

**REVIEW PLAN
for
CONTINUING AUTHORITIES PROGRAM**

**Bernalillo New Mexico Section 205 Feasibility
Town of Bernalillo, Sandoval County, New Mexico**

U.S. Army Corps of Engineers
Albuquerque District

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REVIEW PLAN

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Bernalillo New Mexico Section 205 flood risk management feasibility project decision document.

The Continuing Authorities Program (CAP) is a delegated authority to plan, design, and construct certain types of water resource and environmental restoration projects without specific Congressional authorization. It is a Continuing Authorities Program (CAP) which focuses on water resource related projects of relatively smaller scope, cost and complexity. Traditional USACE civil works projects are of wider scope and complexity and are specifically authorized by Congress. Section 205 of the Flood Control Act of 1948, as amended, authorizes USACE to study, design and construct flood risk management projects.

b. Applicability. The study Authority for this report is contained in Section 205 of the 1948 Flood Control Act, as amended for flood risk management. Flooding in the town of Bernalillo, New Mexico meets or exceeds the criteria for initiating a flood risk management study under Section 205. A Federal Interest Determination was approved by SPD on 21 September 2012. Under this authority the project is cost shared at 65% Federal and 35% non-Federal. The Federal share of planning, design, and construction cannot exceed \$7,000,000 per project.

c. References

- 1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- 2) EC 1105-2-412, Assuring Quality of Planning Models, xxx 2010
- 3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- 4) ER 1105-2-100, Planning Guidance Notebook, Appendix F, Continuing Authorities Program, Amendment #2, 31 Jan 2007
- 5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- 6) Engineering Technical Letter (ETL) 1110-2-571, Engineering and Design: Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, 10 April 2009.
- 7) Project Management Plan

d. 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).

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 Section 205 decision documents is the home MSC. The MSC will coordinate and approve the review plan and manage the ATR. If Type I IEPR will be performed, the MSC will coordinate the IEPR effort with the appropriate PCX, which will administer the Type I IEPR. The home District will post the approved review plan on its public website. A copy of the approved review plan (and any updates) will be provided to the FRM-PCX to keep the PCX apprised of requirements and review schedules.

3. STUDY INFORMATION

a. Decision Document. The Bernalillo New Mexico Section 205 Detailed Project Report will be prepared in accordance with ER 1105-2-100, Appendix F. The approval level of decision documents (if policy compliant) is the home MSC. The DPR will contain the appropriate documentation and analysis to fulfill the requirements of NEPA. An Environmental Assessment (EA) is anticipated for the project subject to determination of potential effects.

b. Study/Project Description. This single purpose Section 205, Continuing Authorities Program (CAP) project is located in the Town of Bernalillo, New Mexico. As of the 2010 census, the population was 8,320. The population is projected to grow 2.00 percent annually from 2010 through 2025, reaching a population of approximately 10,850 in that period. The town covers an area of 4.7 square miles.

The climate is classified as arid continental, characterized by fairly hot summers, mild winters, and short, temperate spring and fall seasons. The average annual precipitation is 9 inches, with about half of the precipitation falling between July and September as brief, often intense thunderstorms. Precipitation in winter is mainly snowfall and averages about 2 inches of moisture per year in the study area.

Historically, flooding has occurred in the town of Bernalillo from the Rio Grande. The Rio Grande is an alluvial river that was a historically aggrading system creating a wide, sandy braided river. It normally inundated an extensive floodplain during high flows. A spoil bank levee was constructed along the Rio Grande in 1933, along the east bank (the east levee), that was certified by FEMA under the Nation Flood Insurance Program (NFIP) until 2008. The river channel bottom is at a higher elevation than the east side of Bernalillo. The levee is an unengineered design and consists of piled-up uncompacted soil, also referred to as a spoil bank levee.

From 1950 to 1975, federal agencies constructed a series of dams on the Rio Grande and its tributaries for flood and sediment control. Cochiti Dam and Jemez Canyon Dam are particularly important to the town of Bernalillo in regulating flood flows and the upstream sediment supply on the Rio Grande in this reach. Cochiti Dam on the Rio Grande and Jemez Canyon Dam on the Rio Jemez were constructed by the Corps of Engineers and began operation in 1975 and 1950 respectively.

