	January 2012
Draft Environment Impact Statement	February/March 2012
Draft DSMR and appendices	April/May 2012
Real Estate Design Memorandum and Relocation Plan	June/July 2012
Final Draft Environmental Impact State	July/August 2012

3) Type I IEPR Review Schedule and Cost

Interim products for hydrology, hydraulic, geotechnical design, environmental and economics will be provided to the panel before the draft report is release for public review. The full Type I IEPR panel will

receive the entire draft DSM report, environmental impact statement (EIS), and all technical appendices concurrent with public and agency review. The final report to be submitted by the Type I IEPR panel must be submitted to the PDT within 60 days of conclusion of public review.

DSMR consist of sensitive information that Homeland Security may restrict the level of information that is released for public review. The PM will coordinate with RMC and MSC DSO before any document is released for public review. The DSADS is likely to be the public document that gets released for public review.

The Type I IEPR is estimated to be \$310,000 for this study.

Table 6. IEPR Schedule

Task	Date
IEPR team identified	April/May 2012
Final Baseline Risk Assessment Report and technical appendices	July/August 2011
Final Hydrology Report	July/August 2011
Final Draft DSMR and appendices	July/August 2011
Final Draft Real Estate Design Memorandum and Relocation Plan	July/August 2011
Final Draft Environmental Impact State	July/August 2011

4) Type II IEPR (SAR) Review Schedule and Cost

The Type II IEPR is estimated to be \$500,000 for this study.

Table 7. IEPR Schedule

Task	Date
SAR team identified	TBD
Final Design and Construction Drawings	TBD

13.PUBLIC PARTICIPATION

Initial public scoping meetings as part of the NEPA requirements took place on May 12, 2010 in Kernville, CA and on May 13, 2010 in Bakersfield, CA. The USACE conducted initial public scoping meetings to present the results of investigations on the Isabella Dam deficiencies and the preliminary risk reduction measures that are being considered in the formulation of the remediation alternatives.

There will also be a discussion of the EIS process, Q&A and opportunity to submit public comments and solicit community input regarding environmental issues of concern.

A public informational meeting was held at the Kern Valley Senior Center in Lake Isabella, CA on December 14, 2010 and at the Kern County Board of Supervisors Chamber in Bakersfield, CA on December 15, 2010. The purpose of these meetings was to provide the public and stakeholders with the latest information on the Isabella Dam Safety Modification Study. Topics discussed at these meetings included, updates to the baseline risk assessment (dam safety issues and significant failure modes), alternative development, EIS process, and schedule.

A series of NEPA Public Scoping meetings were held at Kernville Odd Fellows Hall in Kernville, CA on May 17, 2011; at Kern Valley Senior Center in Lake Isabella, CA on May 18, 2011; and at Kern County Board of Supervisors Chamber in Bakersfield, CA on May 19, 2011. The alternative risk management plans were presented at all three meeting meetings along with the EIS process and schedule. The floor was opened up for questions and answers and there was an opportunity to submit public comments and solicit community input regarding the alternative risk management plans that were presented and will be evaluated in the EIS. NEPA Public Hearings for the Draft EIS were held on April 17 – 19, 2012 at the same location as stated above.

The public will be kept informed throughout the life of the project. Public participation will occur as part of the NEPA process, additional meetings will be held to receive public comments on the draft EIS.

The public review of necessary state or Federal permits will also take place. A formal State and Agency review will occur concurrently with the public review. Upon completion of the review period, comments will be consolidated in a matrix and addressed. A comment resolution meeting will take place, if needed, to decide upon the best resolution of comments. A summary of the comments and resolutions will be included in the decision and NEPA documents. A plan for future public participation will be developed, which might identify informal as well as additional formal forums for participation.

