

**APPENDIX J - SECTION 404(b) (1) EVALUATION**

## SECTION 404(b)(1) EVALUATION

### SAN JUAN HARBOR IMPROVEMENTS SAN JUAN, PUERTO RICO

#### **1.0 Introduction**

Section 404(b)(1) of the Clean Water Act (CWA) of 1972 requires that any proposed discharge of dredged or fill material into waters of the United States must be evaluated using the guidelines developed by the Administrator of the U.S. Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army. These guidelines can be found in Title 40, Part 230 of the Code of Federal Regulations. The following evaluation is prepared in accordance with the guidelines and follows the recommended format contained in ER 1105-2-100, of December 28, 1990. (Note that the proposed placement of material into the Ocean Dredged Material Disposal Site (ODMDS) is not included in this evaluation. Use of the ODMDS is regulated by the Marine Protection Research and Sanctuaries Act, and not the CWA. Information on the proposed use of the ODMDS is included within the main body of this integrated Feasibility Report and Environmental Assessment. More detailed information on the ODMDS can be found in the 1988 Final Environmental Impact Statement and 2011 Site Management and Monitoring Plan (SMMP) prepared by the EPA Region 2 (<https://www.epa.gov/ocean-dumping/site-management-and-monitoring-plan-smmp-san-juan-harbor-ocean-dredged-material>).

#### **2.0 Project Description**

The San Juan Harbor Improvement Project (proposed project) would deepen the Federal channel to 44 feet from the Anegado Channel to the Army Terminal Channel (ATC) and widen the ATC 100 feet. In addition, Cut-6 would be deepened to 46 feet and the San Antonio Channel and Cruise Ship Basin East would be deepened to 36 feet. Finally, the USACE would dredge an additional 1-foot of required overdepth and 1-foot of allowable overdepth in all deepening areas.

Dredging would occur with the use of mechanical or hydraulic dredge. Geotechnical evaluations indicate minimal rock that should not require blasting to break up rock too hard for the use of cutterhead dredge.

The USACE anticipates that the project will require up to fourteen months of construction. Disposal of dredged sediments may include disposal in the ODMDS and a beneficial use site for seagrass restoration.

#### **2.1 Project Location**

San Juan Harbor (SJH) is located on the northeast coast of the Commonwealth of Puerto Rico. The Commonwealth's cruise ships, containerized cargo, dry bulk grains, general cargo including automobiles, and petroleum products pass through SJH. The entrance channel accesses the Atlantic Ocean to the north between Isla de Cabras and Boca del Morro. The entrance channel leads to the inner harbor channels and the water bodies and shorelines of San Juan Bay Estuary.

“San Juan Bay is the focal point for most of the past and present development within the San Juan metropolitan area, and the bay’s drainage basin has been almost completely urbanized. The intensity and diversity of human activities taking place within the metropolitan area have influenced the water and sediment quality of the estuary in many ways, impairing in many instances its functions and values (SJBEP 2000).”

## ***2.2 Authority and Purpose***

The USACE initiated the feasibility study at the request of the Puerto Rico Ports Authority (PRPA), the project’s non-Federal Sponsor (NFS), under the authorization provided by House Report 109-738 - 109th Congress (2005-2006) December 29, 2006, As Reported by the Transportation and Infrastructure Committee documents the resolution approving the navigation study.

*“WATER RESOURCES SURVEY RESOLUTIONS APPROVED BY THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE Mr. Fortuno: San Juan Harbor, PR, Docket number: 2764, Date filed: February 23, 2006 (navigation project). September 20, 2006. Resolution adopted by the Committee on Transportation and Infrastructure.”*

A Limited Reevaluation Report, completed in August 2002, concluded that there was a potential Federal interest in pursuing navigation improvements at San Juan Harbor. A Federal interest exists when the economic benefits exceed the costs to build and maintain a potential project over the period of analysis. That conclusion led to the initiation of the feasibility study and provision of Federal funding following execution of the Feasibility Cost Sharing Agreement in September 2015. The costs for the feasibility study are shared between the USACE and PRPA according to Congressional appropriations. The study phase will end on the date the report is submitted to Congress by the Assistant Secretary of the Army for Civil Works ASA(CW) for authorization. If Congress acts to authorize and fund construction of the project, the construction costs would also be shared. The precise division of costs depends on the specific features of the recommended project.

