



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION
60 FORSYTH STREET SW, ROOM 10M15
ATLANTA, GA 30303-8801

14 DEC 2012

CESAD-RBT

MEMORANDUM FOR COMMANDER, Jacksonville District (CESAJ-EN-QC/[REDACTED]
[REDACTED])

SUBJECT: Approval of Review Plan for Plans and Specifications and Design Documentation Report for Contracts 2B, 2C, 2D, and 2E for the Rio Puerto Nuevo Project, San Juan, Puerto Rico

1. References:

a. Memorandum, CESAJ-EN-QC, 10 December 2012, Subject: Approval of Review Plan for Rio Puerto Nuevo, San Juan, Puerto Rico (Enclosure).

b. EC 1165-2-209, Civil Works Review Policy, 31 January 2010.

2. The enclosed Review Plan for the Plans and Specifications and Design Documentation Report for Contracts 2B, 2C, 2D, and 2E for the Rio Puerto Nuevo Project, San Juan, Puerto Rico has been reviewed by this office and is hereby approved in accordance with references 1.b above.

3. We concur with the conclusion of the District Chief of Engineering that Type II Independent External Peer Review (Type II IEPR) is not required for the design and construction of the subject contracts. The primary basis for our concurrence is that failure or losses of the contract features does not pose a significant threat to human life.

4. The District should take steps to post the Review Plan to its web site and provide a link to CESAD-RBT. Before posting to the web site, the names of Corps/Army employees should be removed. Subsequent significant changes to this Review Plan, should they become necessary, will require new written approval from this office.

5. The SAD point of contact is [REDACTED].

Encl

DONALD E. JACKSON, JR.
COL, EN
Commanding



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P.O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

CESAJ-EN-QC

10 December 2012

MEMORANDUM FOR Commander, South Atlantic Division (CESAD-RBT)

SUBJECT: Approval of Review Plan for Rio Puerto Nuevo, San Juan, Puerto Rico

1. References.

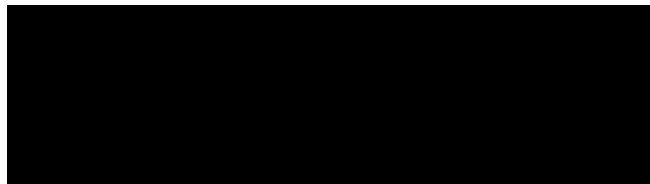
- a. EC 1165-2-209, Civil Works Review Policy, 31 January 2012
- b. WRDA 2007 H. R. 1495 Public Law 110-114, 8 November 2007

2. I hereby request approval of the enclosed Review Plan and concurrence with the conclusion that Type II Independent External Peer Review (IEPR) of this project is not required. The Type II IEPR determination is based on the EC 1165-2-209 Risk Informed Decision Process as presented in the Review Plan. Approval of this plan is for the Plans and Specifications and DDR Implementation Documents. The Review Plan complies with applicable policy, provides for Agency Technical Review, and has been coordinated with SAD. It is my understanding that non-substantive changes to this Review Plan, should they become necessary, are authorized by SAD.

3. The district will post the approved Review Plan to its website and provide a link for SAD use. Names of Corps/Army employees will be withheld from the posted version, in accordance with guidance.

FOR THE COMMANDER:

Encl



PROJECT REVIEW PLAN

Review Plan for Implementation Documents South Atlantic Division (SAD)

Project Name: Rio Puerto Nuevo
Project Location: San Juan, PR
Project P2 Number: 113454
Project Manager: [REDACTED]
SAD Approval Date: XX

THE INFORMATION CONTAINED IN THIS REVIEW PLAN IS DISTRIBUTED SOLELY FOR THE PURPOSE OF PREDISSEMINATION PEER REVIEW UNDER APPLICABLE INFORMATION QUALITY GUIDELINES. IT HAS NOT BEEN FORMALLY DISSEMINATED BY THE U.S. ARMY CORPS OF ENGINEERS, JACKSONVILLE DISTRICT. IT DOES NOT REPRESENT AND SHOULD NOT BE CONSTRUED TO REPRESENT ANY AGENCY DETERMINATION OR POLICY.



