REVIEW PLAN

Rio Puerto Nuevo San Juan, Puerto Rico
Post Authorization Change Report (PAC)

Jacksonville District

MSC Approval Date: May 17 2013
Last Revision Date: None

Project Number: 113454

US Army Corps
of Engineers ®

REVIEW PLAN

Rio Puerto Nuevo San Juan, Puerto Rico
Post Authorization Change Report (PAC)

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Rio Puerto Nuevo San Juan, Puerto Rico, Post Authorization Change Report.

b. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec. 2012
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 21 July 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007

c. Requirements. This review plan was developed in accordance with EC1165-2-214, 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 EC1165-2-214) and planning models are subject to certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

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

The RMO will coordinate with the Cost Engineering Directorate 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 FRM-PCX will also coordinate reviews with the Risk Management Center (RMC) because life safety issues, associated with levee safety, must be addressed.

3. STUDY INFORMATION

a. Decision Document. The Rio Puerto Nuevo PAC, to be prepared in accordance with ER 1105-2-100, Sections 4-1 and 4-5, and Appendix G, dated 30 June 2004, will document design refinements and increases in total project costs. The level of report approval is at Headquarters and Congressional authorization will be required for the increase in cost. To ensure that the environmental effects of the recommended project's refinements will not cause adverse impacts to the quality of the human environment and natural or cultural resources of the area, the original Environmental Impact Statement currently on file from the 1986 authorization will be evaluated to determine its adequacy. Also, informal coordination with the Federal and Commonwealth of Puerto Rico resource agencies under the Section 7 of the Endangered Species Act will be conducted to ensure that the proposed refinements will not jeopardize the continued existence of any species listed as

threatened or endangered in the vicinity of the authorized project. It is anticipated that the existing NEPA documentation will be adequate for the PAC report and this approach has been confirmed through coordination with SAD and HQ. If, as expected, an additional NEPA document is not required, the decision will be documented in a Memorandum for Record (MFR).

Study/Project Description. The Rio Puerto Nuevo flood control project was authorized by the Water Resources Development Act (WRDA) of 1986, Public Law 99-662 at a total project cost of $234 Million. The non-Federal Sponsor is the Puerto Rico Department of Natural and Environmental Resources. The authorized Rio Puerto Nuevo Flood Control Project includes flood control improvements to 11.2 miles of the existing Rio Puerto Nuevo channels and its tributaries from its outlet in San Juan Harbor to the Winston Churchill Avenue (Figure 1: Map of Rio Puerto Nuevo Flood Control Project). The authorized project is designed to provide 0.01-exceedence probability (100 year) flood protection for the areas adjacent to the Rio Puerto Nuevo and its tributaries. For additional details on project features of the Authorized Project refer to the Main Report of the Survey Report. The Rio Puerto Nuevo project purpose is to reduce risks associated with the flood problems in the Rio Puerto Nuevo basin and seek opportunities to increase recreation. In general, the authorized project includes flood control improvements to 1.21 miles of bulkhead trapezoidal channel, 0.36 miles of riprap lined trapezoidal channel, and 4.6 miles of concrete rectangular channel. Additional features include a stilling basin, one high velocity flow junction with tributary stream Guaracanal Channel, an upstream debris basin, mangrove mitigation, and recreation features. Improvements to the main channel requires replacement of 7 highways and 3 pedestrian bridges, modifications to two highway bridges (Kennedey and De Diego Avenues), and construction of a new highway bridge (Highway 1).

The Rio Puerto Nuevo PAC is intended to document the increases in total project costs resulting from increases in Real Estate costs, value added design modifications, modifications resulting from more detailed field data, and engineering and design refinements. The engineering and design refinements include seismic retrofit of modified bridges, adjustment to contract cost for changed site conditions, and required design adjustments addressing significant problems associated with San Jose and Miramar sewer systems. Project economics will be updated accordingly. . After accounting for these design refinements, the project is expected to exceed the section 902 Limit. The currently authorized 902 limit is $541,103,000 and the new estimated project cost is $614,696,000. Therefore, an additional funding authorization is required.

b. Factors Affecting the Scope and Level of Review. *The following factors were considered:*

- *If parts of the study will likely be challenging:* The Rio Puerto Nuevo PAC will document increases in costs primarily due to changes in Real Estate values and design refinements. No substantial challenges have been encountered during project implementation that would affect the scope and level of review for the PAC.

