

REVIEW PLAN

**Caño Martín Peña Ecosystem Restoration Project, San Juan, PR
Feasibility Report**

Jacksonville District

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**US Army Corps
of Engineers®**

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the *Caño Martín Peña Ecosystem Restoration Project, San Juan, PR, Feasibility Report*.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 21 Jul 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) April 2009 PMP Caño Martín Peña, Puerto Rico, Ecosystem Restoration
- (6) March 2001 Cano Martin Pena Project Design Report conducted under the Support for Others Program
- (7) July 2004 Reconnaissance Report Section 905(b) Analysis for Cano Martin Pena, Puerto Rico, Ecosystem Restoration prepared under the authority of a 25 September 2002 House of Representatives study resolution

a. **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 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 National Ecosystem Restoration Planning Center of Expertise (ECO-PCX).

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

3. STUDY INFORMATION

a. **Decision Document.** The Caño Martín Peña Ecosystem Restoration Project, San Juan, PR Feasibility Report addresses the viability of the Ecosystem Restoration following the

requirements set forth in WRDA 2007 Section 5127 and the Subsequent Implementation Guidance Memorandum dated October 27, 2008. The Feasibility report shall comply with the evaluation and design standards of the Corps of Engineers and determine if the project is feasible. The Feasibility Report (FR) will require a review by the Secretary of the Army, as stipulated in the WRDA 2007 Section 5127. This section authorizes the Secretary to carry out the Project at a cost of up to \$150M, pending the Secretary's review of the Report prepared by the Non-Federal Sponsor. The specific authority is as follows:

WRDA 2007 SEC. 5127. CANO MARTIN PENA, SAN JUAN, PUERTO RICO:

The Secretary shall review a report prepared by the non-Federal interest concerning flood protection and environmental restoration for Cano Martin Pena, San Juan, Puerto Rico, and, if the Secretary determines that the report meets the evaluation and design standards of the Corps of Engineers and that the project is feasible, the Secretary may carry out the project at a total cost of \$150,000,000.

The current estimated total project cost is approximately \$243 million. As the cost has exceeded the previously-authorized \$150 million, the Project will require additional approval by the Secretary of the Army and additional authorization by Congress. The FR will be supported by an Environmental Impact Statement (EIS).

Study/Project Description. The Caño Martín Peña (CMP) is a natural tidal channel 3.75 miles long in metropolitan San Juan, Puerto Rico, south of Santurce and north of Hato Rey, dividing these two densely populated wards of the city. It is one of eight interconnected bodies of water within the San Juan Bay Estuary (SJBE), the only tropical estuary in the U.S. Environmental Protection Agency (EPA) National Estuary Program (NEP). The SJBE interior coastal lagoons and tidal channels are connected to the Atlantic Ocean at both ends. The drainage area of the CMP comprises about 2,500 acres. The drainage area of the canal is only about four square miles (2,500 acres) and is a tributary to the Rio Puerto Nuevo basin with a drainage area of about 25 square miles. Extending from east to west through eight densely populated impoverished communities in San Juan, the CMP connects the San Juan Bay with the San José and Los Corozos Lagoons, which are further connected by the Suárez Canal to La Torrecilla Lagoon and the Atlantic Ocean. A project location map is included as FIGURE 1.

Historically, the CMP had an average width of approximately 200 feet and a depth between 6 to 8 feet and provided tidal exchange between San Juan Bay and the San José Lagoon. Since the 1920s, the CMP channel and its associated wetlands began to be modified as a result of development pressures. Low-income migrants from rural Puerto Rico constructed housing structures throughout the wetlands. As the housing developments lacked basic utilities, such as storm and sanitary sewer systems, and adequate road infrastructure for a proper solid waste collection system, thousands of structures have discarded their refuse into the CMP for decades. Consequently, siltation, accumulation of household and construction debris, encroachment of housing and other structures, and sedimentation from urban runoff have almost completely blocked the CMP's ability to convey flows, thus affecting the habitat functional value and water quality in both the CMP and San José Lagoon. The main ecosystem restoration benefits will occur to benthic habitat within the 702-acre San José

Lagoon. Habitat Units will be calculated for this area and, along with alternative plan costs and other criteria, used to compare and select an alternative plan.

