

MAY 2020

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# **DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**

## **RÍO ANTÓN RUÍZ, PUERTO RICO CONTINUING AUTHORITIES PROGRAM (CAP) SECTION 1135 PROJECT**



US Army Corps of Engineers  
JACKSONVILLE DISTRICT

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US Army Corps of Engineers  
JACKSONVILLE DISTRICT

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## FINDING OF NO SIGNIFICANT IMPACT

### RÍO ANTÓN RUÍZ, PUERTO RICO CONTINUING AUTHORITIES PROGRAM (CAP) SECTION 1135 PROJECT DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

The U.S. Army Corps of Engineers, Jacksonville District (Corps), has conducted a supplemental environmental assessment (EA) in accordance with the National Environmental Policy Act of 1969, as amended, (NEPA) in order to evaluate changed construction methodologies. The Corps previously assessed the effects of the 2018 Recommended Plan in the Final Integrated Feasibility Report and Environmental Assessment (IFR/EA) for the Río Antón Ruíz Continuing Authorities Program (CAP) Section 1135 project in Puerto Rico. A Finding of No Significant Impact (FONSI) was signed on February 9, 2018, and the IFR/EA was approved by South Atlantic Division, U.S. Army Corps of Engineers on May 25, 2018. The 2018 final recommendation is contained in the IFR/EA and is incorporated herein by reference. Based on changed site conditions, the 2018 Recommended Plan has been updated to develop the 2020 Recommended Plan, which consists of the following:

- Installation of two sheetpile notched concrete cap weirs at the location of the temporary salt water intrusion measure (SWIM) structures. Weir #1 will be approximately 180 linear feet. Weir #2 will be approximately 140 linear feet.
- Both weirs will have a notch that is 3 feet deep by 15 feet wide with a 2 feet by 1 foot concrete cap to allow for continued vessel and fauna transit.
- Placement of riprap at the weirs starting from the location of the weir wall and extending approximately 25 feet downstream to protect from potential scouring.
- Use of a vibration or impact hammer to drive the sheetpile from the streambanks and/or temporary work platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz.
- Permanent filling of scour holes adjacent to the weir in the diversion canal.

In addition to the “no action” alternative, the 2018 Recommended Plan was evaluated against the updated 2020 Recommended Plan. While other smaller scale alternatives are economically justified, the 2020 Recommended Plan best protects the entire Humacao Natural Reserve (HNR) system from salt water intrusion as a result of the diversion canal, which is the objective of the study. The 2020 Recommended Plan meets all of the project objectives and is the environmentally preferable alternative. Failure to protect the *Pterocarpus officinalis* forest and lagoon system could lead to

impacts to the essential habitat for federally and locally listed species. There is not a locally preferred plan.

All practicable means to avoid and minimize adverse environmental effects have been incorporated into the 2020 Recommended Plan. Environmental commitments as detailed in the IFR/EA will be implemented to minimize impacts.

The Puerto Rico Planning Board concluded that the 2018 Recommended Plan was consistent with the Puerto Rico Coastal Management Program and its associated statutes by letter dated July 6, 2017. The Corps has determined that the 2020 Recommended Plan is consistent to the maximum extent practicable with the enforceable policies of Puerto Rico's approved Coastal Zone Management Program. The Corps will coordinate the 2020 Recommended Plan with Puerto Rico prior to construction and if applicable, will comply with conditions imposed to the maximum extent practicable. The Corps does not anticipate the coordination to materially affect the decision on the preferred alternative.

The proposed inclusion of the permanent scour hole fill and the temporary work platforms and associated fill requires a water quality certificate (WQC) and updated 404(B)(1) Guidelines Evaluation, which is included in this EA's Appendix B. An application pursuant to section 401 of the Clean Water Act was submitted to the Puerto Rico Department of Natural and Environmental Resources (DNER) on January 24, 2020. DNER provided the Corps with a Request for Additional Information (RAI) on February 3, 2020, and the Corps submitted a response to DNER on February 6, 2020. The WQC will be obtained from the Commonwealth of Puerto Rico prior to construction. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

Pursuant to Section 7 of the Endangered Species Act of 1973, as amended, the Corps' consulted with U.S. Fish and Wildlife Services (USFWS) and National Marine Fisheries Service (NMFS) for the 2018 Recommended Plan's potential effects to federally listed species. In a letter dated April 17, 2017, USFWS concurred with the Corps' determination that the Recommended Plan "may affect, but is not likely to adversely affect" listed species under USFWS jurisdiction, provided that the standard conditions for the Antillean manatee and Puerto Rican Boa are incorporated into the project. In a letter dated August 22, 2017, the National Marine Fisheries Service (NMFS) concurred with the Corps' determination that the Recommended Plan is not likely to adversely affect listed species and/or designated critical habitat under NMFS jurisdiction. The Corps has determined that the 2020 Recommended Plan would not result in new effects that were not previously considered and therefore the previous effects determinations are still valid.

Pursuant to the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act, EFH consultation with NMFS was initiated concurrently with the public release of the draft NEPA document. NMFS concurred with the Corps' determination that the proposed action would not have a significant adverse

impact on EFH or federally managed fisheries along the west coast of Puerto Rico by letter dated August 4, 2017. The Corps has determined that the 2020 Recommended Plan would not result in any new effects to the EFH that were not previously considered and therefore additional consultation is not required.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, the Recommended Plan has been coordinated with the Puerto Rico State Historic Preservation Officer (SHPO) via letter dated December 9, 2019 and consideration given under the NEPA. In consultation with SHPO, the Corps determined there will be no adverse effects to historic properties through use of an archaeological monitor.

The Corps will release the proposed FONSI, draft supplemental EA, and associated appendices for a 30-day public and agency review. A copy of the comments received, as well as a summary matrix of the comments and Corps' responses, will be included in Appendix A of the final NEPA document.

Technical, environmental, economic, and cost-effectiveness criteria used in the formulation of alternative plans were those specified in the Water Resource Council's 1983 Economic and Environmental Principles for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in the evaluation of the alternatives.

Based on these reports, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not significantly affect the human environment; therefore, preparation of an Environmental Impact Statement is not required.

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Date

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Andrew D. Kelly, Jr.  
Colonel, Corps of Engineers  
District Commander

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# DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

## RÍO ANTÓN RUÍZ, PUERTO RICO CONTINUING AUTHORITIES PROGRAM (CAP) SECTION 1135 PROJECT

### 1 PROJECT PURPOSE AND NEED

#### 1.1 PROJECT DESCRIPTION

At the request of the Department of Natural and Environmental Resources (DNER), the U.S. Army Corps of Engineers (Corps) conducted a study to consider implementation of ecosystem restoration efforts within Humacao Natural Reserve (HNR) to protect the HNR system from salt water intrusion caused by the construction of the diversion canal. An integrated Feasibility Report and Environmental Assessment (IFR/EA) was prepared and a Finding of No Significant Impact (FONSI) was signed by the District Engineer on February 9, 2018. Subsequently, the IFR/EA was approved by South Atlantic Division, U.S. Army Corps of Engineers on May 25, 2018.

Río Antón Ruíz is located in the Municipality of Humacao on the southeast coast of Puerto Rico. The project area, a total of 1,046 acres, includes a lagoon system and a Pterocarpus forest in the HNR. Six lagoons encompassing approximately 615 acres (249 hectares) compose the system: Mandri 1, 2, and 3; Santa Teresa 1 and 2; and Palmas (see **Figures 1** and **2**). The HNR lagoon system, one of the largest remaining forested freshwater swamps in Puerto Rico, is dominated by approximately 371 acres of protected Pterocarpus trees.