- *A preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be:* It is not anticipated that the requested design refinements and relocations as well as associated increase in the 902 limit will increase project risks. The changes to the project should serve to further reduce risks and ensure success of project purposes.

- *If the project will likely be justified by life safety or if the project likely involves significant threat to human life/safety assurance.* The requested design refinements and associated increase in

the 902 limit are not expected to increase threat to human life/safety assurance beyond that already considered in the authorized project. However, a life safety risk assessment has not been performed for either the original project or design refinements. As such, additional review would be necessary to assess the life safety aspects of the project.

- *If there is a request by the Governor of an affected state for a peer review by independent experts:* *There has been no such request.*

- *If the project/study is likely to involve significant public dispute as to the size, nature, or effects of the project:* The project is characteristic of other flood risk management projects that have been implemented by the USACE through the nation. There are no public disputes surrounding this project. The size, nature and effects of the project and associated refinements do not increase any factors that might lead to any public dispute of the project.

- *If the project/study is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project:* No public dispute is anticipated as a result of the design refinements and associated increase in the 902 limit. Initial economic analyses indicate that the project would still produce substantial benefits and would be within the public interest.

- *If the information in the decision document or anticipated project design is likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices:* The increase in project cost will is based upon *changes in Real Estate costs , value added design modifications, modifications resulting from more detailed field data, and engineering and design refinements*. None of the refinements were considered innovative or precedent-setting and would not introduce changes to prevailing practices. The changes to the project are considered typical post-authorization changes to improve project performance. As such, the PAC or the resulting project modifications will not likely contain influential scientific information or be a highly influential scientific assessment.

- *If the project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule:* The design refinements do not require any redundancy, resiliency and/or robustness to be added to the project. There were no redundancy, resiliency and/or robustness, unique construction sequencing as part of the original project. Construction sequencing would remain the same and is commonplace for this type of project. No substantial changes are expected for the construction schedule save for possible delays due to the need for a PAC.

c. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: *None.*

4. DISTRICT QUALITY CONTROL (DQC)

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

Documentation of DQC. Internal District control of product quality will be accomplished by PDT and supervisory reviews of interim and final products. The District quality management plan addresses the conduct and documentation of this fundamental level of review. DQC documentation will be maintained in the project file and will also be provided to the ATR team.

a. Products to Undergo DQC. The draft PAC and all related appendices.

5. AGENCY TECHNICAL REVIEW (ATR)

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

a. Products to Undergo ATR. ATR will be conducted on the draft report. The draft report ATR is anticipated to be comprehensive. As no NEPA document is likely required, the final report will accommodate and incorporate vertical team comments that would not require additional ATR. If additional NEPA documents are required, they will undergo ATR.

b. Required ATR Team Expertise. The ATR team members should be subject matter experts or regional technical specialists for their fields. The ATR team will be nominated and identified by the RMO/PCX and will be comprised of individuals from all the technical disciplines that were significant in the preparation of the report. Ten technical disciplines determined to be appropriate for this review include: Plan Formulation, Economics, Environmental Resources, Civil Engineering, Hydraulic Engineering and Water Control, Cost Engineering, Risk Analysis, Geotechnical Engineering, and Real Estate.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Plan Formulation	Plan formulation reviewer should be familiar with the requirements of reporting requirements for post authorization

	change reports and experienced in conducting flood risk management studies. Must have experience/expertise in models being used n the study. Preferably familiar with Puerto Rico issues (but not mandatory).
Economics	The economist should be experienced in economic analysis of flood risk management projects. Preferably familiar with economic issues in Puerto Rico (but not mandatory).
Environmental Resources	The Environmental Resources Specialist should be experienced in NEPA compliance, particularly for analysis of flood risk management projects, and associated potential mitigation requirements. Preferably familiar with environmental issues in Puerto Rico (but not mandatory).
Hydraulic Engineering and Water Control	The hydraulic engineering reviewer will be an expert in the field of hydraulics and have a thorough understanding of open channel dynamics, enclosed channel systems, application of detention/retention basins, application of levees and flood walls. . Must have experience/expertise in models being used n the study. Must have a minimum of 7 years of experience and a Professional Engineer (PE) certification
Geotechnical Engineering	Geotechnical Engineer should have extensive knowledge and experience evaluating major civil works structures and geotechnical aspects of construction. Should have design experience evaluating flood risk management projects. Preferably familiar with Puerto Rico (but not mandatory). Must have a minimum of 7 years of experience and a Professional Engineer (PE) certification
Civil Engineering	The Civil Engineer should be experienced in civil engineering for flood damage reduction projects. Preferably familiar with Puerto Rico (but not mandatory). Must have a minimum of 7 years of experience and a Professional Engineer (PE) certification
Cost Engineering	Cost Engineer should be experienced in cost engineering for flood damage reduction projects. Preferably familiar with Puerto Rico (but not mandatory). The cost engineering reviewers will be selected by the Cost DX.
Real Estate	The Real Estate Specialist should have experience with acquisition of diverse properties in support of flood risk management projects. Preferably familiar with pertinent real estate nuances in Puerto Rico (but not mandatory).
Risk Analysis	The risk analysis reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results. The risk to be evaluated is primarily, but, not limited to, flood risk and related life/safety risk. The risk analysis reviewer will be provided by the FRM-PCX.

