DRAFT

ENVIRONMENTAL ASSESSMENT

ATLANTIC COAST OF LONG ISLAND
JONES INLET TO EAST ROCKAWAY INLET
LONG BEACH ISLAND, NEW YORK

COASTAL STORM RISK MANAGEMENT PROJECT

HURRICAN SANDY LIMITED REEVALUATION REPORT

US ARMY CORPS OF ENGINEERS
NEW YORK DISTRICT

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ABBREVIATIONS AND ACRONYMS

ac	Acre/Acres
BMP	Best Management Practices
BOD	Biological Oxygen Demand
CFR	Code of Federal Regulations
CBRS	Coastal Barrier Resource System
CMSA	Consolidated Metropolitan Statistical Area
CO2	Carbon Monoxide
District	United States Army Corps of Engineers, New York District
cy	Cubic Yard/Yards
DEA	Draft Environmental Assessment
EFH	Essential Fish Habitat
FEIS	Final Environmental Impact Statement
ft	Foot or Feet
HTRW	Hazardous, Toxic, and Radioactive Waste
LRR	Limited Re-evaluation Report
lf	Linear Foot/Feet
MLW	Mean Low Water
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen Oxides
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
NYSHPO	New York State Historic Preservation Office
O3	Ozone
Project	The Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project
Project area	6.4 miles of the Long Beach barrier island including the developed community of Point Lookout and adjacent beaches owned by the Town of Hempstead (i.e., Nickerson Beach, Lido Beach, and the City of Long Beach).
ROD	Record of Decision
SSA	Sole Source Aquifer
yr	Year
USGS	United States Geologic Survey
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE), New York District (District), is proposing to implement a cost-effective solution designed to restore the shoreline and provide shoreline protection for Long Beach Island, a barrier island located between Jones Inlet and East Rockaway Inlet, in Nassau County, New York (Figure 1). The Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project (Project), covers approximately 6.7 miles (of which 6.4 miles represents protection provided by the selected plan) of Long Beach Island, and includes the developed community of Point Lookout and adjacent beaches, which includes Nickerson Beach, Lido Beach and the City of Long Beach (Project area).

Recent storm events, such as Hurricane Sandy and Hurricane Irene, have the left the barrier island system within the study area vulnerable, increasing the potential for overwash and breaching during future storm events. Based upon theses impacts, there is an increased urgency to implement Recommended Alternative. As a result of this devastation, Public Law 113-2, the "Disaster Relief Appropriations Act, 2013" provided supplemental appropriations to federal agencies for expenses related to the consequences of Hurricane Sandy. The Second Interim Report to Congress named this Study (see Table 1) in the list of Projects previously Authorized but Unconstructed projects for reducing flooding and storm damage risks in the affected area. The proposed work in this assessment is being funded under PL-113-2.

In 1965, the USACE evaluated various storm protection options for the area and presented findings in the Beach Erosion Control and Interim Hurricane Study for the Atlantic Coast of Long Island, New York: Jones Inlet to East Rockaway Inlet (USACE 1965). Local interests opposed the plan and the project was terminated in 1971. Since that time, beach erosion and storm damage have continued in the area. In response, the USACE conducted a Reconnaissance Study (completed in 1989), and subsequently a Feasibility Study (completed in February of 1995), to evaluate an array of structural and non-structural measures to provide flood and storm protection for the Long Beach Island area (USACE 1989, 1995, 1999).

As a result of the Feasibility Study, several alternatives were evaluated and a final plan was selected. The plan, as presented in the Final Feasibility Study and Final Environmental Impact Statement (FEIS) for the Project, included widening of the existing beach with the hydraulic placement of beach fill material, rehabilitation of 17 groins at Long Beach, construction of six new groins west of Point Lookout at Lido Beach, and construction/rehabilitation of numerous boardwalk extensions, dune walkovers, and dune access points (USACE 1995). The Record of Decision (ROD) granted approval of the plan as presented in the 1995 FEIS and was signed on December 23, 1998.

Subsequent to the 1995 release of the FEIS for the Project, the proposed alternative was re-evaluated. The re-evaluation was conducted to address changes to the shoreline since the 1995 evaluation and changes in the Project scope (i.e., a reduction in the size of the Project area), and to address environmental concerns expressed by agencies and/or interest groups (USACE 1995, 2002). Furthermore, this re-evaluation allowed incorporation of advancements in engineering evaluation methods. As a result of project re-evaluation, several modifications were made to the

plan that was selected in 1995 and are presented in this EA. The proposed Project modifications are intended to provide a long-term, cost-effective solution for reducing erosion and maintaining the beach width in this area.

When compared to the original Project that was presented in the 1995 FEIS and approved through a Record of Decision in 1998, the proposed Project modification includes some new structural features and activities that are in addition to those proposed in the original Project (Table 2.1). However, the overall Project area has been reduced in the proposed Project modification and several structural features and activities (vehicle access ramps, new groins, dune walkovers, impacts within a 136-acre shorebird nesting/foraging area) have been eliminated. As a result, the proposed modification has significantly reduced the area of fill placement and the amount of fill material required for the Project. Specifically, 184 fewer acres will be filled (i.e., approximately 110 acres in the upper beach zone, 39 fewer acres in the intertidal zone, and 35 fewer acres in the sub-tidal zone), the amount of fill material required for the initial construction has been reduced by 3,922,000 cubic yards (cy), and the amount of fill material needed for each 5-yr renourishment activities has been decreased to 1,770,000 cy per yr. The Draft EA provides specific details regarding proposed Project modification and its components.

The District has concluded that, similar to the original Project, the Project modification will still result in some short-term negative impacts to water quality, terrestrial and aquatic habitats and the species that utilize the habitats. There also is a possibility that cultural resources could be affected, however, studies to determine potential impacts are ongoing at this time. In addition, it has been determined that the proposed Project would exceed the Federal de minimis thresholds of 100 tons per year for NOx air emissions.

Impacts to other environmental resources in the proposed Project area are expected to be minor and less than those that would have resulted from the original Project. Specifically, the modification will include the placement of unvegetated hard structures (buildings, groins, and beach access walkovers, ramps) in dune/upper beach, intertidal, and subtidal areas. These structures will permanently cover the substrate beneath the footprint and non-mobile benthic species and will limit the use of the area directly within the structure footprint for foraging by shorebirds and wading birds and some fish species. However, these impacts are not significant because of the following: affected species will utilize other suitable habitat for foraging activities; the existing upper beach and dune areas in these locations are currently of relatively low value to most wildlife species and do not support any Federal or state-listed species (outside of the designated bird nesting area); the direct loss of benthic species and vegetation will be minimal and would not affect populations; and groins are likely to reduce the overall rate of beach loss and erosion in the Project area and will increase the forage base for many fish species by increasing invertebrate biomass. The changes in the conditions of the resources are not significant, and the proposed impacts on these resources as a result of the authorized project are not significantly different than those described in the FEIS which was approved for the original Project in 1995 (USACE 1995).

The use of Best Management Practices (BMP) construction procedures and mitigation measures, pre-construction surveys for species of special concern in the Project area, post-construction

surveys to monitor affects of groins on coastal processes and species, and avoidance of key breeding/nesting and spawning periods, will reduce potential for negative impacts. Furthermore, implementation of the proposed Project will have significant overall beneficial impacts to the environment and surrounding communities, including benefits to aquatic habitats and species, an increase in the availability of suitable habitat for Federal and state-listed species and a diversity of shorebird communities, improved shoreline stabilization and flood protection, and recreational opportunity.

Based on a thorough evaluation of potential impacts performed for the 1995 FEIS and this EA, it has been determined that with the exception of anticipated high NOx emission levels, there will be no significant adverse impacts due to implementation of the proposed Project modification. Comments from agencies and interested parties are being addressed and all practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan.

DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
ATLANTIC COAST OF NEW YORK, JONES INLET TO EAST ROCKAWAY INLET, ISLAND OF LONG BEACH, NEW YORK STORM DAMAGE REDUCTION PROJECT

I. NAME OF ACTION

Evaluation of an array of cost-effective shoreline protection measures to address significant beach erosion and deterioration of protective coastal structures along the densely populated southern coast of Long Beach Island. The approximately 6.4 mile Project area is located along the Atlantic Ocean shoreline of Long Beach Island, and includes the developed community of Point Lookout and adjacent beaches (i.e., Nickerson Beach, Lido Beach and the City of Long Beach).

II. DESCRIPTION OF ACTION

1. **Proposed Action:** The proposed action is a modification to the Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet, Island of Long Beach, New York Storm Damage Reduction Project which received a favorable Record of Decision (ROD) in 1998. Compared to the original Project, the Project modification entails an overall reduction in the Project area, which results in a reduction of 6,000 linear feet (lf) of beach fill area, a reduction of 3,922,000 cy of fill material needed for initial beach fill and a reduction of 341,000 cy per yr for each 5-year renourishment activities, a reduction of five acres (ac) of dune plantings and a reduction of 15,000 lf of sand fence. Specifically, there will be a reduction of 110 ac of filling in the upper beach zone, 39 fewer acres of filling in the intertidal zone, and 35 fewer acres of filling in the sub-tidal zone.

   Structural components of the Project modification include the construction of 57 timber/gravel dune walkovers, extensions of existing dune walkovers and vehicle access ways. Construction of six new groins (two of the six groins originally proposed for the Project has been deferred indefinitely, and are not part of the proposed Project modification), the rehabilitation of 17 groins, the rehabilitation and extension of the eastern terminal groin. A comparison of components of the original selected plan and the proposed Project modification are shown in Table 1.

2. **Alternatives:** A full evaluation of alternatives was previously conducted for the Project, a plan was selected, and a favorable ROD was issued in 1998. During the re-evaluation of the Project a number of similar alternatives were evaluated and a plan was selected that included only slight modifications to the originally selected plan. Therefore, since the alternatives evaluated in 1998 and subsequent Project modifications are similar, a re-evaluation of alternatives was not deemed necessary as part of this re-evaluation. The alternatives considered have been consolidated into two general categories in this Draft Environmental Assessment: 1) No Action Alternative, and 2) Beach Restoration with Groin Rehabilitation, Extension, and Construction.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

This action would result in impacts to benthic communities (potential burial and habitat disturbances) and water quality (turbidity and dissolved oxygen) during active construction activities. However, these effects would be short-term, as the benthic communities will naturally begin to re-establish shortly after construction is completed, forming a similar community within a one to two year period. Due to the sandy sediments in the Project Area, increased turbidity effects would generally be limited to the period of in-water construction, as this type of substrate tends to settle out of suspension quickly.

Buried cultural resources (i.e. shipwrecks) are known to occur in the Project area and additional buried cultural resources may be present. If present and within the area of proposed project activities, there is potential for impacts (i.e. burial, disturbance) to these resources. In consultation with the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) and the New York State Historic Preservation Office, and in accordance with Section 106 guidelines, including 36 CFR Part 800, "Protection of Historic Properties", the USACE has developed a draft Memorandum of Agreement and is conducting research to identify potential buried cultural resources in the Project area. Results will be coordinated with provided to NYSOPRHP, NYSHPO, and interested parties and a determination for any further action will be made at that time.

Federal- and State-listed threatened and endangered species likely to occur in the Project Area include the piping plover and the sea beach amaranth. The Project could potentially result in direct and/or indirect disturbances to piping plover and other nesting shorebirds, including the State-listed least tern, roseate tern, and common terns, if any are present in the project vicinity during the time of construction. However, these impacts can largely be avoided if construction activities are restricted to September 2 through April 14 (outside of the nesting season). Therefore, the USACE has incorporated these construction window recommendations, as well as other recommendations from the U.S. Fish and Wildlife Service (USFWS), into the project construction plans. In addition, the USACE will conduct a pre-construction survey for the sea beach amaranth and will avoid disturbing the plants if any are found within the construction area. As a result, significant adverse impacts to these species are not expected. The USACE is in the process of completing coordination and consultation processes with the USFWS, pursuant to the Fish and Wildlife Coordination Act and the Endangered Species Act. No long-term adverse environmental impacts or consequences are anticipated to result from the proposed shore protection project.