## **3.0 General Description of Dredged or Fill Material and Quantity of Dredged Material**

The construction and maintenance dredged material is expected to contain soft clay (CL) and stiff plastic clay (CH). Sand and gravel mixes were also encountered (i.e., SM-silty sand, SC-clayey sand, and GC-clayey gravel). Some hard limestone and sandstone were also encountered.

### ***3.1 Quantity of Dredged Materials***

The proposed project will result in a construction dredged disposal volume of 2.1 million cubic yards (mcy) based on deepening to 44-foot. In addition, based on an analysis of the existing O&M requirements and the proposed project expansion features, it is estimated that there will be an average annual increase of 15,000 cubic yards of shoal material to be dredged each year from the new project.

### ***3.2 Sediment Characteristics***

Cut-6: Boring logs indicate primarily sandy deposits, with possible lenses of gravel or layers of hard brown calcareous quartz sandstone, intermixed with soft clay or soft silt. Sand (SM) with gravel fragments are described to -44.3 in boring CB-SJ90-21. Rock was found at the end of the boring.

Anegado Channel: Anegado Channel bottom material is characterized primarily by very soft clay with very low strength, with lesser occurrence of high plastic clays.

Anchorage Area F: Existing limited boring data show soft to high plasticity clays, with some organic material. No information on materials is currently available in the USCG expansion area of the area. Other borings occur at more than 1000 ft. away, and show soft to high plasticity clays.

Army Terminal Channel and Army Terminal Turning Basin: Materials encountered in the Army Terminal Channel and Turning Basin are primarily soft clay, clay and sand, with a few instances of weathered rock. The materials encountered include CL, CH, SM, and GC. The clay is generally highly plastic, and includes traces of shell, sand, and gravel. No data is available for the proposed widening. Rock interlayered with clays were found during the last widening of the Army Terminal Channel. Medium hard to hard limestone, and sand and clay interlayers are found within the dredging template.

Cruise Ship Basin East: Materials in the Cruise Ship Basin are mostly unconsolidated materials primarily composed of soft clays and sandy material.

San Antonio Approach Channel and San Antonio Channel: San Antonio Channel constructed depth is approximately -36 feet MLLW, meeting the currently authorized project depth of -35 feet MLLW and also the proposed project depth of -36 feet MLLW. Therefore, no new work is necessary to obtain the proposed depth with the exception of contract overdepths.

San Antonio Channel Extension and Expansion: No geotechnical information is currently available for the San Antonio Channel Extension areas. However, the sponsor is currently constructing the expansion area to a project depth of -36 ft. MLLW, plus applicable overdepths. It is assumed that Federal involvement in this area will be limited to O&M in the future.

### ***3.3 Description of the Proposed Discharge Site***

Sites that may provide opportunities for disposal include the existing ODMDS and Condado lagoon artificial depression. The Dredged Material Management Plan (DMMP; Appendix B) figure 3 shows approximate locations of potential disposal sites.

### ***3.4 Description of the Disposal Method***

Sediments dredged from the proposed San Juan Harbor deepening will vary. Hopper dredge, barge, and scow combinations are the usual vehicles for transport of the dredged material to the ODMDS. None of the material is packaged in any manner.

Disposal of materials in Condado lagoon would most likely occur by pumping slurried material to the desired location. Monitoring at the discharge site would ensure maintenance of water quality standards for turbidity in the discharge water – not more than 10 Nephelometric Turbidity Units (NTU) above background concentration.

### ***3.5 Anticipated Schedule***

The proposed project, if approved, would require up to fourteen months to complete. The schedule is contingent upon agency review, and Congressional approval of proposed plans, and any necessary fiscal appropriations.

## **4.0 Factual Determinations**

This section considers factors described in 40 CFR Part 230.11(a), 230.20 and applicable portions of Subpart H.

### ***4.1 Physical Substrate Determinations***

#### **4.1.1 Substrate Elevation and Slope**

Channel deepening will result in side slope cuts to achieve the authorized depth of the navigation channel, turning basins, and channel bend wideners where appropriate. Side slopes in the existing channel are expected to be modified, as the deeper channel will require extending the side slopes landward to accommodate the same channel bottom width. No direct impacts of this widening are anticipated.