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 1110-1-12 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:

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

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

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR is required for decision documents except where no mandatory triggers apply, criteria for an exclusion are met, and a risk-informed recommendation justifies exclusion**.** 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 EC1165-2-214, 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 EC1165-2-214.

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

a. Decision on IEPR. The Rio Puerto Nuevo PAC is intended to document the increases in total project costs resulting from increases in Real Estate costs, value added design modifications, modifications resulting from more detailed field data, and engineering and design refinements. The engineering and design refinements include seismic retrofit of modified bridges, adjustment to contract cost for changed site conditions, and required design adjustments addressing significant problems associated with San Jose and Miramar sewer systems. The proposed engineering refinements will help best achieve the project's intent of providing a 100-year level of flood protection for the city and preserving the socio-economic stability of the region. Compared to the scope of the currently authorized project, for which the PAC is documenting design refinements, the refinements are sufficiently limited in scope or impact as to not significantly benefit from Type I IEPR. The total cost of the design refinements addressed in the PAC would be more than $45 million, triggering the requirement for Type I IEPR even though they are minor, relative to the total authorized project. Additionally, the proposed refinements do not necessitate project reformulation; however, at this time, there is not enough information to conduct an assessment of life safety risk. The Jacksonville District conclusion is that this project is recommended for Type I IEPR.

The Type I IEPR will include a Safety Assurance Review (SAR) to address life safety risk. Detailed scope of the IEPR will be determined in advance of the review. Preliminarily, the cost of IEPR is anticipated to be approximately $200K. Significant or relevant public or agency comments received prior to or during IEPR will be provided to the panel of reviewers.

In regards to Type II IEPR, as stated above, Type I IEPR will include a SAR to address life safety risks. Based on the project as currently envisioned, the District Chief of Engineering, as the Engineer-in-Charge, recommends a Type II IEPR Safety Assurance Review of the project. A final risk-informed decision concerning the timing and the appropriate level of reviews including a Type II IEPR for the project implementation documents will be prepared and submitted for approval in an updated Review Plan prior to initiation of the design/implementation phase of this project. The Type II IEPR requirements will be addressed in the Implementation Review Plan.

b. Products to Undergo Type I IEPR. The Draft Post Authorization Change Report with technical appendices will be subjected to IEPR. Scope of IEPR I should include:

- General review of the draft report for completeness.
- Completeness and appropriateness of flood risk management analyses.
- Completeness and appropriateness of economic analyses.
- Completeness and appropriateness of engineering analyses.
- Safety Assurance (review of final risk assessment) It will also address safety related conceptual assumptions and design.

c. Required Type I IEPR Panel Expertise.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member should be a professional from academia, a public agency or an Architect-Engineer or Consulting Firm with a minimum 5 years demonstrated experience in evaluating and conducting complex multi-objective public works projects with high public and interagency interest.
Environmental/Ecological Evaluation	The Ecological Evaluations Panel Member should be a scientist from academia, public agency, non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum 5 years demonstrated experience in evaluating and conducting ecological evaluations for complex public works projects with competing trade-offs. Experience should encompass projects with high public and interagency interests and that may have effects on sensitive habitats.
Cost Engineering	The Cost Engineering Panel Member should be an Engineer from academia, a public agency, non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum 5 years