14. REVIEW PLAN APPROVAL AND UPDATES

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

15. REVIEW PLAN POINTS OF CONTACT

Questions and/or comments about this Review Plan may be directed to:

Ms. Veronica Petrovsky, Sacramento District (SPK-PM) Project Manager, at (916) 557-7245, or Veronica.V.Petrovsky@usace.army.mil,

Mr. David Serafini, Sacramento District (SPK-ED) Engineering Division, at (916) 557-7584, or David.C.Serafini@usace.army.mil,

Ms. Marci Jackson, Sacramento District (SPK-PD) Planner, at (916) 557-6709 or Martha.C.Jackson@usace.army.mil,

Mr. Colin Krumdieck, Risk Management Center (RMC), at (720) 215-5545 or colin.w.krumdieck@usace.army.mil,

Mr. Eric Thaut, Program Manager for the Planning Center of Expertise for Flood Risk Reduction, at (415) 503-6852, or eric.w.thaut@usace.army.mil.

Ms. Jodi Staebell, Operational Director Planning Center of Expertise for Ecosystem Restoration, at (309) 794-5448, or Jodi.K.Staebell@usace.army.mil

Mr. Michael P. Jacobs, Cost Engineering Directory of Expertise (CE-DX), at (509) 527-7516, or Michael.P.Jacobs@usace.army.mil

ATTACHMENT 1: TEAM ROSTERS

Tables 7 -13 include rosters and contact information for the current PDT, ATR team, vertical team, PCX points of contact, and Type I IEPR panel members.

Table 7. Project Delivery Team Members		
<u>Project Management Support Team</u>		
Veronica Petrovsky Senior Project Manager	Civil Project Management (L2H0430)	Veronica.V.Petrovsky@usace.army.mil 916-557-7245
Calvin Parret Park Manager	Southern Operations Area Office (L2M0440)	Calvin.Parret@usace.army.mil 559-784-0215
Carolyn Mallory and team Contract Specialists	Construction & A-E (L2P0400)	Carolyn.E.Mallory@usace.army.mil 916-557-5203916-557-5196
Cyndee Lee and Team Engineering Tech	A-E Administration (L2L0810)	Cynthia.J.Lee@usace.army.mil 916-557-6981
Tyler Stalker Public Affairs Specialists	Public Affairs Office (L2C0000)	Tyler.M.Stalker@usace.army 916-557-5107
Charlie Mauldin Dam Operator	Lake Isabella (L2M0446)	William.C.Mauldin@usace.army.mil 559-784-0215
John Palma Project Management Specialist	Programs Support and P2 Unit (L2H0210)	John.C.Palma@usace.army.mil 916-557-6621
Kevin Richardson Civil Engineer (Hydraulic)	Water Management Section - Isabella Dam Operator (L2L0230)	Kevin.A.Richardson@usace.army.mil 916-557-7108
Ronn Rose Dam Safety Specialist	Dam Safety (L2L0710)	Ronn.S.Rose@usace.army.mil 916-557-5396
Roxanne Bump Budget Analyst	Civil Programs (L2H0220)	Roxanne.N.Bump@usace.army.mil 916-557-7749
Steve Verigin Consultant to Water Interests	GEI Consultants – Partner Representative	sverigin@geiconsultants.com (916) 631-4574
Alarice Hansberry Assistant District Counsel	Office of Counsel (L2E0000)	Alarice.R.Hansberry@usace.army.mil 916-557-7264
<u>Technical Team</u>		
David Serafini Lead Engineer	Soil Design A (L2L0720)	David.C.Serafini@usace.army.mil 916-557-7584
Ken Sondergard Senior Materials Engineer	Soil Design B (L2L0790)	Kenneth.B.Sondergard@usace.army.mil
Fiorella Fuentes Materials Engineer	Soil Design A (L2L0720)	Fiorella.J.Fuentes@usace.army.mil 916-557-7063
Angela Duren Hydrologist	Hydrology (L2L0220)	Angela.M.Duren@usace.army.mil 916-557-7062