#### **4.1.2 Sediment Type**

Bottom sediments at the ODMDS are predominantly fine-grained (i.e. silts and clays) with localized sand and gravel areas. Samples of bottom sediments taken from the site the ODMDS average 48% silt and 45% clay. Side-scan sonar imaging conducted in 1996 revealed debris and active venting of biogenic gases over limited portions of the site. Prior to 1974, all dredged material (except for Bar Channel material) taken from San Juan Harbor and its vicinity was placed in upland disposal areas. In 1974, these areas were exhausted and no new upland site could be obtained for dredged material disposal. Since 1975, all dredged material from San Juan Harbor has been disposed offshore. In March 1988, the final ODMDS was designated to receive materials from the San Juan Harbor area. Materials will consist of variable percentages of silt, clay, and sand and there are no proposed limitations on the quantity of material that may be placed at the site.

The water quality of Condado lagoon has been degraded by anthropogenic activities over the years in the San Juan area. Due to dredging activities in the 1950's, an artificial depression was

created in the eastern section of the lagoon. The artificial depression area in the lagoon was a "borrow site" to generate fill for nearby areas. Deep holes, such as the one within Condado Lagoon, typically act as sinks for organically enriched sediments and have very low dissolved oxygen levels near the bottom. Such conditions generally result in very low diversity of benthic flora and fauna, or in some cases the sediments are totally devoid of macrobiota (Haberer 2005). According to "The Hydrodynamics of the Condado Lagoon" prepared for the San Juan Estuary Program by the Caribbean Oceanography Group and Tetra Tech (October 3, 2011), the Condado Lagoon [south of Ashford Avenue bridge] is not a high energy environment. Circulation is largely wind driven and material placed in the artificial depression would remain there except for very fine particles. Under a "98% exceedance wind event" material too fine to remain stable (less than 0.21-0.46mm) would be resuspended. Therefore, construction dredged material used to restore Condado lagoon containing fine grained particles less than 0.21-0.46mm would require capping.

The amount of material generated from the proposed deepening of San Juan Harbor, based on the study's preliminary dredging quantities, is estimated at 2.1 mcy of unconsolidated material (clay, sand, gravel). Some of this material may provide for beneficial uses such as filling deep the artificial depression in Condado lagoon. However, to prevent resuspension of the placed material capping could be required. The capping material could come from the recently shoaled areas of the La Esperanza Ecosystem Restoration project located along the western shore of San Juan Bay. These areas have experienced substantial shoaling from medium grained sand since the completion of the La Esperanza Ecosystem Restoration Project on May 20, 2005.

#### **4.1.3 Dredged/Fill Material Movement**

Although beneficial uses have been discussed at this time the USACE assumes that most of the dredged material will be disposed of at the existing ODMDS. Subsurface currents in the ODMDS are not well defined, but appear to be weak as evidenced by the relatively undisturbed depositional environment within the ODMDS and surrounding area (EPA 2011). Should beneficial use ultimately be deemed viable for some of the dredged sediments, such fills will be configured in a manner consistent with the theoretical and predictive response of sediments to placement in the specific environment proposed for the beneficial use. Material placed in the Condado depression could be subjected to transport by wind waves but capping any material containing fine grained particles less than 0.21-0.46mm should prevent resuspension. The La Esperanza 1135 project could provide the sandy capping material.

##### ***4.1.3.1 Physical Effects on Benthos***

Dredging will impact benthos within the area of dredge influence as the animals living in the sediments are removed. However, these species reproduce rapidly and adjacent, undisturbed sediments will supply a ready source of organisms to recolonize the remaining sediments. Where rock is removed for channel deepening, recolonization of the rock with algae and the small organisms (e.g. worms, clams, etc.) that live on the surface of and in the crevices of the rock will recover via mechanisms similar to the benthos living in unconsolidated sediments. Maintenance dredging may suppress recovery in certain areas that are prone to shoaling. The benthos at the ODMDS and Condado lagoon placement sites will be buried under the deposits of materials

from channel dredging and subsequent maintenance activities. However, the same process of rapid recolonization from adjacent undisturbed habitat is expected to occur in these areas.