	demonstrated experience in performing cost engineering/construction management for all phases of the project, including safety assurance. Active participation in related professional societies is encouraged. Panel member should be familiar with the construction industry and practices used in Florida and/or the Southeastern United States. EC-1165-2-209, Appendix D, paragraph 3.d states, "Each PCX must coordinate with the Cost Engineering Directory of Expertise (DX) at the Walla Walla District. In cases where the Cost Engineering DX identifies the need for Type I IEPR, it will inform the assigned PCX and will assist the PCX with establishing the charge for the external independent peer review." The OEO will be tasked to ensure that the panel member or members will be able to accomplish the charge.
Construction Management	Construction Management Panel Member should be an Engineer from academia, a public agency, non-governmental entity, or an Architect-Engineer or Consulting Firm with a minimum 5 years demonstrated experience in performing cost engineering/construction management for all phases of the project, including safety assurance. Active participation in related professional societies is encouraged. Panel member should be familiar with the construction industry and practices used in Florida and/or the Southeastern United States. (The Cost Engineering and Construction Management discipline may be combined in one individual depending upon the availability of individuals with a comprehensive understanding of both disciplines.)
Hydraulic Engineer	Hydraulic Engineering Panel Member should be from academia, public agency or an Architect-Engineer or Consulting Firm with a minimum 5 years demonstrated experience in hydraulic engineering. Active participation in related professional societies is encouraged.
Risk Analysis	The risk analysis Panel Member reviewer should be from academia, public agency or an Architect-Engineer or Consulting Firm with a minimum 5 years demonstrated experience in with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results. Active participation in related professional societies is encouraged. The risk to be evaluated is primarily, but, not limited to, flood risk and related life/safety risk.
Geotechnical Engineer	The Geotechnical Panel Member should be a Professional Engineer from academia, a public agency, or an Architect-Engineer Consulting Firm with a minimum 5 years demonstrated experience in embankment design (i.e. slope stability, seepage evaluation, settlement analysis, and construction methods) for

	flood control and water storage, cut/fill operations, construction dewatering, and seepage control. Experience should also include geotechnical evaluation of flood risk management structures. Active participation in related professional societies is encouraged.

d. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC1165-2-214, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

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

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

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 MANDITORY CENTER OF EXPERTIESE (MCX) REVIEW AND CERTIFICATION

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

9. MODEL CERTIFICATION AND APPROVAL

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

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

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	*The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate flood damage in the with and without project condition.*	*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 4.1 (River Analysis System)	*The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program will be used for steady flow analysis to evaluate the future without- and with-project condition.*	*H&H CoP Preferred.*
HEC-HMS 3.5 (Hydrologic Modeling System)	*The Hydrologic Modeling System is designed to simulate precipitation-runoff of dendritic watershed systems. The program produces hydrographs that will be used in conjunction with the HEC-RAS software.*	*H&H CoP Preferred.*

HEC-SPP 2.0	*The Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) is an integrated system of software, designed for interactive statistical analysis of flood flow frequency; including curve combination analysis, and also general, volume, duration, and coincident frequency analysis*	*H&H CoP Preferred.*

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR of the draft PAC report is estimated to cost about $40K. Review of the draft PAC report is scheduled to start on August 9, 2013.

b. Type I IEPR Schedule and Cost. Type I IEPR start (start of panel review) is currently scheduled for September 23 2013. It is estimated to cost approximately $200K.

c. Model Certification/Approval Schedule and Cost. Not applicable as all models used have been certified/approved for use.

11. PUBLIC PARTICIPATION

At this time, public participation is not anticipated. Informal coordination with the Federal and Commonwealth of Puerto Rico resource agencies under the Section 7 of the Endangered Species Act will be conducted to ensure that the proposed refinements will not jeopardize the continued existence of any species listed as threatened or endangered in the vicinity of the authorized project. SAJ has coordinated with SAD and HQ and determined that, at this time, no additional NEPA documentation will be required. If additional information arises, SAJ will re-coordinate with SAD and HQ to determine if any additional NEPA documentation will be completed.