**US Army Corps
of Engineers** ®

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1. PURPOSE AND REQUIREMENTS.

a. **Purpose.** This Review Plan defines the scope and level of review activities for the **Rio Puerto Nuevo** project. This review plan reflects the improvements anticipated in the next 10 years. The Review activities consist of District Quality Control (DQC) and Agency Technical Review (ATR). The project was partially constructed, has areas currently under construction, and has additional phases in Pre-Construction, Engineering and Design (PED). The portion of the project that is currently under construction was previously assessed and it was determined that failure of these construction items would not pose a significant threat to human life. Therefore a Type II IEPR of these features in and of themselves is not required. The PED phase documents addressed by this Review Plan are Implementation Documents that consist of Plans and Specifications (P&S) and a Design Documentation Report (DDR) and the construction associated with those documents. Upon approval, this review plan will be included into the Project Management Plan as an appendix to the Quality Management Plan. The project delivery team has initiated preparation of a Post Authorization Change (PAC) report. This PAC will be prepared during FY-13 and will evaluate project efforts upstream. If the PAC is approved, the project scope may increase and the Review Plan will be expanded to include those design and construction efforts.

b. References.

- (1). ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999
- (2). ER 1110-1-12, Engineering and Design Quality Management, 31 March 2011
- (3). FCA 1968, WRDA 1974, and WRDA of 1986 (Project Authorization)
- (4). EC 1165-2-209, Civil Works Review Policy, 31 January 2012
- (5). 02611 - SAJ Quality Control In-House Products: Civil Works PED
- (6). 02612 - SAJ Quality Assurance for Outsourced (AE) Engineering Products: Civil Works PED
- (7). 02613 - SAJ Quality Assurance of Work by Other Corps: Civil Works PED
- (8). 02710 - SAJ Preparation and Submittal of Civil Works Review Plans
- (9). ER 1105-2-100, Planning Guidance Notebook, 22 APR 2000

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). The EC provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and other work products.

d. **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 to the appropriate scope and level of review. Like the PMP, the Review Plan is a living document and may change as the project progresses. The Jacksonville District is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval will be documented in Attachment 1. 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

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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 Jacksonville District's webpage. The latest Review Plan will be provided to the RMO and home MSC.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO for the ATR of the P&S and DDR is South Atlantic Division (SAD).

3. GENERAL PROJECT INFORMATION

Study/Project Description. The Rio Puerto Nuevo project was authorized for construction by Section 202 of the Water Resources Development Act of 1986 (PL 99-662). The project is located in San Juan, Puerto Rico. The Rio Puerto Nuevo Basin drains 24 square miles, 75 percent of which is highly developed with a population of 250,000 persons. The plan of improvement protects against the 100-year flood by the construction in the Puerto Nuevo River and its tributaries of 1.7 miles of earth lined channel, 9.5 miles of concrete lined channels (5.1 miles of which are high velocity), and two debris basins. The plan will also require the construction of five new bridges, the replacement of 17 bridges, and the modification of eight existing bridges. See attachment 1 for completed, current and remaining contract efforts.

4. REVIEW FUNDAMENTALS

- a. The USACE review process is based on a few simple but fundamental principles:
 - Peer review is key to improving the quality of work in planning, design and construction;
 - Reviews shall be scalable, deliberate, life cycle and concurrent with normal business processes;
 - A review performed outside the home district shall be completed on all decision and implementation documents. For other products, a risk informed decision as described in EC 209 will be made as to whether to perform such a review.

- b. The EC 209 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.

5. DISTRICT QUALITY CONTROL (DQC)

SAJ will manage the DQC. In accordance with EC 209 all work products and reports, evaluations, and assessments shall undergo necessary and appropriate District Quality Control (DQC).

DQC is the internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the project Quality Control Plan (QCP) of the Project Management Plan (PMP).

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The DQC is the internal quality control process performed by the supervisors, senior staff, peers and the PDT within the home District and is managed by the home District. DQC consists of;

- a. Quality Checks and reviews. These are routine checks and reviews carried out during the development process by peers not responsible for the original work. These are performed by staff such as supervisors, team leaders or other senior personnel designated to perform internal peer reviews.
- b. PDT reviews. These are reviews by the production team responsible for the original work to ensure consistency and coordination across all project disciplines.