#### ***4.1.3.2 Physical Effects on Water Column Species***

Water column species without sufficient speed to avoid the falling sediment and sediment plume may suffer clogged gills if swimming in a plume of the suspended sediment, or burial if entrained in a column of falling sediment. The noise produced by the hopper dredge and attending vessels may cause some species to avoid the general area.

#### ***4.1.3.3 Actions Taken to Minimize Impacts***

As indicated above, materials placed in the Condado lagoon would have to exceed 0.21-0.46mm or capping would be required. Further, ODMDS and Condado placement would be performed in accordance with applicable federal biological opinions and the water quality certification in order to minimize potential impacts to listed species. Observers aboard the dredge and material transport vessels would help spot and as necessary avoid impacts to turtles, marine mammals, or other listed or managed species, in particular by waiting to release sediments until the located animals have left the area. Turbidity plumes from materials placed in Condado lagoon will be monitored and the construction contractor may elect to incorporate any number of containment devices (Turbidity curtains, sheet piles, etc.) to further confine the material to the target area of the dredged hole in order to maintain acceptable turbidity levels. In any case, the discharge would cease if turbidity exceeds permit criteria.

### **5.0 Water Circulation, Fluctuation, and Salinity Determinations**

This section considers factors described in 40 CFR Part 230.11(a), 230.20 and applicable portions of Subpart H related to the proposed discharge of dredged sediments.

#### ***5.1 Water***

Project dredging and disposal activities would be performed in compliance with Commonwealth of Puerto Rico water quality standards. In accordance with the Coastal Zone Management Act, state consistency review will be performed as part of stakeholder and agency coordination of the draft report. The USACE expects that the Commonwealth of Puerto Rico will concur with the determination that the project is consistent with the enforceable policies of the Puerto Rico Coastal Management Program.

##### **5.1.1 Salinity**

The proposed project will dredge material from the SJBE which has marine salinity levels and dispose of that material in the Atlantic Ocean or Condado lagoon. Salinity in the dredging and disposal locations ranges from marine levels or higher.

##### **5.1.2 Clarity/Color/Odor/Taste/Nutrients/Eutrophication**

The alternative project sediment disposal areas do not include any fresh water sites or freshwater source sites that disposal would impact. The dredging activities will likely produce temporary turbidity that will remain within the water quality certification requirements. Ongoing federal channel maintenance dredging projects have not resulted in significant turbidity exceedances. Because the sediments are primarily sand and clay with little rock, the USACE does not anticipate addition of greater turbidity levels or increases in water column nutrient concentrations during the dredging or as a result of ODMDS or beneficial use of dredged material disposal.

While dredging will temporarily disturb the sediments, the sediments do not likely carry sufficient nutrients to stimulate eutrophication or cause algal blooms. The water circulation is dominated by the tides of the Atlantic Ocean and water residence times remain low under most conditions.

## ***5.2 Current Flow and Water Circulation***

Placement of materials in the ODMDS or Condado lagoon sites will not likely affect general current flow and water circulation in the area, as these currents are the result of much larger processes occurring within the regional ocean. However, improvements to the water circulation within Condado lagoon are anticipated from restoration of the shallow lagoon bathymetry.

### **5.2.1 Stratification and Salinity**

Placement of dredged material at either of the proposed alternative locations would not materially influence stratification conditions or salinity in the placement area or beyond. The channel in the proposed dredging area is relatively deep (40 ft+), narrow and strongly influenced by marine tides. The alternative dredge disposal sites are all well within the influence of marine waters and mixing would rapidly reduce and eliminate any salinity gradient that develops at the point of discharge.

### **5.2.2 Hydrologic Regime**

The proposed sediment discharges will have no impact on the hydrologic regime of surface and groundwater in the project area.

### **5.2.3 Normal Water Level Fluctuations**

Within the dredged channel and bay, tidal surge and penetration may increase slightly depending on the alternative selected and location examined.

## ***5.3 Actions That Will Be Taken to Minimize Impacts***

Disposal of dredged sediments will have only very localized effects on water circulation and fluctuation. For the disposal sites, material disposal will follow all applicable rules and regulations associated with the disposal location and particular sediment qualities.