The Selected Plan consists of dredging the eastern segment of the canal (2.2 miles long) to restore the CMP and adjacent areas and increase tidal flushing of the San José Lagoon, restoring the benthic habitat and reducing the harmful salinity gradient and de-oxygenated areas that have become prevalent. Additionally, mangrove wetlands to the north and south of the CMP will be re-established, and, as ancillary benefits that were not quantified, reduce flooding within the CMP's eight adjacent communities. In addition, the Project incorporates a recreation plan that will include the creation of water plazas that will formalize human interaction with the restored waterfront. The Project will also allow for the potential of environmentally sound waterway transportation and promote recreation and tourism in the adjacent communities of Barrio Obrero Oeste, Barrio Obrero Marina, Buena Vista Hato Rey, Buena Vista Santurce, Israel-Bitumul and Cantera that make up the CMP Special Planning District (the District).

The Caño Martín Peña ENLACE Project Corporation (ENLACE), the non-Federal sponsor, is the public entity within the Government of Puerto Rico that is legally designated with the coordination and implementation of the District Comprehensive Development Plan (DCDP). The DCDP includes the CMP Ecosystem Restoration Project, as well as a series of other improvements that ENLACE has been coordinating in preparation and are necessary for project success. These improvements include family relocations, the creation of sanitary sewer systems for the residences and business within the District, and the prevention of new development and fill in of the CMP. In addition to the \$243 million cost of the CMP Ecosystem Restoration Project, the costs of fulfilling the minimum requirements of the DCDP to prepare the area for the Project may reach up to \$600M and will be borne by ENLACE and the Government of Puerto Rico.

b. **Factors Affecting the Scope and Level of Review.** This section addresses the factors affecting the risk informed decisions on the appropriate scope and level of review. The discussion is intended to be detailed enough to assess the level and focus of review and support the PDT, PCX, and vertical team decisions on the appropriate level of review and types of expertise represented on the various review teams. Factors that may affect risk informed decisions are addressed as follows:

- *If parts of the study will likely be challenging (with some discussion as to why or why not and, if so, in what ways – consider technical, institutional, and social challenges, etc.):*
The proposed project presents some unique issues related to the ecosystem restoration project location in a densely-populated, urban area. Additionally, due to the diverse nature of the sediments and material to be removed from the Caño Martín Peña and subsequent transport to the disposal site, various challenges are expected. Local agencies have expressed concern over water pollution during the operations and long term bioaccumulation that may result from dredging operations and disposal. Water pollution due to sediment/contaminant dispersal is considered in the construction process. Bioaccumulation should present no threat, since the goal is to contain the sediments within the contained aquatic disposal site. Lastly, transportation of dredged material may

present a challenge due to the shallow depths of the San Jose Lagoon. This shall be resolved by constructing a dump scow small enough to navigate the 4-6 feet (on average) deep San Jose Lagoon towards the Canal Suarez.

- *A preliminary assessment of where the project risks are likely to occur and what the magnitude of those risks might be (e.g., what are the uncertainties and how might they affect the success of the project):* As the CMP Ecosystem Restoration Project is part of an ongoing, larger effort that has been conducted by ENLACE and the Government of Puerto Rico, substantial uncertainties for the proposed project have been reduced. A complex and comprehensive public involvement process has identified risks and uncertainties related to project planning, design and implementation. The two largest risks for the project are mainly associated with construction and disposal of dredged sediment: the potential dispersion of sediments should a turbidity barrier or dump scow fail, and after disposal at the Suarez Canal site, possible dispersion of contaminants should the coffer dam break. For this reason, further geotechnical studies and additional engineering during the project planning phase may be necessary to reduce risk.
- *If the project will likely be justified by life safety or if the project likely involves significant threat to human life/safety assurance (with some discussion as to why or why not and, if so, in what ways – consider at minimum the safety assurance factors described in EC 1165-2-209 including, but not necessarily limited to, the consequences of non-performance on project economics, the environmental and social well-being [public safety and social justice]; residual risk; uncertainty due to climate variability, etc.) – the discussion of life safety should include the assessment of the home District Chief of Engineering on whether there is a significant threat to human life associated with the project (per EC 1165-2-209 Frequently Ask Question 3.j.):* In regards to effects on human life, the proposed project should actually reduce significant threats that exist within the environment. Additionally, dredging of the Cano Martin Pena would provide incidental flood protection benefits, as the closed system would be reopened to flow. A climate variability assessment has already been conducted for the proposed project and no life safety concerns were identified. Although there could be substantial improvements as a result of the elimination of accumulated sediments, the project would not be justified by life safety. There would also be tremendous improvements for the public in regards to environmental or social justice issues.
- *If the project/study is likely to involve significant public dispute as to the size, nature, or effects of the project, or likely to involve significant public dispute as to the economic or environmental cost or benefit of the project (with some discussion as to why or why not and, if so, in what ways):* Project costs for a typical ecosystem restoration project with measures such as sediment removal and disposal are normally lower than the current project cost; however, the project is unique in several regards that serve to justify the higher costs. The proposed project is centrally located in San Juan, the capital of Puerto Rico. Real Estate costs are higher within heavily populated areas and additional measures must be taken to ensure relocations and other social concerns are fulfilled. Also, re-establishing tidal flow within the San Juan Bay Estuary would be highly significant, immediately improving the quality of life for over 26,000 people within the