IV. CONCLUSION

Given there are no anticipated significant impacts (primary or secondary) associated with the proposed shoreline protection project modification, this action has been determined to have no adverse environmental impact on the quality of the environment. Therefore, a Supplemental Environmental Impact Statement is not required.

_____ _____

Date

Paul E. Owen
Colonel, U.S. Army
Commander

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), New York District (District) is proposing to implement a cost-effective solution designed to restore the shoreline and provide shoreline protection for Long Beach Island, a barrier island located between Jones Inlet and East Rockaway Inlet, for Nassau County, New York. The Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet, Long Beach Island, New York Storm Damage Reduction Project (Project), covers approximately 6.4 miles of Long Beach Island, and includes the developed community of Point Lookout and adjacent beaches that include Nickerson Beach, Lido Beach, and the City of Long Beach (Project area). This area has been subject to major flooding during storms, causing damage to structures along the barrier island. Over the years, continued erosion, particularly in the eastern areas, has resulted in a reduction in the height and width of the beachfront, which has increased the potential for storm damages.

This Environmental Assessment (EA) has been prepared in response to Public Law (PL) 113-2 of January 29, 2013, Disaster Relief Appropriations, in order to expedite implementation of the construction of the authorized but unconstructed project. This document is prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) which requires the preparation of an EA whenever a action of a Federal agency may significantly affect the quality of the human environment. This EA has been prepared to demonstrate project compliance with the National Environmental Policy Act (NEPA) in accordance with the Council of Environmental Quality (CEQ) regulations (November 20, 1978, 40 CFR Parts 1500-1508). A Final Environmental Impact Statement (FEIS) was prepared for the proposed Project in 1995 (USACE 1995) and a favorable Record of Decision (ROD) was granted for the Project in 1998. Subsequent to the 1995 release of the FEIS for the Project, the proposed alternative was re-evaluated. This DEA re-evaluation from the original EIS was conducted to address changes to the shoreline since the 1995 evaluation, changes in the Project scope (i.e., a reduction in the size of the Project area), and to address environmental concerns expressed by agencies and/or interest groups (USACE 1995). Furthermore, this re-evaluation allowed incorporation of advancements in engineering evaluation methods. As a result of project re-evaluation, several modifications were made to the plan that was selected in 1995 and are presented.

This DEA will address relevant changes in the existing condition that have occurred since the Feasibility Report was completed in February 1995, including changes due to Hurricane Sandy which impacted the study area in October 2012. The scope of this Draft EA (DEA) is to evaluate and document potential environmental affects that may result from modifications to the proposed Project and is provided as a supplement to the Final Environmental Impact Statement (FEIS) prepared for the proposed Project in 1995 (USACE 1995). This report includes the documentation necessary to meet the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality's Guidance Regarding NEPA Regulations, the USACE Procedures for Implementing NEPA (Engineer Regulation [ER]-200-2-2), the USACE Planning Guidance Notebook (ER 1105-2-100), National Historic Preservation Act of 1966, as amended (NHPA) or the Abandoned Shipwreck Act of 1987, the USACE Civil Works Ecosystem Restoration Policy (ER 1165-2-501), and coordination and consultation with local citizens and natural resource agencies which included the United States Environmental

Protection Agency (USEPA), the United States Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the New York State Department of Environmental Conservation (NYSDEC).

1.2 PROJECT HISTORY AND AUTHORIZATION

In October 1986, the Committee on Public Works and Transportation of the United States House of Representatives authorized the USACE to review the previous report on the Atlantic Coast of Long Island, New York, Jones Inlet to East Rockaway Inlet, to determine the feasibility of providing storm damage protection works for Long Beach Island. Subsequently, a reconnaissance study and report were completed in 1989, a Draft Feasibility Report and Draft Environmental Impact Statement (DEIS) report were circulated in 1994, and a Final Feasibility Report and Final Environmental Impact Statement (FEIS) report were circulated in 1995 (USACE 1995). The Final Environmental Impact Statement (FEIS) was completed in March 1998. Following completion of the FEIS, the Record of Decision (ROD) was signed in December 1998 and filed in the *Federal Register* in January 1999.

As part of the PED phase for the authorized project for Long Beach, in February 1998, a technical analysis entitled Terminal Groin Rehabilitation and Extension at Jones Inlet, Long Beach Island was completed and developed as a project modification to include the rehabilitation and extension of the terminal groin at Point Lookout to reduce the loss of sand from the beach and shoaling in the inlet.

Public Law 113-2, the "Disaster Relief Appropriations Act, 2013", The Second Interim Report to Congress named this Study in the list of Projects previously Authorized but Unconstructed projects for reducing flooding and storm damage risks in the affected area.

Local residents and officials were concerned that the proposed groin field would, because of its ability to retain sand, reduce transport of sand downdrift of the groin field, thus inducing greater erosion (more erosion than in the without project condition) immediately west of the last groin. They were concerned specifically that first, the long-established residential communities in Lido Beach and Lido West would be west of the proposed groin field termination point and the residents felt they were potentially vulnerable to downdrift erosion. Second, that beach area has been observed to experience significant changes in beach width and elevation between seasons and during storms. Third, there would be about 7,000 ft of shoreline without groins, and therefore potentially vulnerable, between the groined beach of the City of Long Beach and the proposed new groin field. The New York District, the U.S. Army Corps Coastal and Hydraulics Laboratory and New York State conducted a reanalysis of the project that addressed the issues of local concern and reexamined other portions of the Feasibility Recommended Plan using the latest computer models and field measurements or surveys obtained since the Feasibility Study (USACE 2013 HSLRR)

Since the Feasibility Study was performed in 1995, the New York District's Atlantic Coast of New York Monitoring Program (ACNYMP) has collected significant amounts of data to

document beach conditions and processes. An enhanced understanding of the coastal processes, changing field conditions and improved numerical modeling tools, have resulted in the reanalysis of shoreline stabilization measures for the eastern end (Point Lookout) of Long Beach Island. Significant accretion has taken place in the western portion of the eastern study area, especially at the ebb shoal attachment point (herein also called the ebb shoal "weldment"). However, to the east of the weldment, beach erosion has continued to occur with the attendant potential for flooding and other types of storm damage including endangering shorefront bath house and parking facilities. The discussion concerning these coastal processes can be found in the Physical Conditions section

Figure 1 .

As a result of the Feasibility Study, several alternatives were evaluated and a final plan was selected. The plan included widening of the existing beach with the hydraulic placement of beach fill material, rehabilitation of 17 groins at Long Beach, construction of six new groins west of Point Lookout at Lido Beach, and sand removal from an offshore borrow area. However, since the 1998 release of the FEIS for the Project the proposed alternative was re-evaluated. The re-evaluation was conducted to incorporate advancements in engineering evaluation methods, to address changes to the shoreline since the 1998 evaluation and changes in the Project scope (i.e., a reduction in the size of the Project area), and to address environmental concerns expressed by agencies and/or interest groups. As a result of project re-evaluation, several modifications were made to the plan that was selected in 1995 for this Project. As part of the PED effort for Long Beach, in March 2000, a report entitled, Technical Reanalysis of the Shoreline Stabilization Measures for the Eastern Portion of the Long Beach Island, New York Project was completed. This report evaluated and developed a revised plan for groin construction along the Lido Beach and Point Lookout shoreline reaches. The proposed groin field was found to be necessary to reduce sand losses to the berm and dune system. .

1.3 PURPOSE AND NEED FOR ACTION

The Project purpose remains the same as that presented in the 1995 Final Feasibility Report. The purpose is to evaluate an array of shoreline protection measures to address significant beach erosion and deterioration of protective coastal structures along the densely populated southern coast of Long Beach Island. Erosion has reduced the width of the protective beachfront and has exposed properties to a high risk of damage from ocean flooding and wave attack. Over time the Project area has experienced significant sand loss associate with Hurricane Irene 2011 and Super Storm Sand 2012. There is increased potential for overwash and breaching during future less severe storm events, which could cause major damage in the study area. Based upon theses impacts, there is an increased urgency to implement the Recommended Alternative. As a result of this devastation, Public Law 113-2, the "Disaster Relief Appropriations Act, 2013" provided supplemental appropriations to federal agencies for expenses related to the consequences of Hurricane Sandy. Existing groins and jetties along the island have deteriorated and are becoming less effective at reducing sand loss along the shoreline and providing wave protection. Continuation of the trend in sand loss will increase the potential for economic losses and threat to human health and safety (USACE 1995).

The purposes of the Project modifications are:

1) To reduce the threat of future damage to the shoreline due to wave attack, recession, and inundation from storms;
2) Mitigate or prevent the effect of long-term erosion;
3) Provide an economically justified plan;
4) Preserve, restore, and maintain existing ecological resources and habitats for native fish and wildlife, where possible; and,
5) Preserve or mitigate for the loss of historical, archaeological, and cultural resources in the Project area, if present.

The project purpose remains the same as presented in the Feasibility Report, which is to provide for coastal storm risk management along the barrier island of Long Beach. The study covers the Atlantic Coast of Long Island from Jones Inlet to East Rockaway Inlet and considers the restoration and coastal storm risk management of the shore of Long Beach Island from storm damages caused by erosion, wave attack and inundation. Barrier islands, such as LBI, provide a unique ocean-side habitat as well as providing protection from flooding and erosion on the bay shorelines. Northeasters and hurricanes periodically impact the southern shores of LBI and the shoreline of the back bays. These storms produce tides and waves that cause extensive flooding on the bay shoreline of LBI and erosion to the barrier island. Flooding in the back bays is intensified when the barrier Island is breached or overwashed. While long-term erosion and large storms have posed a significant threat to the project area for many years, a series of recent storms has created a potentially imminent hazard of widespread overtopping of the island. Previous investigations indicate that at several locations, overtopping may erode the barrier to the point

where a breach, or new inlet could be formed. Severe erosion of the protective dunes has left numerous barrier island human and natural structures subject to damage from even minor storms. The project is needed to address three closely related components which create vulnerability to the barrier island and subsequently expose the natural and human communities of the island and bayshore communities to storm damage. These components are breaching, overwashing and tidal flooding.

2.0 MODIFICATIONS TO THE PROPOSED ACTION

The recommended plan for this Project includes the preferred plan (identified in the 1995 Feasibility Report and subsequent 1998 FEIS filing) with post-Feasibility modifications as detailed in this document. The recommended plan provides the most comprehensive, effective, and cost-effective solution to provide storm protection in the Project area.

The proposed action is a modification to the Atlantic Coast of New York, Jones Inlet to East Rockaway Inlet, Island of Long Beach, New York Storm Damage Reduction Project that received a favorable Record of Decision (ROD) in 1998. When compared to the original Project, the Project modification entails an overall reduction in the Project, which results in a reduction of 6,000 linear feet (lf) of fill area, a reduction of 3,922,000 cy of fill material needed for initial beach fill and 341,000 cy per yr re-nourishment activities and a reduction of 15,000 lf of sand fence. Specifically, there will be approximately a reduction of 110 ac of filling in the upper beach zone, 39 fewer acres of filling in the intertidal zone, and 35 fewer acres of filling in the sub-tidal zone.

Structural components of the Project modification include the construction of 57 timber/gravel dune walkovers, extensions of existing dune walkovers and vehicle access ways. Construction of six new groins (two of the six groins originally proposed for the Project has been deferred indefinitely, and are not part of the proposed Project modification), the rehabilitation of 17 groins, the rehabilitation and extension of the eastern terminal groin.

In addition to the decrease in the size of the Project Area and the amount of sand material required for the Project, when compared to the original Project, the Project modification would result in limited construction activities originally proposed within a 136-acre shorebird nesting/foraging area which will be excluded from the Project (Table 1). The proposed Project modification would, however, result in an increase of walkover extensions and vehicle access as well as the rehabilitation of two additional groins, and the rehabilitation and extension of the east jetty. A comparison of components of the original selected plan and the proposed Project modification are shown in Table 1.