**Figure 1. Project vicinity.**

SOURCE: Corps 2018



**Figure 2. Map of project location.**

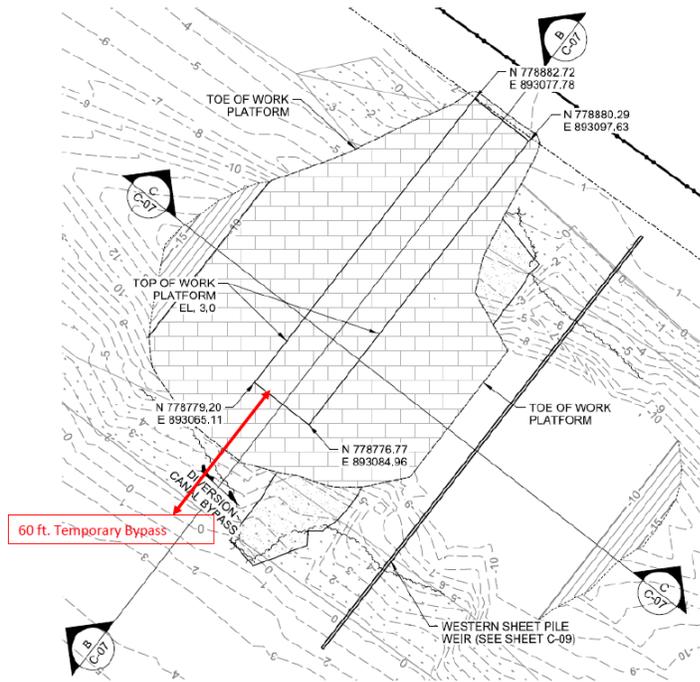
SOURCE: Corps 2018

The 2020 Recommended Plan (see **Figures 3** through **6**) includes the installation of two sheetpile notched concrete cap weirs at the location of the temporary salt water intrusion measure (SWIM) structures. Both weirs will have a notch that is 3 feet deep by 15 feet wide with a 2 feet by 1 foot concrete cap to allow for continued vessel and fauna transit. Scour holes adjacent to the weir in the diversion canal will be filled in. It is anticipated that the sheetpile will be driven using a vibration or impact hammer from the streambanks and/or a temporary platform, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. However, the Contractor may prefer a different method of sheetpile installation and/or temporary access across the channels. The use of equipment and/or methods not covered by the project's National Environmental Policy Act (NEPA) documents and/or required authorizations (e.g. water quality certification) may require reinitiation of consultation with regulating agencies and/or additional coordination. Final details for best management practices (BMPs) and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

The project was initially planned using vinyl sheetpile; however, following the earthquakes that started in December 2019, an updated earthquake analysis determined that vinyl sheetpile is no longer an acceptable option. Metal sheetpile is the accepted material, and its installation can only be conducted at a 90 degree-angle, which requires the

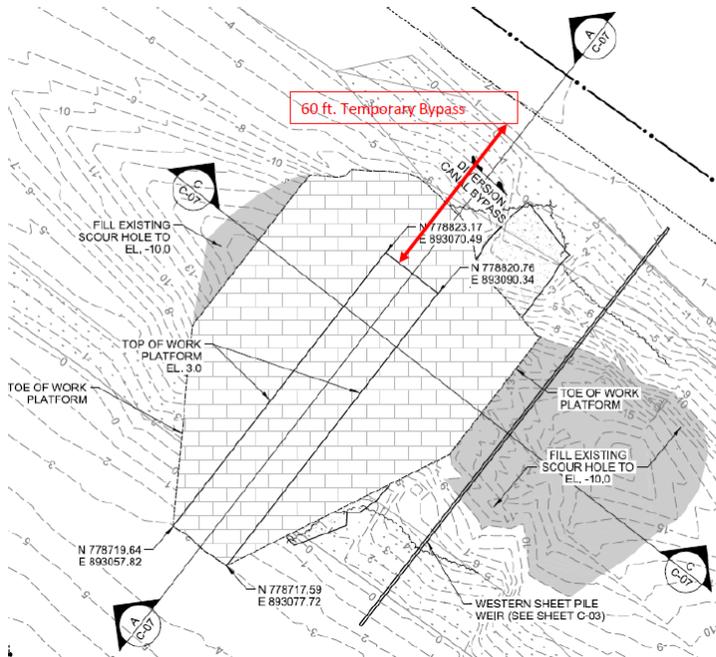
construction to occur within the diversion canal and Río Antón Ruíz. It is assumed that in order to facilitate the installation of the sheetpile weirs, the contractor will need to use temporary platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz.

This draft supplemental Environmental Assessment (EA) evaluates only those effects resulting from the inclusion of the permanent scour hole fill and the construction and use of temporary work platforms and associated fill. All other discussions and conclusions contained in the 2018 IFR/EA are hereby incorporated by reference into this document. This draft supplemental EA will complete the required analysis under the NEPA to account for the updated construction methodology and associated temporary impacts.



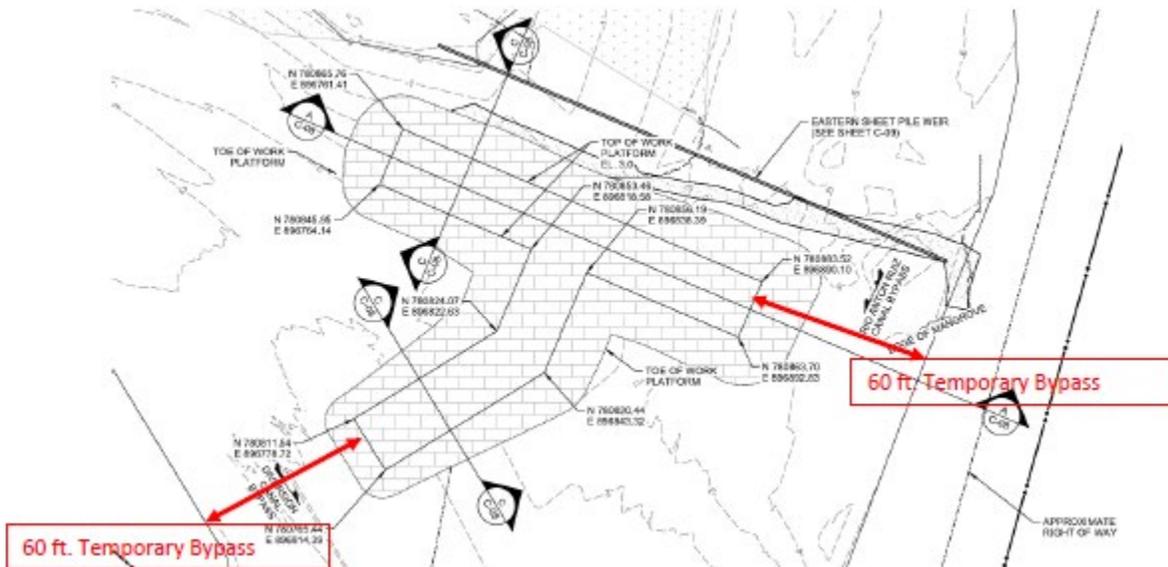
**Figure 3. 2020 Recommended Plan (Western Conceptual Temporary Work Platform)**

*The above drawings are provided for a reference of a reasonably foreseeable method that could work; however, the method used by the contractor may not be what is detailed here.*



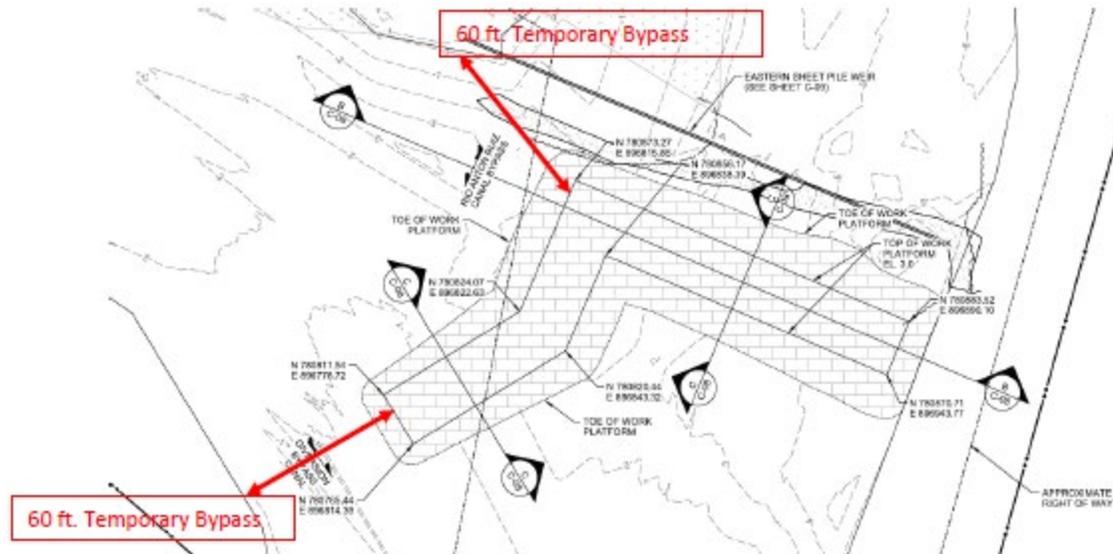
**Figure 4. 2020 Recommended Plan (Western Conceptual Temporary Work Platform)**

*The above drawings are provided for a reference of a reasonably foreseeable method that could work; however, the method used by the contractor may not be what is detailed here.*



**Figure 5. 2020 Recommended Plan (Eastern Conceptual Temporary Work Platform)**

*The above drawings are provided for a reference of a reasonably foreseeable method that could work; however, the method used by the contractor may not be what is detailed here.*



**Figure 6. 2020 Recommended Plan (Eastern Conceptual Temporary Work Platform)**  
*The above drawings are provided for a reference of a reasonably foreseeable method that could work; however, the method used by the contractor may not be what is detailed here.*

## 1.2 PROJECT AUTHORITY

Authority and funds for this report were provided by Section 1135 of the Water Resources Development Act of 1986, as amended – Project Modifications for Improvement of the Environment. Section 1135 projects are part of a larger Continuing Authorities Program (CAP) under which the Secretary of the Army, acting through the Chief of Engineers, is authorized to plan, design, and implement certain types of water resources projects without additional project-specific authorization. Section 1135 authority allows the Corps to carry out projects for improving the quality of the environment when it is determined that such modifications are feasible and consistent with the authorized project purpose and will improve the quality of the environment in the public interest. Section 1135 authority is designed to address environmental degradation associated with an existing Corps project.