area and also creating opportunities for the greater San Juan area as a whole. The proposed project would also serve to reduce and/or eliminate health and safety threats to the public through removal of accumulated sediments in a highly urban area. Feedback from public meetings and coordination between agencies has indicated broad support for the project from a cost perspective.

Some public concern arose that focused mainly on the disposal of spoil material, as some sediment has high levels of contaminants. Due to the project location on an island and in a highly-populated area, there are a limited number of disposal options. ENLACE, the non-Federal sponsor, has been coordinating with the local community, environmental groups and recreational interests since the drafting of the Environmental Impact Statement. A robust analysis of disposal methods and sites has been conducted, and the Report will detail the comparison and selection process for the recommended alternative plan.

- *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 (with some discussion as to why or why not and, if so, in what ways):* There would be no novel or precedent-setting methods or models nor innovative materials or techniques used for the proposed project. The environmental benefits methodology is similar to other habitat assessment models that have been successfully utilized for approved studies throughout the nation. Additionally, this method has already been presented at various Dredging Technical Committee meetings and National Scientific Conferences. Project materials and dredging and disposal techniques would not require any innovative design or methods to accomplish project purposes.
 - *If the project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule (with some discussion as to why or why not and, if so, in what ways):* The project would consist of dredging the Caño Martín Peña channel and construction of sheet pile side walls, with disposal of dredged debris and sediment in an identified facility. Increased redundancy, resiliency, or robustness are not anticipated to be required for the proposed project. Although some contaminated materials do exist within the sediments, disposal of such material should not require any increased protective measures to be implemented above those that are ordinarily conducted. Additionally, the proposed project is not anticipated to require any unique sequencing and schedule overlapping for construction and implementation.
- 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: the DRAFT FR and EIS at a cost of \$1.6M, revisions and public meeting recording and transcription. Revision of the DRAFT FR will be carried out by the USACE through an MOA with the non-Federal sponsor at a cost of \$300,000 provided by the non-Federal sponsor. **The non-Federal Sponsor will also deliver**

IEPR, through a qualified Outside Eligible Organization, at a cost of approximately \$150,000.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC, which 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 will be in accordance with the Quality Manual of the District. In this case, the FR and EIS is being prepared by the Non-Federal sponsor, then subjected to Corps District Review. Quality review equivalent to DQC by the Non-Federal Sponsor and by the Jacksonville District is described, below.

Non-Federal Sponsor: Atkins, ENLACE's consultant, provided internal QA/QC for the technical documents. ENLACE will submit each revised document with a memorandum that summarizes ENLACE's QC process.

Jacksonville District: The USACE will perform DQC on the draft and final FR/EIS to provide technical and policy related comments, general format and grammar errors may also be noted. The USACE will prepare written documentation of the DQC, in the form of a Project Guidance Memo (PGM), including a list of specific FR/EIS review comments.

a. Documentation of DQC.

Non-Federal Sponsor: For each revision, ENLACE will prepare an excel spreadsheet listing all the comments provided, how each comment was addressed and where within the Feasibility Report. Should there be a comment that is not addressed, the spreadsheet will include an explanation of why it was not addressed or is not applicable. The spreadsheet will be accompanied with a memorandum documenting the Quality Control process for the document revision.