Table 1. Summary Comparison of the Original Proposed Project and the Currently Proposed Project Modifications.

Component	Original Project	Project Modification	Change
Beach fill material (for creation of beach berm, sand barrier and a dune)	41,000 linear feet (lf), some within shorebird nesting area	35,000 lf, none within shorebird nesting area	- 6,000 lf
Borrow area sand removal (i.e., total sandfill quantity, excluding 5-year renourishments)	8,642,000 cubic yards (cy)	4,720,000 cy	- 3,922,000 cy
Dune plantings	29 acres (ac)	34.0 ac	+5.0 ac
Sand fence	90,000 lf	75,000 lf	- 15,000 lf
Timber dune walkover ADA	13	12	-1
Timber Dune walkovers (from boardwalk) ADA	5	5	0
Timber Dune walkovers (from boardwalk) None ADA	0	6	+6
Timber non-ADA walkovers	6	23	+17
Timber Vehicle and pedestrian access from boardwalk	2	2	0
Gravel surface vehicle and pedestrian access way	2	9	+7
Extension of existing walkovers	12	8	-4
Raised timber vehicular access	1	0	-1
5-yr renourishment	2,111,000 cy/year (yr)	1,770,000 cy/yr	- 341,000 cy/yr
Rehab and 100 ft Extension of terminal groin	0	1	+ 1
New groins	6	4 (6 proposed, but 2 have been deferred)	0
Rehabilitation of existing groins	15	17	+ 2
Impacts to shorebird nesting/foraging area	136 ac	0 ac	No impacts

2.1 PROJECT ELEMENTS

2.1.1 Beachfill

The selected storm damage reduction plan including changes from the authorized project, comprises approximately 35,000 If of dune and beach fill and generally extends from the eastern end of the barrier island at Point Lookout to the western boundary of the City of Long Beach, including an incidental taper into East Atlantic Beach. This component of the Project includes the following: 1) a dune with a top elevation of +14 ft above NAVD, a top width of 25 ft, and landward and seaward slopes of 1V:5H that will extend along the entire project area (1V:3H on landward slope fronting the boardwalk; 2) in Point Lookout, a beach berm extending a minimum of 110 ft from the seaward toe of the recommended dune at an elevation of +9 ft NAVD, then sloping at 1V:20H to intersection with existing bathymetry; 3) In the Nickerson Beach area in the Town of Hempstead, dune only (no berm) placed along approximately 5,000 If of shoreline. Existing berm will remain undisturbed to allow for bird nesting and foraging; 4) In Lido Beach and the City of Long Beach, a stepped beach berm extending 40 ft. from the seaward toe of the recommended dune at an elevation of +9 ft NAVD, a 1V:10H slope downward to +7 ft NAVD, a 130 ft flat berm at +7 ft NAVD, then sloping 1V:30H to intersection with existing bathymetry; Total sandfill quantity of 4,720,000 cy for the initial fill placement, including tolerance, overfill and advanced nourishment (based on 2013 post-Hurricane Sandy survey); 5)planting of 34 acres of dune grass and installation of 75,000 If of sand fence

2.1.2 Rehabilitation of Existing Groins

Sixteen groins were proposed for rehabilitation in the plan selected in 1998. However, the existing groins within the Project were re-evaluated in March 2002 (USACE 2004b). The groins were evaluated for structural condition, sand trapping effectiveness, and planform holding effectiveness. As a result of this survey, a total of 17 groins were recommended for rehabilitation, including 15 groins in Long Beach and two groins in Point Lookout.

Rehabilitation was based on a condition survey of the existing groins conducted in September 2003, the plans for rehabilitation of existing groins in the Recommended Plan has been modified to include rehabilitation of those groins that were found in poor or fair condition that would be beneficial to the beach stability. Based on this evaluation, 15 of the 23 groins in the City of Long Beach and two groins in Point Lookout should be rehabilitated. The proposed rehabilitation would consist of repositioning existing armor stone and adding additional armor stone along the seaward 200-330 feet of each of the groins. A minimum constructible crest width of approximately 13 ft was selected with side slopes of 1V on 2H. A primary armor weight of approximately five tons was selected in order to approximately match the existing armor stone order to match the existing armor.

2.1.3 Construction of New Groins

The selected 1995 plan proposed eventual construction of six new groins (all 765 ft long and 70 ft wide) at Point Lookout (USACE 1995). Currently only the first four groins are targeted for immediate construction, whereas the remaining two groins are proposed for deferred construction as needed based on the stability of the existing weldment area. However, based on

subsequent re-evaluation of the area, some modifications to the original design of the four new groins have been proposed. The Project requires the immediate construction of a new groin field at Point Lookout that will contain six groins that begin 800 feet west of existing Groin 55 in Point Lookout. The four groins would be constructed with tapered lengths and spaced at an interval of 800 feet. Groin lengths vary and range from 380 ft to 800 ft. Groin widths will be 13 ft.

A determination to construct the two westernmost groins will be triggered at a later date within the 50-year Project life and be based on monitoring data. The criterion for construction includes a change from an accreting beach to an eroding beach in the area where the structures are to be located. The criteria will be evaluated based upon field measurements and analysis.

2.1.4 Point Lookout Terminal Groin Rehabilitation and Extension

During re-evaluation of the proposed Project, the USACE determined that Groin #58 (i.e., West Groin), the terminal groin in Point Lookout, required rehabilitation and extension. Accordingly, the District plans to rehabilitate the existing portion of the groin, extend the length an additional 100 feet (currently 200 ft), and extend the width to between 107 and 170 ft (currently widths range from 50 to 107 ft), in accordance with design specifications presented in the USACE Terminal Groin Rehabilitation and Extension at Jones Inlet, Long Beach Island, New York Report. Extending the terminal groin may decrease the amount of sediment lost toward the inlet after the beach fill component of the project is carried out. It will also possibly retain additional longshore sediment transport without causing large changes in inlet dynamics. The median armor weight for the rehabilitated and new portions of Groin #58 is approximately 10 to 10.75 tons (USACE 1999)

2.1.5 Dune Walkovers, Vehicle Access, and Boardwalk Extensions

Several dune walkovers, vehicle access points and boardwalk extensions are proposed for the City of Long Beach and the Town of Hempstead. Construction of these structures will allow the public to gain safe access to the beach without harming the existing and enhanced dune system.

A total of 57 timber dune walkovers (including 17 timber wheelchair accessible), 9 gravel surface vehicle and pedestrian walkovers, 29 timber non ADA compliant, two timber vehicular access ways from the boardwalk, eight extensions to existing walkovers, are currently proposed. Originally, 29 dune walkovers (both timber and gravel) and 12 vehicle access ramps were included in the selected plan (USACE 1995).

2.1.6 Comfort Stations and Lifeguard Headquarters

The currently proposed plan does not include the construction of combined comfort/lifeguard stations or the construction of timber retaining walls around four existing comfort stations. The relocation and rebuilding of comfort stations and/or lifeguard stations and headquarters was not proposed in the original Project (USACE 1995). However, these structures were destroyed by Hurricane Sandy and the Town of Long Beach has currently relocated them.

2.1.7 Bird Nesting and Foraging Area

The proposed Project modification has excluded Project activities from within a 93.4-acre ephemeral pool and a 42.3-acre tern/piping plover nesting area located in Point Lookout, near the Jones Inlet ebb shoal attachment point (Appendix J). Project activities were proposed within this area as part of the original plan that was selected in 1995. However, the USACE reevaluated proposed Project activities in direct response to concerns regarding shorebird habitat from Federal and State agencies and other interested parties (USACE 1995). As a result, construction of a beach berm within the bird nesting/foraging area has been eliminated from the proposed Project to allow for the continued unimpeded use of the area as shorebird nesting and foraging habitat. Two new groins were originally proposed within the tern/piping plover nesting area. However, based on a re-evaluation of the Project, construction of these groins has been deferred. No beach fill activities will take place within the bird foraging and nesting area.

2.1.8 Sand Removal from Offshore Borrow Area

An offshore borrow area, located approximately 1.5 miles south of Long Beach Island (Figure 3) between 25 feet mean low water and about 60 feet mean low water, has been identified as a potential source of sand material for beach fill and dune construction activities. Approximately 4,720,000 cy of material will be removed from this area. The original plan selected in 1995 proposed 8,642,000 cy of sand removal (USACE 1995).

2.2 REASONABLY FORESEEABLE FUTURE ACTIONS

Reasonably foreseeable future actions of the Project include beach renourishment and maintenance of beach access locations. Renourishment will be conducted every 5-years over the 50-year life of the Project. During each renourishment, approximately 1, 770,000 cy of sand will be added to the beach from the borrow area located approximately 1.5 miles offshore to the south of Long Beach Island. This borrow area contains approximately 36 million cy of suitable beach fill material. Approximately 2,111,000 cy per 5 years of sand removal were proposed in the 1995 selected plan (USACE 1995). Maintenance of beach access locations includes replacing deteriorated or damaged ramps, railings, and stairs associated with dune walkover and boardwalk extensions. Additionally, vehicle access locations will be monitored for excessive wear and maintained on an as-needed basis. Facilities such as lifeguard stations, comfort stations, and associated buildings will likely require periodic maintenance by the local sponsor.

3.0 AFFECTED ENVIRONMENT

A detailed discussion of the affected environmental resources associated with the Project is found in the project's original FEIS (USACE 1995). The proposed Project modifications will not involve any additional affected environmental resources. Therefore, only those environmental resources that may be subjected to additional negative impacts from the currently proposed Project are discussed in this DEA.

The purpose of this section is to provide a brief summary of the affected environmental resources detailed in the FEIS and to update the information based on more recent studies and an evaluation of proposed project modifications as presented in this report.

3.1 DESCRIPTION OF PROJECT AREA

The Long Beach Barrier Island is approximately 10 miles long and varies in width from 1,500 to 4,000 ft. The island is located along the Atlantic (south) coast of Long Island, New York from Jones Inlet westerly to East Rockaway Inlet and parallels the south coast of Long Island (Figure 1). The island is separated from the mainland by bays. The Project area covers approximately 6.4 miles, 35,400 lf, of the Long Beach barrier island. The Project area is situated within Nassau County, New York, and from east to west includes the developed community of Point Lookout and adjacent beaches, including Nickerson Beach, Lido Beach and the City of Long Beach.

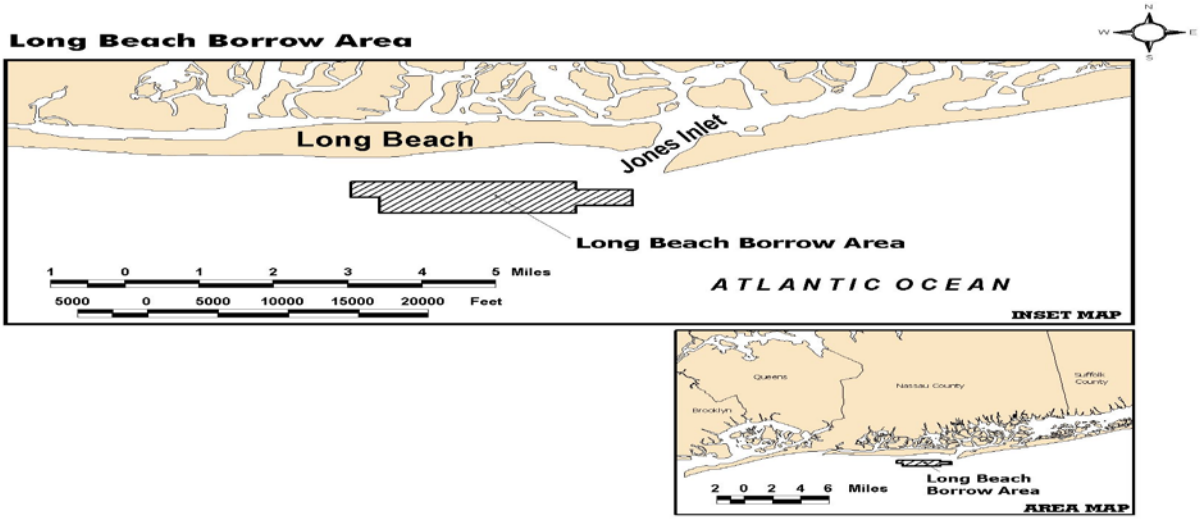
The Project area consists of beaches, sand dunes, herbs, low-growing shrubs, and tidal flats, and has been highly modified as a result of human development. This area does not fall within the Coastal Barrier Resource System (CBRS). Upland areas in the vicinity of the Project have been committed to residential, commercial and recreational development. Near shore and upper beach areas in the Project area are heavily utilized for beach recreation. Numerous stone groins currently exist in the Project area, including 23 at Long Beach, three at Point Lookout and four at Lido Beach. Based on a 2003 assessment, over 60% of these are deteriorated. The offshore portion of the proposed project includes a 550 acre borrow area located approximately 1.5 miles south of Long Beach Island between 25 feet mean low water and to about 60 feet mean low water (Figure 2).