Prior to the construction of Cochiti Dam and other upstream dams flood flows of 10,000 to 20,000 cubic-feet per second (cfs) were periodically recorded in White Rock Canyon and downstream reaches. Prior to the construction of Cochiti Dam, levees were constructed to a 43,000 cfs flood event through the Albuquerque reach. Present-day discharges in the Rio Grande downstream from Cochiti Dam range from a typical minimum winter flow of about 300 cfs, to spring runoff peaks that through regulation do not exceed 7,000 cfs at the Albuquerque gauge. This is the current safe channel capacity water control criterion that is defined in the Cochiti Lake Water Control Manual (USACE 1996). The consequence of detention of high flows is a slow release for long periods of time. For this reason, levees in the Middle Rio Grande below Cochiti should be capable of withstanding long periods (~100 days) of inundation of the foundation and lower portions of the levee. The spoil bank levee may not contain very large release without eroding.

Due to continued aggradation of the river channel inside the leveed floodway, the elevation of the Rio Grande channel bottom is higher than the eastern side of the town of Bernalillo. About 80-percent of the town is located east of the Rio Grande. If the levee were to breach there is no natural path for the water to return to the river. The east levee is an unengineered spoil bank levee that is constructed of uncompacted soil. During storm events the reliability of the levees is unknown and level of flood risk protection to the town of Bernalillo is uncertain. Engineered levees are those in which professional consideration has been

given to the underlying soil conditions, the kind of earth used in building the levee, proper compaction of the levee materials, and other factors.



The east spoil bank levee

Flood flows originating upstream of Cochiti Dam, will be regulated by the dams within the Rio Grande system. A risk of flooding originating upstream of the dams is much reduced but flood risk still remains. Flooding from rainfall-runoff from the unregulated drainage areas downstream of Cochiti and Jemez Canyon Dams presents the higher risk of flooding in the Town of Bernalillo. There are several named and unnamed drainage tributaries to the Rio Grande between Cochiti Dam and the town of Bernalillo. Depending on the duration and intensity of the event the east spoil bank levee could breach or be overtopped.

In 2008, a study was completed by the Corps of Engineers (USACE) to determine the certification status of levees. The 2008 USACE study indicated that the east levee does not meet the minimum design standards as specified in the Code of Federal Regulations (CFR) 65.10; therefore the east levee could not be certified to provide adequate flood risk management for the 100-year flood event.

The Federal Emergency Management Agency (FEMA), the agency responsible for inspecting levees and determining the necessity for flood insurance, has determined that the east levee cannot be certified for FEMA flood insurance purposes. In its existing condition, the east levee could eventually fail during a major flood event. Failure of the levee would result in property damage and potential human injury and loss of life.