Jacksonville District: DrChecks review software will be used during the DQC for comments, responses, and associated resolutions. The Deliverable from USACE will be a PGM. The responses to all comments (citing the location where changes were made) will be provided by ENLACE. ENLACE will also revise the FR/EIS, including all supporting documents prepared, in response to the comments generated during the DQC.

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 performed on the Draft Report (including NEPA and supporting documentation), and Final Report (including NEPA and supporting documentation).

Technical Products include:

I. Feasibility Report

Appendices FR

- 1. DRAFT NOI
- 2. Engineering appendix
- 3. ROM Cost Estimate
- 4. Incremental Cost analysis
- 5. Real Estate Appendix
- 6. Plan Formulation

II. Preliminary DRAFT EIS

EIS Appendices

- a. Existing Wildlife habitat / threatened and endangered species
- b. SJBE Flora and Fauna List
- c. Wetland Studies
- d. Essential Fish Habitat Assessment
- e. Endangered Species Assessment
- f. Sports Fisheries Studies
- g. Ecosystem Benefits Evaluation
- h. Water and Sediment Quality Report
- i. Hydrodynamic – Water quality
- j. Hazardous Toxic radioactive waste
 - i. Geotechnical studies
 - ii. Dredged material management plan
 - iii. Environmental justice report
 - iv. Recreation report
 - v. Aesthetic Studies
 - vi. Cultural and historic resource study
 - vii. Air quality study

b. Required ATR Team Expertise.

Skilled and experienced personnel who have not been associated with the development of the study products perform the ATR. ATR team members may be employees of U.S. Army

Corps of Engineer Districts, other Federal agencies, state or local government agencies, universities, private contractors or other institutions. The key factor is extensive, expert knowledge in their field of expertise. The ATR team will be finalized by the ECO-PCX and is comprised of individuals from all the technical disciplines that were significant in the preparation of the report. ATR team members are listed in Attachment 1. Technical disciplines determined to be appropriate for this review include: ATR Lead, Plan Formulation, Economics, NEPA Compliance, Ecosystem Restoration Benefits Analysis, Hydrology, Hydraulic Engineering, Geotechnical Engineering, Civil Engineering Design, Cost Engineering, Real Estate and Environmental Engineering.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead will be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The 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 (such as planning, economics, environmental resources, etc).
Plan Formulation	The Planning reviewer will be a senior water resources planner with experience in ecosystem restoration and benefit development.
Economics	The economics reviewer will be a senior economist with significant experience in Cost Effectiveness and Incremental Cost Analysis for ecosystem restoration projects..
NEPA Compliance and Ecosystem Restoration Benefits Analysis	The NEPA Compliance and Ecosystem Restoration Benefits reviewer will be a senior biologist/ecologist/environmental engineer, preferably with significant experience in ecosystem restoration and familiarity with coastal and estuarine systems and riparian wetlands. Will be able to review for NEPA compliance (including cultural resources coordination).
Hydrology & Hydraulic Engineering	The hydrology reviewer will be experienced in modeling hydrology of channels and embayments, with a minimum of seven years of experience, and be a Professional Engineer (P.E.). Must be able to evaluate application of the CH3D-WES hydrodynamics model employed to model restoration of tidal tidal flushing of the San José lagoon.
Geotechnical Engineering	The reviewer will be experienced in determining geotechnical requirements for dredging, handling and disposal of debris and sediment from river channels and channel and disposal area design, with a minimum of seven years of experience in geotechnical engineering, and be a Professional Engineer (P.E.)
Civil Engineering	The civil engineer will have knowledge of Corps of Eningeers design standards associated with ecosystem

	restoration projects, with a minimum of seven years of experience in civil engineering, and be a Professional Engineer (P.E.)
Cost Engineering	Approved by the Cost DX. Cost Engineering will review the final cost estimate, risk analysis, total project cost summary and construction schedule.
Real Estate	The reviewer will be a senior real estate specialist experienced in contributing to large civil works projects to include environmental restoration projects.
Environmental Engineer.	The reviewer will have at least seven years experience in evaluating water quality and HTRW effects and requirements of riverine and embayment systems as relates to dredging and disposal of debris and sediment.