District Quality Control (DQC) activities for engineering products are stipulated in ER 1110-1-12, Engineering & Design Quality Management and EC 1165-2-209. DQC will be performed on the P&S and DDR In accordance with 02611 - SAJ Quality Control In-House Products: Civil Works PED. The 02611 process defines DQC as the sum of two reviews, Discipline Quality Control Review (DQCR) and Product Quality Control Review (PQCR). Product Quality Control Review is the DQC Certification that will precede ATR.

6. AGENCY TECHNICAL REVIEW (ATR)

A risk informed process was completed for this project in accordance with EC 209. See paragraph 8, **RISK INFORMED DECISIONS.**

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 will be conducted by a qualified team from outside the home District that is not involved with 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. In limited cases, when appropriate and independent expertise can be secured from Centers or Laboratories or when proper expertise cannot be secured otherwise, SAD may approve exceptions.

7. REVIEW DOCUMENTATION

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;

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- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and;
- (4) Where appropriate, provide a suggested action needed to resolve the comment or concern.

In some situations, such as 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 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 ER 1105-2-100, Appendix H, and ER 1110-1-12 as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

ATR shall 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).

8. RISK INFORMED DECISIONS

- a. ATR: (Source: EC 209, paragraph 15). The following questions and additional appropriate questions were considered;
 1. Does it include any design (structural, mechanical, hydraulic, etc)? Yes. Structural design of channel lining and bridge design will be included.
 2. Does it evaluate alternatives? No. This phase is implementation of the selected plan.
 3. Does it include a recommendation? No.
 4. Does it have a formal cost estimate? Yes. A current working estimate and an Independent Government Estimate will be developed for each contract solicitation.
 5. Does it have or will it require a NEPA document? Yes. An EIS was completed in 1985, an EA/FONSI was completed in 1993, and an EA/FONSI was completed in 2002.
 6. Does it impact a structure or feature of a structure whose performance involves potential life safety risks? No.
 7. What are the consequences of non-performance? Flooding of the protected area.
 8. Does it support a significant investment of public monies? Yes, the end product supported by these implementation documents will be construction of several phases of a multi-million dollar flood damage reduction project.

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9. Does it support a budget request? No, the implementation documents covered by this review plan are for P&S and the DDR. Changes to PED or construction funding, if any, would be reflected by the PAC report not covered under this review plan.
10. Does it change the operation of the project? No.
11. Does it involve ground disturbances? Yes, construction will include conventional excavation and possible pile driving operations.
12. Does it affect any special features, such as cultural resources, historic properties, survey markers, etc, that should be protected or avoided? No.
13. Does it involve activities that trigger regulatory permitting such as Section 404 or stormwater/NPDES related actions? Yes. Project construction requires discharges of fill material into waters of the United States and work in Navigable Waters of the United States. A determination pursuant to Section 404.b.1 of the Clean Water Act (CWA) was included as part of the project's Environmental Impact Statement. The Commonwealth of Puerto Rico issued a Water Quality Certificate pursuant to Section 401 of the CWA on 11 June 1993. Also, the project received concurrence with Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) on 19 Oct 2011, for the offshore disposal of dredged material.
14. Does it involve activities that could potentially generate hazardous wastes and/or disposal of materials such as lead based paints or asbestos? No.
15. Does it reference use of or reliance on manufacturers' engineers and specifications for items such as prefabricated buildings, playground equipment, etc? No.
16. Does it reference reliance on local authorities for inspection/certification of utility systems like wastewater, stormwater, electrical, etc? Yes. Inspection will be required by local authorities for utility replacement in Contract 2C and bridge replacement in Contract 2B.
17. Is there, or is there expected to be any controversy surrounding the Federal action associated with the work product? No.

Decision on ATR: An ATR will be performed on the implementation documents covered under this review plan in accordance with the District QCP and this RP. See Attachment 1 for individual Contract specifics.