3.2 PHYSICAL ENVIRONMENT

3.2.1 Topography, Geology, and Soils

The Project area is located in the Atlantic Coastal Plain Physiographic Province (Pickman 1993). Topography is low-lying, flat terrain with elevations generally ranging from 0 to 6 feet (ft) NGVD. Dominant landforms consist of shallow brackish lagoons and low relief sandy barrier islands and associated dunes. Long Beach Island is one of these barrier islands. Based on beach sediment grabs in the Project area, sand samples ranged in size from very fine to coarse, with a median grain size of 0.21 to 0.22 mm (i.e., fine sand). The area has been severely disturbed due to human activities (Tunstead 1999). A thorough discussion of geologic features and substrate

Figure 2. Location of the Long Beach Borrow Area.



characteristics such as littoral materials, shoreline changes, and sediment budget, is found in the re-evaluation report for this Project .

No prime, unique, or important farmland soils exist within the Project area; therefore the Farmlands Protection Policy Act does not apply to the proposed Project (Tunstead 1999).

3.2.2 Water Resources

The Project area is situated above the North Atlantic Coastal Plain Aquifer System, which is the sole source water supply for more than 3 million people and has been designated as a sole source aquifer (SSA) pursuant to Section 1424(e) of the Safe Drinking Water Act. Approximately 50% of the precipitation that falls on the land surface recharges the ground-water reservoir. Annual precipitation ranges from 40 to 44 inches in the Project area (United States Geologic Survey [USGS] 1995).

The Project area is classified by NYSDEC as Class SA, which defines surface water in the Project area as safe for primary contact recreation and shellfish harvesting (USACE 1995).

Recent water quality data collected by USEPA and the New York City and Nassau County Public Health Departments show that overall bacteriological water quality in the Project area is very good (Jacobs 1999, Luke 1999, USEPA 1999b).

Tides in the Project area are semi-diurnal with mean range along the outer coast of Long Beach of 4.5 feet and a spring range of 5.4 feet. The mean range in Hempstead Bay is 3.9 feet with a spring range of 4.7 feet. Current velocities along the ocean shore range from 2.3 to 3.1 knots at flood tide and 2.2 to 2.6 knots during ebb tides. A thorough discussion of water resources, including wave action, sea level rise, stage-frequency and storms, may be found in the re-evaluation report for this Project.

3.3 NATURAL ENVIRONMENT

3.3.1 Aquatic and Terrestrial Habitats

Oceanfront beach and deepwater ocean habitats constitute the majority of the Project area. The beach community includes upper, intertidal, and nearshore subtidal areas. Except for beachgrass, scattered herbs, and sparse low-growing shrub communities associated with the upper beach/dune area, most of the Project area is devoid of vegetation and is significantly impacted from human use of the area for recreational activities and significant development that abuts the upper beach zone in most of the Project area. The only undeveloped areas in the Project area, besides the beach itself, occur at Silver Point, and Lido Beach/Point Lookout.

The upper beach zone extends from dune areas to just above the high water line and includes dunes and supratidal areas of the beach. The area is predominately covered with sand. However, patches of herbaceous vegetation are found in the upper beach zone and are dominated by American beach grass (*Ammophila breviligulata*), other species found in this zone include spurge (*Euphorbia polygonifolia*), beach plum (*Prunus maritima*), seaside goldenrod (*Solidago sempervirens*), and sea rocket (*Cakile edentula*). The upper dune portion of this zone typically includes scattered patches of the herbs described above and stunted shrub species such as beach heather (*Hudsonia tomentosa*). In areas of low human disturbance, these areas can provide nesting and foraging areas for birds.

The intertidal zone extends from the low tide line to the high tide line and is submerged and exposed according to daily tidal cycles. Species diversity in this zone is relatively low due to limited ability of species to withstand the daily submersion and exposure. Micro and macro-invertebrates known to inhabit this zone include crabs, shrimp, bivalves, and worms. The intertidal zone provides key foraging habitat for shorebirds.

The affected near shore subtidal zone extends from the low water line down to 25 feet below mean low water (MLW) and is nearly continuously submerged. The area contains a rich diversity of aquatic micro and macro-invertebrates including crabs, shrimp, bivalves, worms, and finfish. In addition, numerous man-made groins extend from the intertidal zone into the subtidal zone from 200 to 600 feet (USACE 1995). These structures provide habitat for numerous fish, macro-invertebrates, and birds.

The offshore subtidal zone is located approximately 1.5 miles south of Long Beach Island between 25 feet MLW and to about 60 feet MLW. The area contains a diversity of benthic organisms and phytoplankton and diverse assemblages of shellfish, gastropods, amphipods, isopods and crustaceans. The area also provides a migratory pathway and spawning, feeding and nursery area for many common mid-Atlantic fish species.

Based on USFWS National Wetland Inventory (NWI) maps, the Project area includes approximately 50% intertidal habitat, 30% subtidal habitat and 20% upland/upper beach habitat. The wetland/deepwater areas are devoid of vegetation and are considered non-jurisdictional (*i.e.*, unregulated) wetlands.

3.3.2 Aquatic and Terrestrial Wildlife

FINFISH AND SHELLFISH

Both the nearshore and offshore waters of the Project area support seasonally abundant populations of many recreational and commercial finfish (USFWS 1989, 1995, USACE 1995). Primary fish species include black sea bass (*Centropristis striata*), summer flounder (*Paralichthys dentatus*), winter flounder (*Pseudopleuronectes americanus*), weakfish (*Cynosion regalis*), bluefish (*Pomatomus saltatrix*), scup (*Stenotomus chrysops*), striped bass (*Morone saxatillis*), and Atlantic mackerel (*Scomber scombrus*). In addition, other common species in near shore waters include tautog (*Tautoga onitis*), northern puffer (*Sphoeroides maculates*), windowpane (*Scophthalmus aquosus*) and American eel (*Anguilla rostrata*).

A number of migrant anadromous and catadromous species are found throughout the Project area. Common migrant species include the Atlantic sturgeon (*Acipenser oxyhinchus*), blueback herring (*Alosa aestivalis*), alewife (*alosa pseudoharengus*), American shad (*Alosa sapidissima*), Atlantic silverside (*Menidia menidia*), striped bass, and American eel (Woodhead 1992).

The primary shellfish with important commercial or recreational value in the near shore portion of the Project area are the, hardshell clam [Quahog] (*Mercenaria mercenaria*), softshell clam (*Mya arenaria*), bay scallop (*Argopencten irradiens*), American lobster (*Homarus americanus*), and blue crab (*Callinectes sapidus*) (MacKenzie 1990). Surf clam (*Spisula solidissima*), razor clam (*Ensis directus*) and tellin (*Tellina agillis*) occur in the vicinity of the offshore borrow area. Surveys conducted by the USACE in 2003 and by the NYSDEC in 2012 indicate that the borrow area itself contains very small, to no, localized populations of surf clam. It is the intent of the USACE to conduct another survey in the borrow area prior to the utilization of the borrow area.

Benthic Resources

Beginning in 1966, there have been at least 17 major sediment-benthic macrofauna sampling efforts in the region. As reported in these studies, the sediment composition of the Project area consists of a silty sand, medium coarse grain sand, and hard substrate community (USACE 1995). The benthic community of the near shore portion of the Project area is dominated by polychaetous annelids, followed by malacostracans, bivalves, and gastropods (Reid et al. 1991,

Ray and Clarke 1995, Ray 1996, Way 1995). The silty-sand substrates are dominated by bivalves such as the blue mussel (*Mytilis edulis*), and polychaetes such as red-lined worms (*Nephtys incisa*) (Steimle and Stone 1973). Medium coarse sand substrates are dominated by bivalves (e.g., dwarf tellin [*Tellina agilis]*), echinoidea (e.g., sand dollar [*Echinarachnius parma]*), amphipods (e.g., *Protohaustraius deichmaae* and *Unicola irrorata),* and polychaetes (*e.g.*, burrowing scale worm [*Sthenelais limicola*], lumbrinerid thread worms [*Lumbrineris fragilis*], and mud worm [*Spiophanes bombyx*]) (Steimle and Stone 1973). Hard substrates such as groins are dominated by blue mussel (Steimle and Stone 1973).

Sediments in the offshore borrow area contains over 75 taxa of benthic species (Steimle and Stone 1973). The most numerous species were polychaete worms (dominated by the tube-dwelling polychaete, *Asabellides oculata*) and blue mussel (USACE 1995).

Reptiles and Amphibians

Due to the lack of freshwater habitats and vegetation along the beach and shoreline, no reptiles or amphibians are expected to inhabit the Project area (USACE 1995).

Birds

A wide diversity of bird species is likely to occur within, and in the vicinity of, the Project area. The most common species in the Project area are habitat generalists that are tolerant of development and that utilize beach habitat along the shoreline and deepwater habitats. Common species include herring gull (*Larus argentatus*), greater black-backed gull (*Larus marinus*), American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), barn swallow (*Hirundo rustica*), black-bellied plover (*Pluvialis squatarola*), black scoter (*Melanitta nigra*), bufflehead (*Bucephala albeola*), common grackle (*Quiscalus quiscula*), common yellowthroat (*Geothlypis trichas*), double-crested cormorant (*Phalacrocorax auritus*), European starling (*Sturnus vulgaris*), gray catbird (*Dumetella carolinensis*), mourning dove (*Zenaida macroura*), rock dove/pigeon (*Columba livia*), sanderling (*Calidris alba*), song sparrow (*Milospiza melodia*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), and tree swallow (*Iridoprocne bicolor* [USACE 1998, 2003, USFWS 1992]). Permanent avian residents of the surrounding area include various species of gulls, crows, pigeons, and sparrows, which are commonly associated with developed areas and areas of high human activity (USFWS 1992, USACE 1998, 2003).

Extensive use of beach, dune, and near shore areas for public recreation limits the potential of habitats in the Project area for bird nesting. The primary use of the Project area by birds is for resting and feeding activities.

Mammals

The USFWS (1993) reported that the general Project area includes year-round habitat for gray squirrel (*Sciurus carolinensis*), house mouse (*Mus musculus*), Norway rat (*Rattus norvegicus*), Eastern cottontail (*Sylvilagus floridanus*), and feral cat (*Felis catus*) [USACE 1998, 2003,

USFWS 1992]). This is consistent with results from studies conducted by the USACE on nearby Fire Island.

Extensive use of beach, dune, and near shore areas for public recreation limits the potential of habitats in the Project area for mammals. The primary use of the Project area by mammals is for resting and feeding activities.

3.3.3 Threatened or Endangered Species and Habitats

All appropriate Federal and State agencies were consulted regarding the potential for species and habitats of special concern within the Project area during the preparation of the FEIS for this project (USACE 1995). Correspondence received from these agencies and USACE responses to correspondence relating to the original Project are presented in the FEIS (USFWS 1989, 1995, NMFS 1993, USACE 1995). Subsequent correspondence relating to species and habitats of special concern are presented in Appendix A (Federal and State correspondence), Appendix C (USFWS Fish and Wildlife Coordination Act 2(b) Report), and Appendix G (NMFS correspondence).