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, ATR team members 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 will 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)

Type I IEPR is required for all decision documents except where no mandatory triggers apply, criteria for 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 EC 1165-2-209, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

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

construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

- a. **Decision on IEPR. A type I IEPR shall be carried out for the Caño Martín Peña Ecosystem Restoration Project.** Based on the project as currently envisioned, the District Chief of Engineering, as the Engineer-In-Responsible-Charge, does not recommend a Type II IEPR Safety Assurance Review of this project at this time. A risk-informed decision concerning the timing and the appropriate level of reviews for the project implementation phase will be prepared and submitted for approval in an updated Review Plan prior to initiation of the design/implementation phase of this project.

The risk informed decision explicitly considers:

- That the decision document meets mandatory triggers for Type I IEPR described in Paragraph 11.d.(1) and Appendix D of EC 1165-2-209. The cost of the project exceeds \$45M. The document includes an EIS which excludes the possibility of requesting an exclusion from a Type I IEPR. The Caño Martín Peña Ecosystem Restoration Project is not one limited in scope or limited impact.
- A Type II IEPR (Safety Assurance Review) is not expected to be required because no life safety concerns have been identified. Dredging and channelizing Caño Martín Peña is not expected to create an adverse condition for life safety or intended to increase life safety.
 - *If the Federal action is justified by life safety or failure of the project would pose a significant threat to human life:* Dredging and channelizing Caño Martín Peña is not expected to create an adverse condition for life safety or intended to increase life safety. In regards to effects on human life, the proposed project should actually reduce significant threats that exist within the environment. Additionally, dredging of the Cano Martin Pena would provide incidental flood protection benefits, as the closed system would be reopened to flow. A climate variability assessment has already been conducted for the proposed project and no life safety concerns were identified. Although there could be substantial improvements as a result of the elimination of accumulated sediments, the project would not be justified by life safety; however, there would also be tremendous improvements for the public in regards to environmental or social justice issues.
 - *If 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:* There would be no novel or precedent-setting methods or models nor innovative materials or techniques used for the proposed project. The environmental benefits methodology is similar to other habitat assessment models that have been successfully utilized for approved studies throughout the nation. Additionally, this method has already been presented at

various Dredging Technical Committee meetings and National Scientific Conferences. Project materials and dredging and disposal techniques would not require any innovative design or methods to accomplish project purposes.

- *If the project design requires redundancy, resiliency, and/or robustness; and/or if the project has unique construction sequencing or a reduced or overlapping design construction schedule:* The project would consist of dredging the Caño Martín Peña channel and construction of sheet pile side walls, with disposal of dredged debris and sediment in an identified facility. Increased redundancy, resiliency, or robustness are not anticipated to be required for the proposed project. Although some contaminated materials do exist within the sediments, disposal of such material should not require any increased protective measures to be implemented above those that are ordinarily conducted. Additionally, the proposed project is not anticipated to require any unique sequencing and schedule overlapping for construction and implementation.

- b. **Products to Undergo Type I IEPR.** Type I IEPR shall be performed for the entire Feasibility Report (including supporting documentation), available at the draft report stage; Which includes the following:

Technical Products to be produced include:

Feasibility Report

Appendices

1. DRAFT NOI
2. Engineering appendix
3. ROM Cost Estimate
4. Incremental Cost analysis
5. Real Estate Appendix
6. Plan Formulation

Preliminary DRAFT EIS

EIS Appendices

1. Existing Wildlife habitat / threatened and endangered species
2. SJBE Flora and Fauna List
3. Wetland Studies
4. Essential Fish Habitat Assessment
5. Endangered Species Assessment
6. Sports Fisheries Studies
7. Ecosystem Benefits Evaluation
8. Water and Sediment Quality Report
9. Hydrodynamic – Water quality
10. Hazardous Toxic radioactive waste
11. Geotechnical studies
12. Dredged material management plan

- 13. Environmental justice report
- 14. Recreation report
- 15. Aesthetic Studies
- 16. Cultural and historic resource study
- 17. Air quality study

c. **Required Type I IEPR Panel Expertise.** The PDT has made an initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan and suggests the following disciplines: Economics, Environmental Analysis, Civil Engineering Design and Hydraulic Engineering. See the below table for description of required expertise

The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides examples of the types of disciplines that might be included on the IEPR team and a sample description of the expertise required. Pick from the listed disciplines and/or add additional disciplines as needed and provide a short description of the expertise required for each discipline.