12. REVIEW PLAN APPROVAL AND UPDATES

The South Atlantic 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 applicable) 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:

- *Jacksonville District Project Manager, 904-232-1597*

- *MSC, SAD, , 404-562-5228*
- *FRM-PCX Point of Contact, 415-503-6852*
- *Jacksonville Planning Technical Lead 904-232-3967*
- *Jacksonville Peer Review Coordinator 904-232-1102*

ATTACHMENT 1: TEAM ROSTERS

Team Rosters Intentionally Removed

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ Date _____
Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____
Name
Project Manager
Office Symbol

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

SIGNATURE _____ Date _____
Name
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

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

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

SIGNATURE _____ Date _____
Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____
Name
Chief, Planning Division
Office Symbol

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

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directorate of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Ecosystem Restoration	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act
PAC	Post Authorization Change	USACE	U.S. Army Corps of Engineers

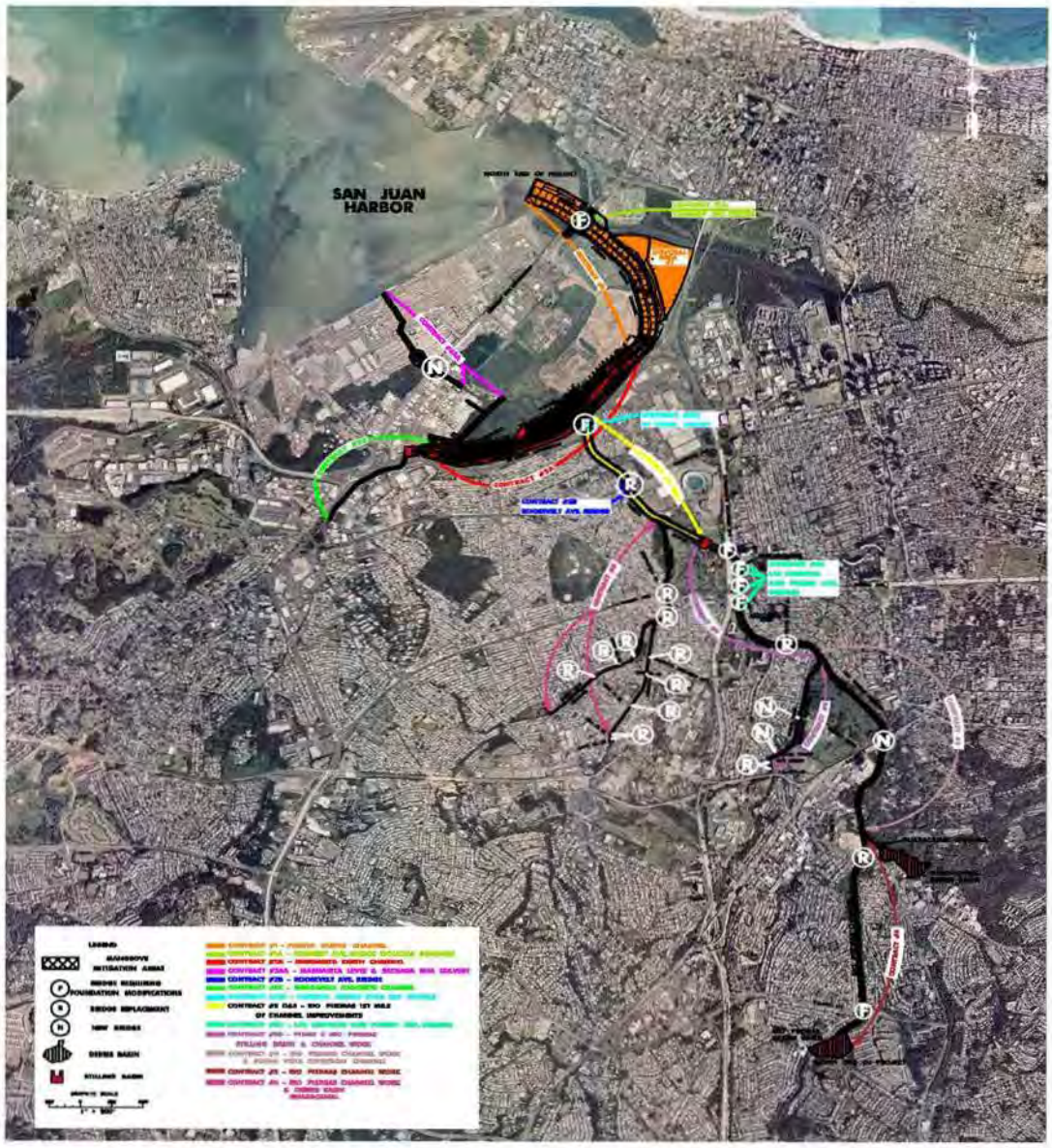

Figure 1: Map of Rio Puerto Nuevo Flood Control Project