- b. **INDEPENDENT EXTERNAL PEER REVIEW (IEPR).** The District considered risks and risk triggers for Type II IEPR, also referred as a Safety Assurance Review (SAR) as described in EC 1165-2-209.
 - i. **Type I IEPR.** Type I IEPR is generally for decision documents. No decision documents or other applicable Section 2034 products are addressed by this Review Plan. Therefore Type I IEPR is not applicable to the implementation documents addressed by this Review Plan.
 - ii. **Type II IEPR (SAR).** 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

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adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

Other Factors to consider for Type II IEPR (SAR) review of a project, or components of a project;

- Does the project involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices?
- Does the project design require redundancy, resiliency, and robustness?
- Does the project have unique construction sequencing or a reduced or overlapping design and construction schedule (e.g., significant project features accomplished using the Design-Build or Early Contractor Involvement (ECI) delivery systems)?

Decision on Type II IEPR: Based on the factors described above and project specific information presented in Attachment 1, it is the recommendation of the SAJ Chief, Engineering Division that a Type II IEPR not be performed for the remaining phases of work covered under this review plan. Detailed information in support of this recommendation is presented in Attachment 1.

Review Plan for Rio Puerto Nuevo
Implementation Documents

ATTACHMENT 1
Review Plan Specifics

A-1. PROJECT INFORMATION

- a) **Study/Project Description.** The Rio Puerto Nuevo project was authorized for construction by Section 202 of the Water Resources Development Act of 1986 (PL 99-662). The project is located in San Juan, Puerto Rico. The Rio Puerto Nuevo Basin drains 24 square miles, 75 percent of which is highly developed with a population of 250,000 persons. The plan of improvement protects against the 100-year flood by the construction in the Puerto Nuevo River and its tributaries of 1.7 miles of earth lined channel, 9.5 miles of concrete lined channels, 5.1 miles of which are high velocity, and two debris basins. The plan will also require the construction of five new bridges, the replacement of 17 bridges, and the modification of eight existing bridges.