Note that neither Federal funds nor Sponsor Contributed Funds are available to pay the Corps of Engineers to deliver the Type I IEPR. Therefore, the Non-Federal Sponsor will secure the review through an authorized OEO, using the National Academy of Sciences (NAS) policy for selecting reviewers, as required by Section 13.b. of EC 1165-2-209. The IEPR will not be managed by the RMO.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member will be an economist from academia, a public agency, a non-governmental entity, or an architect-engineer or consulting firm with at least a MA/MS/MBA degree. Member must have at least 10 years of experience in evaluating and comparing alternative plans and evaluating and conducting National Ecosystem Restoration (NER) analyses of ecosystem restoration-related projects. Experience directly working for or with USACE in applying Principles and Guidelines (P&G) to civil works project evaluations is highly recommended. Active participation in related professional societies is encouraged.
Environmental	Two panel Members will be scientists from academia, a public agency, a non-governmental entity, or an Architect-Engineer or Consulting Firm. The Panel Members must have at least ten years experience directly related to environmental evaluation or review, with a minimum MS degree or higher in a related field. Experience will include an understanding

	<p>of environmental impacts associated with dredging and placement of contaminated debris and sediment. Panel Members will have experience working with wetlands and estuarine ecosystems and have an understanding of embayment and riparian wetland ecological responses to navigation channel and overbank improvements. Panel member will be able to evaluate the application of a benthic index and wetland functional assessment employed to predict ecosystem restoration. Experience in the Puerto Rico region is preferred but not required.</p>
Engineering	<p><u>Civil Engineer</u> - The Panel Member will be a registered P.E. with a minimum of 10 years of experience, from academia or an architect-engineer consulting firm. The Panel Member will have demonstrated experience in restoration projects, dredged material disposal, erosion, coastal currents, channel modifications, with a minimum MS degree or higher in Civil, Hydraulic or related Engineering field. Active participation in related professional societies is encouraged.</p> <p><u>Hydraulic Engineer</u> -The Panel Member will be a registered P.E. with a minimum of 10 years experience from academia or an Architect-Engineer or Consulting Firm. The Panel member will have demonstrated experience in channel design, channel modifications, dredging, and coastal currents, with a minimum MS degree or higher in Civil, Hydraulic or a related Engineering field. Active participation in related professional societies is encouraged.</p>

d. **Documentation of Type I IEPR.** The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 5.c 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 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 1105-2-412 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 process the Hydrology, Hydraulics and Coastal Community of Practice (HH&C CoP) of USACE follows to validate engineering software for use in planning studies and to satisfy the requirements of the Corps' Scientific and Engineering Technology (SET) initiative is provided in Enterprise Standard (ES)-08101 Software Validation for the Hydrology, Hydraulics and Coastal Community of

Practice. 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
Benthic Index for San Juan Bay	The Benthic Index for San Juan Bay was used to provide a relationship between the ecological health of the benthic communities within the San Juan Bay estuary system and the distance between sample sites and the Atlantic Ocean (as a surrogate for residence time). The model will combine the output from the existing USACE-developed hydrodynamic model for San Juan Bay (CH3D-WES) with field data of benthic communities. A simple linear regression will be developed (r-squared value of 0.41, $p < 0.01$) to predict expected changes in ecosystem health (as expressed in Benthic Index scores) as a function of changes in residence time upon reestablishment of historical tidal connections between San Juan Bay and the San José Lagoon during the planning effort for restoration of Caño Martín Peña (selected alternative); and could be used in the context of potential future monitoring programs in the adaptive management process for the restoration program.	<u>Will be submitted for review and approval for single use.</u>
IWR-PLAN	IWR-PLAN is a USACE Corporate models that is utilized to conduct a cost effectiveness/incremental cost analysis of alternative plans.	<u>Approved for use</u>

- 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
CH3D-WES hydrodynamic model	The CH3D-WES hydrodynamic model will be use to determine the circulation parameters that will be use for the determination of ecological uplift potential for various tidal restoration alternatives. The model had been developed and used by the Corps of Engineers back in the 1990s. The ERDC performed a data collection effort in 1995, completed hydrodynamic modeling in 1997, and produced a final report of the hydrodynamic and water quality modeling in 2000; by using this existing	<u>Validated: HH&C CoP Preferred Model</u>

	hydrodynamic model for this effort, the costs of constructing a model grid and the costs of calibrating and verifying the model were avoided for this particular project. The CH3D-WES model is a three dimensional curvilinear finite difference model that produced the necessary input hydrodynamics for a linked water quality model.	
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10. REVIEW SCHEDULES AND COSTS