Federal Species or Habitats of Concern

The piping plover (*Charadrius melodus*), a Federally-listed threatened bird, has been identified and is known to nest within upper beach areas of the Project area (USFWS 1995, USACE 1998). The sea beach amaranth (*Amaranthus pumilus*), Federally-threatened plant, is also known to occur on barrier islands of Long Island. Field surveys did not locate this species in the Project area (USACE 1995). However, the species was found nearby on Jones Beach Island and Rockaway Peninsula (USACE 1995). The USFWS has determined that habitats that occur in the Project area are suitable for sea beach amaranth (USFWS 1995). The Federally-endangered roseate tern (*Sterna dougalii*) utilizes habitats similar to those found in the Project area and has historically occurred near the Project area. However, the species has not recently been documented in Long Beach. Plover usually nest in Lido Beach area which has been designated critical habitat for this species and no beach fill will be places here.

Several species of threatened and endangered marine turtles may be present in the near shore waters of the Project area during summer and early fall. The Federally-listed endangered Atlantic Sturgeon (*Acipenser oxyrhynchus oxyrinchus*) Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and green (*Chelonia mydas*) sea turtles, as well as the threatened loggerhead (*Caretta caretta*) sea turtle have foraging ranges that include the Project area (NMFS 1993, USACE 1998, USFWS 1989, 1995). Sea turtle nesting is unlikely to occur in the Project area, as it is located north of documented breeding grounds (NMFS 1993).

Atlantic Sturgeon are also list here and like all anadromous fish, Atlantic sturgeon are vulnerable to various impacts because of their wide-ranging use of rivers, estuaries, bays, and the ocean throughout the phases of their life. General factors that may affect Atlantic sturgeon include: dam construction and operation; dredging and disposal; and water quality modifications such as changes in levels of dissolved oxygen (DO), water temperature and contaminants.

Atlantic sturgeons have been harvested for years. Many authors have cited commercial over-harvesting as the single greatest cause of the decline in abundance of Atlantic sturgeon. Even though the fishery has been closed coast-wide since 1995, poaching of Atlantic sturgeon continues and is a potentially significant threat to the species, but the magnitude of the impact is unknown. Atlantic sturgeon may compete with other bottom feeding species for food, although there is no evidence of abnormally elevated interspecific competition, and it has been suggested by van den Avyle that "non-selective feeding of juvenile and adult sturgeons may reduce the potential for competition with other fish species".

No Federally-protected habits of concern occur within the Project area.

State Species or Habitats of Concern

The State-listed threatened common tern (*Sterna hirundo*) and least tern (*Sterna antillarum*) are known to occur in habitats similar to those found in the Project area. Surveys conducted in the early 1990's documented nesting least terns at Lido Beach, Atlantic Beach and Point Lookout (USACE 1998). The tern colony at Point Lookout was subsequently abandoned during a severe storm in 1991 (NYSDEC 1994, USACE 1995). Subsequent surveys found no nesting terns (NYSDEC 1994) in the immediate Project area. Other State-listed species that occur in the general area include the State-endangered piping plover, and sea beach amaranth. State-listed species that may occur in the vicinity of the Project area include the state-endangered roseate tern and state-special concern species black skimmer (*Rynchops niger*). These species are known to utilize coastal beach habitats similar to those found in the Project area and the species are commonly associated with nesting tern colonies.

New York State Department of State (NYSDOS) lists Nickerson Beach, located approximately 1 mile west of Point Lookout, as a significant coastal fish and wildlife habitat (NYSDOS 1987). Nickerson Beach consists of approximately 15 acres of sparsely vegetated dunes and adjacent pebble and shell areas. Despite heavy recreational use nearby, the area remains as an undeveloped barrier beach ecosystem (a rare occurrence in Nassau County). This area serves as key nesting habitat for the Federally and State-listed piping plover and has previously provided habitat for the State-listed least and common terns (NYSDEC 1994).

Essential Fish Habitat

Pursuant to Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Federal agencies are required to consult with the NMFS regarding any action they authorize, fund, or undertake that may adversely affect Essential Fish Habitat (EFH). For assessment purposes, an adverse effect has been defined in the Act as follows: "Any impact which reduces the quality and/or quantity of EFH. Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species fecundity), site specific or habitat wide impacts, including individual, cumulative, or synergistic consequences of actions."

Based on a review of the National Oceanic and Atmospheric Administration (NOAA) guide to EFH designations in the Northeastern United States, designated EFH occurs in the greater Project area as identified by the 10-minute by 10-minute square that is bounded as follows: North 40° 40.0' N, East 73° 50.0' W, South 40° 30.0' N, and West 74° 00.0' (NMFS 2004). NOAA describes this square as "Atlantic Ocean waters within the square within the Hudson River estuary affecting the following: western Rockaway Beach, western Jamaica Bay, Rockaway Inlet, Barren I., Coney I. except for Norton Pt., Peardegat Basin, Mill Basin, southwest of Howard Beach, Ruffle Bar and many smaller islands."

Fish occupation of waters within the project impact areas is highly variable spatially and temporally. Some of the species are strictly offshore, while others may occupy both nearshore and offshore waters. In addition, some species may be suited for the open ocean or pelagic waters, while others may be more oriented to bottom or demersal waters. This can also vary between life stages of Federally managed species. Also, seasonal abundances are highly variable, as many species are highly migratory.

3.4 CULTURAL RESOURCES

In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation implementing regulations, 36 Code of Federal Regulations [CFR] Part 800, *Protection of Historic Properties*, the USACE has identified the Area of Potential Effect (APE) for this Project to include the offshore borrow area, the near shore and onshore sand placement area and the groin construction and rehabilitation areas. The New York District is supplementing surveys originally conducted for the 1998 Feasibility Study and FEIS to further identify historic properties and determine the effect of project plans on them. The New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) and other interested parties were consulted regarding this project during preparation of the EA. Correspondence relating to cultural resources is presented in Appendix F. In addition, a site reconnaissance and an extensive evaluation of the history and prehistory of the Long Beach Island was conducted and compiled for this study and remote sensing surveys and dive inspection were also carried out and others are on-going (Pickman 1993, Panamerican Consultants, Inc. 1996, 1998a&b, 2005).

3.4.1 Historic Resources

The first European settlers arrived on Long Island during the first half of the seventeenth century. It was not until the middle of the nineteenth century, however, that Long Beach was occupied by Euro-Americans. According to local histories, no structures were located on Long Beach until after 1849. Residents of the mainland used the island primarily for pasturage. In 1849, a Life Saving Station was constructed on Long Beach to house surf boats, lifesaving apparatus and a crew of six to seven men.

Between 1849 and 1879, only a few buildings were constructed on Long Beach. In 1873, a transatlantic cable connecting New York to England, via Halifax, Nova Scotia, made its landfall

at Long Beach Island, between the current Edwards and Riverside Boulevards. The development of the island began in 1880 with the construction of a railroad from Lynbrook to Long Beach and the construction of the first large resort hotel and bathing pavilion on the island. This was followed by the construction of a number of other hotels in the 1880s and 1890s and during the first two decades of the twentieth century. Summer homes and permanent residences were also built on the island during the twentieth century. The location of these structures was well north of the present boardwalk and beach zone (Pickman 1993). No significant remains of the project area's history would be situated along the site of the present beach.

Two structures located in the vicinity of the project area, the Granada Towers and the United States Post Office, are listed on the NRHP. One private residence, located on Washington Boulevard and thought to be one of the first private homes on Long Beach, is listed on the historic structures inventory maintained by the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP). None of these structures are within the project area. No other buildings or structures have been listed or determined eligible to be listed on the National Register within the Project area since the completion of the Final Feasibility Report and FEIS.

3.4.2 Shipwrecks

Several dozen possible shipwrecks were identified in the initial near-shore survey of the project area (Panamerican Consultants 1996 and 1998) around Long Beach. Further testing on these sites was carried out in 2005 (Panamerican Consultants, Inc. 2005). Two shipwrecks have been documented within the near shore sand placement. The 1837 wreck identified as the *Mexico* occurs near Lido Beach and a second wreck, known by local divers as the *Marble*, occurs near Point Lookout (Pickman 1993, Panamerican Consultants 1996, 1998, and 2005). Both wrecks are potentially eligible for inclusion in the National Register of Historic Places. Another object detected during the 1998 near shore remote sensing survey, referenced as Anomaly 18, is unknown and requires further investigation to determine its significance.

3.4.3 Submerged Sites

During the last glacial period, the sea level was up to 400 feet lower than current levels. The shoreline at this time lay at the outer edge of the continental shelf approximately 100 miles from the present shoreline. According to area studies, the sea level rose at a steady pace between circa 7000 to 3000 before present era, with a slower rate of increase after circa 3000, before present era. Cores taken adjacent to the project area indicate the presence of peat, silt, and clay deposits that are remains of the lagoons that formed behind the barrier islands that were created off the present Long Island shoreline at this time. The presence of these lagoonal deposits may mean that the inundation of the ground surface occurred in a low energy environment, which may have permitted any prehistoric sites located in the nearshore area to survive any disturbance. These deposits would consist of organic peat and/or organic silts and clays (Pickman 1993).

The proposed borrow area may also contain prehistoric land surfaces. The borrow site would have been available for human occupation until sometime after 7000 before present era. Two of fifteen cores taken from within the borrow site to a depth of 20 ft below the ocean floor

contained either a clay layer or layer of dark gray silt (Pickman 1993). Based on data taken from cores and borings for adjacent areas, it is possible that these two cores taken within the borrow site may represent land surfaces that would lie on top of prehistoric deposits (Pickman 1993).

3.5 SOCIOECONOMIC ENVIRONMENT

Based on the 1998 FEIS, no Hazardous, Toxic, and Radioactive Waste (HTRW) sites, or New York State-listed Inactive Hazardous Waste Disposal Sites have been identified within the proposed Project area (NYSDEC and New York State Department of Health 1998) and no Federal navigational waterways of navigational projects are located in proximity to the proposed Project area.

3.5.1 General Setting

Population. Population in the City of Long Beach has decreased from a 1990 total population of 33,510 to a 2010 total of 33,275. The Town of Hempstead has shown an increase in population from 49,453 (1990) to 53,891 (2010). The Lido Beach Community's population has increased from 2,786 (1990) to 2,897 (2010). This population for Nassau County has increased from 1,287,348 (1990) to 1,339,532 (2010). The population trend for the project area is expected to be stable in the future.

Income. Per capita income is an indicator of the economic strength of a community. The per capita income in the City of Long Beach has increased during the period of 2000 to 2010 from $31,069 to $43,377. The per capita incomes have also increased for the Town of Hempstead from $28,153 (2000) to $37,211 (2010), Lido Beach Community from $47,604 (2000) to $74,449 (2010) and Point Lookout Community from $39,953 (2000) to $79,146 (2010) this rate of increase is higher than the overall rate for Nassau County.

Shore Ownership and Use. The majority of the beaches within the study area are publicly owned and publicly accessible. Within the Town of Hempstead there are several privately owned properties and several special park districts, which are discussed further in the formulation section. There is public transportation to the majority of the beaches as well as sufficient parking area along most of the project shorefront. There is full lateral beach access along the entire study area shorefront, and a public bus, which provides drop-offs along the main artery of the barrier island. As prescribed by Corps policy and regulations, costs of improvements in those areas that are not open to the public would be 100% non-Federal, unless protection to such areas is incidental to the project. The State has submitted a Public Access Plan, which is intended to conform with Federal policy. To allow for full public access and yet offset the levies that residents are charged for beach maintenance, several of the beach areas have adopted differential fees, which include higher fees for non-residents than residents.

3.5.2 Coastal Zone Management

The Project area is located within the designated coastal zone regulated under the Wetland Act of 1970 and Article 42 of New York Codes, Rules, and Regulations, Part 600.2.