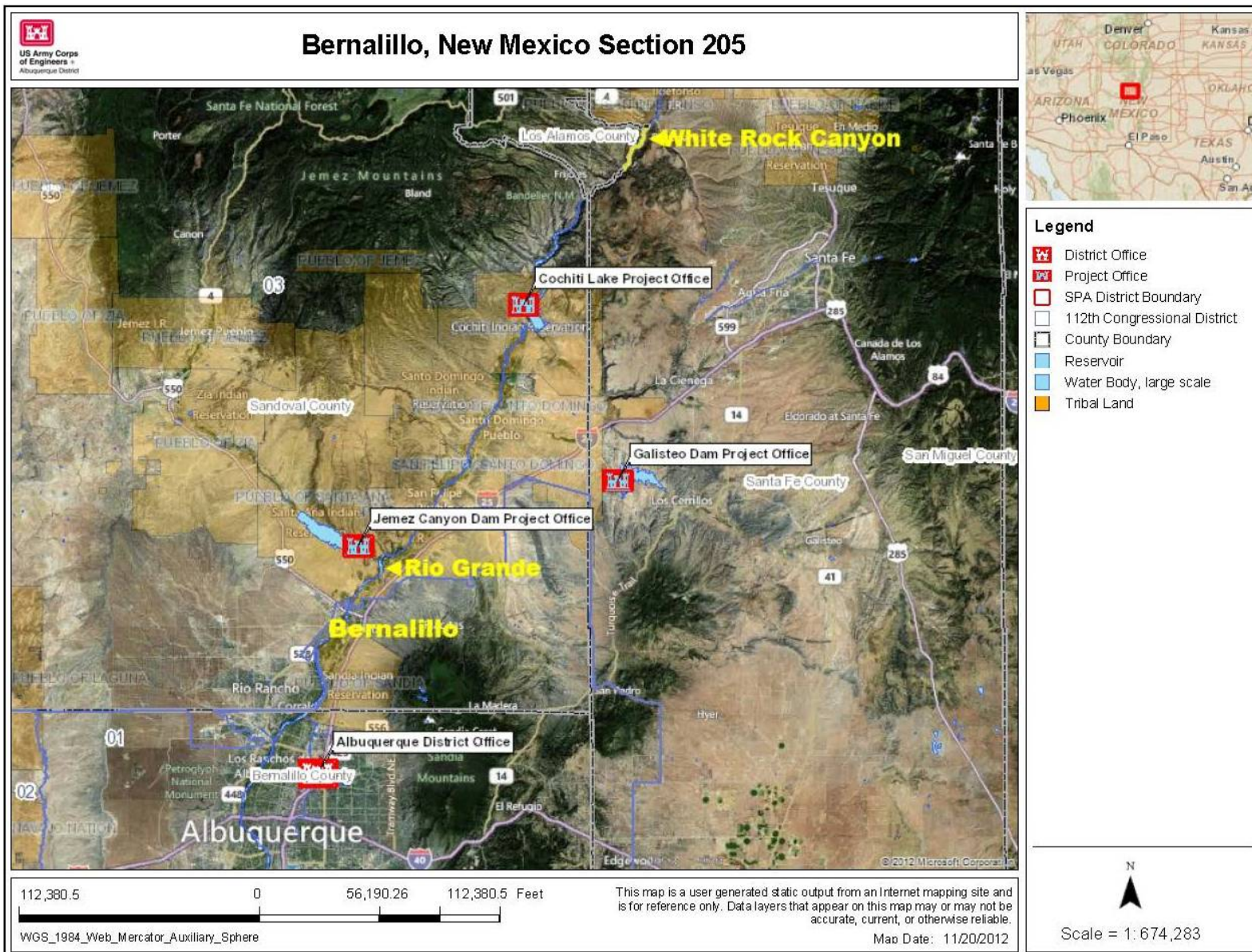


Figure 1 Bernalillo, NM Section 205 Study Area

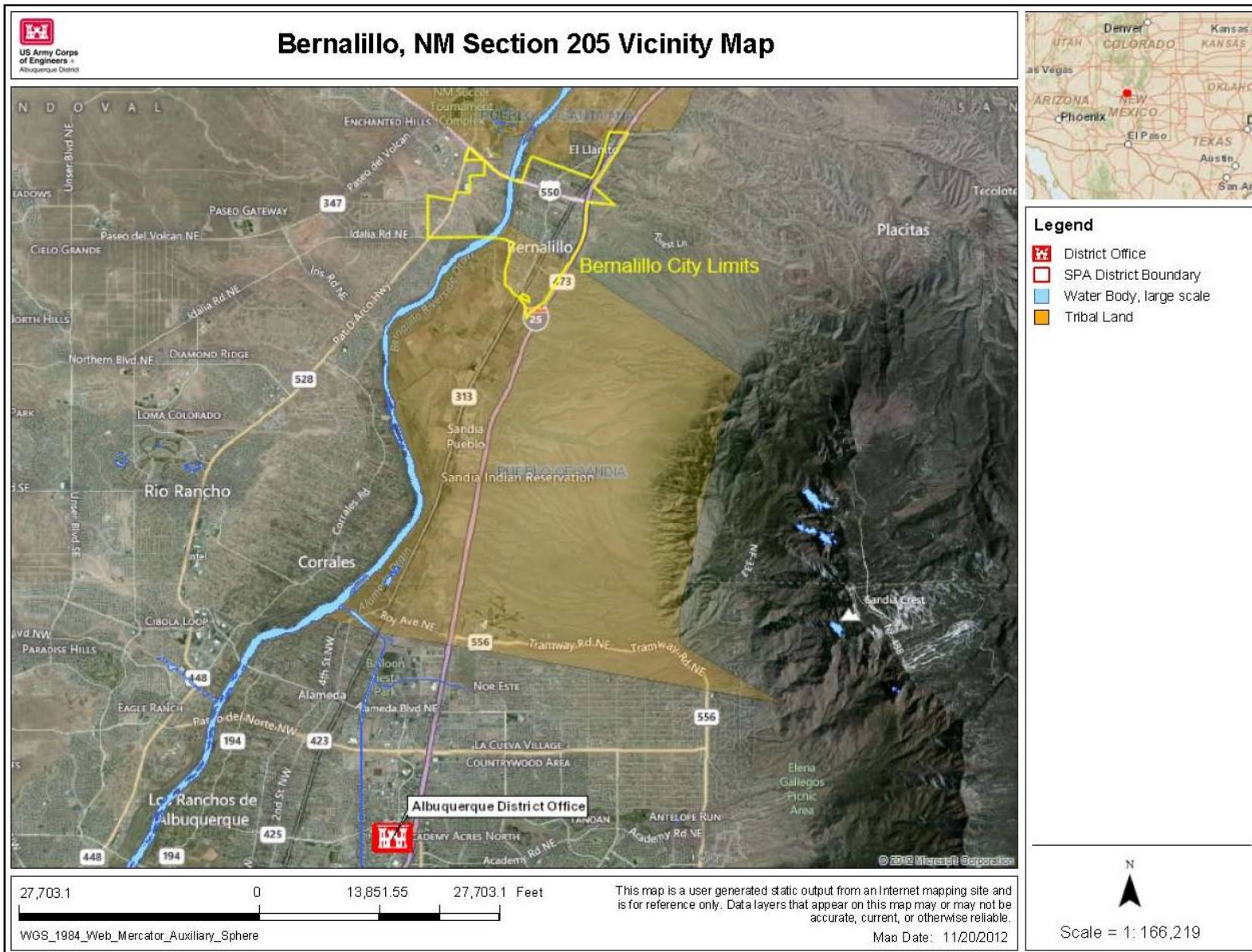


Figure 2 Bernalillo, NM Section 205 Vicinity map

c. Factors Affecting the Scope and Level of Review.

Safety Assurance factors include:

- 1) Non-engineered spoil banks already exist throughout the project area which gives floodplain areas a false measure of flood risk management.
- 2) Flood depths in some portions of the populated floodplain can reach 4-10 feet

Challenges include:

- 1) New Corps policy and procedures for performing feasibility studies;
- 2) Properly incorporating a decade long project history through many personnel changes;
- 3) Rigorous schedules.
- 4) As part of Operations and Maintenance of the finished project, the non-federal sponsor will be required to maintain the vegetation free zone to either side of the levee per ETL 1110-2-571.

This project is considered to have low overall risk because:

- 1) The Corps has completed studies and projects of this nature recently and successfully;
- 2) FRM Measures are expected to be similar to others used in the Albuquerque vicinity, no novel or precedent-setting methods are anticipated;
- 3) Health and human safety factors are currently believed to be minimal;
 - Population centers are not immediately adjacent to proposed levee alignments
 - Several evacuation routes exist for populated areas at risk of flooding
 - Width of floodplain results in low flow velocities