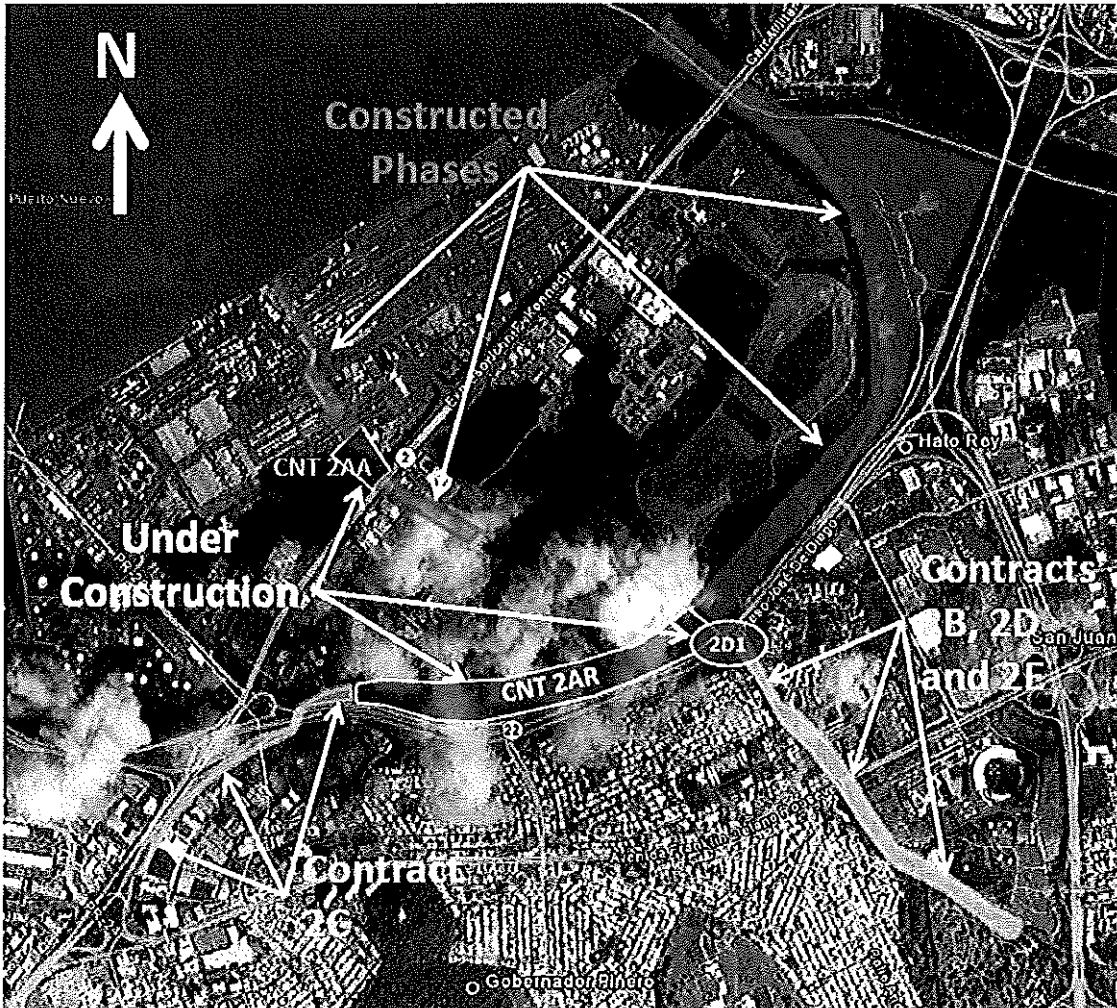


FIGURE 1 PROJECT LOCATION MAP

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Figure 1 above describes the current project. The blue shaded area indicates the areas constructed to date. Areas in red indicate those features currently under construction. Areas in yellow represent the project phases which are covered under this review plan with anticipated PED activities to occur in the next 5 to 10 years, namely, Contracts 2C, 2B, 2D, and 2E. These contracts consist of below ground channel improvement and bridge retrofits.

1. **Rio Puerto Nuevo Contracts that have been completed to date include:**
 - a. **Contract 1:** Construction included 1.3 miles of channel beginning in the San Juan Harbor and ending about ½ mile downstream of the De Diego Expressway Bridge over Rio Piedras at a cost of \$46.0 million.
 - b. **Contract 1A:** Construction included seismic retrofit for the Kennedy Avenue Bridge at a cost of \$3.7 Million. The contract was modified to include installation of a 36-inch waterline as a betterment at a cost of \$6.8 million.
 - c. **Contract 2A:** Main features of this contract included construction of a steel pipe pile wall, a steel sheet pile wall at the Margarita confluence, relocation of the San Jose Sewer Siphon and 36-inch waterline and channel dredging at a cost of \$27 million. The contract was terminated for convenience to the government.
 - d. **Contract 2AA – Box Culvert:** Construction included a secant pile wall box culvert, Option B, which was the last 300 feet of the culvert near the port facilities bulkhead and the open channel work north of Kennedy Avenue at a cost of \$84 million.

2. **Rio Puerto Nuevo Contracts currently under construction include:**
 - a. **Contract 2AR:** Construction includes remaining work that was not completed as part of Contract 2A. This contract includes demolition of the existing confluence wall, construction of a new confluence wall and revetment, grade control structures and dredging and excavation.
 - b. **Contract 2AA- Bechara Middle Section:** Construction includes an approximately 720 foot earth channel between the existing box culvert and Kennedy Avenue Bridge and includes deep soil mixing and relocation of the existing 90-inch diameter sanitary sewer line.
 - c. **Contract 2D1:** Construction includes modifications to De Diego Expressway Bridge.

3. **Remaining Rio Puerto Nuevo Contracts include:**

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- a. **Contract 2C - Upper Margarita Channel** (estimated construction in 2013/2014):
The scope for this phase of the project includes the construction of the authorized Margarita Channel template from approximately STA 47+00 to STA 89+60. There will be some overlap downstream of STA 47+00 to tie-into the end of Contract 2AR. Structural features will include the Margarita stilling basin and wingwalls, Margarita concrete U-framed channel (STA 51+65 to STA 89+60) and relocation of an existing 36" diameter sewer line and electrical lines. Contract 2C will be divided into three separate construction contracts: 1) Upper Margarita Channel - STA 46+00 to STA 56+00, 2) Upper Margarita Channel - Sewer Line Relocation at STA 66+29, and 3) Upper Margarita Channel - STA 56+00 to STA 89+60.