3.5.3 Aesthetics and Scenic Resources

Aesthetics and scenic resources in the Project area are accessed primarily by boardwalks along the shore, and encompass a view of the ocean and beach recreational facilities to the south and commercial and residential development to the north. The beach extends to the east and west for many miles, as does the boardwalk. Groins are visible along the shore throughout the project area.

3.5.4 Recreation

The island is primarily residential with extensive recreational facilities to support recreational uses normally associated with beachfront open space. Facilities include bathhouses, boardwalks, refreshment stands, bathrooms, showers, lifeguard stations, hotels/motels, and access ramps to beach areas. The beach areas provide recreational opportunities for year-round residents and are easily accessible by people from New York City and surrounding areas of Nassau County. Annual beach attendance on Long Beach Island is estimated at over 1.5 million visitors (USACE 1998). Annual beach use is reported to have declined in the Point Lookout area due to severe erosion of the shoreline and loss of beach area. The south shore of Long Beach Island is a continuous strip of sand beach serving the year-round inhabitants as well as the great influx of summer visitors and vacationers. Most visitors to Long Beach are from Nassau, Kings, Queens, and New York Counties. From 1999 to 2002 an average of 500,000 people visited the beach in the City of Long Beach and from 1994 to 2002 an average of almost 500,000 in the eastern beaches of Point Lookout, Nassau County and Lido Beach. It is noted that due to the erosion, which has most severely affected the usage of the Point Lookout area, beach attendance has substantially declined. For example, the attendance in this area in 1984 was 523,065 while the average attendance from 1993 to 2002 was approximately 130,000.

3.5.5 Transportation

The study area is accessible to major population and commercial centers, through an extensive network of highways, roads and railways. Direct access from the major corridors to the barrier island is provided by three vehicular bridges from: Loop Parkway on the eastern end of the barrier island; Atlantic Beach bridge on the west; and the Long Beach causeway in the center. The communities are also served by the Long Island Railroad, which provides passenger rail service from eastern Long Island and New York City directly into the City of Long Beach. There is a public bus which runs east to west along the major artery of the barrier island from Point Lookout to Atlantic Beach.

3.5.6 Noise and Air Quality

Noise level measurements have not been obtained in the Project area. In lieu of field measurements, the noise levels in the Project area can be approximated using existing land uses. The dominant land use in the Project area is primarily residential housing which has mean outdoor day-night sound levels range from 59 to 78 A-weighted decibel (USEPA 1978).

The proposed Long Beach Project is located in the New York-Northern New Jersey-Long Island Consolidated Metropolitan Statistical Area (CMSA) of Nassau County. According to the National Air Quality and Emissions Trends Report (USEPA 2004) the New York-Northern New Jersey-Long Island CMSA is designated as a severe nonattainment area for ozone (O3). The area was previously designated as a nonattainment area for carbon monoxide (CO), but now is designated as attainment for CO and therefore, the area is currently considered to be a maintenance area for CO. All other hazardous air pollutant levels monitored by EPA in Nassau County (i.e., nitrogen dioxide, sulfur dioxide, particulate matter, and lead) are above EPA standards (USEPA 2004).

4.0 ENVIRONMENTAL IMPACTS

A detailed discussion of the environmental impacts associated with the Project may be found in the FEIS and FONSI (USACE 1995). Those impacts were determined to be insignificant, comments from agencies and interested parties were addressed, and all practicable means to avoid or minimize adverse environmental effects were incorporated into the recommended plan. Cultural Resource Final Approval was based on "continued Section 106 work" prior to any project construction as described in Section 4.4. Therefore, all required permits were obtained for the Project and a favorable ROD was issued in 1998.

Subsequent re-evaluations of the Project have resulted in some project modifications. The proposed modifications will not involve impacts to any additional environmental resources not addressed in the FEIS for the original project. However, the extent of impacts (i.e., acres of project footprint) has been reduced for some of the environmental resources that were identified in the 1995 FEIS. Specifically, when compared to the original proposed Project, the Project modification would result in a reduction of 170 acres of impact (i.e., 110 acres of filling in the upper beach zone, 39 fewer acres of filling in the intertidal zone, and 35 fewer acres of filling in the sub-tidal zone), the amount of initial fill material required for the Project would be reduced by 3,922,000 cubic yards (cy), and the amount of fill material needed for renourishment activities would be decreased by 341,000 cy.

The purpose of this section is to provide a brief summary of the impacts to environmental resources as detailed in the FEIS and to update the information based on more recent studies and an evaluation of proposed project modifications as presented in this DEA (USACE 1998). Only those environmental resources that are likely to exhibit negative impacts from the currently proposed Project are discussed in this DEA. The Fish and Wildlife Coordination Act 2(b) report for this Project is available in Appendix C.

4.1 OVERALL PROJECT AREA

The currently proposed Project represents a modification to the original approved Project that has reduced the overall amount of beach fill, dune fill, dune plantings, sand fence, and fill required for renourishment activities, and has reduced the number of dune walkovers, new groins and vehicle access ramps. In addition, the proposed project modification also has limited Project

activities within a 136-acre shorebird foraging/nesting area. Although, the Project has increased the number of proposed boardwalk walkovers and vehicular ramps and now includes a 100-foot extension of groin 58 (i.e., East Groin), these changes are overall insignificant relative to the original approved Project and will have no significant negative environmental impacts.

In the 1995 FEIS, it was determined that offshore, near shore and onshore components of the Project could potentially cause some minor adverse impacts to water quality, aquatic habitats and species (i.e., benthic organisms, fish and their habitat), potential threat to several endangered marine and terrestrial species (i.e., sea turtles, piping plover, sea beach amaranth), cultural resources (i.e., shipwrecks), and socio-economic impacts to recreational activities during construction (i.e., noise and restrictions to construction areas). Similar potential impacts are likely under the currently proposed Project. However, it is the physical extent (i.e., acreage of impacts) that has changed which translates to less overall impacts throughout the Project area relative to the original approved Project. No significant negative impacts, in addition to those described in the 1995 FEIS and highlighted below, are expected from the currently proposed Project modification. No new natural resources or endangered species have been identifying within the project area since the 1995 EIS.

4.2 PHYSICAL ENVIRONMENT

4.2.1 Topography, Geology, and Soils

Construction/extension of hard structures (groins, walkovers, access roads) and beach fill placement would result in permanent impacts on topography within the footprint of the proposed activity. However, although impacts on topography would be permanent they would not result in significant negative impacts to Long Beach Island. Following Project activities the topography in beach fill areas will be characteristically similar to natural beach/dune communities found along the coast of Long Island. No impacts on geology would result from the Project structures because bedrock elevations would be below the depth of proposed fill and structure foundations.

No significant or long-term impacts would occur on native soil grain size, structure, nutrient status, or organic matter content as a result of the Project, because the structures would retain and capture littoral materials native to the beach community and the texture of the nourishment material to be used would be compatible with native sand material. Construction/extension of groins would result in continued protection of upland property from wave action and erosion that would accompany a storm with a reoccurrence interval of 100 years along the Long Beach shoreline and would reduce the amount of renourishment fill required. The groin structures would help to slow the long-term beach erosion rate in the Project Area.

4.2.2 Water Resources

Negligible increases in near shore turbidity and suspended solids may result during construction of the groins from disturbance of subsurface sediments. These increases in turbidity and

suspended solids are likely to cause a short-term reduction in oxygen levels, a reduction in primary productivity and photosynthesis, and may clog gills and filter-feeding structures of some sessile aquatic species (Reilley et al. 1978, Courtenay et al. 1980). Periodic (every 5 years) renourishment activities would cause impacts similar to those generated during initial construction, but impacts would occur over a shorter period. However, because of tidal and current influences, and the relatively quick settling velocity of subsurface sediments (medium to fine grained sand), turbidity is expected to dissipate rapidly, both spatially and temporally (Naqvi and Pullen 1982) and the Project is not anticipated to have significant long-term impacts on water quality. Appendix B provides an evaluation of Project effects as related to the New York State Section 404(b)(1) water-quality guidelines.

The Project would have no significant impact on regional hydrology or groundwater resources.

The Project would have no significant impact on natural tidal fluctuations. Littoral currents in the Project area would be affected considerably as a result of the perpendicular shoreline orientation of the groins, the longest of which is designed to extend as far offshore as the existing groins in Point Lookout. The lengths of the four new groins will range from 450 lf to 775 lf. No new natural resources or endangered species have been identifying within the project area since the 1995 EIS. The groin system will dissipate onshore and alongshore wave-generated erosive forces, allowing littoral material to settle in the Project area.

4.3 NATURAL ENVIRONMENT

4.3.1 Aquatic and Terrestrial Habitats

Construction of the proposed Project modification would impact shoreline intertidal, subtidal, and upper beach and dune habitats. However, when compared to the original approved project, the Project modification will affect 110 fewer acres in the upper beach zone, 39 fewer acres in the intertidal zone, and 35 fewer acres in the sub-tidal zone. No new natural resources or endangered species have been identifying within the project area since the 1995 FEIS.

The upper beach zone and dunes represent terrestrial communities in the Project area. These areas are dominated by sand and bachgrass, therefore some impacts to the dunes and associated vegetation are anticipated primarily due to construction of permanent vehicle and pedestrian access ramps and walkways and placement of the sand barrier (i.e., dune) adjacent to the existing boardwalk in the city of Long Beach. As such, some permanent long-term impacts to the vegetated beach and dune communities are anticipated. However, impact are not deemed significant because the existing vegetated beach and dune communities are currently of relatively low overall value as a result of recreational use of the area and close proximity to high density development

Placement of groins would result in a small loss of intertidal beach and subtidal aquatic habitats located within the groin footprint. However, overall habitat within the intertidal zone would increase as the beach is widened as a result of proposed beach fill activities. In addition,groin structures themselves would reduce the rate of beach loss in the Project Area and would provide

vertical habitat for many marine organisms. The physical characteristics of the intertidal habitat will not be altered since the grain size of fill material will be the same as that of native sand in the Project area.

4.3.2 Aquatic and Terrestrial Wildlife

Finfish and Shellfish

Impacts during construction of the Project may include the mortality of clams, benthic fish communities (e.g., toadfish), and other invertebrates present in the sandy habitat of the Project area during placement of fill material and construction/extension of groins (Reilley et al. 1978, Courtenay et al. 1980, Naqvi and Pullen 1982). However, once constructed, the groins would improve habitat for some intertidal organisms (Carter 1989). For example, the crevices between the groin stones would provide protection from larger predators for the young of many species of finfish and shellfish.

Benthic feeding fish species (e.g., windowpane, summer and winter flounder) would experience temporary displacement until appropriate food sources recolonize the Project area (Courtenay et al. 1980). However, these and other fish that are present at the time of construction are expected to feed in the surrounding area and therefore will be unaffected by the temporary localized reduction in available benthic food sources.

The Project would impose minimal impacts during construction and for each renourishment for the local shellfish species within the Project area. No new natural resources or endangered species have been identifying within the project area since the 1995 FEIS. Most sessile species present directly underneath the Project footprint would be buried during construction. Motile shellfish species would be able to relocate temporarily outside of the immediate Project area. Based on surveys conducted in 2003, there are only small populations of surf clam in the offshore borrow area. Therefore no long-term significant impacts to surf clam populations are expected from the Project. Some species, such as rockweeds (*Fucus* spp.), oysters, and barnacles (*Balanus* spp.) would flourish on the newly constructed groins (Carter 1989).

In addition to the temporary impact to the fish and shellfish species of the Project area, a slight temporary increase in turbidity is also expected near the Project area during construction (Reilley et al. 1978, Courtenay et al. 1980, Naqvi and Pullen 1982). Increases in turbidity could affect the settling rate of shellfish ova and larva, and can clog and damage the gills of fish species (Uncles et al. 1998). However, the churned sediment would settle quickly and any impacts to the benthic fish and shellfish community would be minimal.

The Project would result in a long-term beneficial impact to both fish and shellfish species of the Project area. The groins would create areas suitable for recruitment and protection for numerous shellfish species. In addition, the groins would provide habitat and food source locations for fish species.