The Albuquerque District Chief of Engineering Division has assessed that there is significant threat to life safety and thus an IEPR Type I and II (Safety Assurance Review) are warranted.

The PDT has determined that this study:

- 1) is not expected to be controversial;
 - Public meetings have not shown there to be any public dispute as to the size, nature or effects of the project;
 - Public meetings have not shown there to be any public dispute as to the economic or environmental cost or benefit of the project.
- 2) is not expected to have adverse impacts on scarce or unique cultural, historic, or tribal resources;
 - Cultural surveys have not identified cultural resources in the proposed footprint of FRM alternatives;
 - Tribal coordination has not identified any tribal concerns;
- 3) is not expected to have adverse impacts on any fish or wildlife species or their habitat whether or not they are listed as endangered or threatened under the Endangered Species Act of 1973;
 - Although endangered species and their habitat exists within the study area, experience with similar Corps projects within SPA has shown that adverse impacts are unlikely
- 4) is not likely to contain influential scientific information, nor is it likely to be a highly influential scientific assessment.
- 5) does not involve the rehabilitation or replacement of existing hydropower turbines, lock structures, or flood control gates.
- 6) is not expected to be based on novel methods, does not present complex challenges for interpretation, does not contain precedent-setting methods or models, and will not present conclusion that are likely to change prevailing practices.