## 1.3 PROJECT NEED OR OPPORTUNITY

The purpose of the project is to provide a permanent solution to reduce the saltwater intrusion into the HNR system. In a letter dated May 26, 2004, DNER notified the Corps that following completion of the 205 flood control project in 2001, salinity levels in the HNR lagoon system and Pterocarpus forest have substantially increased, up to 35 ppt. In 2007, DNER developed and constructed a series of temporary SWIMs in order to preserve the HNR ecosystem. The project is now needed to provide a permanent solution to continue to restore and preserve the Pterocarpus forest and the biodiversity of the freshwater fauna and flora within the HNR in Humacao, Puerto Rico. Although the temporary plugs were initially successful, salinity levels increased at most of the stations by the beginning of 2009 due to the deterioration of the sandbags/plugs over time. Therefore, the plugs have lost their effectiveness and allow saltwater intrusion into the HNR system. It should be noted that the plug deterioration was expected as the plugs were intended only as a temporary measure to lower the salinity levels while data was

gathered to determine if the construction of permanent tidal exchange measures would be warranted.

#### **1.4 RELATED ENVIRONMENTAL DOCUMENTS**

The Final IFR/EA for the Río Antón Ruíz, Puerto Rico CAP Section 1135 Project can be found at the following link (click on Puerto Rico, scroll down to the project):

<http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/>

All discussions and conclusions contained in the 2018 IFR/EA are hereby incorporated by reference into this document.

#### **1.5 DECISIONS TO BE MADE**

This draft supplemental EA specifically considers potential effects from the inclusion of the permanent scour hole fill (located adjacent to the weir in the diversion canal) and the temporary use and construction of the work platforms which would require fill within the diversion canal and Río Antón Ruíz. This proposed work is reasonably foreseeable due to changed materials and methods as a result of updated engineering analysis conducted at the beginning of the project's design and implementation (DI) phase and following the series of earthquakes that have impacted Puerto Rico in 2019 and 2020, after the completion of the Final IFR/EA.

The only decision to be made by this draft supplemental EA is whether the inclusion of the permanent scour hole fill and the use and construction of the temporary work platforms and associated fill in the diversion canal and Río Antón Ruíz will result in significant effects on the human environment. The need for mitigation measures or BMPs to reduce any potentially adverse effects, particularly in regards to Endangered Species Act (ESA) listed species, will be determined based upon the analysis contained within this EA. The Corps will make the decision to sign the FONSI and move forward with the Recommended Plan if no significant impacts on the human environment are identified. If significant impacts are identified, the Corps will choose to implement mitigation measures to reduce the impacts to a lower-than-significant threshold, proceed with the Notice of Intent to prepare an Environmental Impact Statement, or not implement the Recommended Plan.

#### **1.6 SCOPING AND ISSUES**

##### **1.6.1 ISSUES ELIMINATED FROM FURTHER ANALYSIS**

The following issues were adequately addressed in the 2018 IFR/EA and are eliminated from further analysis in this draft supplemental EA: (1) general setting; (2) physical environmental (i.e. hydrology, sea level, climate); (3) natural environmental (i.e. air quality, noise, aesthetics, and recreation resources); and (4) socioeconomic environment (i.e. local economy and demographics, land use).

##### **1.7.2. ISSUES FURTHER ADDRESSED**

Pursuant to NEPA and with regard to environmental requirements, the Corps is providing an update on the project's compliance with the ESA, Magnuson-Stevens Fishery Conservation and Management Act of 1976, Clean Water Act of 1972 (CWA) (Section 401 and Section 404(B)1), and Coastal Zone Management Act of 1972 (CZMA). Additionally, the Corps will address fish and wildlife resources (other than threatened and endangered (T&E) species), cultural resources, irreversible and irretrievable commitment of resources, and cumulative impacts within this draft supplemental EA.

### **1.7 WATER QUALITY CERTIFICATION AND COASTAL ZONE MANAGEMENT ACT (CZMA) FEDERAL CONSISTENCY DETERMINATION (FCD) CONCURRENCE**

The Puerto Rico Planning Board concluded that the 2018 Recommended Plan was consistent with the Puerto Rico Coastal Management Program and its associated statutes, 16 U.S.C. §1456, by letter dated July 6, 2017. The Corps has determined that the 2020 Recommended Plan is consistent to the maximum extent practicable with the enforceable policies of Puerto Rico's approved Coastal Zone Management Program. The Corps will coordinate the 2020 Recommended Plan with Puerto Rico prior to construction and if applicable, will comply with conditions imposed to the maximum extent practicable. The Corps does not anticipate the coordination to materially affect the decision on the preferred alternative.

The inclusion of the permanent scour hole fill and construction and use of temporary work platforms and associated fill will also require a water quality certificate (WQC) and updated 404(B)(1) Guidelines Evaluation. An updated 404(B)(1) Guidelines Evaluation is included in Appendix B. An application for water quality certification pursuant to section 401 of the CWA, 33 U.S.C. § 1341, was submitted to the Puerto Rico DNER on January 24, 2020. DNER provided the Corps with a Request for Additional Information (RAI) on February 3, 2020, and the Corps submitted a response to DNER on February 6, 2020. The WQC will be obtained from the Commonwealth of Puerto Rico prior to construction. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

### **1.8 PUBLIC INTEREST FACTORS**

While the Corps does not process and issue permits for its own activities, pursuant to 33 C.F.R. §336.1, the Corps meets all applicable substantive legal requirements, including public notice, and opportunity for public hearing where its activities result in regulated discharges. As part of its review, the Corps evaluates potential effects, including cumulative effects, of the proposed activity and its intended use and/or effect on public interest. All factors which may be relevant to the proposal must be considered including the cumulative effects thereof. These factors may include:

- General Environmental Concerns;
- Conservation;
- Wetlands;
- Fish and Wildlife Values;
- Water Quality;
- Historic Properties;

- Economics;
- Aesthetics;
- Recreation;
- Energy Needs;
- Mineral Needs;
- Consideration of Property Ownership;
- Safety;
- Needs and Welfare of the People.

The following factors were considered, but were determined to be not applicable to this project:

- Flood Hazards;
- Flood Plain Values;
- Food and Fiber Production.
- Land Use;
- Navigation;
- Shore Erosion and Accretion;
- Water Supply and Conservation;

Section 2 of the 2018 IFR/EA describes the existing conditions. Section 5 of the 2018 IFR/EA and Section 4 of this 2020 EA describes potential effects to these factors from the implementation of the proposed project. The Corps determined that 2020 Recommended Plan will not result in significantly different effects to the human environment. The proposed action will result in short term adverse effects to fish and wildlife, water quality, aesthetics, safety, and energy and mineral needs. These short term adverse effects will cease with the completion of construction. Long-term beneficial effects associated with the action are expected to general environmental conditions, wetlands, and fish and wildlife. These long term benefits would be expected to remain for years following construction.

Based on the analysis provided in the 2018 IFR/EA and this 2020 EA, the Corps concludes that the proposed activity is in the public interest.

## 2 ALTERNATIVES

The alternative formulation process for the Río Antón Ruíz CAP 1135 project, as well as its potential effects, were described within the 2018 IFR/EA. In summary, the 2018 IFR/EA stated that the final array of alternatives considered for implementation were evaluated for their success in meeting the Planning Objectives, including Purpose and Need, and the Planning Constraints, including technical and environmental feasibility, environmental acceptability, and habitat analysis. The evaluation criteria were then considered in screening the alternatives according to their overall acceptability. As stipulated under the CAP 1135 Authority, Cost-effectiveness/Incremental Cost Analysis (CE/ICA) should focus on alternative solution.

The following alternative plans and combinations were evaluated in the 2018 IFR/EA:

- No Action.
- Alternative 1 (Recommended Plan): Construct two sheetpile notched concrete cap weirs at the locations of the current temporary SWIM structures.
- Alternative 1A: Construct one sheetpile notched concrete cap weir at the current location of the temporary SWIM structure at the Río Antón Ruíz.
- Alternative 1B: Construct one sheetpile notched concrete cap weir at the current location of the temporary SWIM structure at the diversion canal near the lagoon.
- Alternative 2: Construct one sheetpile concrete weir downstream of the confluence of the diversion canal and the Río Antón Ruíz.