## **6.0 SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS**

Guidance for this section of the 404(b)(1) evaluation is furnished in Title 40 CFR 230.11(c) and 230.21.

## ***6.1 Particulate/Turbidity Effects***

### **6.1.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Dredging and Disposal Site**

Turbidity plumes generated by regular channel maintenance activities in the proposed project footprint have remained within permit-required turbidity levels. The dredging and dredged material management associated with the deepening project will be conducted to remain within the requirements of environmental permit conditions for that project. Permit conditions are expected to include monitoring of any plume produced by the dredging and disposal of dredged materials with actions required if the plume exceeds the marine turbidity standard, 10 NTU above background in most locations. For the Condado lagoon placement, the 2014 EQB WQC requires a turbidity standard of 10 NTU above background.

### **6.1.2 Contaminants**

Dredged material is not generically considered as either a "hazardous substance" under the definitions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. 9601(14)) or a "hazardous waste" under the definitions of the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. 6921 et seq.). Specific to this project, the USACE incorporated a Hazardous, Toxic, and Radioactive Waste (HTRW) Assessment into the integrated report (Sections 2.4.18 and 5.4.18) which did not identify contaminants of concern within the Harbor Deepening project area.

Some industries transport goods through the Harbor that could be considered hazardous or toxic. The U.S. Coast Guard establishes procedures for movement of such goods to ensure those operations are done safely. No such movements have resulted in spills that caused widespread threats to human health or safety.

Based on previous survey results, disposal operations at the proposed alternative sites should not cause significant effects on concentrations of contaminants in the water column given that only dredge material of suitable quality will be permitted for disposal.

### **6.1.3 Pathogens**

Since effluent originates from the watershed and no biological organisms are added during the dredging operation, no new pathogens are expected as a result of the dredging.

### **6.1.4 Aesthetics**

Some visual impacts from turbidity are expected from the open water discharges. However, these are expected to be temporary in nature, and diluted by ocean currents. Any work in Condado lagoon may also have some visual impacts, but such impacts are expected to be

temporary and not long-term beneficial impacts to aesthetics are expected from the bathymetric restoration.

### **6.1.5 Effects on Biota**

Suspended particulates could have some temporary adverse impact on filter feeders. ODMDS disposal would occur for relatively short periods of time and particles would quickly settle or mix with surrounding waters. The USACE would follow the conditions of the WQC and USFWS and NMFS ESA Section 7 consultations concerning the disposal operations in Condado lagoon.

### **6.1.6 Primary Production, Photosynthesis**

Suspended particulates may be expected to have negligible effect on primary production because the occurrence of turbidity is localized and temporary. No change to overall productivity of the estuary or coastal waters is expected.

### **6.1.7 Suspension/Filter Feeders**

Suspended particulates could have some localized and temporary adverse impacts on filter feeders.

## ***6.2 Actions taken to Minimize Impacts***

During dredging and disposal activities, turbidity monitoring will occur at the dredging site and the Condado lagoon disposal site and will adhere to permit required monitoring protocols and actions in the case of turbidity exceedance.

## **7.0 Ecosystem and Organism Determinations**

### ***7.1 Effects of Ecosystems and Organisms***

#### **7.1.1 Effects on Benthos**

Dredging and disposal of dredged materials will result in temporary disruption in benthic communities. However, recolonization occurs relatively rapidly. There will be a temporary impact on benthic communities at the disposal sites, as some organisms will be buried. Some organisms, which inhabit the underwater sites, are capable of burrowing upward through the disposed material and should survive. In addition, since the Condado lagoon depression was found to have very low diversity and in some cases were devoid of macrobiota, long-term beneficial impacts to benthos within Condado lagoon would be expected from disposal there.

#### **7.1.2 Effects on Plankton and Nekton**

Impacts on plankton and nekton would be primarily due to increases in turbidity during dredging and sediment disposal operations. Increased turbidity could include a decrease in phytoplankton

growth from decreased light availability due to absorption or reflection of light by suspended particulates. A decrease in feeding by nekton could result from reduced phytoplankton availability, limited visibility of prey or interference in feeding behavior from increased particulates. These temporary impacts are not expected to result in significant impacts on plankton or nekton.