Decision on Type II IEPR: In consideration of the factors described in paragraph 8, RISK INFORMED DECISIONS, as they relate to Type II IEPR, it is the determination of the SAJ Chief, Engineering Division that a Type II IEPR for Contract 2C is not required based on the following information:

- (1) Does failure of the project pose a significant threat to human life?

Contract 2C involves the design and construction of below ground channel improvements. All construction will be to increase the cross section of the channel. The channel cross section will transition from a trapezoidal area in the downstream portion to U-shaped concrete lined channel in the upper reaches. Failure of the project does not pose a significant threat to human life in that the constructed channel template is below existing grade, project channel widening downstream has already been constructed, and continued construction of project features expand the current level of flood protection.

- (2) Does the project involve the use of innovative materials or techniques?

Construction of this contract will utilize standard methods and procedures used by the Corps of Engineers on other similar work.

- (3) Does the project design require redundancy, resiliency, or robustness?

The project design does not require the addition of redundant project features. Resiliency or robustness incorporated into design features are a function of normal civil works design criteria and are not in excess of customary practice.

- (4) Does the project have a unique construction sequencing or a reduced or overlapping design construction schedule?

The design is not innovative and is not using design or construction techniques that are precedent setting; nor is the project using unique construction scheduling or Early Contractor Involvement (ECI) delivery systems. Diversion and care of water during construction of U-framed channel portions in the upper reaches will be managed to prevent flooding upstream due to constricted channel construction

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activities. Channel construction will be accomplished in 250'-300' reaches with channel deepening/excavation accomplished first. A removable and divertable cofferdam will be placed at the upstream of each reach. Construction of the U-frame channel sections will progress along one side of the centerline while daily flows are bypassed through a 36" diameter pipe on the other side. This process will be reversed to construct the remaining half. In the event of large storm events, the contractor will be required to remove the upstream cofferdam to maintain full existing conveyance and avoid upstream flooding. Trapezoidal sections in the downstream reaches have sufficient real estate to allow diversion of water to occur through the historic stream bed during channel construction.

- b. **Contract 2B - Roosevelt Avenue Bridge** (estimated construction in 2014/2015): Construction includes bridge replacement with a 4-lane permanent bridge utilizing a 3-lane temporary bridge and channel work. The estimate time for construction is four years to accomplish since it will require a temporary bridge and management of relocated traffic in Metropolitan San Juan.

Decision on Type II IEPR: In consideration of the factors described in paragraph 8, RISK INFORMED DECISIONS, as they relate to Type II IEPR, it is the determination of the SAJ Chief, Engineering Division that a Type II IEPR for Contract 2B is not required based on the following information:

- (1) Does failure of the project pose a significant threat to human life?

Contract 2B involves the design and construction of a 4 lane bridge. The bridge replacement is required to span the larger cross section of the channel. The channel cross section will go from a trapezoidal to U-shaped concrete lined channel. Failure of this project is remote and therefore would not pose a significant threat to human life.

- (2) Does the project involve the use of innovative materials or techniques?

This project will utilize standard methods and procedures used by the Puerto Rico Department of Transportation and Corps of Engineers on other similar work.

- (3) Does the project design require redundancy, resiliency, or robustness?

The project design does not require the addition of redundant project features other than the construction of a temporary 3-lane bridge. Resiliency or robustness incorporated into design features are a function of normal infrastructure design criteria and are not in excess of standards utilized by the Puerto Rico Department of Transportation.

- (4) Does the project have unique construction sequencing or a reduced or overlapping design construction schedule?

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The design is not innovative and is not using design or construction techniques that are precedent setting; nor is the project using unique construction scheduling or Early Contractor Involvement (ECI) delivery systems.

- c. **Contract 2D - Lower Puerto Nuevo Channel Walls** (estimated construction in 2015/2016): The scope of this contract calls for the construction of channel walls from Station 88+33 to Station 147+40 and excavation of the main channel. Other features include the tie-in channel at Josefina Confluence.