The 2018 authorized plan (Alternative 1) provides the best solution to reducing the saltwater intrusion into the HNR system by meeting the project objectives. Additional information can be found in Section 3 of the 2018 IFR/EA.

### 2.1 2020 DRAFT SUPPLEMENTAL EA ALTERNATIVES

As a result of the earthquakes that impacted Puerto Rico since December 2019, the Recommended Plan's accepted materials and method have changed. Metal sheetpile must now be used instead of vinyl. Metal sheetpile must be installed on a 90 degree angle which will require work to be conducted from within the diversion canal and Río Antón Ruíz. It is reasonable to assume that in order to facilitate the installation of the sheetpile weirs, the contractor will need to use temporary platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. However, the Contractor may prefer a different method of sheetpile installation and/or temporary access across the channels. The use of equipment and/or methods not covered by the project's NEPA documents and/or required authorizations (e.g. water quality certification) may require reinitiation of consultation with regulating agencies and/or additional coordination. Final details for BMPs and methods will be determined during the permitting and

contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

The project site remains in need of reduced saltwater intrusion. As a result of these changes, this draft supplemental EA has been prepared to confirm that construction of the authorized plan, with the inclusion of the permanent scour hole fill and the construction and use of the temporary work platforms and associated fill (2020 Recommended Plan), will not result in significant effects on the human environment (See section 4 for discussion of effects).

In addition to the “no action” alternative (A), the 2018 Authorized Plan (B) was evaluated against the updated 2020 Recommended Plan (C). Alternative C accommodates the changed conditions (inclusion of the permanent scour hole fill and the construction and use of the temporary work platforms and associated fill), requiring fill within the diversion canal and the Río Antón Ruíz, but is otherwise unchanged from Alternative B, which meets the objectives of the study. Both Alternatives B and C provide a resilient solution to the continued saltwater intrusion that threatens the HNR system. Additionally, both B and C are economically justified.

#### 2.1.1 NO-ACTION ALTERNATIVE – ALTERNATIVE A

NEPA regulations refer to the No Action Alternative as the continuation of existing conditions of the affected environment without implementation of, or in the absence of, the Recommended Plan. The No Action Alternative provides a benchmark to allow for a comparison of the environmental effects of the proposed action and any reasonable action alternatives.

#### 2.1.2 2018 AUTHORIZED PLAN – ALTERNATIVE B

The 2018 Recommended Plan consists of the following:

- Installation of two sheetpile notched concrete cap weirs at the location of the temporary SWIM structures. Weir #1 will be approximately 180 linear feet. Weir #2 will be approximately 140 linear feet.
- Both weirs will have a notch that is 3 feet deep by 15 feet wide with a 2 feet by 1 foot concrete cap to allow for continued vessel and fauna transit.
- Use of a vibration or impact hammer to drive the sheetpile.

The construction sequence for the project is anticipated to involve the installation of erosion and sediment control features including silt fence along the work perimeters and floating turbidity barriers within the Río Antón Ruíz and diversion canals, upstream and downstream of the structure locations. The structures will be sheetpile driven from the bank of the diversion canal. The sheetpile weirs will have a concrete cap. Depending on the tidal conditions, there may be the need to draw down the water level directly adjacent to the sheetpile in order to construct the concrete cap. Sheetpile or use of other means to create a small dewatering cell and then pumping directly back into the channel should be sufficient if the concrete cap is placed in sections. No diversion of water (diversion channel) is anticipated for the dewatering efforts. Access for the project will be via the

existing project limits, within the berms along the channel and adjacent to the levee. The staging/stockpiling area will also be located within the existing project limits. All construction and maintenance access can use the existing project limits from the original 205 project.

### 2.1.3 2020 RECOMMENDED PLAN – ALTERNATIVE C

Although the Corps does not typically dictate means and methods to the Contractor, it is assumed that the construction of the project will likely need to include the construction and use of temporary work platforms and associated fill in order to facilitate installation of the sheetpile weirs. Additionally, a hydrographic survey conducted during the project's DI phase identified two large scour holes located adjacent to the weir in the diversion canal. Alternative C (2020 Recommended Plan) accommodates the changed conditions by allowing for the inclusion of the permanent scour hole fill and the construction and use of temporary work platforms and associated fill within the diversion canal and the Río Antón Ruíz. Alternative C is otherwise unchanged from Alternative B which meets the objectives of the study to reduce saltwater intrusion into the HNR.

BMPs and methods to manage turbidity during the placement of concrete caps, sheetpile driving, and placement of fill in the scour holes and for the temporary work platforms will ensure minimized and controlled turbidity. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods. Prior to any construction activity turbidity curtains, silt fences, and/or other BMP measures will be installed. A two phase temporary work platform for the installation of the sheetpile is proposed as follows:

#### Western Weir Conceptual Temporary Work Platform:

The Corps assumes that the conceptual temporary work platform would use what is left of the 2007 SWIMs as a base and build up from there. The total footprint of the Western Weir and its temporary work platform could be approximately 0.586 acres. The existing SWIM bags had an 0.045 acre footprint as constructed whereas the total acreage of the temporary work platform measures approximately 0.244 acres (approximately 0.2 acres more than previously impacted). The temporary work platform would be removed from the diversion canal once construction of the weir is complete.

#### Eastern Weir Conceptual Temporary Work Platform:

The Corps assumes that for the construction of the eastern weir in Río Antón Ruíz, a similar two phase temporary work platform was conceptualized. The eastern weir is driven through part of the remaining 2007 SWIMs, which had an estimated 0.05 acre footprint as constructed. The work platform would likely be constructed from the south bank of the diversion canal and Río Antón Ruíz confluence. The total footprint of the Eastern Weir and its temporary work platform could be approximately 0.435 acres. Should the contractor use this method, the temporary work platform would be approximately 0.309 acres (approximately 0.26 acres more than previously impacted). The temporary work platform would be removed from the Río Antón Ruíz once construction of the weir is complete.

## 2.2 ISSUES AND BASIS OF CHOICE

The potential effects of the proposed project as well as the No Action Alternative are thoroughly evaluated within the 2018 IFR/EA and are hereby incorporated by reference (Corps 2018). Therefore, the analysis in this 2020 EA addresses only the effects associated with the inclusion of the permanent scour hole fill and the construction and use of temporary work platforms and associated fill, which were not previously evaluated.

**Table 1** lists the potentially affected factors considered in this EA and provides a brief comparison of the No Action Alternative (Alternative A), the 2018 Recommended Plan (Alternative B), and the 2020 Recommended Plan (Alternative C). Section 4 provides the analysis of the major features and consequences of the No Action Alternative in comparison to Alternative C, which was carried forward for evaluation. The No Action Alternative is carried forward as a basis of comparison for NEPA purposes. It is noted however, that the No Action Alternative would not allow the Corps to continue to meet the objectives of the Section 1135 project.

Implementation of Alternative B is no longer possible due to the changed site conditions. Alternative C will implement BMPs to reduce any potentially adverse effects, particularly in regards to potential turbidity. (See Chapter 4 for the effects of the 2020 Recommended Plan.) The Corps and its contractors commit to avoiding and minimizing adverse effects during construction activities. Environmental commitments, as discussed in Chapter 6, will be included in the contract specifications.

In consideration of applicable factors listed in 33 C.F.R. § 320.4 (as discussed in this EA's section 1.8) and the analysis completed in Section 4 of this EA, the Corps determined Alternative C is not contrary to public interest and would not significantly affect the quality of the human environment; therefore, Alternative C is carried forward as this EA's Recommended Plan. The Recommended Plan is the least cost, environmentally acceptable alternative.