As a result, DQC, ATR and IEPR will focus on:

- 1) Completeness and compliance of H&H analysis;
- 2) Review of the planning process and criteria applied;
- 3) Review of the methods of preliminary analysis and design;
- 4) Compliance with sponsor, program, and NEPA requirements;
- 5) Completeness of preliminary design and support documents;
- 6) Spot checks for interdisciplinary coordination.

In accordance with Section 2035 of WRDA 2007, EC 1165-2-209 requires that all projects addressing flooding or storm damage reduction undergo a Type II IEPR (Safety Assurance Review during design and construction. Safety assurance factors must be considered in all reviews for those studies. Prior to preconstruction engineering and design (PED) of the project identified for construction, a PMP will be developed that will include safety assurance review. Safety assurance review will also be accomplished during construction.

d. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC and ATR, similar to any products developed by USACE. Additional in-kind contributions provided by the local sponsor may be:

- 1) Existing reports and hard data that they contribute to the study / project;
- 2) Assistance during public involvement actions;
- 3) Assistance during the formulation of alternatives;
- 4) Attendance at F3 and F4 conference and briefings.

Existing reports or data provided as part of the study are subject to peer review requirements. The local sponsor will not be preparing their own products for this study that would require DQC or ATR.

4. DISTRICT QUALITY CONTROL (DQC)

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

a. Documentation of DQC. Reviewers shall review the draft report 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 report shall be submitted into DrChecks software and provided as report in subsequent compliance packages.

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.

Review comments shall contain these principal elements:

- 1) A clear statement of the concern;
- 2) The basis for the concern, such as law, policy, or guidance;
- 3) Significance for the concern; and
- 4) Specific actions needed to resolve the comment.

A copy of the DQC comments will be submitted to the ATR Team when necessary.

b. Products to Undergo DQC. Products to undergo DQC include the entire decision document, planning models, technical appendices, plans and specification, operations and maintenance manuals, and all contractor products.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). Plans and Specifications and Operations and Maintenance Manuals will also go through the ATR process. 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. Once actual costs are determined, this Review Plan will be revised. Until then, ATR review and assistance is estimated to be between \$40,000 – \$55,000 for the study.

a. Products to Undergo ATR. The ATR will review and comment on the Detailed Project Report, appendices, planning models, the Engineering Technical Appendix, plans and specifications, operations and maintenance manuals, and the MCACES. The ATR will also review any significant changes made to subject documents through the higher level and public review process. Technical appendices and other supporting documentation will be provided for additional reference.

b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with experience in preparing Section 205 decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The reviewer should have recent experience in reviewing Plan Formulation processes for multi-objective studies and be able to draw on “lessons learned” in advising the PDT of best practices.
Economics	The reviewer should be familiar with the processes used in evaluation of flood risk management projects and have recent experience in preparing economic analysis plans for flood risk management feasibility studies. HEC-FDA will be used for analysis, as will IMPLAN. Analysis will address all four project accounts during the F4 phase.
Environmental Resources	The reviewer should have a solid background in the habitat types to be found in the arid southwestern United States, and understand the factors that influence the reestablishment of native species of plants and animals.
Cultural Resources	The reviewer should have extensive Corps’ experience regarding cultural resources on public and tribal lands. They need to be familiar with Department of Defense as well as USACE policies and procedures as they pertain to Corps studies and projects.

	http://www.usace.army.mil/CECW/Pages/cultural.aspx
Hydrology	The reviewer should have extensive knowledge of hydrology of the Rio Grande basin or similar.
Hydraulic Engineering	The reviewer should have extensive knowledge of HEC-RAS modeling including the use of GIS (ARC-INFO) inputs to the model. The reviewer should also have a solid understanding of the geomorphology of alluvial rivers.
Geotechnical Engineering	The reviewer should carry a Professional Engineer's license and have recent experience in the Corps' design requirements for levee work. This person should also have experience in investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties that are relevant to the project considered, assessing risks posed by site conditions; designing earthworks and structure foundations; and monitoring site conditions, earthwork and foundation construction.
Civil Engineering	The reviewer should have recent experience in the design and of plans and specifications for levees and river bridges, to include tie in to natural features.
Cost Engineering	The reviewer should have 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.