Decision on Type II IEPR: In consideration of the factors described in paragraph 8, RISK INFORMED DECISIONS, as they relate to Type II IEPR, it is the determination of the SAJ Chief, Engineering Division that a Type II IEPR for Contract 2D is not required based on the following information:

- (1) Does failure of the project pose a significant threat to human life?

Contract 2D involves the design and construction of below ground channel improvements. All construction will be to increase the cross section of the channel. The channel cross section will transition from a trapezoidal area in the downstream portion to U-shaped concrete lined channel. This phase involves excavation of the channel to the design template and construction of the concrete side walls. Failure of the project does not pose a significant threat to human life in that the constructed channel template is below existing grade, project channel widening downstream has already been constructed, and continued construction of project features expand the current level of flood protection.

- (2) Does the project involve the use of innovative materials or techniques?

Construction of this contract will utilize standard methods and procedures used by the Corps of Engineers on other similar work.

- (3) Does the project design require redundancy, resiliency, or robustness?

The project design does not require the addition of redundant project features. Resiliency or robustness incorporated into design features are a function of normal civil works design criteria and are not in excess of customary practice.

- (4) Does the project have unique construction sequencing or a reduced or overlapping design construction schedule?

The design is not innovative and is not using design or construction techniques that are precedent setting; nor is the project using unique construction scheduling or Early Contractor Involvement (ECI) delivery systems. Diversion and care of water during construction of U-framed channel portions in the upper reaches will be managed to prevent flooding upstream due to constricted channel construction activities. Channel construction will be accomplished in 250'-300' reaches with

Review Plan for Rio Puerto Nuevo Implementation Documents

channel deepening/excavation accomplished first. A removable and divertable cofferdam will be placed at the upstream of each reach. Construction of the U-frame channel sections will progress along one side of the centerline while daily flows are bypassed through a 36" diameter pipe on the other side. This process will be reversed to construct the remaining half. In the event of large storm events, the contractor will be required to remove the upstream cofferdam to maintain full existing conveyance and avoid upstream flooding.

- d. **Contract 2E - Lower Puerto Nuevo Channel Bottom Protection (estimated construction in 2016/2017):** The scope for this contract calls for installation of the grouted concrete panel system on the bottom of the main channel from Station 88+33 to Station 147+40 previously constructed under Contract 2D.

Decision on Type II IEPR: In consideration of the factors described in paragraph 8, RISK INFORMED DECISIONS, as they relate to Type II IEPR, it is the determination of the SAI Chief, Engineering Division that a Type II IEPR for Contract 2E is not required based on the following information:

- (1) Does failure of the project pose a significant threat to human life?

Contract 2E involves the design and construction of below ground channel improvements. All construction will be to increase the cross section of the channel. The channel cross section will transition from a trapezoidal area in the downstream portion to U-shaped concrete lined channel. This phase involves the installation of the grouted concrete panel system on the bottom of the main channel previously constructed under Contract 2D. Failure of the project does not pose a significant threat to human life in that the constructed channel template is below existing grade, project channel widening downstream has already been constructed, and continued construction of project features expand the current level of flood protection.

- (2) Does the project involve the use of innovative materials or techniques?

Construction of this contract will utilize standard methods and procedures used by the Corps of Engineers on other similar work.

- (3) Does the project design require redundancy, resiliency, or robustness?

The project design does not require the addition of redundant project features. Resiliency or robustness incorporated into design features are a function of normal civil works design criteria and are not in excess of customary practice.

- (4) Does the project have unique construction sequencing or a reduced or overlapping design construction schedule?

**Review Plan for Rio Puerto Nuevo
Implementation Documents**

The design is not innovative and is not using design or construction techniques that are precedent setting; nor is the project using unique construction scheduling or Early Contractor Involvement (ECI) delivery systems.