**Table 1. Summary and comparison of the potential environmental consequences associated with the implementation of Alternative A (No Action), Alternative B (2018 Recommended Plan), and Alternative C (2020 Recommended Plan).**

Environmental Factor	Alternative A (No Action)	Alternative B (2018 IFR/EA Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks</i>	Alternative C (2020 Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks and/or temporary work platforms</i>
T&E Species	Continued saltwater intrusion will promote a marine environment within the lagoon system Loss of freshwater systems and species as well as less foraging, nesting, and resting opportunities from the loss of the Pterocarpus forest and Typha marsh could make the lagoon system less enticing for listed species resulting in an adverse impact to the overall biodiversity in the HNR	<p>May affect, but not likely to adversely affect (MANLAA) the following species:</p> <ul style="list-style-type: none"> <li>• Puerto Rican Boa (<i>Epicrates inornatus</i>)</li> <li>• Antillean Manatee (<i>Trichechus manatus</i>)</li> <li>• Loggerhead Sea Turtle (<i>Caretta caretta</i>)</li> <li>• Green Sea Turtle (<i>Chelonia mydas</i>)</li> <li>• Hawksbill Sea Turtle (<i>Eretmochelys imbricata</i>)</li> <li>• Leatherback Sea Turtle (<i>Dermochelys coriacea</i>)</li> <li>• Nassau Grouper (<i>Epinephelus striatus</i>)</li> </ul> <p>No effect to the following species:</p> <ul style="list-style-type: none"> <li>• Scalloped Hammerhead Shark (<i>Sphyrna lewini</i>)</li> <li>• Pillar coral (<i>Dendrogyra cylindrus</i>)</li> <li>• Rough cactus coral (<i>Mycetophyllia ferox</i>)</li> <li>• Lobed star coral (<i>Orbicella annularis</i>)</li> <li>• Mountainous star coral (<i>Orbicella faveolata</i>)</li> <li>• Boulder star coral (<i>Orbicella franksi</i>)</li> <li>• Elkhorn coral (<i>Acropora palmata</i>)</li> <li>• Staghorn coral (<i>Acropora cervicornis</i>)</li> </ul> <p>Turbidity curtains, silt fences, and/or other BMPs (e.g. soft-start ramp up procedures, daytime only work, qualified observers, etc.) would ensure protection of T&amp;E species</p>	Same as Alternative B.

Environmental Factor	Alternative A (No Action)	Alternative B (2018 IFR/EA Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks</i>	Alternative C (2020 Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks and/or temporary work platforms</i>
Fish and Wildlife Habitat	<p>Continued saltwater intrusion will promote a marine environment within the lagoon system</p> <p>Loss of freshwater systems and species as well as less foraging, nesting, and resting opportunities from the loss of the Pterocarpus forest and Typha marsh could make the lagoon system less enticing for listed species resulting in an adverse impact to the overall biodiversity in the HNR</p> <p>Loss of the HNR Pterocarpus forest would reduce the amount of critical nesting habitat available for the West Indian whistling duck.</p>	<p>Minor and short term unavoidable adverse effects to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the temporary fill footprint as a result of burial (expected immediate recolonization of the area from adjacent communities)</p> <p>Insignificant and temporary avoidance and/or displacement impacts to mobile species</p>	Same as Alternative B.

Environmental Factor	Alternative A (No Action)	Alternative B (2018 IFR/EA Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks</i>	Alternative C (2020 Recommended Plan) <i>Two sheetpile weirs constructed from the streambanks and/or temporary work platforms</i>
Essential Fish Habitat (EFH)	With no action taken, the ongoing degradation of viable freshwater benthic habitat would continue. Freshwater fish would likely leave the area to escape and avoid the environmental stress of high salinity and saltwater fish would likely naturally recruit and dominate the lagoon.	Long term benefit to freshwater fish habitat Promote recovery and recruitment of freshwater species Mobile saltwater species will likely leave lower salinity areas Immobile saltwater species will naturally die off allowing for recovery and recruitment of freshwater species Minor and short term unavoidable adverse effects to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the temporary fill footprint as a result of burial (expected immediate recolonization of the area from adjacent communities) Insignificant and temporary avoidance and/or displacement impacts to mobile species	Same as Alternative B.
Water Quality	Salinity in the HNR freshwater systems would continue to increase.	Reduction of salinity levels to 10ppt or less in the lagoon system Improved water quality by filtering suspended solids Minor, temporary turbidity during construction at the project site	Same as Alternative B.
Cultural Resources	No effect.	No adverse effect to cultural resources.	Same as Alternative B.

### **3 EXISTING ENVIRONMENT**

This section summarizes the general existing physical and biological features of the Río Antón Ruíz project area. The reader is encouraged to access the 2018 IFR/EA for additional information on the affected environment.

Site conditions at the Río Antón Ruíz CAP Section 1135 project changed as a result of earthquakes impacting Puerto Rico since December 2019. An updated engineering analysis was conducted following the December 2019 earthquakes, which occurred after the completion of the 2018 IFR/EA. Initial materials selected during the development of the 2018 Recommended Plan included the use of vinyl sheetpile; however, the updated engineering analysis determined that metal sheetpile is the accepted material to use at the project. Installation of metal sheetpile can only be conducted at a 90 degree-angle, which requires the construction to occur within the diversion canal and Río Antón Ruíz. The use of temporary work platforms and associated fill are reasonably foreseeable due to the changed materials and methods.

The SWIMs are deteriorated and the HNR system continues to remain in need of saltwater intrusion reduction measures. Saltwater intrusion continues to promote a marine environment within the lagoon system.

## 4 ENVIRONMENTAL EFFECTS

This section provides the analysis of the anticipated changes to the existing environment (including direct and indirect effects) for the No Action Alternative, Alternative B (2018 Recommended Plan), and Alternative C (2020 Recommended Plan). Cumulative effects are also discussed in **Tables 2** and **3** of this section.

Environmental effects caused by the installation of the sheetpile weirs and potential environmental effects of the No Action Alternative are thoroughly evaluated within the 2018 IFR/EA and are hereby incorporated by reference (Corps 2018). The reader is encouraged to access the 2018 IFR/EA for additional information.

Due to the required changes in materials and methods caused by the recent earthquakes and hydrographic survey results identifying two large scour holes, it is assumed that the construction of the project will likely need to include the permanent scour hole fill and the construction and use of temporary work platforms and associated fill in order to facilitate installation of the sheetpile weirs (2020 Recommended Plan). The inclusion of the temporary work platforms and associated fill has the potential to affect T&E listed species, fish and wildlife (other than T&E species), EFH, and water quality. Therefore, the analysis in this section addresses only the effects associated with the inclusion of the permanent scour hole fill and the construction and use of the temporary work platforms and associated fill, which were not previously evaluated.

### 4.1 SUMMARY OF EFFECTS

The only difference between the 2018 Recommended Plan and the 2020 Recommended Plan is that the project would include the permanent scour hole fill and the construction and use of temporary work platforms and associated fill in order to facilitate installation of the sheetpile weirs. To reduce potential effects to the maximum extent practicable, the Corps will assume the temporary work platforms and associated fill will occur at the same locations as were previously impacted by the construction of the 2007 SWIMs as well the immediate surrounding area (as shown in Figures 3-6 in Section 1.1 of this EA). A summary of the potential maximum in-water acreage effects are provided in Table 2:

**Table 2. Maximum potential in-water acreage affected by construction and temporary work platform activities.**

Location	Maximum Acreage	Construction Activities
West Weir	0.586	Construct temporary work platform (constructed of either soil or geobags full of soil), install sheet pile weir, place riprap, remove temporary work platform.
East Weir	0.435	Construct temporary work platform (constructed of either soil or geobags full of soil), install sheet pile weir, place riprap, remove temporary work platform.

Location	Maximum Acreage	Construction Activities
West Temporary Platform	0.244	Construct temporary work platform (constructed of either soil or geobags full of soil), remove temporary work platform at the completion of the project.
East Temporary Platform	0.309	Construct temporary work platform (constructed of either soil or geobags full of soil), remove temporary work platform at the completion of the project.

#### 4.2 T&E SPECIES

Pursuant to Section 7 of the ESA, the Corps consulted with USFWS and NMFS for potential effects to listed T&E species. The Corps determined the project will not affect any designated critical habitat or the following listed species:

- Scalloped Hammerhead Shark (*Sphyrna lewini*)
- Pillar coral (*Dendrogyra cylindrus*)
- Rough cactus coral (*Mycetophyllia ferox*)
- Lobed star coral (*Orbicella annularis*)
- Mountainous star coral (*Orbicella faveolata*)
- Boulder star coral (*Orbicella franksi*)
- Elkhorn coral (*Acropora palmata*)
- Staghorn coral (*Acropora cervicornis*)

The Corps will include a soft-start ramp up procedure during sheetpile driving as well as the USFWS' 2011 standard in-water conditions for the Antillean manatee and the NMFS' 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions in the project's plans and specifications. Therefore, the Corps determined that by including these protection measures, the project "may affect, but is not likely to adversely affect" the following listed species:

- Puerto Rican Boa (*Epicrates inornatus*)
- Antillean Manatee (*Trichechus manatus*)
- Loggerhead Sea Turtle (*Caretta caretta*)
- Green Sea Turtle (*Chelonia mydas*)
- Hawksbill Sea Turtle (*Eretmochelys imbricata*)
- Leatherback Sea Turtle (*Dermochelys coriacea*)
- Nassau Grouper (*Epinephelus striatus*)

In a letter dated April 17, 2017, USFWS concurred with the Corps' determination that the Recommended Plan "may affect, but is not likely to adversely affect" listed species under USFWS jurisdiction, so long as the standard conditions for the Antillean manatee and Puerto Rican Boa are incorporated into the project. In a letter dated August 22, 2017, NMFS concurred with the Corps' determination that the inclusion of Recommended Plan "may affect, but is not likely to adversely affect" listed species under NMFS jurisdiction.