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

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

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

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-2-12 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 may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- **Type I IEPR.** Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-209.
- **Type II IEPR.** Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the Plans and Specifications, design and construction activities prior to initiation of physical construction and, and Operations and Maintenance M annuals until construction activities are completed, and periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. Decision on IEPR. It is the policy of USACE that all Section 205 project decision documents undergo Type I IEPR. This is based on the life safety aspects of Section 205 projects and to ensure that final Section 205 decision documents adequately address/present residual flood risk, risk communication, and uncertainty in any recommendations and that the recommend plan is complete and effective in mitigating flood risk.

The Type I IEPR will focus on the formulation of alternative and selection of the tentatively selected flood risk management plan. The review panel will be composed of individuals with expertise in arid region riverine systems ecology, groundwater surface water interactions, geotechnical engineering, hydraulic, hydrologic and sediment modeling. The entire feasibility report with appendices will be provided to the IEPR team. It is not anticipated that the public, including scientific or professional societies, will be asked to nominate potential external peer reviewers. Due to the restricted budget of the CAP studies the panel will not likely conduct a site visit.

Type II IEPR will be conducted for design and construction phase of the project in accordance with the Water Resources Development Act (WRDA) 2007 (Public Law 110-114), Section 2035. The IEPR will be conducted by a contractor managed by the FRM-PCX. The FRM-PCX will follow the process established in EC 1165-2-209 in managing the IEPR.

b. Products to Undergo IEPR. The IEPR panel will review and comment on the Environmental Assessment (EA), the entire decision document, planning model documentation, tech appendices, plans and specifications, operations and maintenance manuals, and other supporting documentation for the Type I IEPR. The planning models will be reviewed for how these were applied to alternative analysis and selection of the recommended alternative.

The Panel will review the following documents as part of the Type II IEPR:

- 100% Geotechnical Report
- Design 95%
- Plans and Specifications

c. Required IEPR Panel Expertise. Anticipated reviewers as well as number of reviewers will be determined by the PDT and ATR team after the ATR process. At a minimum, the IEPR panel will consist of engineering, environmental and economics disciplines.

Type I IEPR Panel Members/Disciplines	Expertise Required
Economics	The reviewer should be familiar with the processes used in evaluation of flood risk management projects and have recent experience in preparing economic analysis plans for flood risk management feasibility studies. HEC-FDA will be used for analysis, as will IMPLAN. Analysis will address all four project accounts during the F4 phase.
Natural Resources	The reviewer should have a solid background in the habitat types to be found in the arid southwestern United States, and understand the factors that influence the reestablishment of native species of plants and animals.
Civil / Geotechnical / Hydraulic Engineering	The reviewer should have extensive knowledge of HEC-RAS modeling including the use of GIS (ARC-INFO) inputs to the model. The reviewer should also have a solid understanding of the geomorphology of alluvial rivers. The reviewer should also have recent experience in the design and of plans and specifications for levees and river bridges, to include tie in to natural features. Lastly, the reviewer should carry a Professional Engineer’s license and have recent experience in the Corps’ design requirements for levee work. This person should also have experience in investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties that are relevant to the project considered, assessing risks posed by site conditions; designing earthworks and structure foundations; and monitoring site conditions, earthwork and foundation construction.