- b) **Current Total Project Cost.** \$599,000,000. The project delivery team has initiated preparation of a Post Authorization Change (PAC) report. This PAC will be prepared during FY-13 and will evaluate projects efforts upstream. If the PAC is approved, the project scope may increase and the Review Plan will be expanded to include those design and construction efforts.
- c) **Required ATR Team Expertise.** ATR team and required expertise;

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with experience in flood risk management projects and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. ATR Team Leader may be a co-duty to one of the review disciplines. A minimum of 10 years of related project design/construction experience is desired.
Hydraulic Engineering	The team reviewer should be a registered professional with experience in earth and concrete channel design and flood wall design to support the development of the Plans and Specifications. A minimum of 5 years of related project design/construction experience is desired.
Geotechnical Engineering	The team reviewer should be a registered professional with experience in design and analysis of concrete flood walls and channels, sheet pile retaining structures, bridge foundations, revetments to support the development of the Plans and Specifications. A minimum of 5 years of related project design/construction experience is desired.
Structural Engineering	The team reviewer should be a registered professional with experience in concrete U-framed channels and walls, sheet pile type structures and bridge construction/modifications. A minimum of 5 years of related project design/construction experience is desired.
Civil Engineering	The team reviewer should be a registered professional engineer with experience in civil/site work experience that includes earthwork operations, site drainage, embankments and utilities relocations. A minimum of 5 years of related project design/construction experience is desired.
Cost Engineering	The team reviewer should be a senior level Cost Engineer with experience in projects relating to earthwork operations, embankments, concrete channels and walls, sheet pile structures and bridge construction. A minimum of 5 years of related project design/construction experience is desired.

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A-2. REVIEW SCHEDULES AND COSTS

The schedule and estimated costs below is for Contract 2C which anticipates an FY-13 award. The ATR for Contract 2B will be in FY-2014, Contract 2D will be in CY-2016, and contract 2E will be in CY-2018. Schedules and estimated costs for performing ATR review for Contracts 2B, 2D, and 2E will developed at a later date when better schedule details become available and will be incorporated into this review plan by revision.

a. ATR Schedule Contract 2C.

Review Milestone	Review Products	Date Planned
100% ATR review	Upper Margarita Channel - P&S/DDR	March 22 – April 15, 2013
100% backcheck	Upper Margarita Channel - P&S/DDR	April 23 - April 29, 2013
ATR Certification	Upper Margarita Channel - P&S/DDR	May 16, 2013

b. ATR COSTS- Labor/Expenses Contract 2C.

Review Milestone	# Reviewers/hours	Approximate cost/hr	Totals
100% ATR review	5/20	\$110	\$11,000
100% backcheck	5/5	\$110	\$2750
ATR Certification	8/10	\$120	\$9600
Total ATR costs			\$23,350

c. Engineering Models. During the GDM and the FDM phases, numerous numerical models were used which include HEC-2, HEC-RAS, and HEC-6. There was also a physical model constructed at U.S. Army Engineer Research and Development Center (ERDC) (former Waterways Experiment Station). These models will be the basis of the project phases covered under this contract. No additional engineering models are anticipated to be used in the development of the implementation documents or other work products.

A-3. REVIEW PLAN POINTS OF CONTACT

The Review Management Organization for ATR will be SAD unless noted otherwise.

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

Contact	Role	Title	Office/District/Division	Phone
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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A-6. REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number	Date Approved
Original			
Revision 1			

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ATTACHMENT 2

B-1. ACRONYMS AND ABBREVIATIONS

<u>Acronyms</u>	<u>Defined</u>
ATR	Agency Technical Review
CAP	Continuing Authorities Program
DCW	Director of Civil Works
DQC	District Quality Control
EC	Engineering Circular
ECI	Early Contractor Involvement
EIS	Environmental Impact Statement
ER	Engineering Regulation
FAQ's	Frequently Asked Questions
HQUSACE	Headquarters, U.S. Army Corps of Engineers
IEPR	Independent External Peer Review
SAD	South Atlantic Division
MSC	Major Subordinate Command
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PMP	Project Management Plan
QA	Quality Assurance
QCP	Quality Control Plan
QMS	Quality Management System
RIT	Regional Integration Team
RMC	Risk Management Center
RMO	Review Management Organization
RP	Review Plan
SES	Senior Executive Service
SAR	Safety Assurance Review (also referred as Type II IEPR)