The project is already incorporating the USFWS' 2011 standard in-water conditions for the Antillean manatee and the NMFS' 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions. The Corps determined inclusion of the permanent scour hole fill, and the temporary work platforms and associated fill will not result in significantly different effects to T&E species previously coordinated with USFWS and NMFS; therefore, no additional coordination is required.

#### **4.3 FISH AND WILDLIFE (OTHER THAN T&E SPECIES)**

Inclusion of the temporary work platforms and associated fill will not result in significantly different effects to fish and other wildlife resources that what was previously coordinated in the 2018 IFR/EA. Alternative C would be expected to result in unavoidable adverse effects to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the permanent and temporary fill footprints as a result of burial; however, the effects are expected to be minor and short term, given the expected immediate recolonization of the area from adjacent communities.

#### **4.4 ESSENTIAL FISH HABITAT**

Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976, the Corps consulted with NMFS during the development of the IFR/EA for potential effects to Essential Fish Habitat (EFH). A final response from NMFS Habitat Conservation Division on the integrated EFH assessment was received on August 4, 2017. NMFS concurred with the Corps' determination that the project will not adversely affect EFH. NMFS did not provide any EFH conservation recommendations.

Inclusion of the permanent scour hole fill and construction and use of the temporary work platforms and associated fill will not result in effects to essential fish habitat that were not previously considered. The temporary work platforms and associated fill will occur in previously impacted areas and will also impact the non-motile benthic community; however, these impacts would cease with the completion of construction and removal of the temporary work platforms. Benthic repopulation within the impacted areas will occur by organisms migrating from adjacent habitat. Impacts from to mobile marine organisms, such as fish, are expected to be insignificant and temporary as these organisms are able to relocate and avoid direct physical effects. The Corps determined inclusion of the permanent scour hole fill and the construction and use of the temporary work platforms and associated fill will not result in significantly different effects to EFH than what was previously coordinated with NMFS; therefore, no additional coordination is required. The EFH assessment included in the 2018 IFR/EA is still valid and incorporated by reference.

#### **4.5 WATER QUALITY**

Temporary, minor turbidity impacts caused by implementation of Alternative C may occur. An application for water quality certification pursuant to section 401 of the CWA, 33 U.S.C. § 1341, was submitted to the Puerto Rico DNER on January 24, 2020. DNER provided the Corps with a Request for Additional Information (RAI) on February 3, 2020, and the Corps submitted a response to DNER on February 6, 2020. An updated copy of the project's 404(B)(1) Guidelines Evaluation is included in Appendix B. All conditions of the

water quality certification will be implemented in order to minimize adverse impacts to water quality. Prior to construction, the WQC will be obtained from the Commonwealth of Puerto Rico, and all turbidity controls (e.g. turbidity curtains, silt fences, and/or other BMPs) would be installed to maintain turbidity compliance within WQC standards.

#### **4.6 CULTURAL RESOURCES**

Prior to the construction of the Section 205 flood control project, the Corps conducted archaeological investigations within the area of potential effect (APE). These efforts identified two archaeological sites (HU-6 and HU-7) within the flood control project footprint and are documented in the Panamerican Consultants, Inc. (PCI) report titled “Cultural Resources Survey and Archaeological Testing of the Río Antón Ruíz Flood Control Study, Humacao, Puerto Rico” (Cinquino 1995). PCI conducted a pedestrian survey with shovel tests and test units. Both HU-6 and HU-7 were recorded as prehistoric artifact scatters requiring additional research. The subsequent data mitigation excavations by New South Associates (NSA) are presented in a report titled “Archaeological Data Recoveries at Site HU-6 and HU-7, Río Antón Ruíz Flood Control Project, Municipio de Humacao, Puerto Rico” (Siegel 2002). No memorandum of agreement was completed at this time, and the Corps made a determination of No Adverse Effect to historic properties on the basis of the excavations.

Based on previous archaeological work and the construction of the flood control project and subsequent installation of the saltwater intrusion devices, the Corps determined the re-use of the same access, staging, and construction areas posed no adverse effects to cultural resources and historic properties. The Corps provided this determination via letter to the Puerto Rico State Historic Preservation Officer (SHPO) on December 9, 2019. On January 23, 2020, SHPO provided concurrence conditioned on the inclusion of an archaeological monitor when constructing the northern weir.

#### **4.7 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS**

Under the No Action Alternative, unabated saltwater intrusion may result in adverse effects to the freshwater environment in the HNR system ultimately converting the freshwater environments to saltwater environments.

Implementation of Alternative B is no longer possible due to the changed site conditions. Therefore, Alternative C is the 2020 Recommended Plan. Alternative C would be expected to result in unavoidable adverse effects to non-motile macrofaunal communities (i.e. worms, clams, etc.) located within the temporary and permanent fill footprint as a result of burial; however, the effects are expected to be minor and short term, given the expected immediate recolonization of the area from adjacent communities.

##### Natural or Depletable Resources:

The No Action Alternative would negatively affect the HNR system through unabated saltwater intrusion and implementation of Alternative B or C include direct and indirect effects. The use of fuel (petroleum depletion) would be required for construction and operations. These effects are considered to be minor as petroleum importation and refinement is an active industry on the island.

Energy Requirements and Conservation:

The No Action Alternative would require no energy or energy conservation efforts; however, implementation of Alternative B or C will involve the use of fuel to power heavy machinery used in conjunction with the project’s construction.

**4.8 CUMULATIVE IMPACTS**

Cumulative impacts are defined in 40 C.F.R. §1508.7 as those effects that result from “...the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

Past, present and reasonably foreseeable actions and plans are summarized below in **Table 3**. Section 1.4 of the EA contains more details on environmental reports completed in/around the project’s vicinity. In addition, it is expected that the public, Commonwealth of Puerto Rico, and local governments could have permitted activities in or around the project area. Federal activities are evaluated under NEPA directly for each project. Other projects that take place in-water or would affect wetlands are evaluated under a permit issued by the Corps Regulatory Division.

The Río Antón Ruíz CAP Section 1135 project, when considered with past projects in the area and potential future projects, has no significant cumulative impact on the environmental conditions of the project area. A summary of cumulative impacts on environmental factors from past, present, and reasonably foreseeable actions and plans is provided in **Table 4**.

**Table 3. Past, present, and reasonably foreseeable actions and plans affecting the project area.**

<b>Past Actions/Authorized Plans</b>	<b>Current Actions and Operating Plans</b>	<b>Reasonably Foreseeable Future Actions and Plans</b>
- 2001 Section 205 flood control project - 2007 SWIMs	- No known actions or operating plans	- No known future actions or plans

**Table 4. Summary of cumulative impacts.**

<b>T&amp;E Species, Fish and Wildlife Resources, EFH, Water Quality, and Cultural Resources</b>	
<b>Past Actions</b>	Construction of residential and commercial/public infrastructure has decreased the amount of habitat available for fish, wildlife, and T&E species use in the area. Construction of the diversion canal allowed for more direct saltwater intrusion to adversely affect the freshwater systems in the HNR. Construction of the Flood Control Project adverse impacted archaeological sites.
<b>Present Actions</b>	Overfishing and pollution continue to degrade the nearshore benthic resources which are EFH for managed fish species as well as habitat for T&E listed species. Ongoing saltwater intrusion is adversely affecting the freshwater systems in the HNR. No known effects to cultural resources.
<b>Recommended Plan</b>	The permanent scour hole fill will occur in the diversion channel, which is an engineered solution constructed during the 2001 205 project. The temporary work platforms and associated fill will occur in previously impacted areas. Benthic repopulation within the impacted areas will occur by organisms migrating from adjacent habitat. Impacts to mobile marine organisms (e.g. sea turtles, manatees, fish, etc.) are expected to be insignificant and temporary as these organisms are able to relocate and avoid direct physical effects. Temporary, minor turbidity impacts caused by construction may occur. Best management practices will be used to limit the possibility of adverse effects. Additionally, due to the implementation of standard protection measures and turbidity controls such as silt fences, turbidity curtains and other BMPs, these impacts are expected to be minor and will cease with the completion of construction. In addition, the turbidity controls and other BMPs would prevent access by listed species to the construction area. Detailed discussion of the effects of the proposed action on the components of the natural setting are described in section 5 of the 2018 IFR/EA. The Recommended Plan will result in no adverse effects to cultural resources.
<b>Future Actions</b>	Any Federal and/or state/local projects will be required to follow regulations to protect T&E species and maintain WQ standards within the area. There are no known future effects to cultural resources.
<b>Cumulative Impacts</b>	Implementation of the BMPs and in-water work protection measures will minimize cumulative impacts to the natural setting to the maximum extent practicable.