Type II IEPR Panel Members/Disciplines	Expertise Required
Natural Resources	The reviewer should have a solid background in the habitat types to be found in the arid southwestern United States, and understand the factors that influence the reestablishment of native species of plants and animals.
Civil / Geotechnical / Hydraulic Engineering	The reviewer(s) should have extensive knowledge of HEC-RAS modeling including the use of GIS (ARC-INFO) inputs to the model. The reviewer should also have a solid understanding of the geomorphology of alluvial rivers. The reviewer should also have recent experience in the design and of plans and specifications for levees and river bridges, to include tie in to natural features. Lastly, the reviewer should carry a Professional Engineer’s license and have recent experience in the Corps’ design requirements for levee work. This person should also have experience in investigating existing subsurface conditions and materials; determining their physical/mechanical and chemical properties that are relevant to the project considered, assessing risks posed by site conditions; designing earthworks and structure foundations; and monitoring site conditions, earthwork and foundation construction.

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

- 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;
- 3) Describe the nature of their review and their findings and conclusions; and
- 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. POLICY AND LEGAL COMPLIANCE REVIEW

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

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

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

9. MODEL CERTIFICATION AND APPROVAL

EC 1105-2-407 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 1105-2-407 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

a. Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
Hydrologic Engineering Center Flood Damage Analysis Version 1.2.4 (Economic Computation)	Provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without and with project plans to aid in the selection of a recommended plan to manage flood risk.	Certified

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
HEC-RAS 4.0 (River Analysis System)	HEC-RAS provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without and with project conditions along the Rio Grande and its tributaries. This model will be used for with project flood stages and levee design.	HH&C CoP Preferred Model
MCASES	This is a cost estimating model that was developed by Building Systems Design Inc. The Army Corps of Engineers began using this model in 1989. This will be used as a tool to determine cost estimates for project alternatives.	
FLO-2D	It is used by the Corps Flood Plain Management Group and includes graphics and reporting. This model will be used for hydrologic routing for with and without project floodplains and flood stages.	Approved for flood routing and floodplain mapping

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The ATR Peer Review process began in the spring of FY09 with the draft F3 report. ATR on the Detailed Project Report is planned for April 2012. The ATR is estimated to cost approximately \$70,000. As additional information becomes available, this Review Plan will be updated.

b. Type I IEPR Schedule and Cost. The IEPR will follow the Detailed Project Report ATR. The IEPR is estimated to cost approximately \$150,000. As additional information becomes available, this Review Plan will be updated.

c. Type II IEPR Schedule and Cost. The IEPR will follow the plans and specification ATR. The IEPR is estimated to cost approximately \$150,000. As additional information becomes available, this Review Plan will be updated.

d. Model Certification/Approval Schedule and Cost. All models are certified or approved for use without further model review. The hydrology and hydraulic models will be certified as part of the ATR by the Hydraulic Engineering Center. Cost/Schedule risk analysis and the MCACES will be certified by the Cost Center of Expertise also as part of the ATR. As additional information becomes available, this Review Plan will be updated.

11. PUBLIC PARTICIPATION

State and Federal resource agencies may be invited to participate in the study covered by this review plan as partner agencies or as technical members of the PDT, as appropriate. Agencies with regulatory review responsibilities will be contacted for coordination as required by applicable laws and procedures. The ATR team will be provided copies of public and agency comments. Public involvement is anticipated throughout the Feasibility Study. A public scoping meeting will be held in the spring of 2013 and public comments received during the public meeting will be addressed. The public will have opportunity to provide written comments on the draft EA in 2014.

12. REVIEW PLAN APPROVAL AND UPDATES

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

13. REVIEW PLAN POINTS OF CONTACT

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

SPA Contact: Chief Planning (505-342-3201)

PCX Director: (415-503-6852)

SPD Reviewer: District Support Team Lead (415-503-6556)

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team Members

Cost Engineering	505-342-3401
Project Management	505-343-6262
Geotechnical	505-342-3427
Environmental	505-342-3358
Structural Engineering	505-342-3442
Environmental Engineering	505-342-3295
Geospatial	505-342-3664
Plan Formulation	505-342-3204
Cultural Resources	505-342-3352
Real Estate	505-342-3229
Economics	505-342-3366
Tribal Liaison	505-342-3355
Hydrology, Hydraulics & Sedimentation [H&H]	505-342-3336
Civil Engineering	505-342-3406

ATRT (TBD by FRM-PCX)

Name	Discipline	District	Phone

IEPR (TBD)

Name	Discipline

ATTACHMENT 2: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

APPENDIX A: PROJECT SCHEDULE