### **7.1.3 Effects on Aquatic Food Web**

Aside from temporary and localized effects of turbidity, no appreciable effects on the aquatic food web are anticipated. As stated previously, coordination with other agencies will identify means to minimize impacts to aquatic resources by standard actions such as devoted observers for listed species, turbidity monitoring, and boat operation restrictions.

### **7.1.4 Effects on Special Aquatic Sites**

The Isla Verde Marine Protected Area (MPA) is located approximately 4.5 miles east of the entrance to Condado lagoon. In-water disposal of dredged sediments at identified alternative locations are far removed from this MPA. The dredging and Condado lagoon disposal would take place within the San Juan Bay National Estuary. Restoration of seagrass beds in Condado Lagoon would support a goal of the San Juan Bay Estuary Program's Comprehensive Conservation and Management Plan.

### **7.1.5 Sanctuaries and Refuges**

The dredging project area (including dredging template, potential disposal areas, and potential effects area) does not include any Sanctuaries or Refuges.

### **7.1.6 Submerged Aquatic Vegetation and Wetlands**

Identified sediment disposal locations (ODMDS, Condado lagoon) generally do not include submerged aquatic vegetation (SAV) (sites are too deep) or wetlands. However, SAV and mangrove wetlands do occur within SJH but distant enough from the action area that no direct or indirect impacts to these resources are anticipated.

### **7.1.7 Threatened and Endangered Species**

A number of listed species may be found in the affected area. In or near the affected area are critical habitat for Acroporid corals, Antillean Manatee habitat, nesting and foraging habitat for sea turtles. Two Biological Assessments (BAs) has been prepared for the deepening and widening of portions of San Juan Harbor and continued operation and maintenance of the San Juan Harbor Navigation Project. The BAs concluded that the proposed project may affect swimming green, hawksbill, and loggerhead sea turtles; may affect but is not likely to adversely affect the Antillean manatee, whales, and stony corals; and would have no effect on the giant manta ray, scalloped hammerhead shark, and Nassau grouper.

### **7.1.8 Other Wildlife**

The USACE will as appropriate and necessary propose and coordinate to develop specific plans for protection of SAV, wetlands, benthic macroinvertebrates, and fisheries associated with the proposed deepening.

### ***7.2 Actions to Minimize Impacts***

All dredging operations would be completed in compliance with the appropriate Biological Opinion for navigation channels and hopper dredge operations in the southeast issued by the NMFS. The proposed action would follow the terms and conditions of the South Atlantic Regional Biological Opinion from the National Marine Fisheries Service <http://el.erdc.usace.army.mil/seaturtles/refs-bo.cfm> for use of a hopper dredge.

Standard manatee protection measures would be followed.

The proposed action is not likely to adversely affect whales which have been observed offshore San Juan. The proposed action would follow the terms and conditions of the South Atlantic Regional Biological Opinion from the National Marine Fisheries Service (NMFS) <http://el.erdc.usace.army.mil/seaturtles/refs-bo.cfm>.

## **8.0 PROPOSED DISPOSAL SITE DETERMINATIONS**

### ***8.1 Summary***

Avoidance of potential impacts and mitigation of unavoidable impacts will be incorporated into construction plans. The dredging, handling, and disposal of material similar to that already being processed as part of previous deepening efforts and ongoing maintenance efforts without adverse impact indicates the likely path of the proposed project.

### ***8.2 Determination of Compliance with Applicable Water Quality Standards***

Water quality certification is being requested from the Commonwealth of Puerto Rico for the proposed deepening project. The environmental effects evaluation for the proposed dredged material indicated that the project will meet applicable water quality standards (WQS) for all parameters of concern at the edge of the mixing zone set up for dredging and disposal activities.

### ***8.3 Stormwater Runoff Determinations***

The proposed action will have no effect on any existing stormwater management or stormwater regulatory framework.