Bruce VanEtten Engineering Tech	Environmental Design –HTRW (L2L0970)	Bruce.L.VanEtten@usace.army.mil 916-557-5377
Chung F. Wong Civil Engineer (Structural)	Structural Design – Structural (L2L0630)	Chung.F.Wong@usace.army.mil 916-557-7305
Gary Bedker Economist	Water Resources Branch (L2K0400)	Gary.M.Bedker@usace.army.mil 916-557-6707
Martha (Marci) Jackson Planner	Watershed Assessment (L2K0440)	Martha.C.Jackson@usace.army.mil 916-557-6709
Henri Mulder Senior Geotechnical Engineer	Soil Design (L2L0720)	Henri.V.Mulder@usace.army.mil 916-557-7417
Hiep Doan Electronics Engineer	Water Management (L2L0230)	Hiep.V.Doan@usace.army.mil 916-557-7113
Penny Caldwell Reality Specialist	Acquisition & Management - Real Estate (L2N0600)	Penny.P.Caldwell@usace.army.mil 916-557-6884
JJ Baum Environmental Engineer	Environmental Chemistry -Water Quality (L2L0960)	John.J.Baum@usace.army.mil 916-557-6656
Lew Hunter Geologist/Geophysicist	Geology (L2L0730)	Lewis.E.Hunter@usace.army.mil 916-557-5368
Mike Haskell GIS Specialist	GIS & Mapping (L2L0840)	Michael.Haskell@usace.army.mil 916-557-5194
Michael Ma Civil Engineer (Structural)	Structural Design – Structural (L2L0630)	Michael.Ma@usace.army.mil 916-557-7298
Mitch Stewart Environmental Manager	Environmental Planning (L2K0510)	Mitchell.W.Stewart@usace.army.mil 916-557-6734
Nathan C. Cox Civil Engineer (Hydraulic)	Hydraulic Design (L2L0210)	Nathan.C.Cox@usace.army.mil 916-557-7529
Richard M. Perry Archeologist	Cultural, Recreation Social Assessment (L2K0530)	Richard.M.Perry@usace.army.mil 916-557-5218
Steve P. Freitas Quality Specialist	Quality Management Support (L2L0830)	Steve.P.Freitas@usace.army.mil 916-557-7296
Sherman Fong, Cost Estimator	Cost Engineering (L2L0820)	Sherman.C.Fong@usace.army.mil 916-557-6983
Jim Weir Civil Engineer	Civil Design (L2L0610 / L2L0620)	James.B.Weir@usace.army.mil 916-557-7285
Martin Fahning Geologist	Geology (L2L0730)	Martin.M.Fahning@usace.army.mil 916-557-6703
Vlad Perlea Sr Geotechnical Engineer/Seismic Specialist	Soil Design (L2L0720)	Vlad.G.Perlea@usace.army.mil 916-557-5320
Paul Risher Hydraulic Analysis	Hydraulic Design (L2L0210)	Paul.B.Risher@usace.army.mil 916-557-5387
Mary Diel Value Engineering	Cost Engineering (L2L0820)	Mary. R.Diel@usace.army.mil 916-557-6833

Table 8. District Quality Control Team

Discipline	Phone	USACE District
Kevin Hazleton, Lead DQC, Geotechnical	(916) 557-7531	Sacramento District (SPK)
Jerry Fuentes, Planning	(916) 557-6706	Sacramento District (SPK)
Gary Bedker, Economics	(916) 557-6707	Sacramento District (SPK)
Sue Lang, Structural	(916) 557-7295	Sacramento District (SPK)
Steve Graff/Hydraulic	(916) 557-7297	Sacramento District (SPK)
John High/Hydrology	(916) 557-7136	Sacramento District (SPK)
Dennis Potter/Construction	(540) 723-6470	Sacramento District (SPK)
Joe Reynolds/Cost	(916) 557-7573	Sacramento District (SPK)
Matt Davis, NEPA/EIS	(916) 557-6708	Sacramento District (SPK)
Bill Halczak, Materials	(916) 557-7427	Sacramento District (SPK)
George Hu, Seismic	(916) 557-6923	Sacramento District (SPK)
Jeremy Hollis, Real Estate	(916) 557-6880	Sacramento District (SPK)
Verne Brown, Geology	(916) 557-7339	Sacramento District (SPK)
TBD, Mechanical Engineering		Sacramento District (SPK)
TBD, Electrical Engineering		Sacramento District (SPK)
TBD, Environmental Engineering (HTRW)		Sacramento District (SPK)
Joe Griffin, Cultural Resources	(916) 557-7897	Sacramento District (SPK)
Mike Ruthford, Dam Safety Specialist	(916) 557-7302	Sacramento District (SPK)
Alarice Hansberry, Office of Counsel	(916) 557-7264	Sacramento District (SPK)