Benthic Resources

The proposed Project would cause short-term negative and long-term beneficial impacts to the benthic communities in the Project area (USACE 2001). Negative impacts to the benthic community would include the smothering of existing sessile benthic communities within the groin area and adverse effects to benthic organisms as a result of increased turbidity during construction. Beneficial impacts to the benthic community include the increase in food source, spawning beds, and shelter of the Project area (Reilley et al. 1978, Naqvi and Pullen 1982). No new natural resources or endangered species have been identifying within the project area since the 1995 FEIS.

The sessile benthic community beneath and in close proximity to the proposed groins would experience direct impacts. These species will be buried and some mortality of shellfish and polychaetes is expected for individuals that cannot escape during the construction process. In addition, a short-term impact to the existing benthic habitat would result from burial of the benthic floral and faunal community, which would cause a temporary decrease in food availability for the surviving benthic community.

The construction and extension of groins would cause a transient increase in turbidity within the Project area. One study performed in 1995 found that increased turbidity resulted in increased biological oxygen demand (BOD) (Uncles et al. 1998). No long-term impacts to BOD would occur because sediment would settle quickly upon completion of construction.

The construction and extension of groins would provide living spaces for the floral and faunal benthic species. Benthic resources would begin to recolonize the Project area immediately following Project completion. Infaunal organisms are likely to recolonize the area from nearby communities and re-establish to a similar community within a 1 to 2-year period (USACE 1995). It is possible that the species composition of the benthic community that reestablishes would be slightly different than the pre-construction composition (USACE 1995). Various floral species such as rockweed and spongomorpha (S*pongomorpha spp.*), and faunal species such as barnacle, oyster, and blue mussel, are expected to move into the area and colonize living space on the groin (Moore and Seed 1986).

Rockweeds are known to support numerous organisms, including both autotrophs and heterotrophs. In addition, rockweeds provide shelter, moisture at low tide, and food especially for the sessile epifaunal and epiphytic groups (Oswald et al. 1984). Gastropods, bivalves, and crustaceans are all common inhabitants of rockweeds. Thus, the benthic floral and faunal species increase throughout the Project area, the food source availability for the fish species, would also increase (Carter 1989).

In addition to creating living spaces and increasing food availability of the Project area, the proposed Project would provide shelter from wave attacks for the existing and surrounding benthic communities. Carter (1989) found that by orienting and streamlining, some bivalves and gastropods have reduced drag coefficients and increased the capability of resisting force.

Reptiles and Amphibians

No reptiles or amphibians are expected to occur within the Project are due to lack of suitable habitat. Therefore, there will be no long-term impacts to reptiles and amphibians as a result of the Project.

Birds

The shoreline of Long Beach Island provides feeding and resting areas for birds that pass through the area along the Atlantic flyway during annual migration in early spring and late fall (USACE 1998, 2003, 2004a). Heavy machinery and the increased noise levels may temporarily affect birds in the Project area during construction activities. These effects may indirectly result in displacement of individuals and/or disruptions to nesting near construction activities. In addition, proposed vehicle and pedestrian access areas will promote access to and use recreational use of beach areas. Several proposed access ramps would be located in close proximity to known shorebird nesting and foraging areas.

However, the overall impacts to bird species from the proposed Project are expected to be minimal. Avian species are mobile and are expected to avoid direct mortality. In addition, in accordance with recommendations by the USFWS most of the Project activities in the area of active nesting plovers will occur from September through April, outside the key spring and fall migration periods (Piping plover) to avoid disruption of migration activities (USFWS 1995, USACE 1995). Recreational use of the Long Beach shoreline is currently relatively high. Birds have adapted to the human use of the area and birds have continued to use the upper beach/dune area for nesting and foraging. Impacts to birds from the additional access areas to the beach are expected to be minimal.

Mammals

Although there is potential for Project construction activities to temporarily displace any mammals present in the area and limit access to feeding or nesting habitats, these species are mobile and are expected to avoid direct mortality (USACE 2004a). In addition, the sparsely vegetated terrestrial habitats impacted by the project (upper beach and dune) typically provide low quality habitat for mammals and are used only for foraging activities. Mammals are expected to utilize other suitable areas for foraging.

4.3.3 Threatened and Endangered Species and Habitats

The USACE is currently coordinating with USFWS, NYSDEC, and NMFS to assess impacts to threatened and endangered terrestrial and aquatic species and habitats as a result of the Project. Agencies are evaluating the existing resources and anticipated Project impacts in conjunction with the public and agency review period for this Draft EA and USFWS review of a Biological Assessment prepared by the USACE for this Project. No new natural resources or endangered species have been identifying within the project area since the 1995 FEIS. Previous comments from agencies have been incorporated into this EA and were taken into consideration during Project re-evaluation and during development of Project species monitoring and mitigation plans

(USACE 1995). The Fish and Wildlife Coordination Act 2(b) report for this Project is available in Appendix C.

Federal Species or Habitats of Concern

Federally listed species known to occur in the Project area include the Federally-threatened bird, piping plover, the Federally-threatened plant, sea beach amaranth, and transient Federally-listed threatened loggerhead (*Caretta caretta*), as well as the endangered Kemp's ridley (*Lepidochelys kempi*), leatherback(*Dermochelys coriacea*) , green turtles(*Chelonia mydas*) and Atlantic sturgeon. The remaining federally listed species that may occur in the project areas are: the endangered North Atlantic right whale (*Eubalaena glacialis*); the endangered humpback whale (*Megaptera novaeangliae*); and the endangered fin whale (*Balaenoptera physalus*).

The Project would potentially result in direct and/or indirect disturbances to nesting shorebirds and their broods, if any are present in the Project vicinity for this purpose at the time of construction. The USFWS recommended restricting construction activities to September 1 through April 1 in areas with nesting plovers to avoid direct adverse impacts to the shorebirds (USFWS 1995). Therefore, the USACE has incorporated this recommendation into its Project plans. The USACE will also prepare a Biological Assessment for piping plover, will help to facilitate the implementation of the USFWS' piping plover recovery plans through appropriate habitat management within the project boundaries, will perform pre-construction surveys to evaluate and document use of the Project Area by Federal or state-listed species, and if necessary will perform monitoring of nest sites before, during, and after construction within the Project area (USACE 1995). Additionally, in accordance with recommendations by the USFWS, protective fencing will be used to exclude humans from any area inhabited by threatened or endangered species (USFWS 1995, USACE 1995).

In accordance with the USFWS recommendations for protection of the sea beach amaranth, the USACE will survey the beach area prior to construction and avoid disturbing locations of the plant during the growing season (July 1 through November 1). Any sea beach amaranth plants identified in the construction area will be protected from incidental disturbance by construction equipment/materials by surrounding them with safety fence for avoidance. Construction activities will avoid all delineated locations of the plant and will undertake all practicable measures to avoid incidental taking of the plant. If any sea beach amaranth plants are identified within the direct construction footprint, the USACE will reinitiate consultation with the USFWS to identify acceptable alternatives or mitigation. In accordance with USFWS' recommendations, following construction, the USACE will conduct follow-up surveys of sea beach amaranth within the Project area, and will provide summary reports annually to the USFWS (USACE 1995, USFWS 1999). In addition, the USACE will prepare a Biological Assessment for sea beach amaranth.

The Federally-listed threatened loggerhead, as well as the endangered Kemp's ridley, leatherback, and green turtles may utilize coastal resources in the Project vicinity for foraging (USACE 1998, NMFS 1993). However, no nesting is likely to occur in the Project area because these species of sea turtles nest south of the Project area (NMFS 1993). In addition, NMFS has

indicated that the leatherback turtle feeds on pelagic prey and would not be affected by the Project. In accordance with NMFS recommendations, if hopper dredges are used in the inlets or offshore borrow area between mid-June and mid-November, NMFS-approved observers will be onboard the vessels to monitor the dredge material (NMFS 1993, USACE 1995). The District will coordinate with NMFS regarding any sea turtles observed or captured during dredging activities (NMFS 1993, USACE 1995). No new natural resources or endangered species have been identifying within the project area since the 1995 FEIS.

Dredging offshore areas has the potential to impact the Atlantic Sturgeon aquatic ecosystems by removal/burial of benthic organisms, increased turbidity, alterations to the hydrodynamic regime. Hydraulic dredges can directly impact sturgeon and other fish by entrainment in the dredge. Dredging may also impact important habitat features of Atlantic sturgeon if these actions disturb benthic fauna, or alter rock substrates (which do not occur in the project area). Indirect impacts to sturgeon from either mechanical or hydraulic dredging include the potential disturbance of benthic feeding areas, disruption of spawning migration, or detrimental physiological effects of resuspension of sediments in spawning areas.

Although little is known about natural predators of Atlantic sturgeon, there are several documented fish and mammal predators, such as sea lampreys, striped bass, common carp, minnow, smallmouth bass, walleye, grey seal, and fallfish. There are some concerns that predation may adversely affect sturgeon recovery efforts in fish conservation and restoration programs, and by fishery management agencies. However, further research is needed on predation affects on Atlantic sturgeon. BMP will be taken to ensure the recovery of this species which will be covered in our BA and continued coordination with NMFS.

The planned construction methods will enable most work to be staged and performed from the land and the groins, thereby reducing the temporary water quality impacts and general disturbances resulting from in-water construction activities. Additionally, transient listed species are expected to avoid the Project area during construction activities. Therefore, the project is not likely to adversely affect these protected species.

State Species or Habitats of Concern

No State-listed threatened or endangered species of reptiles, amphibians, mammals, or vegetation were identified in the Project area, although several State-listed bird species are known to use habitats similar to those found in the Project area. Impacts and considerations that offset the impacts to the State-listed least tern, roseate tern, and common tern and special concern species black skimmer, would be similar as described for Federally-listed species.

Other State-listed threatened species that occur in the general area include the northern harrier, osprey, and the transient peregrine falcon and bald eagle. Construction and operation of the Project is not expected to significantly impact these species because the Project would not affect their preferred nesting habitat, and other foraging habitat is readily available in the vicinity of the Project.

However, the USACE will prepare a Biological Assessment for piping plover, will help to facilitate the implementation of the piping plover recovery plans through appropriate habitat management within the project boundaries, will perform pre-construction surveys to evaluate and document use of the Project Area by Federal or state-listed species, and if necessary will perform monitoring of nest sites before, during, and after construction within the Project area. Additionally, in accordance with recommendations by the USFWS, protective fencing will be used to exclude humans from any area inhabited by Federal or state-listed threatened or endangered species (USFWS 1995, USACE 1995).

Essential Fish Habitat

Temporary impacts on EFH are predicted during periods of active construction and would be the same as those described in sections 4.3.2 (Finfish and Shellfish, and Benthic Resources impact sections). Habitat would be temporarily degraded during groin construction and beach fill placement, as elevated suspended sediment levels would temporarily lower dissolved oxygen and visual feeding efficiency, and irritate gill tissue. Although sessile benthic invertebrates would likely be smothered during construction, and aquatic habitat would essentially be unavailable to motile species during construction, implementation of the proposed Project is predicted to enhance EFH over the long term. The groins would create areas of recruitment and protection for numerous shellfish species, which would also provide habitat and food source locations for fish species.

4.4 CULTURAL RESOURCES

In accordance with the Advisory Council on Historic Preservation regulations for implementing the National Historic Preservation Act (NHPA), 36 Code of Federal Regulations [CFR] Part 800, the New York District has identified three potentially eligible resources, the *Mexico*, the *Marble* and an unidentified resource detected during the remote sensing survey that requires further study to determine its identity (Panamerican Consultants Inc. 1996, 1998a&b, and 2005). In order to address the potential impacts to these cultural resources, the New York District has prepared a Draft Programmatic Agreement (PA) which stipulates the steps required for the New York District to determine the eligibility of these resources, determine the level of impact the project may have upon those resources that are eligible for the NRHP, and further, to avoid or mitigate for the impacts. This process will be carried out in consultation with the NYSHPO and other interested parties. The draft PA has been provided to the NYSHPO for its review and comment . Execution of the PA will satisfy the New York District's responsibility under Section 106 of the NHPA. The draft PA and other supporting documentation are provided in Appendix F.