### ***8.4 Potential Effects of Human Use Characteristic***

#### **8.4.1 Recreational and Commercial Fisheries**

Dredged material disposal activities are expected to only minimally affect pelagic species. The combined activities areas (transport paths) are small with respect to the habitat area for inhabitant fishes. Fishes may avoid the area where ships are operating. Adult fishes within and immediately adjacent to the disposal area may experience a short-term reduction in dissolved oxygen uptake through the gills due to the presence of suspended particles clogging opercular cavities and gill filaments, as well as a slight decrease in available oxygen due to the biological oxygen demand of the dredged material. Adult fishes may also experience stress from avoidance reactions. However, conditions that could impact pelagic fishes are expected to be short-term and localized, and the effects on pelagic adults in the water column are not expected to be significant.

#### **8.4.2 Water Related Recreation and Aesthetics**

The project will result in only temporary impacts to water quality, primarily as a result of turbidity generated during dredging and sediment disposal, whether at the ODMDS or in Condado lagoon. While viewing a plume from dredging or dredged material disposal may temporarily decrease the aesthetic experience of that view, these effects are temporary. Ongoing maintenance creates similar conditions, so while the construction will occur more intensely than maintenance dredging at various locations, the effects will again be temporary and end with the completion of construction. For Condado lagoon disposal, temporary impacts to water-related recreation would occur for the duration of construction.

#### **8.4.3 Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves**

The San Juan Harbor Historic Site lies along the first couple miles of the Harbor. Coordination between USACE and SHPO is underway to develop appropriate operation and monitoring. No major or permanent adverse impacts are expected to the Historic site as a result of the project. Restoration of seagrass beds in Condado Lagoon would support a goal of the San Juan Bay Estuary Program's Comprehensive Conservation and Management Plan.

#### ***8.5 Determination of Cumulative Effects on the Aquatic Ecosystem***

The disposal of and potential beneficial uses of dredged material will incur only minor cumulative effects on the aquatic/marine ecosystem into which the fill is placed.

While ODMDS or Condado placement of dredged material will bury existing benthic infauna, recolonization is expected to occur rapidly. This process of burial and recolonization will continue, as the much larger surrounding and undisturbed benthic habitat will continue to serve as a colonization source. The project represents a minor impact to the infaunal community and those species that feed on the infaunal community.

#### ***8.6 Determination of Secondary Effects on the Aquatic Ecosystem***

Secondary effects on the aquatic system may include some general wildlife avoidance of the project area over time because of dredging-produced turbidity and noise during dredging and disposal activities occurring over the next 50 years. A small increase in risk of vessel strikes will

occur during dredging and dredged material disposal operations. An increase in risk of vessel strikes after project construction is not anticipated since the project would not result in additional ship calls to San Juan Harbor.

## **9.0 FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE**

### ***9.1 Determinations***

(a) An ecological evaluation of discharges of dredged material associated with the proposed deepening of SJH has been made following the evaluation guidance in 40 CFR 230.6, in conjunction with the evaluation considerations in 40 CFR 230.5. The evaluation concluded that the proposed project is in full compliance with Section 404(b)(1) of CWA. Applicable State WQS will be met for discharges. The least environmentally damaging practicable alternatives were chosen to meet the project goals and objectives.

(b) The work will be conducted in accordance with Commonwealth Water Quality Certifications to the extent practicable. Should it become apparent that operation of the project is resulting in a violation of Commonwealth WQS, coordination with the appropriate agency will be initiated to determine the appropriate course of action. The disposal operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

(c) Operation of the project will not jeopardize the continued existence of any federally listed threatened or endangered species or its designated critical habitat. The Project will follow the provisions, which the USFWS and NMFS state as necessary through the Section 7 consultation process.

(d) The proposed discharges will not result in significant degradation of the Waters of the United States. There will be no significant adverse effects on human health and welfare, municipal and private water supplies, recreation and commercial fisheries, plankton, fish, shellfish, wildlife, special aquatic sites, life stages of aquatic life and other wildlife dependent on aquatic ecosystems, aquatic ecosystem diversity, productivity and stability, or recreational, aesthetic and economic values.

(e) The discharges will include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem, including turbidity monitoring during construction of the project.

### ***9.2 Findings***

Based on the determinations made in this Section 404(b)(1) Evaluation, the finding is made that with the conditions enumerated in both the BA for this project and the dredged material environmental effects evaluation, the proposed discharges comply with the Section 404(b)(1) guidelines.