- a. **ATR Schedule and Cost.** ATR is planned for the Draft Report and EIS on 21 March 2013. ATR estimated cost is \$38K. The ATR will be conducted concurrent with the IEPR due to the robust DQC that the District will perform on the products prepared by the Non-Federal Sponsor. This process has been vetted with the vertical team including the RMO.
- b. **Type I IEPR Schedule and Cost.** IEPR of the draft report is scheduled to begin on 21 March 2013, with an estimated cost of \$150K (delivered by Non-Federal Sponsor). The IEPR will not be managed by the RMO.
- c. **Model Certification/Approval Schedule and Cost.** The Model Approval Plan will be submitted to the PCX on approximately December 21, 2012 with a requested approval for use date of approximately February 21, 2013 and a critical date of 15 May 2012.

11. PUBLIC PARTICIPATION

Multiple stakeholders were involved in the implementation of this project for it to be possible. Without community participation, this project would present greater difficulty and potential opposition. Therefore, it has been a priority to keep the technical information and all of the specifics open to the public and involve the multiple stakeholders in the actual decision making process from the beginning. To guarantee participation and input in the elaboration of the DRAFT document, the non-federal sponsor has coordinated with the communities, organizations and multiple agencies involved, and promoted their active participation in the development of the Feasibility Report.

To ensure the participation of all of the stakeholders the project ensures a space for input from the residents of the eight communities of the Caño Martín Peña that would be directly affected. Over twenty-one involvement meetings were hosted to discuss the project in depth and gather feedback and recommendations from the communities. Three rounds of Community Assemblies were held in the eight communities of the Caño Martín Peña. Following the first round of assemblies, a Community Committee (CC) was established to further discuss the specific needs and address uncertainties with respect to the technical reports generated for the project. The CC consisted of at least one representative from each of the communities impacted. The CC met once a month and was actively involved in revising documents and communicating the information to the public. The assemblies and meetings have detailed all of the technical aspects of the project, in accessible language. In addition to Community Assemblies with the eight

communities, meetings have been held with local fishermen, sports fishermen, recognized environmental organizations, and other municipality representatives for the areas outside San Juan involved in the project.

In 2009, the government created a Dredging Technical Advisory Committee (TAC), in which all local and federal agencies have a designated representative. The agencies that participate in the TAC include five (5) federal agencies, seven (7) state agencies, and three (3) stakeholder organizations. The community leadership also selected one representative from among themselves to participate in the TAC and serve as the voice of the community. Through this public participatory process, the project has documented and addressed specific community and local agency concerns and made including residents and agencies in the discussion a top priority, with meetings held at key parts of the drafting process.

Public participation will continue with the EIS-FR public hearings after the USACE approves the draft for public release. Community meetings will be held to include the residents who live near the Finca La Marina site. A webpage in Spanish was also created to inform the public and provide contact information for feedback: www.dragadomartinpena.org.

As for the Type I IEPR, it is not anticipated that the public or scientific or professional societies will be asked to nominate potential peer reviewers. USACE responses to IEPR comments will be made available to the public by posting the official USACE response on a public website.

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) will 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, will be posted on the Home District's webpage. The latest Review Plan will 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, 904-232-1018
- South Atlantic Division Point of Contact, 404-562-5206
- ECO-PCX, Operational Director, 309-794-5448



Figure 1: Project Location Map

ATTACHMENT 1: TEAM ROSTERS

Team Rosters intentionally removed

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION 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 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.

SIGNATURE

Name
ATR Team Leader
Office Symbol/Company

Date

SIGNATURE

Name
Project Manager
Office Symbol

Date

SIGNATURE

Name
Architect Engineer Project Manager¹
Company, location

Date

SIGNATURE

Name
Review Management Office Representative
Office Symbol

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.

SIGNATURE

Name
Chief, Engineering Division
Office Symbol

Date

SIGNATURE

Name
Chief, Planning Division
Office Symbol

Date

¹ Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number