Table 9. Agency Technical Review Team

Name and Discipline	Phone	USACE District
Mark Pabst, Lead ATR, Geotechnical	303-330-1389	Risk Management Center (RMC), West
Jeremy Britton, Geotechnical	503-808-4581	Portland District
Richard Allwes, Structural & Hydraulic	412-395-7108	RMC, East
Vongmony Var, Consequences, Economics, Planning	251-694-3866	Mobile District
Matt Fleming, Hydrologist	530-756-1104	Hydrologic Engineering Center (HEC)
Mike Nield, Geologist, Rock Mechanics	304-399-5056	Huntington District
Paula Boren, Cost Estimating	412-395-7239	Pittsburg District,
Jim Neubauer, Cost Estimating	509-527-7332	Walla Walla District
Steven Scissions, Dam Break/Inundation	505-342-3328	Albuquerque District
Patty Smith, Real Estate	(502) 315-7017	Louisville District
Jay Ayaay, Environmental	304-399-5276	Huntington District

Table 10. Type I Independent External Peer Review Panel

Discipline	Phone	Years of Experience	Credentials
Hydraulics/Hydrology Engineering	TBD		
Economics	TBD		
Environmental/NEPA/Planning	TBD		
Civil/Structural Design	TBD		
Geotechnical Engineering	TBD		
Geologist	TBD		

Table 11. Vertical Team

Name	Phone	Email
Nathan Snorteland/Director of Risk Management Center	571-232-9189	Nathan.Snorteland@usace.army.mil
Doug Boyer/Risk Management Center, Western Regional Chief	303-349-4061	Douglas.D.Boyer@usace.army.mil
Karen G. Berresford /DST Lead	415-503-6557	Karen.G.Berresford@usace.army.mil
Clark D. Frentzen /Planning	415-503-6590	Clark.D.Frentzen@usace.army.mil
Boni Bigornia/Engineering	415-503-6567	Boniface.G.Bigornia@usace.army.mil
Rod Markuten/Construction	415-503-6569	Rod.E.Markuten@usace.army.mil
Mary Gillespie /Real Estate	415-503-6553	Mary.L.Gillespie@usace.army.mil
Annette Kuz /Office of Counsel	415-503-6633	Annette.B.Kuz@usace.army.mil
Victoria McAllister /Public Affairs Office	415-503-6514	Victoria.L.McAllister@usace.army.mil
Edward Sing /Quality Management	415-503-6533	Edward.F.Sing@usace.army.mil
James Bartha /Contracting	415-503-6548	James.Bartha@usace.army.mil
George Domurat/Operations	415-503-6575	George.G.Domurat@usace.army.mil

Table 12. Planning Center of Expertise Points of Contact

Name	Discipline	Phone
Eric Thaut	Program Manager, PCX Flood Risk Management	415-503-6852
Jodie Staebell	Operational Director, PCX Ecosystem Restoration	309-794-4558
Michael Jacobs	Cost Engineering Directory of Expertise (CE-DX)	509-527-7516

ATTACHMENT 2: ISABELLA DAM SAFETY MODIFICATION STUDY

[Insert Name of Document]

STATEMENT OF TECHNICAL REVIEW FOR DECISION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *[insert name of document]* for the Isabella Dam Safety Modification Study. 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 DrCheckssm.

Mark Pabst, P.E.
ATR Team Leader
CEIWR- RMC-WD

Date

David Serafini, P.E., G.E.
Lead Engineer
CESPK-ED-G

Date

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

Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: [*Describe the major technical concerns and their resolution.*](#) As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Rick L. Poeppelman, P.E.
Chief, Engineering Division
CESPK-ED

Date

Alicia Kirchner
Chief, Planning Division
Office Symbol

Date