## **5 PUBLIC AND AGENCY COORDINATION**

### **5.1 SCOPING AND DRAFT EA**

A Notice of Availability for the proposed FONSI, draft EA, and associated appendices will be coordinated with pertinent agencies and interested stakeholders for 30 calendar days to allow for review and comment. The project will be in compliance with the NEPA of 1969, as amended, 42 U.S.C. §4321, *et seq.* Public Law 91-190 upon completion of this review.

### **5.2 COMMENTS RECEIVED AND CORPS' RESPONSES**

A copy of all comments received during the public and agency review and comment period, as well as a summary matrix of the comments and Corps' responses, will be included in the final NEPA document's Appendix A.

## 6 ENVIRONMENTAL COMMITMENTS AND COMPLIANCE

Pursuant to NEPA, the Corps is providing an update on the project's compliance with applicable environmental acts and/or Executive Orders (E.O.s) which are affected by the required project changes. This Supplemental EA has been prepared pursuant to NEPA and its implementing regulations.

Environmental effects caused by the installation of the sheetpile weirs and potential environmental effects of the No Action Alternative are thoroughly evaluated within the 2018 IFR/EA and are hereby incorporated by reference (Corps 2018). The Corps and its contractors commit to avoiding and minimizing for adverse effects during construction activities by including the commitments from the 2018 IFR/EA in the contract specifications. The reader is encouraged to access the 2018 IFR/EA for additional information. Compliance with applicable environmental acts and/or E.O.s documented in the 2018 IFR/EA are still valid except for updates as noted below.

### National Environmental Policy Act of 1969 (42 U.S.C. §4321 *et seq.*)

This EA has been prepared pursuant to NEPA and its implementing regulations. A Notice of Availability for the proposed FONSI, draft EA, and associated appendices will be coordinated with pertinent agencies and interested stakeholders for 30 calendar days to allow for review and comment. This public coordination and the final NEPA document will comply with the intent of NEPA.

### Clean Water Act of 1972, Section 401 and Section 404(B) (33 U.S.C. §1341 and 33 U.S.C. §1344(b))

In consideration of the project changes, updates to the project's WQC application and the CWA Section 404(b)(1) Guidelines Evaluation is required. An application for water quality certification pursuant to section 401 of the CWA, 33 U.S.C. § 1341, was submitted to the Puerto Rico DNERR on January 24, 2020. DNER provided the Corps with a Request for Additional Information (RAI) on February 3, 2020, and the Corps submitted a response to DNER on February 6, 2020. An updated copy of the project's 404(B)(1) Guidelines Evaluation is included in Appendix B. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality. Prior to construction, the WQC will be obtained from the Commonwealth of Puerto Rico, and all turbidity controls (e.g. turbidity curtains, silt fences, and/or other BMPs) would be installed to maintain turbidity compliance within WQC standards. The project complies with the Act.

### Coastal Zone Management Act of 1972 (16 U.S.C. §1451 *et seq.*)

The Puerto Rico Planning Board concluded that the 2018 Recommended Plan was consistent with the Puerto Rico Coastal Management Program and its associated statutes by letter dated July 6, 2017. The Corps has determined that the 2020 Recommended Plan is consistent to the maximum extent practicable with the enforceable policies of Puerto Rico's approved Coastal Zone Management Program. The Corps will coordinate the 2020 Recommended Plan with Puerto Rico prior to construction and if applicable, will comply with conditions imposed to the maximum extent practicable. The Corps does not

anticipate the coordination to materially affect the decision on the Recommended Plan. The project complies with the Act.

National Historic Preservation Act of 1966 (54 U.S.C. §300101 *et seq.*)

The proposed action is in compliance with Section 106 of the National Historic Preservation Act, as amended (Public Law 89-665). As part of the requirements and consultation process contained within the National Historic Preservation Act implementing regulations of 36 C.F.R. 800, this project is also in compliance through ongoing consultation with the Archaeological and Historic Preservation Act, as amended (Public Law 93-291), Archeological Resources Protection Act (Public Law 96-95), American Indian Religious Freedom Act (Public Law 95-341), Native American Graves Protection and Repatriation Act (NAGPRA) (Public Law 101-601), Executive Order 11593, 13007, and 13175, the Presidential Memo of 1994 on Government to Government Relations and appropriate Florida Statutes. Due to the previous construction of projects within the Area of Potential Effect (APE), the Corps determined proposed action will have no adverse effect to historic properties and provided this finding by letter to the State Historic Preservation Officer on December 9, 2019. SHPO concurred with this finding, conditional on archaeological monitoring of the construction of the northern weir, on January 23, 2020.

## 7 LIST OF PREPARERS

Name	Organization	Expertise	Role in Preparation
Kristen Donofrio, Senior Biologist	Corps	NEPA/Biologist	Primary Author
Christopher Altes, Archeologist	Corps	Cultural Resources	Contributing Author
Alberto Alvarado Water Quality Specialist	Corps	Water Quality	Contributing Author
Meredith Moreno, Senior Archeologist	Corps	Cultural Resources	Document Reviewer
Sheila Hint Project Manager	Corps	Project management	Document Reviewer
Melissa Reynolds, Engineer Team Lead	Corps	Engineer	Document Reviewer
Mike Hollingsworth Senior Water Quality Specialist	Corps	Water Quality	Document Reviewer
Jason Spinning, Coastal Section Chief	Corps	Supervisory Biologist	Document Reviewer
Angela Dunn, Environmental Branch Chief	Corps	Supervisory Biologist	Document Reviewer

## 8 ACRONYM LIST

BMPs	Best Management Practices
CAP	Continuing Authorities Program
CE/ICA	Cost-effectiveness/Incremental Cost Analysis
C.F.R.	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
DNER	Department of Natural and Environmental Resources
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FCD	Federal Consistency Determination
FONSI	Finding of No Significant Impact
FR	Federal Register
HNR	Humacao Natural Reserve
HTRW	Hazardous, Toxic, and Radioactive Waste
M	Meters
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
T&E	Threatened and endangered
U.S.	United States
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
WQC	Water Quality Certification

## **9 REFERENCES**

U.S. Army Corps of Engineers (Corps). 2018. Final Integrated Feasibility Report and Environmental Assessment, Río Antón Ruíz, Puerto Rico, Continuing Authorities Program (CAP) Section 1135 Project. Jacksonville, FL.

# APPENDIX A

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## Public and Agency Project Comments and Corps' Responses

### Draft Supplemental Environmental Assessment Río Antón Ruíz Continuing Authorities Program (CAP) Section 1135 Project



U.S. Army Corps of Engineers  
JACKSONVILLE DISTRICT

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*This appendix will be updated following the completion of the public and agency review and comment period.*

# **APPENDIX B**

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**Clean Water Act 404(b)(1) Guidelines Evaluation**

**Draft Supplemental Environmental Assessment  
Río Antón Ruíz  
Continuing Authorities Program (CAP)  
Section 1135 Project**



**U.S. Army Corps of Engineers  
JACKSONVILLE DISTRICT**

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## 404(b)(1) Guidelines Evaluation

### Operation and Maintenance Dredging and Dredged Material Placement for Río Antón Ruíz Continuing Authorities Program (CAP) Section 1135 Project

May 2020

#### 1. Technical Evaluation Factors

##### a. Physical and Chemical Characteristics of the Aquatic Ecosystem (40 C.F.R. §§ 230.20-230.25)(Subpart C)

	N/A	Not Significant	Significant
(1) Substrate impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(2) Suspended particulates/turbidity impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(3) Water Quality Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) Alteration of current patterns and water circulation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(5) Alteration of normal water fluctuations/hydroperiod	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(6) Alteration of salinity gradients	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The purpose of the Río Antón Ruíz Restoration Project is to preserve the *Pterocarpus officinalis* forest and the biodiversity of both the freshwater and saltwater fauna and flora in the Humacao Natural Reserve (HNR) within the limited authority of the Continuing Authorities Program (CAP) section 1135. Based on changed site conditions, the Recommended Plan described in the 2018 Integrated Feasibility Report and Environmental Assessment (IFR/EA) for the Río Antón Ruíz project has been updated. The 2020 Recommended Plan includes the permanent filling of scour holes and the use of a vibration or impact hammer to drive the sheetpile from the streambanks and/or temporary work platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. The 2020 Recommended Plan is otherwise unchanged from the 2018 Recommended Plan.