4.4.1 Historic Resources

No structures will be affected by the proposed project. A transatlantic cable dating from 1873 may be located within the nearshore portion of the Project area (USACE 1999). However, deposition of sand during construction would help to protect the cable. No adverse impacts to the cable are expected from the Project (NYSOPRHP 1993).

4.4.2 Shipwrecks

As stipulated in the draft PA, the New York District will carry out remote sensing and dive investigations to determine whether the *Mexico*, the *Marble*, and an additional unknown resource are eligible for the NRHP. Prior to construction the New York District shall determine the level of impact expected for each site and in coordination with the NYSHPO and other interested parties to carry out the necessary mitigative measures for each NRHP eligible site (Panamerican Consultants, Inc. 2005).

4.4.3 Submerged Sites

Based on cores taken at the proposed borrow area, potential lagoonal deposits occur at 20 feet depth. Sumberged prehistoric sites would occur below this depth (Pickman 1993). Thus, dredging activities for the Project would have no impact on submerged prehistoric sites. Should dredging depth exceed 20 feet, additional studies would be required to determine whether prehistoric deposits exist within the borrow area.

4.5 SOCIOECONOMIC ENVIRONMENT

4.5.1 Floodplains

Affect on floodplains from the Project and proposed project modification are similar. The Project modification would be beneficial for the Project area as a result of reducing the impacts of tides and wave attacks to the beachfront in the Project area and reducing the movement of sediment, thus maintaining a wider beach and increasing storm protection and recreational opportunities.

4.5.2 Coastal Zone Management

As required under the Federal Coastal Zone Management Act, the USACE reviewed the proposed Project in relation to the applicable policies of the New York State Coastal Zone Management Program and determined that it is consistent with all relevant policies in the original EIS. The New York State Coastal Zone Management Program Consistency is still pending and will be provided as Appendix D.

4.5.3 Aesthetics and Scenic Resources

The Project would result in the addition of several groins in the viewshed and some reconstructed/extended groins would be larger than the existing groins. However, these changes do not significantly reduce the aesthetic and scenic resources, because groins are already part of the viewshed in the Project area.

4.5.4 Recreation

No significant or long-term impacts to recreational resources in the Project area are anticipated as a result of the proposed Project. Temporary disruption of recreational activities along the beach and boardwalk may occur in the Project area as a result of construction activities. However, these impacts would be minor and would be limited to the duration of construction activities in the Project area. Potential long-term benefits to recreational resources in the Project area include additional areas available for sport fishing (i.e., additional groins), an increase in the size of recreational beach area, improved access to comfort stations and lifeguard headquarters, and protection of beaches.

4.5.5 Transportation

Temporary disruption of traffic on local roadways and thoroughfares in the Project area may occur due to the delivery of stone rubble and other Project materials and equipment. These impacts would be minor and limited to the construction period. Project activities will not extend within the inlets and would therefore not impede boat traffic in these areas. No long-term impacts on transportation resources in the Project area are anticipated as a result of the proposed Project.

4.5.6 Noise and Air Quality

Sources of noise for the proposed Project include dredging equipment, several bulldozers (or similar equipment), and a pump-out station (if used). Construction activities would result in short-term minor increases in noise generation as a result of the operation of construction equipment. No long-term significant impacts would occur.

Similar to noise impacts, sources of emissions/pollution include emissions from cutterhead dredges, several bulldozers (or similar equipment), and a pump-out station (if used). The project is expected to commence during the fourth quarter of calendar year 2014 and is expected to be completed within either a 4-year or a 5-year construction schedule. Options to reduce emissions are currently being evaluated and include a reduction in the overall scope of the proposed Project; use of additives to lower emissions (e.g., PuriNOxTM Technology); revising the methods for executing the project (e.g., using electric dredges); use of cleaner burning equipment (e.g., specifying equipment with engines meeting Tier II or Tier III emission levels).

All water resources projects including coastal storm risk management projects must consider, and must include, Clean Air Act compliance. Projects must consider the emissions associated with the construction activities, and ensure that the effects are acceptable, or brought to an acceptable range. New York District has examined, in detail, how various projects could be implemented in such a manner to comply with the Clean Air Act. The estimated cost to comply, are included, as part of the total project cost. In this instance, an analysis of emission outputs, in terms of nitrogen dioxide (NO_x), identified that the project would exceed the National Ambient Air Quality Standards (NAAQS) allowable threshold of 100 tons/year and 100 tons per year for

PM 2.5. Additionally, this project has not been accounted for in the New York State Implementation Plan (SIP). As such, the alternatives to comply with the Clean Air Act include:

a. extend the construction period so as to prevent emissions in any one year reaching or exceeding the threshold level;
b. reduce project emissions by altering the set of equipment used or changing the way the equipment is operated, or both;
c. offset project emissions by causing emissions produced within the non-attainment area (any area that the Environmental Protection Agency currently designates as not meeting one or more of the NAAQS for criteria pollutants, or more specifically within the NJ/NY/CT tri-state non-attainment area) by others to be less than they otherwise would have been;
d. purchase, year by year, emission reduction credits (ERCs) generated by emission reductions accomplished by "stationary sources" within the non-attainment area
e. identify new offset possibilities; or State agrees to accommodate the project in the SIP

For this project these alternatives were compared and it was determined that the most cost effective means would be to suspend construction during the peak ozone season each year, thus extending the period of construction but also avoiding emissions of pollutants like NO_x for the period during which they are of concern. For a more detailed analysis of the Clean Air Act Compliance alternatives and the formulation of the selected alternative refer to Appendix .

4.6 ENVIRONMENTAL JUSTICE

In accordance with Executive Order 12898 (dated February 11, 1994), Federal agencies are required to identify and address the potential for disproportionately high and adverse environmental and human health effects on minority and low-income populations, resulting from the agencies' programs, policies, and activities.

Population in the City of Long Beach has decreased from a 1990 total population of 33,510 to a 2010 total of 33,275. The Town of Hempstead has shown an increase in population from 49,453 (1990) to 53,891 (2010). The Lido Beach Community's population has increased from 2,786 (1990) to 2,897 (2010). This population for Nassau County has increased from 1,287,348 (1990) to 1,339,532 (2010). The population trend for the project area is expected to be stable in the future.

The population of Long Beach population is composed of predominately non-minority white populations. In this area, approximately 77% of the population is white, 5.8% of the population is black, 12.8% are Hispanic and the remaining 4.3% of the population includes other races such as Asian, Pacific Islanders, American Indians, and other races (Ersys 2000).

No significant or unacceptable adverse environmental or human health effects are expected to result from the proposed action. Therefore, there would be no disproportionately high and adverse impact to minority or low-income populations.

5.0 CONCLUSION

When compared to the original Project that was presented in the 1995 FEIS and approved through a Record of Decision in 1998, the proposed Project modification includes several structural features and activities (i.e., groin extension, new groin, rehabilitation of groin, dune ramps, and boardwalk/walkover extensions) that are in addition to those proposed in the original Project (Table 1). However, the overall Project area has been reduced in the proposed Project modification and several structural features and activities have been eliminated. The impacts within a 136-acre shorebird nesting/foraging area have been greatly reduced. As a result, the proposed modification has significantly reduced the area of fill placement and the amount of fill material required for the Project. Specifically, 184 fewer acres will be filled (i.e., approximately 110 acres of filling in the upper beach zone, 39 fewer acres of filling in the intertidal zone, and 35 fewer acres of filling in the sub-tidal zone), the amount of initial fill material required for the Project has been reduced by 3,922,000 cubic yards (cy), and the amount of fill material needed for 5-yr renourishment activities has been decreased to 1,770,000 cy per yr.

Similar to the original Project, the Project modification will still result in some short-term negative impacts to water quality, terrestrial and aquatic habitats and the species that utilize the habitats. There is also a possibility that cultural resources could be affected, however, studies to determine potential impacts are ongoing at this time. In addition, it has been determined that the proposed Project would exceed the Federal de minimis thresholds of 100 tons per year for NOx air emissions.

Impacts to other environmental resources in the proposed Project Area are expected to be minor and less than those that would have resulted from the original Project. Specifically, the modification will include the placement of unvegetated hard structures (buildings, groins, and beach access walkovers, ramps) in dune/upper beach, intertidal, and subtidal areas. These structures will permanently cover the substrate beneath the footprint and non-mobile benthic species and will limit the use of the area directly within the structure footprint for foraging by shorebirds and wading birds and some fish species. However, these impacts are not significant because; affected species will utilize other suitable habitat for foraging activities; the existing upper beach and dune areas in these locations are currently of relatively low value to most wildlife species and do not support any Federal or state-listed species; the direct loss of benthic species and vegetation will be minimal and would not affect populations; and groins are likely to reduce the overall rate of beach loss and erosion in the Project Area and will increase the forage base for many fish species by increasing invertebrate biomass. The changes in the conditions of the resources are not significant, and the proposed impacts on these resources as a result of the authorized project are not significantly different than those described in the FEIS which was approved for the original Project in 1995.

The use of BMP construction procedures and mitigation measures, pre-construction surveys for species of special concern in the Project Area, and avoidance of key breeding/nesting and spawning periods, will reduce potential for negative impacts. Furthermore, implementation of the proposed Project will have significant overall beneficial impacts to the environment and

surrounding communities, including benefits to aquatic habitats and species, an increase in the availability of suitable habitat for Federal and state-listed species and a diversity of shorebird communities, improved shoreline stabilization and flood protection, and recreational opportunity.

Based on a thorough evaluation of potential impacts performed for the 1995 FEIS and this EA, it has been determined that with the exception of anticipated high NOx emission levels, there will be no significant adverse impacts due to implementation of the proposed Project modification. Comments from agencies and interested parties have been addressed and all practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan. This EA will be uploaded to the NYD web page for public review https://intranet.usace.army.mil/nad/nan/Pages/Home.aspx

6.0 LIST OF PREPARERS

A list of preparers for this DEA is provided below, including name, position, and role in preparation of the DEA.

TABLE 5-1. LIST OF PREPARERS

Name	Position	Role in DSEA Preparation
U.S. Army Corps of Engineers, New York District		
Robert Smith	Project Environmental Manager	Project Management Review

7.0 COORDINATION WITH REGULATORY AGENCIES

All necessary permits were obtained for the 1995 proposed Project and a favorable ROD was filed in 1999. The USACE will continue to coordinate with the NYSDEC to obtain a Section 401 Water Quality Certificate, and the New York State Office of Coastal Zone Management to obtain a consistency determination for the proposed project modifications. The USACE will also coordinate closely with NYSDEC and the USEPA regarding nonattainment for NOx air emissions.

In addition, the USACE is continuing to coordinate with the USFWS pursuant to Section 2(b) of the Fish and Wildlife Coordination Act. A Final Fish and Wildlife Coordination Act Report was issued by the USFWS for the original Project (USACE 1995). Coordination with the USFWS is ongoing pursuant to finalizing this final report, and also pursuant to completing consultations in compliance with Section 7 of the Endangered Species Act (ESA) and subsequent re-evaluation and modification to the Project. In addition, the USACE is consulting with the National Marine Fisheries Service in accordance with Section 7 of the ESA and Section 305(b)(2) of the MSFCMA. Also it has been determined that a section of the Project falls within the Coastal Barrier Resources System (CBRS). Section 5 of the Coastal Barrier Resources Act (CBRA; 16 U.S.C. § 3504) prohibits new Federal expenditures or financial assistance within System units of the CBRS. The District is currently coordinating with the FWS to get an exemption.

In addition, this DEA shall be distributed to all appropriate Federal, State, and local agencies and interested parties, pursuant to NEPA (Appendix I). All applicable Federal, State, and local policies will be complied with during review and implementation of the proposed Project.

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