Temporary turbidity will occur during project construction. Impacts will be temporary and localized, lasting only as long as construction takes place. Best Management Practices (BMPs) and methods to manage turbidity during the placement of concrete caps, sheetpile driving, and placement of fill in the scour holes and for the temporary work platforms will ensure minimized and controlled turbidity. It is reasonable to assume that in order to facilitate the installation of the sheetpile weirs, the contractor will need to use temporary platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. However, the Contractor may prefer a different method of sheetpile installation and/or temporary access across the channels. The use of equipment and/or methods not covered by the project's National Environmental Policy Act (NEPA) documents and/or required authorizations (e.g. water quality certification) may require reinstitution of consultation with regulating agencies and/or additional coordination. Final details for BMPs and methods will be determined during the permitting and contracting process. The

contractor will be given criteria to determine and achieve acceptable means and methods.

b. Biological Characteristics of the Aquatic Ecosystem (40 C.F.R. §§ 230.30-230.32)  
(Subpart D)

	N/A	Not Significant	Significant
(1) Effect on threatened/endangered species and their habitat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(2) Effect on the aquatic food web	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The Corps has concluded that the project may affect, but is not likely to adversely affect, the following federally listed species:

- West Indian (Antillean) manatee (*Trichechus manatus manatus*);
- Puerto Rican boa (*Epicrates inornatus*);
- Loggerhead Sea Turtle (*Caretta caretta*);
- Green Sea Turtle (*Chelonia mydas*);
- Hawksbill Sea Turtle (*Eretmochelys imbricata*);
- Leatherback Sea Turtle (*Dermochelys coriacea*).

The Corps has determined that the project will have no effect on the following federally-listed species:

- Pillar Coral (*Dendrogyra cylindrus*);
- Rough Cactus Coral (*Mycetophyllia ferox*);
- Lobed Star Coral (*Orbicella annularis*);
- Mountainous Star Coral (*Orbicella faveolata*);
- Boulder Star Coral (*Orbicella franksi*);
- Elkhorn Coral (*Acropora palmata*);
- Staghorn Coral (*Acropora cervicornis*).

In a letter dated April 17, 2017, USFWS concurred with the Corps' determination that the Recommended Plan "may affect, but is not likely to adversely affect" listed species under USFWS jurisdiction, so long as the standard conditions for the Antillean manatee and Puerto Rican Boa are incorporated into the project. In a letter dated August 22, 2017, NMFS concurred with the Corps' determination that the inclusion of Recommended Plan "may affect, but is not likely to adversely affect" listed species under NMFS jurisdiction.

The project is already incorporating the USFWS' 2011 standard in-water conditions for the Antillean manatee and the NMFS' 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions. The Corps determined inclusion of the temporary work platforms and associated fill will not result in significantly different effects to T&E species previously coordinated with USFWS and NMFS; therefore, no additional coordination is required.

c. Special Aquatic Site (40 C.F.R. §§ 230.40-230.45) (Subpart E)

	N/A	Not Significant	Significant
(1) Sanctuaries and refuges	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) Wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) Mud flats	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) Vegetated shallows	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(5) Coral reefs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(6) Riffle and pool complexes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

There are no special aquatic sites located in the project area; therefore, no impacts are anticipated.

d. Human Use Characteristics (40 C.F.R. §§ 230.50-230.54) (Subpart F)

	N/A	Not Significant	Significant
(1) Effects on municipal and private water supplies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(2) Recreational and Commercial fisheries impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(3) Effects on water-related recreation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(4) Aesthetic impacts	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The sheetpile weirs will be constructed in the same area as the 2007 temporary salt water intrusion measures (SWIMs). The temporary work platforms and associated fill will be constructed in the same locations as the SWIMs. Inclusion of the temporary work platforms and associated fill will not result in significantly different effects to fish and other wildlife resources that what was previously coordinated in the 2018 IFR/EA.

2. Evaluation of Dredged or Fill Material (40 C.F.R. § 230.60) (Subpart G)

- a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (**Check only those appropriate**)

- (1) Physical characteristics
- (2) Hydrography in relation to known or anticipated sources of contaminants
- (3) Results from previous testing of the material in the vicinity of the project
- (4) Known, significant, sources of persistent pesticides from land runoff or percolation
- (5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances
- (6) Other public records of significant introduction of contaminants from

- industries, municipalities or other sources
- (7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge/fill
- (8) Other sources (specify)

Based on changed site conditions, the Recommended Plan described in the 2018 IFR/EA for the Río Antón Ruíz project has been updated. It is reasonable to assume that in order to facilitate the installation of the sheetpile weirs, the contractor will need to use temporary platforms, constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. However, the Contractor may prefer a different method of sheetpile installation and/or temporary access across the channels. The use of equipment and/or methods not covered by the project's NEPA documents and/or required authorizations (e.g. water quality certification) may require reinstitution of consultation with regulating agencies and/or additional coordination. BMPs and methods to manage turbidity during the placement of concrete caps, sheetpile driving, and placement of fill in the scour holes and for the temporary work platforms will ensure minimized and controlled turbidity. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

- b. An evaluation of the appropriate information in 2a above indicated that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, of that levels of contaminants are substantively similar at extraction and disposal sites and not likely to exceed constraints. The material meets the testing exclusion criteria.

YES  NO

### 3. Disposal Site Delineation (40 C.F.R. § 230.11(f))

- a. The following factors, as appropriate, have been considered in evaluating the disposal site.
  - (1) Depth of water at disposal site
  - (2) Current velocity, direction, and variability at disposal site
  - (3) Degree of turbulence
  - (4) Water volume stratification
  - (5) Discharge vessel or fill speed and direction
  - (6) Rate of discharge/fill
  - (7) Dredged material characteristics (constituents, amount, and type of material, settling velocities)
  - (8) Number of discharges/fill per unit of time
  - (9) Other factors affecting rates and patterns of mixing (specify)

Based on changed site conditions, the Recommended Plan described in the 2018 IFR/EA for the Río Antón Ruíz project has been updated. It is reasonable to assume that in order to facilitate the installation of the sheetpile weirs, the contractor will need to use temporary platforms,

constructed of either soil or geobags full of soil, within the diversion canal and Río Antón Ruíz. However, the Contractor may prefer a different method of sheetpile installation and/or temporary access across the channels. The use of equipment and/or methods not covered by the project's NEPA documents and/or required authorizations (e.g. water quality certification) may require reinstitution of consultation with regulating agencies and/or additional coordination. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

The sheetpile weirs will have a concrete cap. Depending on the tidal conditions, there may be the need to draw down the water level directly adjacent to the sheetpile in order to construct the concrete cap. Sheetpile or use of other means to create a small dewatering cell and then pumping directly back into the channel should be sufficient if the concrete cap is placed in sections. No diversion of water (diversion channel) is anticipated for any dewatering efforts. Temporary turbidity will occur as a result of sheetpile driving. Impacts will be temporary and localized, lasting only as long as construction takes place. BMPs and methods to manage turbidity during the placement of concrete caps, sheetpile driving, and placement of fill in the scour holes and for the temporary work platforms will ensure minimized and controlled turbidity. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

Access for the project will be via the existing project limits, within the berms along the channel and adjacent to the levee. The staging/stockpiling area will also be located within the existing project limits. All construction and maintenance access can use the existing project limits from the original 205 project.

- b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES  NO

#### 4. Actions to Minimize Adverse Effects (40 C.F.R. §§ 230.70-230.77)(Subpart H)

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge/fill.

YES  NO

#### 5. Factual Determination (40 C.F.R. § 230.11)

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short or long-term environmental effects of the proposed discharge/fill as related to:

- a. Physical substrate at the disposal site (review sections 2a, 3, 4, & 5)
- b. Water circulation, fluctuation & salinity (review sections 2a 3, 4, & 5)
- c. Suspended particulates/turbidity (review sections 2a, 3, 4, & 5)
- d. Contaminant availability (review sections 2a, 3, & 4)
- e. Aquatic ecosystem structure and function (review sections 2b, c; 3, & 5)

- f. Disposal site (review sections 2, 4, & 5)
- g. Cumulative impact on the aquatic ecosystem
- h. Secondary impacts on the aquatic ecosystem

6. Review of Compliance (40 C.F.R. § 230.10(a)-(d) (Subpart B)

A review of the permit application indicates that:

- a. The discharge/fill represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge/fill must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for EA alternative);  
 YES       NO
- b. The activity does not appear to 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally designated marine sanctuary(if no, see section 2b and check responses from resource and water quality certifying agencies);  
 YES       NO
- c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);  
 YES       NO
- d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge/fill on the aquatic ecosystem (if no, see section 5);  
 YES       NO

7. Findings

- a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404 (b)(1) guidelines
- b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions:
- c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

- (1) There is a less damaging practicable alternative
- (2) The proposed discharge/fill will result in significant degradation of the aquatic ecosystem
- (3) The proposed discharge/fill does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem