FINDING OF NO SIGNIFICANT IMPACT

Issuance of a Negotiated Agreement Authorizing Use of Outer Continental Shelf Sand from Borrow Area D2 in the Barnegat Inlet to Little Egg Inlet (Long Beach Island), New Jersey Storm Damage Reduction Project

Pursuant to the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508), the U.S. Army Corps of Engineers Philadelphia District (Corps), in cooperation with the Bureau of Ocean Energy Management (BOEM), prepared an environmental assessment (EA) to determine whether the proposed use of Outer Continental Shelf (OCS) sand resources (Borrow Area D2) in the Long Beach Island (NJ) Storm Damage Reduction Project (Project) would have a significant effect on the human environment and whether an environmental impact statement (EIS) should be prepared. Pursuant to the Department of the Interior (DOI) regulations implementing NEPA (43 CFR 46), BOEM has independently reviewed the EA and determined that the potential impacts of the proposed action have been adequately addressed.

Proposed Action

BOEM's proposed action is the issuance of a negotiated agreement to authorize use of D2 so that the project proponents, the Corps and the New Jersey Department of Environmental Protection (NJDEP) (non-federal sponsor), can obtain up to 7 million cubic yards (MCY) of OCS sand for the Project. The Corps' proposed action is the nourishment of approximately 16.9 miles of shoreline, of which 4.5 miles have already been constructed.

The purpose of BOEM's proposed action is to respond to the Corps' and NJDEP's request for use of OCS sand under the authority granted to the DOI by the Outer Continental Shelf Lands Act (OCSLA). The legal authority for the issuance of negotiated noncompetitive leases for OCS sand and gravel is provided by OCSLA (43 U.S.C. 1337(k) (2)). The project was authorized by Congress for initial construction by Section 101(a)(1) of the Water Resources and Development Act of 2000 and is funded under the Disaster Relief Appropriations Act of 2013.

Alternatives to the Proposed Action

In 1999, the Corps prepared a Final Environmental Impact Statement (FEIS) evaluating a suite of structural and non-structural alternatives to the proposed action. The Corps selected beach nourishment as the preferred alternative and subsequently constructed approximately 4.5 miles of the Project, including two emergency repairs, from 2006-2013 using a 683-acre borrow area (D1) located within state waters. There is insufficient volume of sand remaining in D1 for continued project maintenance and/or full project construction. The 1034-acre OCS borrow area D2 was identified and evaluated as a new sand resource. The EA, which tiers from and updates the 1999 FEIS, evaluates the use of D2 and several other sources of beach-quality sand.

Two practical alternatives were considered by BOEM: A) authorize use of the OCS borrow area D2 and B) the No Action alternative. The potential impacts resulting from BOEM's no action, or not issuing the negotiated agreement, would depend on the course of action subsequently pursued by the project proponents. The options considered include:

(a) Identification and use of another alternative offshore borrow location of comparable sand quantity and quality,
(b) Identification and use of onshore sources of comparable sand quantity and quality, or
(c) Not constructing the project.

None of these options would fully meet the Project's purpose and need and address the storm damage reduction needs in a timely manner. Alternative economically-viable borrow areas with sufficient beach compatible sediment have not been identified at this time, despite previous regional resource evaluation studies (i.e. inlet, nearshore, and offshore environments). Option (a) would not minimize overall environmental effects as potential effects would be comparable, or potentially worse, depending on the borrow location. Option (b) is not considered to be economically viable, as suitable upland sources are limited in the project area. In the case of no project under option (c), coastal erosion would continue, available habitat would continue to deteriorate, the recreational amenity associated with the public beach would be severely affected, and the likelihood and frequency of property and storm damage would increase.

Environmental Effects

This EA evaluates the impacts from the proposed action, including connected actions of conveyance and placement of the sand. The EA incorporates by reference the previous effects analyses that have been determined to still be valid and augments a subset of analyses in light of new information. No new significant impacts were identified, nor was it necessary to change the conclusions of the types, levels, or locations of impacts described in previous documents. The EA and FONSI identify all mitigation, monitoring, and reporting requirements necessary to avoid, minimize, and/or reduce and track any foreseeable adverse impacts that may result from all phases of construction. A subset of these requirements, specific to activities under BOEM jurisdiction, will be incorporated into the negotiated agreement (Attachment 1).

Significance Review

Pursuant to 40 CFR 1508.27, BOEM evaluated the significance of potential environmental effects considering both CEQ context and intensity factors. The potential significance of environmental effects has been analyzed in both spatial and temporal context. Potential effects are generally considered reversible because they will be minor to moderate, localized, and short-lived. No long-term significant or cumulatively significant adverse effects were identified. The ten intensity factors were considered in the EA and are specifically addressed below:

1. Impacts that may be both beneficial and adverse.

Potential adverse effects to the physical environment, biological resources, cultural resources, and socioeconomic resources have been considered. Temporary reduction of water quality is expected due to elevated turbidity during dredging and placement operations; however, the Project will be constructed using best management practices to avoid violation of NJ's Surface Water Quality Standards. Total increases in air emissions from offshore and onshore equipment are small, localized, and temporary relative to existing point and nonpoint and mobile source emissions in Ocean County, NJ. In accordance with the Clean Air Act, this project will comply with the General Conformity (GC) requirements (40 CFR 90.153). Short-term and local adverse effects to benthic and fishery resources are expected within the dredging and placement areas. Dredging depths within D2 are limited to 5-10 feet below the existing elevations to facilitate

ecological recovery by minimizing impacts to shoal morphology and habitat. Potential dredging entrainment risk of sea turtles, Atlantic sturgeon, and shortnose sturgeon has been reduced through the use of sea turtle deflecting dragheads and associated operating parameters. Potential effects to marine mammals have been reduced through vessel speed and avoidance protocols. Temporary displacement or behavior modification of birds near the borrow and/or beach placement areas could occur through direct construction impacts and/or indirect impacts to benthic prey base. For safety reasons, navigational and recreational resources located in the vicinity of the dredging operation would temporarily be unavailable for public use. A temporary increase in noise levels and a temporary reduction in the aesthetic value would occur with the presence and operation of construction equipment.

There would also be beneficial impacts from increased storm protection and an improved recreational beach. Shorebirds that utilize the project area for nesting, breeding, feeding and resting may be displaced due to construction and/or reduced prey abundance in the short term; however, long term benefits may be obtained from the newly created shorebird habitat associated with the constructed and maintained beach.

2. The degree to which the proposed action affects public health or safety.

The proposed activities are not expected to significantly affect public health. Construction noise will temporarily increase ambient noise levels and equipment emissions would decrease air quality in the immediate vicinity of placement activities. The public is typically prevented from entering the segment of beach under construction, so recreational activities will not be occurring in close proximity to operations. Dredging operations will be performed in accordance with an environmental protection plan, addressing marine pollution, waste disposal, and air pollution. The Corps will be conducting inspections to ensure compliance with the plan.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

No prime or unique farmland, park lands, designated Wild and Scenic reaches, wetlands, or critical habitat for listed species would be impacted by implementation of the Project. All "environmentally sensitive" *Prime Fishing Areas* designated by state resource agencies were avoided. Dredging within D2 has the potential to impact Essential Fish Habitat (EFH) through direct entrainment, higher suspended sediment levels, reduced feeding success, and reduced water oxygen levels. All of these impacts are limited in their spatial and temporal extent and will not adversely affect EFH on a broad scale. Additionally, D2 and the nearshore environment were surveyed for cultural resources and appropriate buffers incorporated into the proposed action to ensure no construction related impacts to potentially significant historic properties.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

No effects are expected that are scientifically controversial. Effects from beach nourishment projects, including dredging on the OCS, are generally well studied. The effects analyses in the EA has relied on the best available scientific information, including information collected from previous dredging and nourishment activities in and adjacent to the project area. Project specific

benthic community composition studies have been undertaken in the vicinity of D2 along with other more general studies evaluating the effects of dredging and beach nourishment activities.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Beach nourishment is a common solution to coastal erosion problems along the mid-Atlantic coast. Phased construction has occurred in 2006, 2010, and 2012 within the project area, and no significant adverse effects have been documented to date. The project design is typical of beach nourishment operations. Mitigation and monitoring efforts are similar to that undertaken for past projects and have been demonstrated to be effective. Though proposed hopper dredging activities have the potential to entrain sea turtles and sturgeon, no incidental takes have been documented within the project area based on historic endangered species observer data. Small caliber Munitions and Explosives of Concern (MEC) have been and may be encountered during dredging operations; however, a 1.25 inch screen will be placed on the dredge intake to prevent any of the MEC from entering the hopper. Additionally, a 0.75 inch screening basket will be placed on the discharge end of the pipe to preclude placement on the beach. Based on past experiences constructing similar projects and implementation of previously implemented mitigation measures, the effects of the proposed action are not expected to be highly uncertain and the proposed activities do not involve any unique or unknown risks.

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

No precedent for future action or decision in principle for future consideration is being made in BOEM's decision to authorize use of D2 for this construction cycle. BOEM considers each use of a borrow area on the OCS as a new federal action. The Bureau's authorization of the use of the borrow area does not dictate the outcome of future leasing decisions. Future actions will also be subject to the requirements of NEPA and other applicable environmental laws.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.*

Significance may exist if it is reasonable to anticipate cumulatively significant impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. The EA identifies those actions and potential impacts related to underlying activities. The EA and previous NEPA document conclude that the activities related to the proposed action are not reasonably anticipated to incrementally add to the effects of other activities to the extent of producing significant effects. Although there will be a short-term and local decline in benthic habitat and populations, both are expected to recover within a few years. No significant cumulative impacts to benthic or fish habitat and associated communities are expected from the use of D2.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

The proposed action is not expected to adversely affect historic resources. Seafloor-disturbing activities (e.g., dredging, anchoring, pipeline emplacement and relocation) may occur during proposed construction activities. An archaeological clearance survey was performed in the

borrow areas, and no cultural resources were identified. Additional surveys were conducted of the beach placement and nearshore submerged project areas. Six anomalies were located on the beach placement area. Two submerged anomalies identified proved to be shipwreck sites potentially eligible for listing on the National Register of Historic Places (NRHP). These sites will be avoided by 200 feet to ensure no impact to potentially significant historic properties. The placement of sand on the beach is expected to further bury and protect the other anomalies from storm damage. Another remote sensing survey will be performed in advance of construction activity to establish corridors for pump-out and conveyance operations; any targets or anomalies identified will be avoided during the emplacement and retrieval of submerged pipeline.

The Corps and BOEM will work with the New Jersey State Historic Preservation Office (SHPO) should a shipwreck or other culturally important remains be unexpectedly discovered. No significant impacts to cultural resources are anticipated with implementation of the measures to protect identified resources, cease work if an unexpected discovery occurs, and immediately notify the SHPO upon discovery so they can determine if the resource is significant or not and make the determination of the best means to protect the resource. The project is in compliance with the National Historic Preservation Act (NHPA), as amended; the Archeological and Historic Preservation Act (AHPA), as amended; and Executive Order 11593.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973.*

Listed species present within the project area under U.S. Fish and Wildlife Service (FWS) jurisdiction include sea beach amaranth, piping plovers, and the red knot (currently proposed for listing). Listed species under National Marine Fisheries Service (NMFS) jurisdiction within the in-water dredging environment include five species of sea turtles, Atlantic sturgeon, shortnose sturgeon, and six federally listed species of endangered whales. No designated critical habitat is present for any of these species within the project area. BOEM and the Corps have consulted with both the FWS and NMFS pursuant to ESA and have concluded that the Project may affect but is not likely to adversely affect listed species within the project area. The Corps will minimize beach construction impacts to piping plovers through compliance with the USFWS's guidelines for managing recreational activities in piping plover breeding habitat. Though the occurrence of sea beach amaranth in the project area is unlikely, protective buffers will be implemented if necessary. The red knot is not known to occur in the immediate project vicinity.

Consultation with the NMFS for the proposed action is ongoing; however, the Project and associated minimization measures is consistent with past informal and formal consultations for dredging activities. Standard protocol will be implemented to reduce the risk of sea turtle and sturgeon entrainment during hopper dredging operations. Additionally, dredge operators will monitor the presence for whales and implement slow down procedures to avoid collision risk. As the lead federal agency, the Corps will comply with all applicable Reasonable and Prudent measures (RPM's) and associated Terms and Conditions (T&C's) of the pending NMFS Biological Opinion (BO) for this project. As a cooperating federal agency, BOEM will: (1) be engaged throughout the ongoing consultation process, (2) will have the opportunity to review the Corps' contract plans and specifications, and (3) participate in the pre-construction meeting prior

to construction to reinforce the implementation of all applicable RPM's and T&C's within the final BO.

10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

The Corps must comply with all applicable federal, state, and local laws and requirements. The dredging contractor will be required to provide an environmental protection plan that verifies compliance with these environmental requirements. BOEM and the Corps have undertaken the necessary consultations with NMFS, FWS, and other state agencies. On 1 May 2014, the NJDEP, Division of Land Use Regulation, determined that the proposed project is conditionally consistent with New Jersey's rules on Coastal Zone Management and the applicable rules guiding issuance of a water quality certificate, pursuant to Section 401 of the Clean Water Act. The Project will be conducted in a manner that should not violate NJDEP's Surface Water Quality Standards. The proposed action is in compliance with the Marine Mammal Protection Act. Marine mammals are not likely to be adversely affected by the Project and incorporation of safeguards to protect threatened and endangered species during Project construction would also protect marine mammals. Migratory birds are not likely to be adversely affected by the proposed action. No recent nesting of migratory birds has been reported in the placement area and all known nesting areas have been excluded from the project area.

Consultations and Public Involvement

The Corps, serving as the lead federal agency, and BOEM, in a cooperating role, has coordinated with the USFWS, NMFS, NJDEP, and NJ SHPO in support of this leasing decision. The EA was subject to a public comment period. Pertinent correspondence with federal and state agencies is provided in Appendix C of the EA. The EA and FONSI will be posted to BOEM web site [http://www.boem.gov/Non-Energy-Minerals/Marine-Minerals-Program.aspx].

Conclusion

BOEM has considered the consequences of issuing a negotiated agreement to authorize use of OCS sand from borrow area D2 for the Project. BOEM independently reviewed the attached EA (Attachment 2) and finds that it complies with the relevant provisions of the CEQ and DOI regulations implementing NEPA and other Marine Mineral Program requirements. Appropriate terms and conditions enforceable by BOEM will be incorporated into the negotiated agreement to avoid, minimize, and/or mitigate any foreseeable adverse impacts (Attachment 1).

Based on the evaluation of potential impacts and mitigating measures discussed in the EA, BOEM finds that entering into a negotiated agreement, with the implementation of the mitigating measures, does not constitute a major federal action significantly affecting the quality of the human environment, in the sense of NEPA Section 102(2) (C), and will not require preparation of an EIS.

James F. Bennett
Chief, Division of Environmental Assessment

5/23/14
Date

ATTACHMENT 1 PROPOSED MITIGATION MEASURES

This attachment includes the draft Plan and Performance Measures provided to the BOEM Leasing Division for inclusion in the Memorandum of Agreement.

1.1 Plans and Performance Requirements

The USACE will include this MOA as a reference document in advertising the Plan prior to construction. The USACE will provide BOEM with a copy of the Plan. BOEM will review the Plan within one (1) week of receiving it, thus ensuring that each activity or operation is conducted in a manner that is in compliance with the provisions and requirements of the MOA, including any terms and conditions identified in any Biological Opinions (BOs) resulting from consultation related to the Project, consistent with Paragraph 2, "Environmental Responsibilities and Environmental Compliance" below. Subject to the provisions in this MOA, activities or operations related to the Project authorized by this MOA at the D2 Borrow Area may be initiated after expiration of the 1-week BOEM review period, or such earlier date if BOEM provides concurrence that the Plan meets the provisions and requirements of the MOA and includes any terms and conditions identified in any resulting BOs. The USACE will allow BOEM to review and comment on modifications to the Plan that may affect the borrow area or pipeline corridors on the OCS, including the use of submerged or floated pipelines to convey sediment from the borrow area to the placement site, before implementation of the modification. The USACE, as the Project administrator, reserves its right to proceed as necessary to prevent delaying the contract or Project schedule subject to these conditions.

The USACE will ensure that all operations at the D2 Borrow Area are conducted in accordance with the final approved Plan and all terms and conditions in this MOA, as well as all applicable statutes, regulations, orders, and any guidelines or directives specified or referenced herein are met.

The preferred method for obtaining and conveying sand resources from the D2 Borrow Area will be consistent with the NEPA and authorizing documents, as well as project permits. Dredging depths will not exceed any specifications identified in the Plan.

However, if dredging and/or conveyance methods are not wholly consistent with those evaluated in relevant NEPA documents for this Project, environmental and cultural resources consultations, and those authorized by relevant project permits, additional environmental review may be necessary. If the additional NEPA review, consultations, or permit modifications would impact or otherwise require supplementation of the provisions of the MOA, an amendment may be required.

Prior to the commencement of construction, the USACE must electronically provide BOEM with a summary of the construction schedule, consistent with Paragraph 15. The USACE, at the reasonable request of BOEM or the Bureau of Safety and Environmental Enforcement (BSEE), must allow access, at the site of any operation subject to safety regulations, to any authorized Federal inspector and must provide BOEM or BSEE with any documents and records that are pertinent to occupational or public health, safety, environmental protection, conservation of

natural resources, or other use of the OCS, as may be requested.

1.2 Environmental Responsibilities and Environmental Compliance

The USACE is the lead agency on behalf of the Federal Government to ensure the Project complies with applicable environmental laws, including but not limited to the ESA, MSA, NHPA, and CZMA and any consultations or limitations imposed thereunder. The USACE is responsible for compliance with the specific conditions of relevant state permits.

Pursuant to 50 CFR §402.07, the USACE is designated as the lead Federal agency for ESA Section 7 consultation concerning protected species under the purview of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). The USACE will require its contractor(s) to implement the mitigation terms, conditions, and measures required by the USFWS, NMFS, the New Jersey Department of Environmental Protection, and BOEM pursuant to applicable Federal and state laws and regulations prior to commencement of activities authorized under this MOA, including extraction, transportation, and placement of OCS sand resources from the D2 Borrow Area. The required mitigation terms, conditions, and measures are reflected in the relevant BOs, Conservation Recommendations, Water Quality Certifications, Consistency Determinations, and applicable state or local permits issued to the USACE.

As lead agency, the USACE has initiated ESA Section 7 consultation with NMFS and a Biological Assessment has been submitted. This consultation is anticipated to result in either a BO or a concurrence with the May Affect/Not Likely to Adversely Affect determination. Therefore, based on the outcome of the consultation, BOEM reserves the right to amend this MOA, as necessary, if additional and/or different mitigation and minimization measures are required by NMFS. Furthermore, BOEM reserves the right to review the Plan and participate in the pre-construction meetings as discussed in Paragraphs 1 and 3, respectively, to ensure compliance with all terms and conditions in any BOs issued as a result of consultation prior to initiation of construction activities. If an incidental take of sea turtles or other endangered species should occur within Federal waters by the USACE or its authorized contractor(s) and is not covered by an incidental take statement (ITS), BOEM may require suspension of activities authorized in the MOA and reinitiation of the consultation may be warranted. The type, amount, and severity of incidental take not covered by an ITS that will trigger suspension, and the need for any such suspension or reinitiated consultation, will be determined by BOEM and the USACE jointly. Depending on the results of an assessment of any incidental take not covered by an ITS or any reinitiated consultation, BOEM expressly reserves the right to: (1 lift the suspension, (2 revoke and terminate the MOA, (3 negotiate with the Parties on an amendment to the existing MOA, or (4 enter into a new MOA with additional terms and conditions to protect threatened or endangered species. BOEM shall provide prompt written notice to the Parties of any such suspension of the MOA and activities authorized herein, and request that consultation be reinitiated with NMFS, as applicable and as described herein.

Electronic copies of all relevant and non-privileged correspondence, monitoring data, and reports related to activities covered by this MOA must be provided electronically to BOEM within 14 days of issuance (including observer and dredging reports), unless an earlier timetable is provided in any applicable Biological Opinion, permit or other authorization for the Project. Construction must not commence until the pre-construction requirements have been completed,

including but not limited to completion of the consultation as described herein.

1.3 Pre-Construction Notification of Activity in or near the Borrow Area

The USACE will invite BOEM to attend a pre-construction meeting that describes the USACE's and/or its contractors' or agents' plan and schedule to construct the Project.

The USACE will also notify BOEM electronically at least 72 hours prior to the commencement, and by the next business day after termination, of operations at the D2 Borrow Area. BOEM will electronically notify the USACE in a timely manner of any OCS activity within the jurisdiction of the DOI that may adversely affect the USACE's ability to use OCS sand resources for the Project.

1.4 Dredge Positioning

During all phases of the Project, the USACE will ensure that the dredge and any bottom-disturbing equipment is outfitted with an onboard global positioning system (GPS) capable of maintaining and recording locations within an accuracy range of no more than plus or minus 3 meters. The GPS must be installed as close to the hydraulic dredge as is practicable or must use appropriate instrumentation to accurately represent the position of the hydraulic dredge. During dredging operations, the USACE will notify BOEM electronically if dredging occurs outside of the approved borrow area. Such notification will be made as soon as possible after the time the USACE becomes aware of dredging outside of the approved borrow area.

Anchoring, spudding, or other bottom-disturbing activities are not authorized outside of the authorized borrow area on the OCS, except when there are immediate concerns regarding safety, navigation risks, or emergency situations.

The USACE will electrically provide BOEM all appropriate Dredging Quality Management (DQM) data acquired during the Project using procedures jointly developed by the USACE's National Dredging Quality Management Data Program Support Center and BOEM. The USACE will submit the DQM data, including draghead, cutterhead, or other hydraulic or mechanical dredging device depth biweekly. A summary DQM dataset will be submitted within 90 days of completion of the Project. If available, the USACE will also submit Automatic Identification System (AIS) data for vessels qualifying under the International Maritime Organization's (IMO) International Convention for the Safety of Life at Sea.

1.5 Dredge Operation

Dredging will occur using a hydraulic cutterhead or trailing suction hopper dredge. The USACE will provide the dredging contractor with a sufficiently large enough borrow area to work within to accommodate physical and biological impact minimization measures to the extent practicable. Specifically, dredging within D2 shall be conducted in a manner to maintain overall shoal integrity by restricting cut depths to 5-10 feet, avoid creating deep depressions or pits, and leaving un-impacted portions of the delineated borrow area to augment benthic recolonization.

1.6 Submittal of Production and Volume Information

The USACE, in cooperation with the dredge operator, will submit to BOEM on a biweekly basis an electronic summary of the dredge track lines, outlining any deviations from the original Plan.

A color-coded plot of the draghead, cutterhead, or other hydraulic or mechanical dredging device will be submitted, showing any horizontal or vertical dredge violations. The dredge track lines must show dredge status, including hotelling, dredging, transiting, or unloading. This map will be provided in PDF format.

The USACE will provide to BOEM at least a biweekly report electronically, of the construction progress including estimated volumetric production rates. The project completion report, as described under Paragraph 13 below, will also include production and volume information, including Daily Operational Reports.

1.7 Local Notice to Mariners

The USACE will require its contractor(s) for the Project to place a notice in the U.S. Coast Guard Local Notice to Mariners regarding the timeframe and location of dredging and construction operations in advance of commencement of dredging.

1.8 Marine Pollution Control and Contingency Plan

The USACE will require its contractor(s) and subcontractor(s) to prepare for and take all necessary precautions to prevent discharges of oil and releases of waste and hazardous materials that may impair water quality. In the event of such an occurrence, notification and response will be in accordance with applicable requirements of 40 C.F.R. part 300. All dredging and support operations must be compliant with U.S. Coast Guard regulations and the U.S. Environmental Protection Agency's Vessel General Permit, as applicable. The USACE will notify BOEM of any noncompliant discharges and remedial actions taken, and will provide copies of all reports of the incident and resultant actions electronically.

1.9 Encounter of Ordnance

Magnetometer surveys suggest that the dredge contractor may encounter small-caliber Munitions and Explosives of Concern (MEC) in the D2 Borrow Area. As a safety precaution, a screen must be placed over the drag head to prevent any MEC from entering dredge equipment and or being placed on the beach. The screen must be designed to prevent the passage of objects greater than 1.5 inches in diameter. The screens on the discharge basket are required to have openings no larger than 0.75 inches center to center.

If any ordnance is encountered while conducting dredging activities at the D2 Borrow Area, the USACE will report the discovery by the following business day to: Chief, Marine Minerals Branch, at (703) 787-1215 and dredgeinfo@boem.gov.

1.10 Bathymetric Surveys

The USACE will provide BOEM with pre- and post-dredging bathymetric surveys of the D2 Borrow Area. The pre-dredging survey will be conducted within 60 days prior to dredging. The post-dredging survey will be conducted within 60 days after the completion of dredging. If, within the next 1 to 3 years, the USACE conducts any bathymetric surveys of the D2 Borrow Area, the USACE will provide copies of the survey(s) to BOEM. Hydrographic surveys will be performed in accordance with the USACE Hydrographic Surveying Manual EM 1110-2-1003, providing 100 percent seamless coverage using interferometric swath or multibeam bathymetry. All bathymetric data will be roll, pitch, heave, and tide corrected using accepted practices.

Survey lines of the specific dredge area within the D2 Borrow Area will be established at intervals necessary to provide 100 percent coverage. Three equidistant cross-tie lines will be established parallel to the principal survey baseline. All survey lines will extend at least 100 meters beyond the edge of the dredge areas. All data will be collected in such a manner that post-dredging bathymetry surveys are compatible with the pre-dredging bathymetric survey data to enable the latter to be subtracted from the former to calculate the volume of sand removed, the shape of the excavation, and nature of post-dredging bathymetric change.

Copies of pre-dredging and post-dredging hydrographic data will be submitted electronically to BOEM within ninety (90) days after each survey is completed. The delivery format for data submission is an ASCII file containing corrected x, y, z data. The horizontal data will be provided in the North American Datum of 1983 (NAD '83) New Jersey State Plane, U.S. survey feet, unless otherwise specified. Vertical data will be provided in the North American Vertical Datum of 1988 (NAVD '88), U.S. survey feet, unless otherwise specified. An 8.5-x-11-inch plan view plot of the pre- and post-construction data will be provided showing the individual survey points and/or vessel track lines, as well as contour lines at appropriate elevation intervals. These plots will be provided in PDF format. Survey metadata will also be provided.

1.11 Archaeological Resources

1.11.1 Onshore Prehistoric or Historic Resources

If the USACE discovers any previously unknown historic or archeological resources while accomplishing the Project nearshore of or in the vicinity of Long Beach Island, the USACE will notify BOEM electronically of any finding. As Lead Agency, the USACE will initiate the Federal and state coordination required to determine if the resources warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places, and the appropriate action for the resolution of adverse effects.

1.11.2 Offshore Prehistoric or Historic Resources

Based on previously conducted surveys of the borrow area, no potentially significant cultural resources anomalies are currently identified within the D2 Borrow Area. However, in the event that the dredge operators discover any archaeological resources prior to dredging operations in the D2 Borrow Area or in the vicinity of pump-out operations, the USACE will report the discovery electronically to BOEM by the next business day. The USACE will coordinate with BOEM on the measures needed to evaluate, avoid, protect, and, if needed, mitigate adverse impacts from an unanticipated discovery. If investigations determine that the resource is significant, the Parties will together determine how best to protect the resource.

If the USACE and/or dredge operators discover any archaeological resources while conducting dredging operations, the USACE will require that dredge and/or pump out operations be halted immediately and avoid the resource per the requirements of the USACE specifications for unanticipated finds. The USACE will then immediately report the discovery electronically to BOEM. The USACE Planning Division will coordinate with BOEM on the measures needed to evaluate, avoid, protect, and, if needed, mitigate adverse impacts from an unanticipated discovery. If investigations determine that the resource is significant, the Parties will together determine the necessary further action required and how best to protect the resource.

1.12 Responsibilities

BOEM does not warrant that the OCS sand resources used in this project are suitable for the purpose for which they are intended by the USACE. BOEM's responsibility under this Project is limited to the authorization of access to OCS sand resources from the D2 Borrow Area, as described in this MOA, and therefore BOEM disclaims any and all responsibility for the physical and financial activities undertaken by the USACE in pursuit of the Project.

1.13 Project Completion Report

Consistent with Paragraph 15, a project completion report will be submitted by the USACE to BOEM within 120 days following completion of the activities authorized under this MOA. This report and supporting materials should be sent in writing and electronically. The report will contain, at a minimum, the following information:

- the names and titles of the project managers overseeing the effort (for the USACE, the engineering firm (if applicable), and the contractor), including contact information (phone numbers, mailing addresses, and email addresses);
- the location and description of the project, including the final total volume of material extracted from the borrow area and the volume of material actually placed on the beach or shoreline (including a description of the volume calculation method used to determine these volumes);
- DQM data, in ASCII files, containing the x, y, z and time stamp of the cutterhead or drag arm locations;
- a narrative describing the final, as-built features, boundaries, and acreage, including the restored beach width and length;
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions;
- a list and description of any construction change orders issued, if applicable;
- a list and description of any safety-related issues or accidents reported during the life of the project;
- a narrative and any appropriate tables describing any environmental surveys or efforts associated with the project and costs associated with these surveys or efforts;
- a table, an example of which is illustrated below, showing the various key project cost elements;

	Cost Incurred as of Construction Completion ($)
Construction	
Engineering and Design	
Pre- and Post-Dredging Bathymetric Surveys	
Compilation of Project	

	Cost Incurred as of Construction Completion ($)
Completion Report	
Total	

- a table showing the various phases of the project construction, the types of construction equipment used, the nature of their use;
- a table listing significant construction dates beginning with bid opening and ending with final acceptance of the project by the USACE;
- digital appendices containing the as-built surveys, beach-fill cross-sections, and survey data;
- any additional pertinent comments;
- a table, an example of which is illustrated below, showing the various items of work construction, final quantities, and monetary amounts;

Item No.	Item	Estimated Quantity	Unit	Unit Price	Estimated Amount	Final Quantity	Bid Unit Price	Final Amount	% Over/ Under
1	Mobilization and Demobilization								
2	Beach Fill								
3	Any beach or offshore hard structure placed or removed								

- a listing of construction and construction oversight information, including the prime and subcontractors, contract costs, etc.;
- a list of all major equipment used to construct the project;
- a narrative discussing the construction sequences and activities, and, if applicable, any problems encountered and solutions;
- a list and description of any construction change orders issued, if applicable;
- a list and description of any safety-related issues or accidents reported during the life of the project;
- a narrative and any appropriate tables describing any environmental surveys or efforts associated with the project and costs associated with these surveys or efforts;
- a table listing significant construction dates beginning with bid opening and ending with final acceptance of the project by the USACE;
- digital appendices containing the as-built drawings, beach-fill cross-sections, and survey data; and any additional pertinent comments.

Attachment 2

Final Environmental Assessment with Appendices

Final
ENVIRONMENTAL ASSESSMENT

BARNEGAT INLET TO LITTLE EGG INLET (LONG BEACH ISLAND), NEW JERSEY

STORM DAMAGE REDUCTION PROJECT

Philadelphia District, U.S. Army Corps of Engineers

February 2014

BARNEGAT INLET TO LITTLE EGG INLET
STORM DAMAGE REDUCTION PROJECT
OCEAN COUNTY, NEW JERSEY

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

In 1999, the United States Army Corps of Engineers, Philadelphia District, evaluated the environmental impacts associated with the construction of the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project, and prepared a Final Environmental Impact Statement (FEIS). A Record of Decision (ROD) was signed in February 2001. The selected plan involves the placement of beachfill sand, which would be obtained from offshore sources to construct a berm and a dune for the purpose of storm damage reduction for the communities on Long Beach Island (LBI) from Seaview Drive, Loveladies to the terminal groin in Holgate, Long Beach Township, Ocean County, New Jersey. The initial plan called for approximately 4.95 million cubic yards (mcy) of sand for initial berm placement and 2.45 mcy for dune placement.

Although the design plan remains the same as described in the 1999 EIS, following Superstorm Sandy in 2012 existing conditions within the project area were re-evaluated to update quantity estimates. Beach nourishment to create a dune and beach berm of uniform cross section for the remaining unconstructed project municipalities entails a 125-foot wide beach berm at elevation +8.0 North American Vertical Datum (NAVD) and a dune at an elevation of +22 feet NAVD. The dune would be 30-feet wide at its crest and incorporate 347 acres of planted dune grasses and 540,000 linear feet of sand fencing. When initial construction is complete the total length of the dune/berm system would be approximately 16.9 miles long, and will require placement of approximately 7.8 mcy of sand fill. About 2 million cubic yards of sand would be required for periodic renourishment, on average, at 7-year intervals for a period of 50 years. For completion of initial construction of the project, approximately 2.9 mcy from Borrow Area D1 and approximately 4.9 mcy from Borrow Area D2 will be placed on the beach.

Initial construction has occurred along 4.5 miles of the LBI shoreline within some sections of the island (*i.e.* the municipalities of Surf City; Ship Bottom, Harvey Cedars; and the Brant Beach section of Long Beach Township). A 683-acre area (Borrow Area D1), centered approximately 2.5 miles off Harvey Cedars within state waters, has been utilized as the sand source. Additional sand sources are needed to complete initial construction. A 1034-acre area (Borrow Area D2) in Outer Continental Shelf (OCS) waters located directly east of Borrow Area D1, has been identified and evaluated. Since the Bureau of Ocean Energy Management (BOEM) has sole jurisdiction over OCS sand resources under the OCS Lands Act, and as such must authorize the use of the proposed borrow areas in the LBI project, BOEM is serving as a cooperating agency.

In compliance with the National Environmental Policy Act of 1969, as amended, and Council on Environmental Quality (CEQ) regulations, the Philadelphia District has prepared a draft Environmental Assessment (EA) to evaluate new information and proposed modified actions subsequent to the FEIS. The Draft EA for the project was forwarded to the U.S. Environmental

Protection Agency Region II, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the New Jersey State Historic Preservation Office, the New Jersey Department of Environmental Protection (NJDEP), and all other known interested parties for comment.

The EA concludes that the proposed storm damage reduction project, if implemented, would not likely jeopardize the continued existence of any species or the critical habitat of any fish, wildlife or plant, which is designated as endangered or threatened pursuant to the Endangered Species Act of 1973 as amended by P.L. 96-159.

The EA also concludes that the project can be conducted in a manner, which should not violate New Jersey's Surface Water Quality Standards. Pursuant to Section 401 of the Clean Water Act, Water Quality Certification was provided from the NJDEP dated 15 June 2000 and 20 July 2006 (NJDEP Land Use Regulation File No. 1500-99-0001 1&2). Based on the information developed during preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, it was determined in accordance with Section 307(c) of the Coastal Zone Management Act of 1972 that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of New Jersey. A Federal consistency determination for this project was provided by NJDEP in 2005 and 2006.

There are no known properties listed on, or eligible for listing on, the National Register of Historic Places that would be affected by the proposed activity. The proposed plan has been designed to avoid archaeologically sensitive areas, and concluded as having No Adverse Effect on historic properties potentially eligible for or listed on the National Register of Historic Places.

In accordance with the Clean Air Act, this project will comply with the General Conformity (GC) requirement (40CFR§90.153) through the following options that have been coordinated with the New Jersey Department of Environmental Protection (NJDEP); statutory exemption, emission reduction opportunities, use of the Joint Base McGuire/Lakehurst GC State Implementation Plan budget, and/or the purchase of Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) ozone season oxides of nitrogen (NOx) allowances. This project is not *de minimis* under 40CFR§90.153, therefore one or a combination of these options will be used to meet the GC requirements. The project specific option(s) for meeting GC are detailed in the Statement of Conformity (SOC), which is required under 40CFR§90.158.

The proposed Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project will not significantly affect the quality of the human environment; therefore a Supplemental Environmental Impact Statement is not required.

12 Feb 2014
Date

John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

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1.0 PROJECT DESCRIPTION, PURPOSE, AND NEED

1.1 Introduction

The New Jersey Shore Protection Study addresses coastal erosion and water quality degradation along the ocean coast and back bays of the state of New Jersey (USACE 1990). The study provides recommendations for future beach nourishment and coastal restoration actions and programs to reduce storm damage and minimize the harmful effects of shoreline erosion; the plan also provides recommendations for coastal planners, engineers and resource agencies to reduce degradation of coastal lands and water quality.

Under the New Jersey Shore Protection Study, a Final Feasibility Report and Integrated Environmental Impact Statement (EIS) was completed by the U.S. Army Corps of Engineers Philadelphia District (PCOE) in 1999 for the Barnegat Inlet to Little Egg Inlet (Long Beach Island) reach of the New Jersey Atlantic Ocean coastline (Figure 1-1). The 50-year plan selected by the PCOE for restoring Long Beach Island (LBI) called for the placement of approximately 7.4 million cubic yards (mcy) of sand along approximately 17 miles of coastline from Barnegat Inlet to Little Egg Inlet, including 4.95 mcy for the initial berm placement and 2.45 mcy for dune placement. The berm and dune restoration extends from groin 4 (Seaview Drive, Loveladies) to the terminal groin (groin 98) in Holgate, Long Beach Township. The Barnegat Light area (northern end of the study area) is not included. The Feasibility Report estimated that approximately 1.9 mcy of sand would be needed for periodic nourishment every 7 years over the authorized 50-year period. Since 2006, the PCOE has constructed 4.5 miles of the LBI shoreline (*i.e*. within the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township).

Several borrow areas located within state waters off the New Jersey coast have been used to supply sand to beachfront communities; however, many of these sand sources have been deemed environmentally sensitive and are no longer available for use, whereas the sand in other borrow areas is not beach compatible or said borrow areas do not have sufficient volumetric capacity over the life of the project. Borrow Area D1, a 683-acre area centered approximately 2.5 miles off Harvey Cedars in state waters, has been utilized for past construction at LBI. There is an insufficient volume of sand remaining in D1 for continued project maintenance and/or full project construction. The PCOE previously identified two alternative borrow areas on the Outer Continental Shelf (OCS) that contain beach-compatible sediments for possible use in the LBI project: a 572 acre area directly east of Area D1, named D2, and a 542 acre area directly southeast named D3 (see Section 2.2 for a more detailed discussion of the proposed OCS borrow areas). Subsequent to geotechnical, biological, and cultural investigations, Area D2 and D3 underwent further geotechnical evaluation and were subsequently combined as one 1034 acre site referred to as Area D2. Combined, the area allows for more flexibility to avoid any areas of unsuitable material during dredging. The total acreage of the combined site is not additive, as the boundaries were modified to avoid areas of unsuitable material.

The purpose of this Environmental Assessment is to evaluate the PCOE's proposed use of expanded borrow area D2, as well as any new information that has become available since completion of the Final Feasibility Report and Integrated EIS in 1999. This EA tiers directly from the 1999 Final Feasibility Report and Integrated EIS; the effects analyses in that document are incorporated by reference and summarized herein and in the case where that information previously presented has changed, conditions or effects analyses are presented and updated herein. Since the Bureau of Ocean Energy Management (BOEM) has sole jurisdiction over OCS sand resources under the OCS Lands Act, and as

such must authorize the use of the proposed borrow areas in the LBI project, BOEM is serving as a cooperating agency during the preparation of this EA.

Figure 1-1: Barnegat Inlet to Little Egg Inlet (Long Beach Island) project area, New Jersey.

1.2 Purpose and Need

Loss of sand from New Jersey coastal beaches and dunes is a serious problem that affects both the coastal environment and important public and private infrastructure (Figure 1-2). The U.S. Army Corps of Engineers (USACE) has selected beach nourishment as the most effective way to address the problem and previously constructed segments of the LBI project using sand from Borrow Area D1. The LBI project is needed to stem chronic coastal erosion and restore and enhance hurricane and storm damage protection provided by the beach and dune system. There is not sufficient volume of beach-compatible sand remaining in Borrow Area D1 to continue maintaining and complete the project. In addition, since the discovery of Discarded Military Munitions (DMM) within Borrow Area D1 during the initial LBI beachfill operation in March 2007, PCOE has been employing munitions screens on the dredging intake for subsequent beach nourishment projects to prevent DMM from being deposited on the beaches. The "sieved" method of pumping with screens renders less material in the borrow area available for beach placement.

Figure 1.2: Chronic erosion along Long Beach Island.

To construct the remaining segments of the LBI project and continue maintenance of the project as authorized, the PCOE must have access to a different borrow area to construct and maintain the beach

and dune system. This EA provides an evaluation of the OCS Borrow Area D2 and updates the conditions and effects analyses of the project in support of the BOEM's related proposed action: authorizing use of OCS sand, in response to the PCOE's request for use of OCS sand under the authority granted to the Department of the Interior by the Outer Continental Shelf Lands Act (OCSLA). The proposed action is necessary because the Secretary of the Interior delegated the authority granted in the OCSLA to the BOEM to authorize the use of OCS sand resources for the purpose of shore protection and beach restoration.

1.3 Study and Project Authorities

1.3.1 New Jersey Shore Protection Study

The New Jersey Shore Protection Study was authorized under resolutions adopted by the Committee on Public Works and Transportation of the U.S. House of Representatives and the Committee on Environment and Public Works of the U.S. Senate in December 1987. The Senate resolution adopted by the Committee on Environment and Public Works on December 17, 1987 states:

> That the Board of Engineers for Rivers and Harbors, created under Section 3 of the Rivers and Harbors Act, approved June 13, 1902, be, and is hereby requested to review existing reports of the Chief of Engineers for the entire coast of New Jersey with a view to study, in cooperation with the State of New Jersey, its political subdivisions and agencies and instrumentality thereof, the changing coastal processes along the coast of New Jersey. Included in this study will be the development of a physical, environmental, and engineering database on coastal area changes and processes, including appropriate monitoring, as the basis for actions and programs to prevent the harmful effects of shoreline erosion and storm damage; and, in cooperation with the U.S. Environmental Protection Agency (USEPA) and other Federal agencies as appropriate, develop recommendations for actions and solutions needed to preclude further water quality degradation and coastal pollution from existing and anticipated uses of coastal waters affecting the New Jersey coast. Site specific studies for beach erosion control, hurricane protection, and related purposes should be undertaken in areas identified as having potential for a Federal project, action, or response.

The House resolution adopted by the Committee on Public Works and Transportation on 10 December 1987 states:

> That the Board of Engineers for Rivers and Harbors is hereby requested to review existing reports of the Chief of Engineers for the entire coast of New Jersey with a view to study, in cooperation with the State of New Jersey, its political subdivisions and agencies and instrumentality thereof, the changing coastal processes along the coast of New Jersey. Included in this study will be the development of a physical, environmental, and engineering database on coastal area changes and processes, including appropriate monitoring, as the basis for actions and programs to prevent the harmful effects of shoreline erosion and storm damage; and, in cooperation with the Environmental Protection Agency and other Federal agencies as appropriate, the development of recommendations for actions and solutions needed to preclude further water quality degradation and coastal pollution from existing and anticipated uses of coastal waters affecting the New Jersey Coast. Site specific studies for beach erosion control, hurricane protection, and related purposes should be undertaken in areas identified as having

potential for a Federal project, action, or response which is engineeringly, economically, and environmentally feasible.

1.3.2 Long Beach Island Coastal Storm Damage Reduction Project

The Long Beach Island Coastal Storm Damage Reduction Project was authorized by Congress for construction by Section 101 (a) (1) of the Water Resources Development Act of 2000 and cost-shared with the nonfederal sponsor, the New Jersey Department of Environmental Protection. The project is considered an ongoing construction project for purposes of PUBLIC LAW 113–2, issued 29 January 2013; The Disaster Relief Appropriations Act, 2013. PL 113-2, Chapter 4: for "repairs to projects that were under construction and damaged as a consequence of Hurricane Sandy" at full federal expense with respect to such funds.

1.3.3 BOEM Authority

Section 8(k) of the OCSLA grants BOEM the authority to convey, on a noncompetitive basis, the rights to OCS sand, gravel, or shell resources for shore protection, beach or wetlands restoration, or for use in construction projects funded in whole or part or authorized by the federal government. These resources fall under the purview of the Secretary of the Interior who oversees the use of OCS sand and gravel resources, and BOEM as the agency charged with this oversight by the Secretary.

1.4 Project Location

The barrier island between Barnegat Inlet to the north and Little Egg Inlet to the south is known as Long Beach Island in Ocean County, New Jersey. The island has a total length of 20.8 miles and has a general axis of orientation aligned in a north-northeast/south-southwest direction. The New Jersey coastline, including Long Beach Island, has a long history of severe erosion and is frequently subject to storm damage from wave attack and storm surge inundation. Along the shoreline, there are a total of 99 visible groin structures spaced at intervals that range from 750 to 1000 feet. The groins are constructed of timber, stone, or a combination of the two.

The island is separated from the mainland to the west by shallow, elongated backwaters with salt marshes: Barnegat Bay and Little Egg Harbor. Barnegat Inlet has been a Federally-maintained inlet since 1940 with the completion of rock jetties. Long Beach Island is comprised of the following municipalities: the Borough of Barnegat Light, Long Beach Township, the Borough of Harvey Cedars, the Borough of Surf City, the Borough of Ship Bottom, and the Borough of Beach Haven (Figure 1-1). It can be described as a developed urban area consisting of primarily residential homes and small businesses, with herbaceous shrub, beach, dune and tidal wetland perimeter areas. Seashore and water-oriented summer recreation is the predominant land-use including residential rentals and support services for commercial establishments.

Other than the municipalities there are also major State and Federal land holdings on Long Beach Island. Barnegat Inlet State Park, about 32 acres, is managed by New Jersey Department of Environmental Protection, Division of Parks and Forestry and bounds the north end of the island and borders Barnegat Inlet. The Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge, nearly two miles of undeveloped beach, forms the southern tip of the island and borders Beach Haven Inlet. The U.S. Department of the Interior, U.S. Fish and Wildlife Service manages the refuge. The land use/cover type for the project area is typical of coastal barrier island and trapped bay conditions. Barnegat Bay, a 75-

square-mile estuary, is a crucial link in the Atlantic flyway for migratory waterfowl. These wetlands serve as the winter grounds for waterfowl as well as important nesting, feeding, and migratory habitat for hundreds of species of shorebirds and waterfowl. The Barnegat Bay system, located west of the proposed project area, includes contiguous streams and adjacent wetlands that provide nursery grounds for many coastal fish populations and supports large recreational and commercial fisheries for finfish and shellfish. These resources comprise the centerpiece of a thriving tourist industry and as such, are critical to the economic, as well as environmental health of southern New Jersey.

The project area also includes the diverse inner shelf habitat offshore of Long Beach Island, including the physically-dominated surf zone, sandy nearshore habitat, and offshore borrow areas that will be targeted for dredging for beach fill. The borrow areas D2 and D3 are described in more detail in Chapter 3.

1.5 Prior Related Studies and Reports

There exist numerous planned, completed, as well as ongoing shoreline erosion protection projects along the New Jersey ocean coast. Various groups, including the Federal government, the State of New Jersey, local municipalities, and private interests, have initiated this type of activity. The PCOE reports relevant to this project are presented below:

Project Information Report, Rehabilitation Effort for the New Jersey Shore Protection, Barnegat Inlet to Little Egg Inlet, NJ Hurricane/Shore Protection Project, 2012. Under the authority of 33 701n (Public law 84-99) this PIR was prepared to document damage to the project and serves on a nationwide basis to reduce loss of life and property damage under DOD, USACE, FEMA, and other agencies' authorities.

Project Information Report, Rehabilitation Effort for Surf City and Harvey Cedars Shore Protection, Barnegat Inlet to Little Egg Inlet, 2010. This report provides an overview of all pertinent regulations required for supplemental sand placement deemed necessary following severe erosion on the northern end of the project area due to a large number of coastal storms during the winter and spring.

Barnegat Inlet to Little Egg Inlet Feasibility Report and Integrated Environmental Impact Statement – 1999. This report presents the result of a feasibility phase study to determine the magnitude and effect of shoreline erosion problems and an implementable solution to the problems at Long Beach Island, New Jersey. The selected plan for hurricane and storm damage protection is berm and dune restorations utilizing sand obtained from offshore borrow sources, with periodic renourishment every 7 years for a 50-year period of analysis.

The Feasibility Report and EIS was prepared in accordance with ER 1105-2-100 (Civil Works Planning Guidance Notebook), ER 1110-2-1150 (Engineering & Design for Civil Works Projects), ER 1165-2-130 (Federal Participation in Shore Protection), and other applicable guidance and regulations. Preparation of the LBI EIS involved coordination with appropriate Federal and state resource agencies. During the public review of the EIS, a Water Quality Certificate, in accordance with Section 401 of the Clean Water Act, and a concurrence of Federal consistency with the New Jersey Coastal Zone Management program, in accordance with Section 307 (c) of the Coastal Zone Management Act, was granted by the New Jersey Department of Environmental Protection (NJDEP). A Section 404(b)(1) evaluation is included in the Final Feasibility Report and Integrated EIS. This evaluation concluded that the proposed action would not result in any significant environmental impacts relative to areas of concern under Section 404 of the Federal Clean Water Act. In accordance with the Fish and Wildlife Coordination Act (FWCA), a

Planning Aid Report was obtained from the U.S. Fish and Wildlife Service (1996) and a Section 2 (b) Report (1999). The Feasibility Report and Integrated EIS (1999) presented the results of the analysis of existing conditions, plan formulation, and design of the National Economic Development (NED) plan. The scope of work involved field data collection at both the proposed placement sites and proposed borrow areas, including hydrographic and topographic surveys, benthic organism utilization, economic, real estate and cultural resources studies.

Barnegat Inlet to Little Egg Inlet Reconnaissance Study – 1995. This study was the fifth site specific study conducted under the New Jersey Shore Protection Study. This first phase of the Corps's two-phase study planning process (the reconnaissance phase) addressed shoreline erosion and storm damage vulnerability of Long Beach Island, New Jersey. The study determined the potential for a Federal project, action and response which is engineeringly, economically, and environmentally feasible.

New Jersey Shore Protection Study – 1990. The Study was initiated in 1988 to investigate shoreline protection and water quality problems, which exist along the entire coast. Special interest focused on physical coastal processes, those mechanisms occurring in the coastal zone, which result in the movement of water, wind and littoral materials. Upon the conclusion that existing numerical data was insufficient to provide long-term solutions, future comprehensive studies were proposed. The Limited Reconnaissance Phase of the New Jersey Shore Protection Study identified and prioritized those coastal reaches which have potential Federal interest based on shore protection and water quality problems which can be addressed by the PCOE. Barnegat Inlet to Little Egg Inlet was one of the reaches identified to undergo the Corp's two-phase planning process.

Barnegat Inlet Phase I General Design Memorandum – 1981. Phase II GDM - 1984. These design documents were prepared to finalize planning and policy for a modification to the Barnegat Inlet project. Ultimately it was decided to pursue as a correction for a design deficiency with the original inlet jetty configuration. The arrowhead design of 1939-40 did not provide for a sufficiently stable channel and safe navigation through Barnegat Inlet.

New Jersey Inlets and Beaches, Barnegat Inlet to Longport -1974. This recommended the following project for Long Beach Island: beach fill with a 75 ft berm at +10 MLW, construction of one additional groin, modification of seven groins, reimburse the state for recent construction of 14 groins, maintenance of all groins, and periodic nourishment for the beachfill. The project was authorized for PED in 1976 and for construction in 1986.

Miscellaneous Report No. 80-9 Beach Changes at Long Beach Island, New Jersey, 1962-73. Coastal Engineering Research Center (CERC) report 1980. This report documents beach changes during the period after the March 1962 storm and during the time of heavy groin construction until 1972.

Beach Erosion Control Report on Cooperative Study (Survey) of the New Jersey Coast, Barnegat Inlet to the Delaware Bay Entrance to the Cape May Canal - 1957. This report eventually became **House Document 86-208** (1959) "Shore of New Jersey -Barnegat Inlet to Cape May Canal, Beach Erosion Control Study" provided for Federal participation in the costs of constructing stone revetment, timber bulkhead, timber groins, extending stone groins, and beach nourishment.

2.0 ALTERNATIVES

This EA tiers directly from the 1999 Feasibility Report and Final EIS that previously considered a full suite of structural and non-structural alternatives to beach nourishment. The structural measures that were considered in the 1999 report included bulkheads, seawalls, revetments, offshore breakwaters, groins, beach restoration/nourishment, and beach sills. Nonstructural measures included flood insurance, development regulations, and land acquisition. Chapter 2 of the present EA describes the proposed action (selected plan), no action alternative, and borrow area alternatives that were subsequently considered following completion of the 1999 EIS.

Since the PCOE previously selected beach nourishment as the preferred alternative and the project was partially constructed from 2006-2013, this EA does not re-consider the full suite of alternatives previously evaluated during the initial planning process. The alternatives evaluated and compared in this EA include various sources of beach-quality sand with the purpose of identifying a new borrow area in support of the authorized beach nourishment project.

Section 2.1 summarizes the NED plan previously selected as the preferred alternative. Section 2.2 reviews borrow areas identified in the vicinity of LBI. Section 2.3 describes the alternatives evaluated for the current proposed action.

2.1 Selected Plan

In February 2001, the PCOE selected the NED plan for Barnegat Inlet to Little Egg Inlet, which included a combination of dune and berm restoration, with periodic nourishment every seven years for a 50 year project life. The National Economic Development (NED) plan is the plan which maximizes benefits to the Nation while meeting planning objectives. The NED objective is to increase the value of the Nation's output of goods and services and improve the national economic efficiency, consistent with protecting the Nation's environment pursuant to national environmental statutes, applicable executive orders and Federal planning requirements.

In the LBI Project, the PCOE proposed to place on various stretches of Long Beach Island in phases where the existing berm and dune profiles are below the minimum measurements of the design profile. The plan will provide for a dune with a slope of 1V:5H. This will produce a beach berm width of 125 feet from centerline of dune to the edge of the berm, with approximately 105 feet of dry beach from the seaward toe to mean high water (MHW). The dune elevation is 22 feet NAVD with a 30-foot wide crest and incorporates 347 acres of planted dune grasses and 540,000 linear feet of sand fencing. This plan was chosen because it provided the maximum net storm damage reduction benefits.

As described in the 1999 EIS, the plan required 4.95 million cubic yards of sand for initial berm placement and 2.45 million cubic yards for dune placement for the entire project area. Approximately 1.9 million cubic yards of sand would be needed for periodic nourishment every 7 years over a 50-year period of analysis. The Barnegat Light (northern end of the study area) is not included in the project because it has little long-term erosion and adequate dune and berm profiles. In the southern uninhabitated portion of the study area, the U.S. Fish and Wildlife Service has stated that the Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge will remain in its natural state, therefore it also is excluded from the project.

Although the design plan remains the same as described in the 1999 EIS, following Superstorm Sandy in 2012 existing conditions within the project area were re-evaluated to update quantity estimates. Beach nourishment to create a dune and beach berm of uniform cross section for the remaining unconstructed project municipalities entails placement of approximately 7.8 mcy of sand fill. About 1.9 million cubic yards of sand would be required for periodic renourishment, on average, at 7-year intervals for a period of 50 years. For completion of initial construction of the project, approximately 2.9 mcy from Borrow Area D1 and approximately 4.9 mcy, with a 20-25% contingency quantity, will be dredged from Borrow Area D2. When initial construction is complete the total length of the dune/berm system would be approximately 16.9 miles long.

Beach access during and after construction includes natural beach walkover paths, up and over the dunes at a skewed angle and delineated by sand fencing. Vehicular access will be provided at existing vehicular access points. The plan also included planting 337 acres of dune grass and 509,700 linear feet of dune fencing.

A protective dune/berm with periodic nourishment represents the least environmentally damaging structural method of reducing potential storm damages at a reasonable cost. It is generally considered socially acceptable, proven to work in high-energy environments, and is the only engineered shore protection alternative that directly addresses the problem of a sand budget deficit (National Research Council, 1995). The somewhat transient nature of beach nourishment is actually advantageous. Beach fill is dynamic, and adjusts to changing conditions until equilibrium can again be achieved. Despite begin structurally flexible, the created beach can effectively dissipate high storm energies, although at its own expense. Costly rigid structures like seawalls and breakwaters utilize large amounts of material foreign to the existing environment to absorb the force of waves. Beach nourishment uses material typical of existing area sand to buffer the shoreline structures against storm damage. Consequently, beach nourishment is more aesthetically pleasing as it represents the smallest departure from existing conditions in a visual and physical sense, unlike groins.

2.1.1 Project History

Initial construction of three sections of the Barnegat Inlet to Little Egg Inlet project has been completed using Borrow Area D1. Figure 2-1 shows the typical landside beachfill operation during construction. For each of the three initial construction sections, the beach fill material was placed into the general construction template depicted on Figure 2-5.

1. In 2006-2007 approximately 886,000 cubic yards (cy) of sand was placed on 8,100 linear feet of beach between North 25th Street in Surf City to South 5th Street in the northern five blocks of Ship Bottom.
2. In 2010 approximately 3,000,000 cy of sand was placed on 10,450 linear feet of beach between 86th street and 500 feet south of Bergen Avenue in Harvey Cedars.
3. In 2012, approximately 1,200,000 cy of sand was placed on 5,200 linear feet in the Brant Beach section of Long Beach Township, between 32nd and 57th Streets.

In addition to the initial construction of the three segments, two emergency repair actions have been conducted in response to a number of severe coastal storms that caused damage to the completed project sections:

1. In 2011 an additional 300,000 cy was placed between North 25th and North 10th Streets in Surf City in response to severe Nor'easter storms that caused severe erosion during the prior two winters.
2. In 2013, the PCOE conducted emergency repairs along the completed sections of Long Beach Island, placing approximately 880,000 cy was placed in Brant Beach, approximately 280,000 cy of beachfill in Surf City, and approximately 840,000 cy of beachfill in Harvey Cedars. The borrow area was D1.

As explained in the 1999 EIS, there is a long and complex history of state sponsored beach nourishment projects along LBI dating to the 1950s (refer to Table 1-2, 1999 EIS).

Figure 2-1: Beachfill along Brant Beach, Long Beach Island in 2012.

2.2 Alternative Borrow Areas

There are no economically viable land sources of sand for the large quantities of beach fill required. Inlet, nearshore, and offshore sand sources are the only economically viable borrow areas alternatives. Barnegat Inlet, a Federally-maintained channel, is dredged three times a year by the dredge Currituck with approximately 100,000 cubic yards removed each time. The median grain size of this material is adequate for beach purposes along LBI but quantities limit the cost effectiveness of using the inlet as a sand source. The quantities of sand dredged at any one time for maintenance is very small in comparison to the quantity needed for beach renourishment.

Potential nearshore and offshore borrow areas A-G were originally identified by Meisburger and Williams in the 1982 USACE Coastal Engineering Research Center (CERC) report entitled "Sand Resources on the Inner Continental Shelf off the Central New Jersey Coast". Borrow Area G was determined to have incompatible material based on the 1982 report, and thus, was not considered any further during feasbility. Seven offshore borrow areas were identified in the 1999 Feasibility Report and EIS including borrow areas A, B, C, D, E, F and Barnegat Light Inlet. Borrow area D included areas D1 and D2, the latter of which extended onto the OCS. Borrow Area C and F were not considered further due to the interference of AT&T submarine telecommunication cables. Borrow areas A, B, D and E, located within three miles of the Long Beach Island coast, were determined to be the most feasible and cost-effective sources of sand (Figure 2-2):

Borrow Area "A". Site A is an ebb shoal located 0.25 statute miles offshore from Barnegat Inlet and is about 845 acres. This site is approximately 3.0 miles long by 1.5 miles wide. Borrow area A is considered a back-up source of material due to its moderate compatibility with the beach material. This site has an estimated 2,200,000 cubic yards (cy) of suitable material.

Borrow Area "B". Site B is about 272 acres and centered off Loveladies at a distance of about 1.7 statute miles. It is approximately 2.2 miles long with a width of 0.8 miles. This site has approximately 3,640,000 cy of suitable material for the proposed beach fill.

Borrow Area "D" (now referred to as D1). Site D was initially identified as 567 acres and most recently as a 683-acre site centered approximately 2.5 miles off Harvey Cedars and has a length of 1.3 miles and width of 0.6 mile (the shape of D1 was adjusted slightly before initial construction due to additional subsurface information). This site is currently estimated to have approximately 2,900,000 cy of suitable material.

Borrow Area "E" is 400 acres in size and centered off Ship Bottom at a distance of about 1.0 statute mile and has an approximate length of 2.5 miles and width of 0.3 mile. This site has approximately 9,350,000 cy of suitable material for the proposed beach fill.

In 1999, the selected plan for LBI proposed to use Borrow Areas A, B, D1 and E for initial construction and periodic nourishment. In general, subsurface investigations indicated that shoals contained the proper grain size material that was compatible with the sand material on the beaches (USACE/Alpine 1996; Duffield Associates 1998). Subsurface investigations in 1982, 1996, and 1998 indicated that finer material existed outside of the shoals. Nine vibracores were collected in 1998 east of Barnegat Inlet, Harvey Cedars, and Beach Haven Crest (Duffield Associates, 1998). Predominantely granular materials were encountered in a majority of the vibracores obtained, with some fine-grained materials in two vibracores. In 2002, another 19 vibracores were taken at locations offshore of Harvey Cedars in Borrow Areas D1 and in Borrow Area D2, ranging in distance from two to six miles from the coast (Duffield Associates, 2002). D2 was a northeast extension of the D1 borrow area, extending on to the OCS (Figure 2-2). The majority of the vibracore samples had significant quantities of granular materials in the initial 10 feet below the mudline. Two core locations located closest to shore were observed to contain relatively thin layers of fine-grained materials in the uppermost 2 feet of material obtained in the core. While the thickness of the fine-grained stratum is relatively thin, the areal extent of these materials is unknown. The northwestern, or shoreward boundary of Area D1 may not offer material suitably coarse-grained for beachfill material.

Only Borrow Area D1 has been used in the partial construction of the LBI project to date. Borrow Areas A, B, D1, and E, located 0.25 to 2.5 miles offshore, offer varying available quantities and compatibility characteristics, but no longer meet the design quantities needed and/or dredging these areas is not considered environmentally acceptable. Area A has been eliminated because of its moderate grain size compatibility and the greater likelihood for more severe environmental impacts associated with repeat dredging in a productive inlet system. Moreover, dredging Borrow Area A may interrupt the longshore sediment transport and sediment bypassing that has developed around the ebb tidal delta. The PCOE expected to use Borrow Areas B and E during the 42-year renourishment cycle following initial construction. The PCOE proposed to use Area B every seven years after initial construction, dredging approximately 167,000 cy each. In comparison, Area E was expected to contribute 379,000 cy for initial construction and 794,000 cy every 7 years until depleted. Borrow Areas B and E have been effectively eliminated over environmental impacts concerns, resulting in the reduction of available sand source by approximately 12 million cy. Area B and E were ruled out as they are located partially in areas that have been identified by the New Jersey Department of Environmental Protection as Prime Fishing Areas, as defined by the Rules on Coastal Zone Management N.J.A.C. 7:7E, as amended July 18, 1994.

While telecommunication cables also pass through Borrow Area D1, the majority of the Borrow Area D1 could still be utilized, except those areas where finer grained material was sampled. In 2006, PCOE pumped approximately 880,000 cy of sand onto Surf City. Unknown at the time, the D1 Borrow Area contained significant quantities of discarded military munitions. Over 1,150 munitions items were recovered by PCOE or turned in by citizens from the Surf City beach. The PCOE entered into an agreement with the NJDEP (nonfederal sponsor) to use munitions screening on all beach nourishment dredging projects, regardless of the source location of the material. Munitions screening on both the dredge intake and discharge points screen out substrate particles larger than the screen openings, thereby reducing available quantities for placement. PCOE typically limits the depth of dredging to 5-10 feet below current surface to minimize impacts to the bottom habitat. Three previous initial construction placements combined with recent post-storm emergency repair and restoration renourishment actions have reduced the remaining capacity of Borrow Area D1. Capacity is insufficient to complete initial construction of the remaining portions of the project. The PCOE determined that additional sand sources would be necessary as D1 alone could not provide sufficient volume.

As previously mentioned, a 572 acre area directly east of D1, designated D2, was identified and sampled in 2001, 2002 and 2009 (Duffield Assoc. 2002; Cox, 2001; Scott and Bruce, 2001). Thereafter, D3, a 542 acre area directly southeast of D2, was delineated (CH2MHill, 2009; Cox, 2012; Scott, 2012). Borrow Areas D2 and D3, now collectively referred to as D2, are both located outside state waters (Figure 2-3 and Figure 2-4). Duffield Associates subcontracted Alpine Ocean Seismic Survey, Inc. in 2009 to conduct vibracore sampling in areas D2 and D3. Twelve additional vibracores were taken, including 5 in Area D2 and 7 in Area D3, after munitions were discovered. The majority of samples possessed more than 96% sand and determined to be beach compatible.

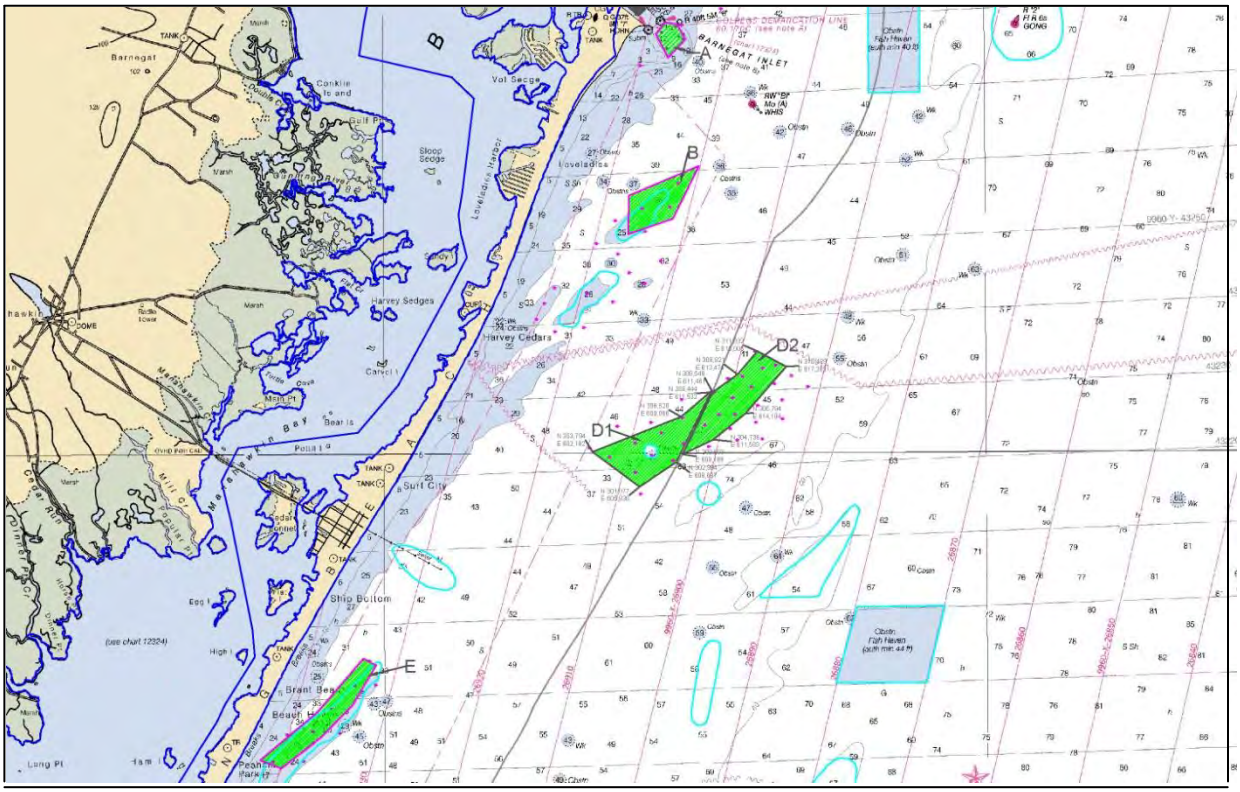

Figure 2-2: Original proposed borrow areas. The original proposed Area D2 was included in 1999 EIS.

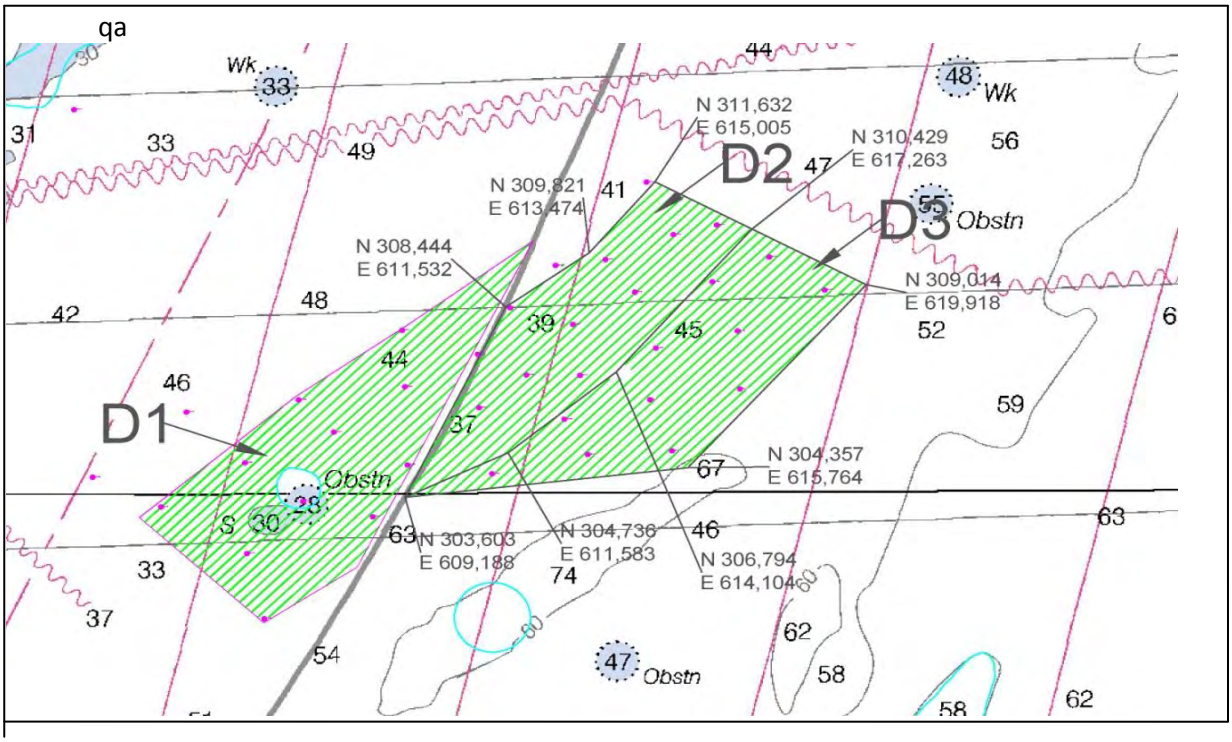

Figure 2-3: Proposed Borrow Areas D2 and D3 analyzed in 2011 and 2012.

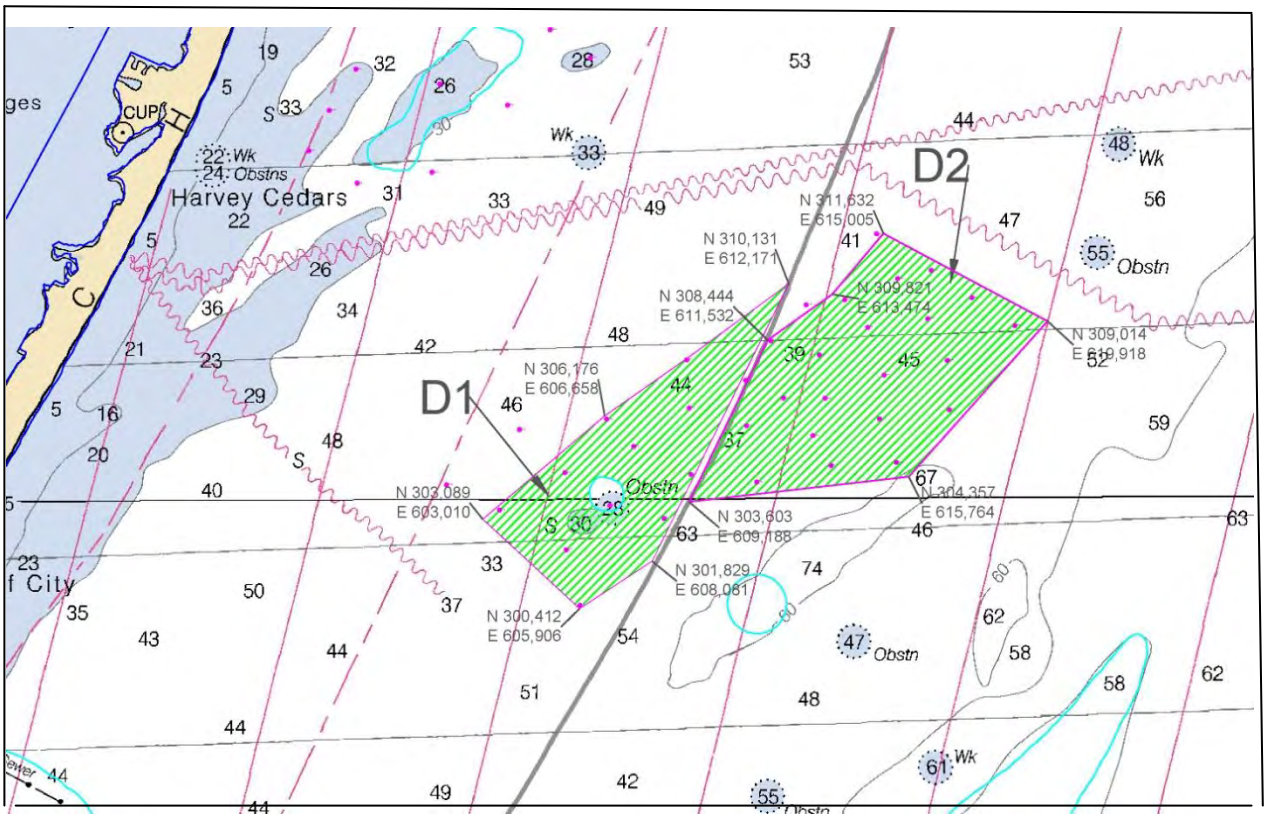

Figure 2-4: Redesignated Area D2 (modified original Areas D2 and D3 combined).

2.3 Alternative Plans

2.3.1 No Action

Project construction was initiated in 2006. Initial construction of the beach berm and dune has been completed to date in Harvey Cedars, Brant Beach, and Surf City, comprising approximately 26% of the total project. Beach nourishment projects serve to protect coastal infrastructure because their template is designed to offer sufficient elevation and length of a beach berm and vegetated dune system to function in a naturalized state. The No Action Alternative will leave the project partially constructed with a remaining quantity of only 2.9 mcy in Borrow Area D1. The impacts to resources of the No Action Alternative are presented in the EIS (USACE, 1999) and for purposes of brevity, are not included herein. With respect to the current proposal to complete project construction, the impacts to resources under the No Action alternative would be the same as those described in the 1999 EIS. The No Action Alternative would render the partially completed project incapable of providing the intended storm protection and undermines the resiliency and integrity of the constructed portions of the project.

The New Jersey coast also serves the added benefit as a recreational resource, generating a tourism industry in addition to providing major shipping and commercial fishing industries. Decades of coastal developments have interrupted the natural and necessary movement of sediment and interfered with coastal processes, and combined with sea level rise, erode protective sand dunes. With the No Action

alternative, coastal communities will continue to be vulnerable to winds and high waves, and ultimately, flooding.

2.3.2 Beach Nourishment using Borrow Area D1

For the reasons presented in Section 2.2, Borrow Area D1 became the most viable borrow area for the LBI project construction and has been used solely, thus far, for those portions of the project that have been constructed to date. Due to several storms, initial construction quantities and post-storm emergency renourishment quantities reduced the remaining capacity in D1 to approximately 2.9 mcy. The total volume need estimated in the Feasibility Study (USACE, 1999) was approximately 21 mcy over the 50 year life of the project. The use of Borrow Area D1 alone was dismissed as it was concluded to be infeasible.

2.3.3 Preferred Plan: Beach Nourishment using Borrow Areas D1 and D2

As previously presented in Section 1.1**,** several borrow areas located within state waters off the New Jersey coast have been used to supply sand to beachfront communities; however, many of these sand sources have been deemed environmentally sensitive and are no longer available for use, whereas the sand in other borrow areas is not beach compatible or said borrow areas do not have sufficient volumetric capacity over the life of the project. Borrow Area D1, a 683-acre area centered approximately 2.5 miles off Harvey Cedars in state waters, has been utilized for past construction at LBI. There is an insufficient volume of sand remaining in D1 for continued project maintenance and/or full project construction. The PCOE previously identified two alternative borrow areas on the Outer Continental Shelf (OCS) that contain beach-compatible sediments for possible use in the LBI project: a 572 acre area directly east of Area D1, named D2, and a 542 acre area directly southeast named D3 (see Section 3.3 for a more detailed discussion of the proposed OCS borrow areas). Subsequent to geotechnical, biological, and cultural investigations, Area D2 and D3 underwent further geotechnical evaluation and were combined and identified as one 1034 acre site, referred to as Area D2. The combined site allows for more flexibility to avoid any areas of unsuitable material during dredging. The total acreage of the combined site is not additive as the boundaries were modified to avoid areas of unsuitable material.

Although the design plan remains the same as described in the 1999 EIS, following Superstorm Sandy existing conditions within the project area were re-evaluated to update quantity estimates. Beach nourishment to create a dune and beach berm of uniform cross section for the remaining unconstructed project municipalities entails a 125-foot wide beach berm at elevation +8.0 North American Vertical Datum (NAVD) and a dune at an elevation of +22 feet NAVD. The dune would be 30-feet wide at its crest and incorporate 347 acres of planted dune grasses and 540,000 linear feet of sand fencing. When initial construction is complete the total length of the dune/berm system would be approximately 16.9 miles long, and will require placement of approximately 7.8 million cubic yards (mcy) of sand fill. About 1.9 mcy of sand would be required for periodic renourishment, on average, at 7-year intervals for a period of 50 years. For completion of initial construction of the project, approximately 2.9 mcy from Borrow Area D1 and approximately 4.9 mcy from Borrow Area D2 will be dredged. An estimated additional 20-25% may be dredged from Area D2 to account for potential losses during the dredging operation due to sediment characteristic variability, shoreline change prior to construction, and settlement/erosion due to storms during construction.

Approximately 4 miles of the 16.9 mile project has been constructed. Three separate contracts have been completed based on the appropriations made available to date. Initial construction has been completed in Harvey Cedars (2 mi), Surf City (1 mi), and the Brant Beach section of Long Beach Township (1 mi). The municipalities that still require initial construction include Long Beach Township, the Borough of Ship Bottom, and the Borough of Beach Haven.

Dredging of sand from within the limits of D1 and D2 shall be accomplished by either a cutter suction or trailing suction hopper dredge. Cutter suction or hydraulic dredges are floating platforms equipped with a rotating cutter that excavates the sea floor, feeding the loosened material into a pipe (generally 30" diameter) and pump system that transports the material and water slurry up to typical distances of five miles. Transport distances can be extended by the addition of booster pumps in the pipeline route. These booster pumps are within New Jersey state waters.

Trailing suction hopper dredges are designed to vacuum material from the sea floor through drag arms that load the material into the hold of the vessel (3,600 CY to 6,500 CY). The cargo of sand is then sailed to a pump-out location within New Jersey state waters where the material is pumped ashore by the ship (or the pump-out station). Both dragheads and cutterheads will be screened on intakes and baskets. The hole size on the intake screens is 1 ¼" while the mesh on the baskets is ¾". The screening device on the dredge intake or in-pipeline section prevents the passage of any material greater than 1 ¼"in diameter. The maximum allowable opening is 1-1/4" x 6 ".

Current depths in Borrow Area D1 range between -35 and -65 feet NAVD88 and between -40 and -60 feet NAVD88 in Borrow Area D2. Dredge cut depths can vary greatly depending on the type of dredge plant utilized. For each drag arm of a hopper dredge, cuts typically are about 4 feet wide and 3 feet deep. Hydraulic cutter suction dredges can cut lanes approximately 200 feet wide and about 5 feet deep with each pass. To allow flexibility for the dredge to most efficiently remove the required volume of sand, the dredger is permitted to access the entire extent of the delineated borrow area but typically does not impact the entire site. Maximum cut depths are restricted to 5-10 feet deeper than surrounding bathymetry. The only operation within BOEM regulated waters for trailing suction hopper dredges is the dredging process itself.

Once material is on the beach, earth work equipment is used to spread the sand to meet line and grade (dune, berm, fore slope, *etc.*) as required by contract (Figures 2-5, 2-6). Initial construction is anticipated to take approximately 4-6 months of dredging and 6 months of berm construction (*i.e*. bulldozing), crossover construction, dune grass planting, sand-fence installation. There will be one staging area within each community that will be utilized for construction materials, such as dune fencing. These areas are typically 50 x 100 feet in size and generally located in the public works yard of each municipality. All other staging of equipment will be done on the beach.

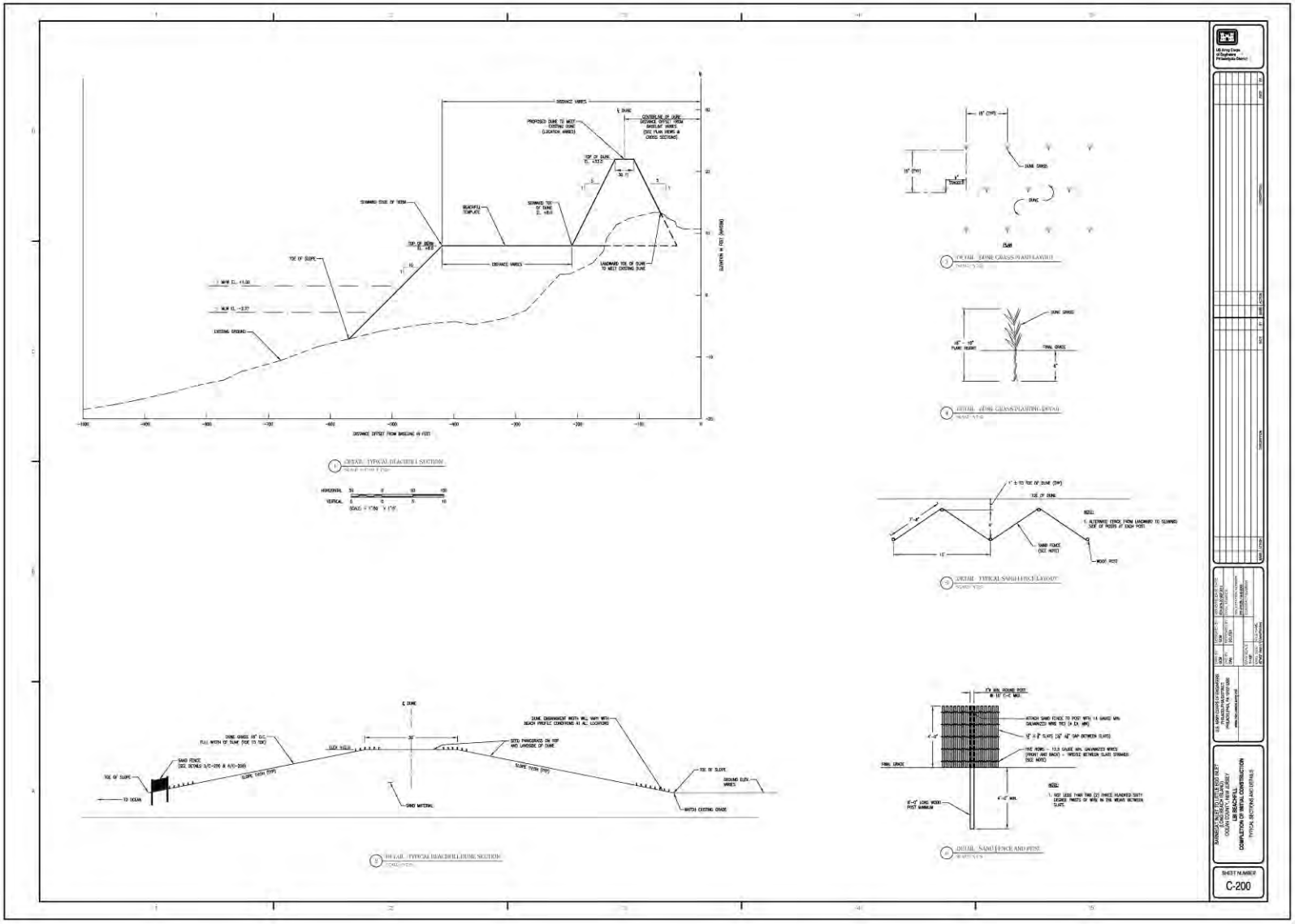
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Figure 2-5: Typical cross-sectional profile of the proposed beachfill.

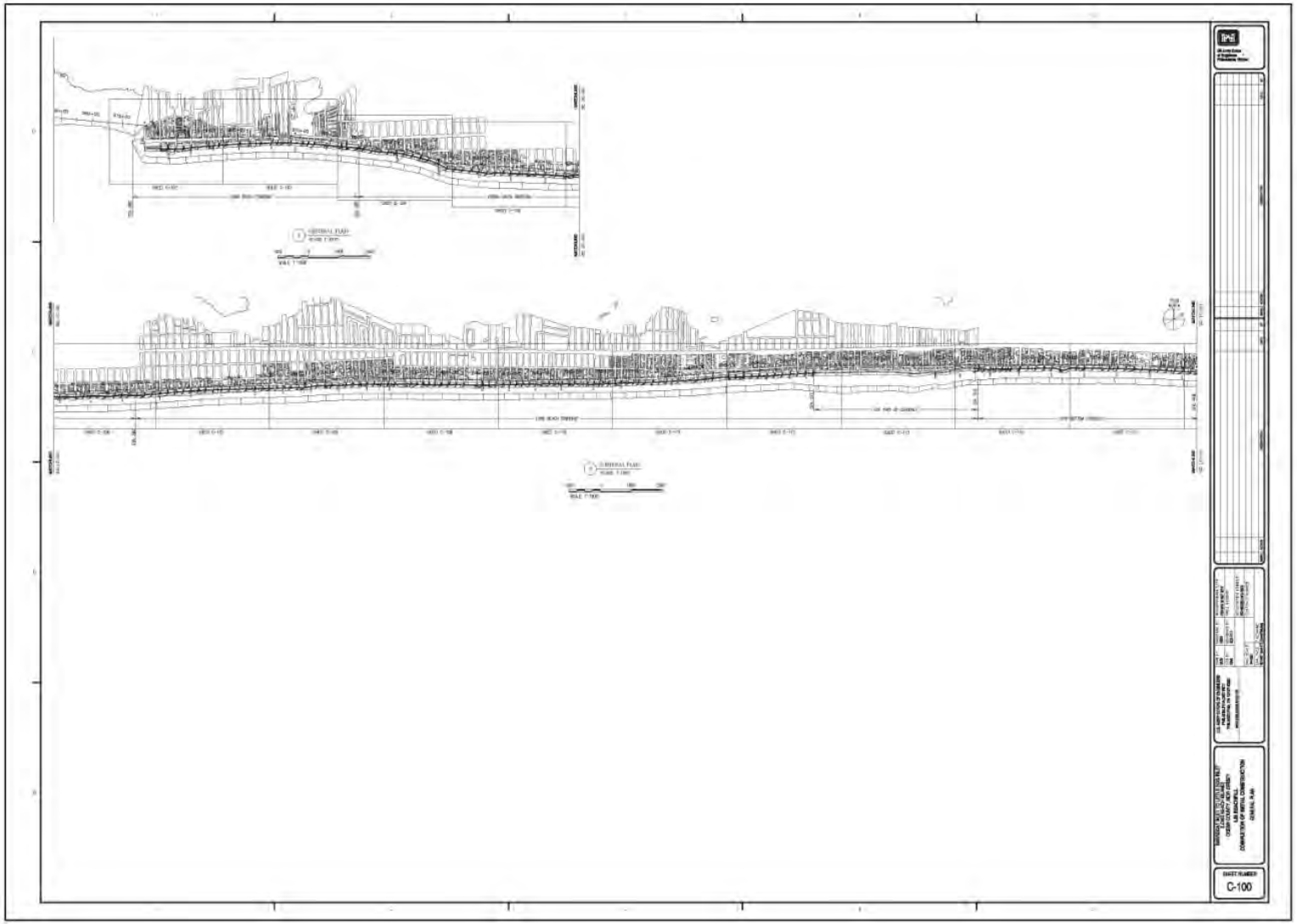

Figure 2-6: Plan Lay-out.

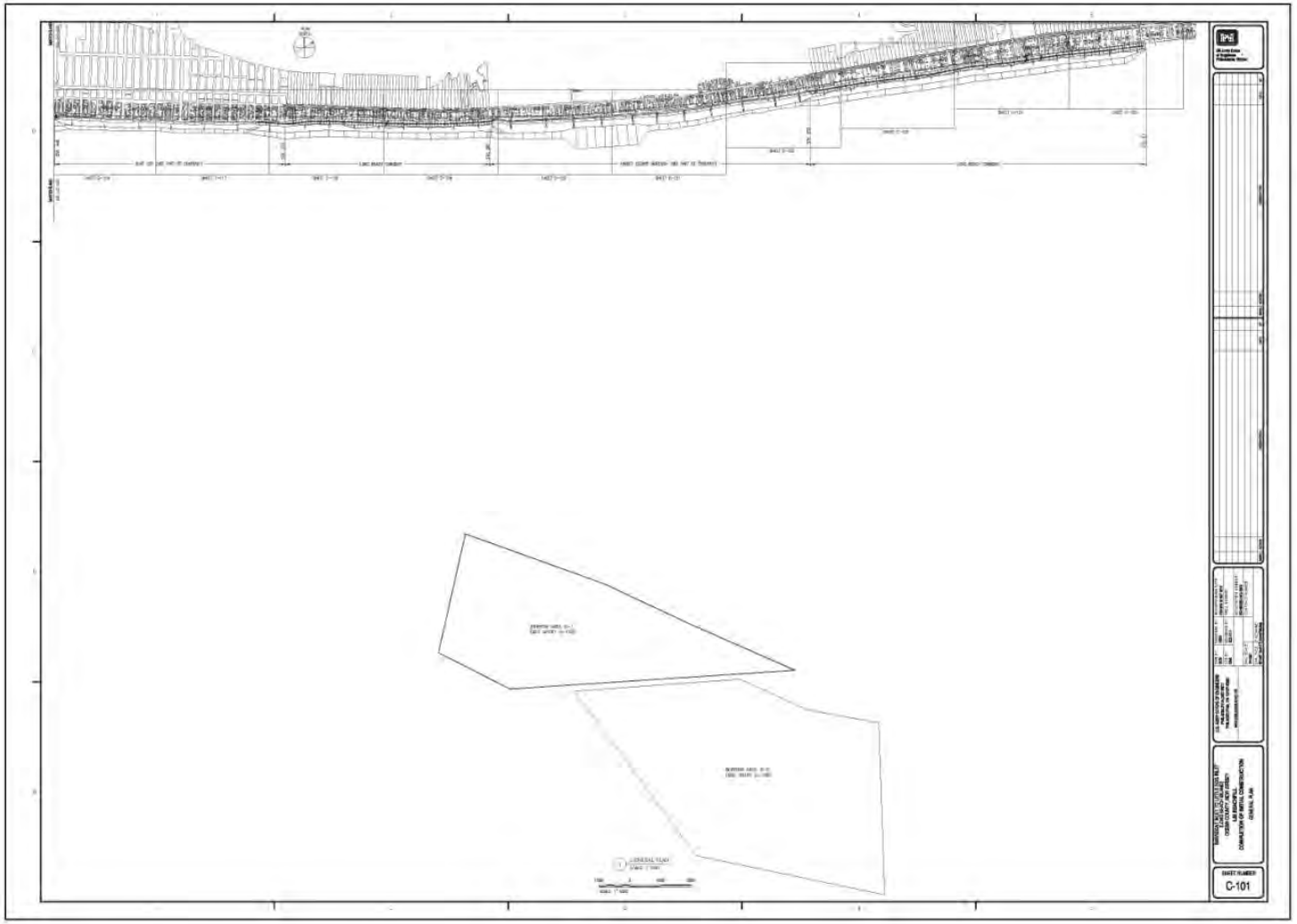

Figure 2-6: Plan Lay-Out (cont.)

3.0 AFFECTED ENVIRONMENT

The affected environment for this EA includes the beach, the nearshore zone within which project related activities (*i.e.*, dredge pump-out) would occur, and the offshore borrow areas identified as sources of beach fill material. Given that there is a complete description of all project related resource areas in the 1999 EIS except the proposed borrow area, only those environmental resources that have measurably changed or would be notably affected are discussed in detail; otherwise the description of the affected environment is incorporated by reference and summarized.

Resources Carried Forward for Detailed Analysis-Table 3-1 presents the results of the process of identifying resources to be analyzed in this EA. The general organization of resource areas is consistent with the EIS, however some have been grouped and/or renamed for clarity.

Resources Considered but Eliminated from Detailed Analysis - Numerous resources were considered in the EIS, but warrant no further examination in this EA. USACE and BOEM's rationale for eliminating resource areas from detailed study is presented in Table 3-1.

Table 3-1 – Resources Considered for Analysis in this EA

Resource	Analyzed in Detail in this EA?	If *Yes,* EA Section If *No*, Rationale for Elimination
Water Quality	Yes	Section 3.2.1; 4.2.1
Sound	Yes	Section 3.2.2; 4.2.2
Beach and Dune Habitat	Yes	Sections 3.1.1; 4.1.1
Intertidal and Nearshore Zone	Yes	Section 3.2.3; 3.2.4; 4.2.3; 4.2.4
Offshore Sand Habitat	Yes	Section 3.2.4; 4.2.4
Finfish	Yes	Sections 3.2.4.3; 4.2.4.3
Wildlife	Yes	Sections 3.1.3; 4.1.3
Birds	Yes	Sections 3.1.2; 3.3; 4.1.2
Threatened and Endangered Species	Yes	Section 3.3; 4.3
Visual	No	Negligible impacts identified in the EIS
Air Quality	Yes	Section 3.5; 4.5
Recreation	No	Negligible adverse impacts. positive impacts in EIS
Cultural Resources	Yes	Section 3.4; 4.4
Essential Fish Habitat	Yes	Section 3.2.4.4; 4.2.4.4
Cumulative Effects	Yes	Section 4.14

3.1 Terrestrial

3.1.1 Dunes and Nearshore Habitat

New Jersey Atlantic beaches and nearshore waters provide a dynamic environment heavily influenced by the tidal flows and long-shore currents. Beaches and dunes are linked together to form the "littoral active zone". Even though there is active sand exchange occurring between them, the two systems are quite distinct. The beach/surf zone being a marine, wave-driven system, and the dune field a primarily wind-driven terrestrial ecosystem. The intertidal zone has shifting sands and pounding surf dominating the habitat. Organisms within this zone have evolved to have special locomotory, respiratory, and morphological adaptations that enable them to survive in this extreme habitat. They are agile, mobile and capable of resisting long periods of environmental stress. These organisms tend to be rapid burrowers with high rates of reproduction and short (1 to 2 years) life spans (Hurme and Pullen, 1988). Dominant marine intertidal species are presented in Section 3.2.4.2 Benthic Invertebrates.

Coastal dune fauna is generally not indigenous but displays high diversity. In typical undisturbed beach profiles along the Atlantic Coast of New Jersey, the primary dune is the first dune landward from the beach. The flora of the primary dune are adapted to the harsh conditions present such as low fertility, heat, and high energy from the ocean and wind. The dominant plant on these dunes is American beachgrass (*Ammophila breviligulata*), which is tolerant of salt spray, shifting sands and temperature extremes. American beachgrass is a rapid colonizer that can spread by horizontal rhizomes, and also has fibrous roots that can descend to depths of 3 feet to reach moisture. Beachgrass is instrumental in the development of dune stability, which opens up the dune to further colonization with more species like seaside goldenrod (*Solidago sempervirens*), sea-rocket (*Cakile edentula*) and beach cocklebur (*Xanthium echinatum*).

The secondary dunes lie landward of the primary dunes, and tend to be more stable resulting from the protection provided by the primary dunes. The increased stability also allows an increase in plant species diversity. Some of the plant species in this zone include: beach heather (*Hudsonia tomentosa*), coastal panic grass (*Panicum amarum*), saltmeadow hay (*Spartina patens*), broom sedge (*Andropogon virginicus*), beach plum (*Pnmus maritima*), seabeach evening primrose (*Oenothera humifisa*), sand spur (*Cenchrus tribuloides*), seaside spurge (*Ephorbia polygonifolia*), joint-weed (*Polygonella articulata*), slender-leaved goldenrod (*Solidago tenuifolia*), and prickly pear (*Opuntia humifusa*).

3.1.2 Birds

Migratory shorebirds are a Federal trust resource responsibility of the U. S. Fish and Wildlife Service. Many species of shorebirds inhabit the beach during the spring and fall migrations, although most are even more likely to be found on protected wetland areas located around the perimeter of the proposed project area on Long Beach Island. Shorebirds feed on small individuals of the resident infauna and other small organisms brought in with waves. Common shorebird species include clapper rail (*Rallus longirostris*), sanderling (*Calidris alba*), dunlin (*C. alpina*). semipalmated sandpiper (*C. pusilla*), western sandpiper (*C. mauri*), least tern (*Sterna antillarum*), American bittern (*Botaurus lentiginosus*), and least bittern (*Ixobrychus exilis*),and willet (*Catoptrophomus semipalmatus*). The Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge, on the southern end of Long Beach Island, provides important resting and feeding areas for migrating shore birds. Sanderling, dunlin, and western sandpiper also occur on the

beach throughout the winter. Colonial nesting shorebird habitat is increasingly under pressure from development and human disturbance along New Jersey's Atlantic beaches. Nesting birds such as common tern (*Sterna hirundo*), least tern (*Sterna antillarum*), black skimmer (*Rynchops niger*), and American oystercatcher (*Haematopus palliatus*) are frequent spring and summer inhabitants on unvegetated dunes and upper beaches within the study area. For a comprehensive list of colonial nesting waterbirds, raptors, and migratory songbirds that visit the barrier island and surrounding marshes in Barnegat Bay, Manahawkin Bay, and Little Egg Harbor adjacent to Long Beach Island, please refer to the EIS (USACE, 1999).

Several species of gulls are common along New Jersey's shores, and are attracted to forage on components of the beach wrack such as carrion and plant parts. These gulls include the laughing gull (*Larus atricilla*), herring gull (*L. argentatus*), and ring-billed gull (*L. delawarensis*).

3.1.3 Wildlife

Due to the developed nature of the project site, most of the terrestrial wildlife that can be found in the area would be either transient in nature or very adaptable to human intervention. Common species include American toad (B*ufo americanus*), common snapping turtle (*Chelydra serpentine*), eastern diamondback terrapin (*Malaclemys terrapin terrapin*), raccoon (*Procyon lotor*), white-footed mouse (*Peromyscus leucopus*), house mouse (*Mus musculus*), and eastern cottontail (*Sylvilagus floridanus*). A more extensive listing of amphibian, reptilian, and mammalian species is provided in Section 2.3 of the EIS (USACE, 1999).

3.2 Aquatic

3.2.1 Water Quality

Section 2.2 of the 1999 EIS reviews nearshore and offshore water quality in more detail, only a brief summary is included here. Water quality in Barnegat Inlet, the Atlantic Ocean, and other surface waters in the study area are generally good. Exceptions are occasional waste discharges or offshore oil spills. Intentional overboard discharge of solid waste and sewage from recreational boats may degrade water quality in the Bay. The discharge of this contamination makes water unsanitary for swimming and may cause closure of shellfish beds. The state of New Jersey has classified the water along the ocean side of Long Beach Island as approved for the harvest of oysters, clams and mussels, except for one mile of beach off of Surf City that is rated prohibited. It is expected that the primary cause of non-point source pollution be related to development on land and/or the activities that result from land development. Sources might include run-off of petroleum products, fertilizers and animal wastes from roadways and lawns. When it is generated on land, such non-point source pollution is carried by rainwater, which can drain to surface or ground water and ultimately reach the ocean.

The proposed borrow areas are found within the Mid-Atlantic Bight (MAB), one of the four subregions of The Northeast Continental Shelf. Each subregion reflects different underlying oceanographic conditions and fishery management boundaries with varying water temperature and salinity. In the MAB, temperature stratification varies greatly between summer and winter. The water column is vertically well-mixed, with surface water temperatures of 14°C (57°F) at the surface and 11°C (52°F) at depth in the winter. During the summer, the water is generally 25°C (77°F) near the surface and 10°C (50°F) at depths greater than 656 feet (Paquette *et al*., 1995). The pH of the marine seawater is relatively stable

due to the presence of the CO2- carbonate equilibrium system which maintains a pH between 7.5 and 8.5. The major chemical parameters of marine water quality include pH, dissolved oxygen, and nutrient concentrations. Salinity in the MAB generally ranges from 28 to 36 parts per thousand (ppt) over the continental shelf. Lower salinities are found near the coast and the highest salinities found near the continental shelf break. Marine seawater salinity is generally highest during the winter and lowest in the spring.

3.2.2 Sound

Predominant noises in the proposed placement site consist of crashing waves, gulls, and tourists. In a recent study done on in-water noise of a beach nourishment dredging project at Wallops Island, VA, background sound pressure levels (SPLs) averaged 117 decibels (dB) across all sampling days, sites, water depths and weather conditions. Minimum measured sound levels ranged from 91 dB to 107 dB depending on sampling location and water depth; maximum levels ranged from approximately 128 dB to just under 148 dB (Reine *et al*. in prep). Highest SPLs were found at frequencies of less than 200 hertz. The authors note that sea state and the associated sounds generated by waves interacting with the survey vessel likely contributed to the elevated readings.

3.2.3 Upper Marine Intertidal

The upper marine intertidal zone is also primarily barren, however, more biological activity is present in comparison to the upper beach. Organic inputs are derived primarily from the ocean in the form of beach wrack, which is composed of drying seaweed, tidal marsh plant debris, decaying marine animals, and miscellaneous debris that washed up and deposited on the beach. The beach wrack provides a cooler, moist microhabitat suitable to crustaceans such as the amphipods *Orchestia* spp. and *Talorchestia* spp., which are also known as beach fleas. Beach fleas are important prey to ghost crabs. Various foraging birds and some mammals are attracted to the beach fleas, ghost crabs, carrion and plant parts that are commonly found in beach wrack. The birds include gulls, shorebirds, fish crows, and grackles.

3.2.4 Nearshore and Offshore

The following paragraphs discuss geomorphology and biological resources associated with New Jersey coastal waters which overlap nearshore waters with offshore waters. The term “nearshore” refers to all intertidal and marine waters located within the coastal zone that extends out to sea 3 nautical miles (approximately 3.3 statute miles) from the New Jersey shoreline, otherwise referred to as the Inner Continental Shelf (ICS). The term “offshore” refers to marine waters lying seaward of state coastal waters under Federal jurisdiction (BOEM), otherwise known as the Outer Continental Shelf (OCS).

3.2.4.1. Offshore Geomorphology

An evaluation of the offshore sand shoal was conducted by the New Jersey Geology and Water Survey (NJGWS, 2013, pers. comm.) in OCS waters off the New Jersey coast where Borrow Area D2 is located. The entire shoal was calculated by the NJGWS to contain approximately 64.2 mcy of sand and extends nearly 4 times the size of the proposed offshore borrow area. Figure 2-7 (prepared by NJGWS) shows the original Borrow Areas D2 and D3 (now combined), overlain in gray scale on the entire sand shoal and

comprises approximately 18.5 mcy of sand. The plan proposes to dredge approximately 4.9 mcy, less than 8% of the sand identified by NJGWS that comprises the shoal.

The sand resource shoal identified by NJGWS is a shore-detached ridge, formed through a combination of eustatic and hydrodynamic factors. The evolution of these continental shelf sand bodies is characteristic of transgressive episodes in sea-level cycles (Snedden *et al*., 1994; McBride and Moslow, 1991; Figueiredo, 1984). Short-term along-shore inlet shifting due to longshore currents and other factors, combined with longer term landward inlet migration due to sea level rise, result in ebb-tidal delta sediments being cut off from inlet sediment sources. In the New Jersey offshore, they are subsequently reshaped by longshore currents into ridges typically oriented 10 degrees to 30 degrees oblique to the shoreline (Uptegrove *et al*., 2012). Currents and waves reshape the sand body, carving swales that may cut below the base of the former delta, adding relief to the shoal feature and transforming a shore-attached ridge into a shore-detached ridge (Snedden *et al*., 1994).

The sand ridges typically have a convex upper surface and a flat lower surface (Snedden *et al*., 1994). The flat lower surface is typically floored by a gravel layer that was formed during the last glacial maximum (LGM), when sea level was approximately 125 m (~400 ft) lower than it is today. Leading up to and during the LGM, the surface was subaerial, as indicated by extensive oxidation of the sand and gravel (in the vibracore samples). The convex upper surface has a smooth shape, due in part to the unconsolidated and texturally more homogeneous sands which typically comprise the upper sections of these ridges. In addition to the Pleistocene gravel at the base of the shoal features, some may contain an interbedded sand/clay unit of variable thickness overlying the gravel (Smith, 1996). The interbedded section is interpreted to be estuarine sediments of the Holocene transgression, buried by advancing barrier sands and related shore ridges as Holocene sea-level continued to rise (Smith, 1996).

The shore-detached shoal feature in Area D2 lies on the southern edge of the ebb-tidal shoal complex of present-day Barnegat Inlet (see Uptegrove *et al*., 2012, 2013). It is possible that there were shore-attached/shore-detached ridges that formed around an earlier inlet seaward of present-day Harvey Cedars or present-day Ship Bottom. The D2 site would fit the model for a shore-detached ridge associated with a former inlet offshore present-day Ship Bottom. This most likely occurred prior to modern times, when sea level was 50-60 feet lower, and the inlets between barrier islands were several miles seaward of their present locations.

From a limited review of existing seismic and shallow core data, the ebb-tidal delta of the present-day Barnegat Inlet is comprised of a more aerially extensive, moderate-relief sand body and smaller sand ridges extending approximately 5 miles beyond the inlet. It appears that the prevailing southerly long-shore drift in this area has transported sediment to the south, resulting in more extensive accumulation and preservation of sand to the south and east of Barnegat Inlet than to the north. However these currents do not supply significant sediment to the sand resource shoal. The proximity of the ebb-tidal delta to the north may be a buffer for the sand resource shoal against erosion by currents from the north. But at the same time, the delta feature is not supplying significant sediment to the relict sand ridge, however submarine currents continue to sculpt these features, as noted by Snedden et al. (1994).

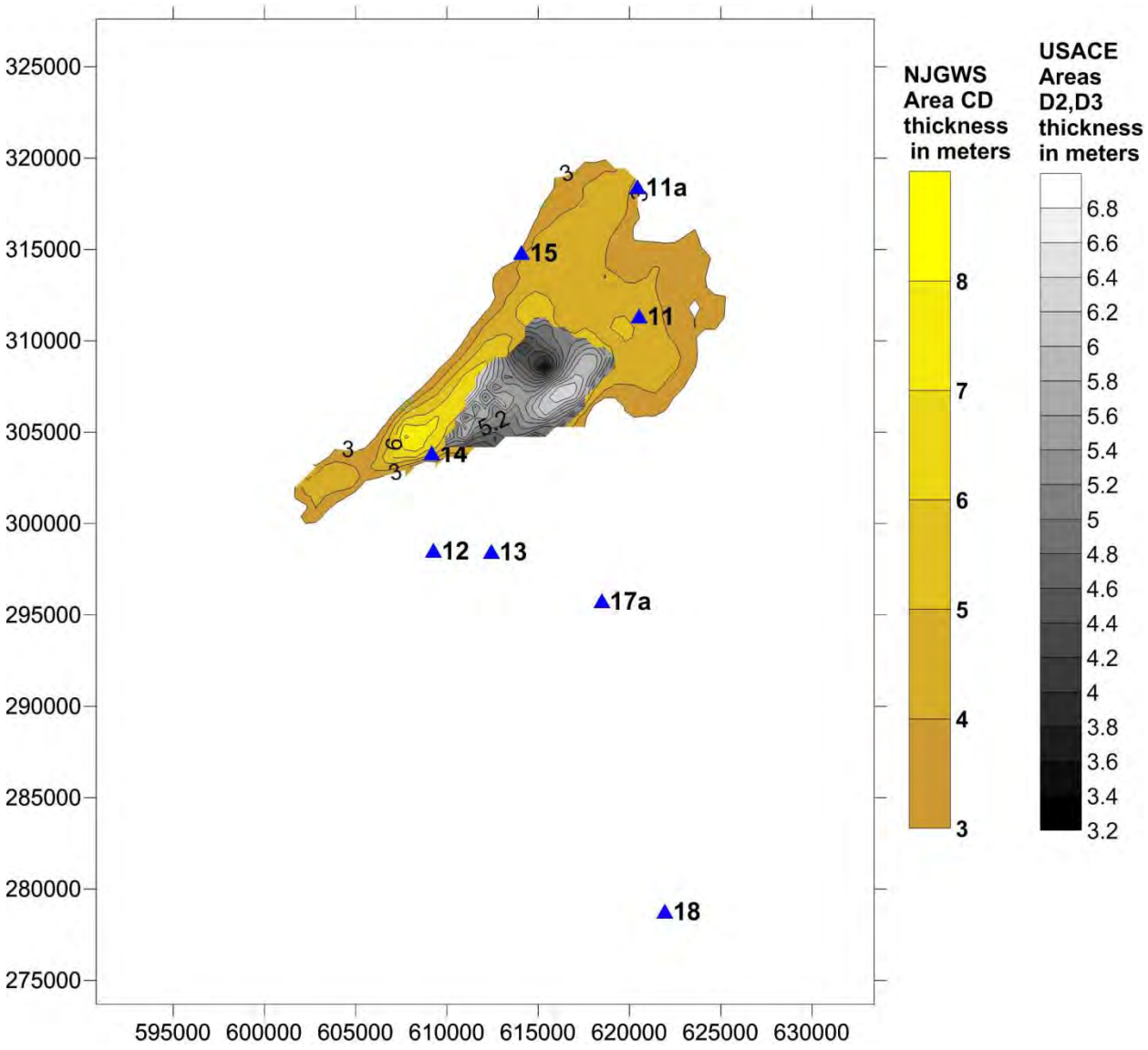

Figure 2-7: Sand resource map of Shoal CD (NJGWS, 2009). Map units are NJ State Plane feet. Map scale for contour plots in meters thickness of sand. Blue triangles are locations of NJGWS cores. Sand volume of entire Area CD shoal (in tan/brown): approximately 64.2 mcy. Sand volume of USACE combined borrow areas (D2 and D3) in Federal waters (in gray): 18.5 mcy.

3.2.4.2. Benthic Invertebrates

Typical invertebrate infauna of the beach intertidal zone that have evolved to survive in high energy, disruptive habitat include the mole crab (*Emerita talpolida*), haustorid amphipods (*Haustorius* spp.), coquina clam (*Donax variablilis*), and spionid worm (*Scolelepis squamata*) (Scott and Bruce, 1999). The epifaunal blue crab (*Callinectes sapidus*), and lady crab (*Ovalipes ocellatus*) are also found in the intertidal zone. These invertebrates are prey to various shore birds and nearshore fishes.

Long Beach Island has groins that represent an artificial rocky intertidal zone. Some typical

algae found growing on the groins are sea lettuce (*Ulva lactuca*), hollow green weeds (*Enteromorpha* spp.), rockweeds (*Fucus* spp.), and laver (*Porphyra* spp.). In addition to providing a hard substrate for the attachment of benthic macroalgae, the groins also contain suitable habitat for a number of aquatic and avian species. Typical invertebrates that might be attached to these groins are blue mussel (*Mytilus edulis*), skeleton shrimp (*Caprella* spp.), little gray barnacle (*Chthamalus fragilis*), northern rock barnacle (*Balanus balanoides*), and striped anemone (*Haliplanella luciae*). If the groin is made of wood the following wood boring species might be found: gribble worm (*Limnoria tripunctata*), and shipworm (*Teredo navalis*). These structures are also used by various finfish for feeding and shelter.

The benthic community composition of the four LBI nearshore borrow areas and an LBI reference area were evaluated in 1998 and found to be similar (Scott and Kelley, 1998). For comparative purposes with OCS benthic resources, the full benthic evaluation report can be found in the Environmental Appendix of the EIS (USACE, 1999). Polychaete worms, followed by molluscs and arthropods (specifically crustaceans) dominated the areas. Oligochaete worms also contributed substantially to the faunal composition of these areas. The mean abundance of the top 10 dominant taxa of each borrow area contributed from 69% of the total mean abundance at Area B to more than 88% at Area E. In general, the dominant polychaetes were small, surface dwelling organisms. The small bristle worm *Polygordius* spp. was either the first or the second most dominant polychaete in each area.

Other dominant polychaetes included the small capitellid *Mediomastus ambiseta* and the small syllid *Parapionosyllis longicirrata*. The dominant crustacean was the very small (<5 mm as an adult) tanaid *Tanaissus psammophilus*. The majority of the molluscs were also dominated by the small bivalves *Donax variabilis*, *Petricola pholadiformi,s* and *Tellina agilis*. Another dominant bivalve the surf clam *Spisula solidissima* had some clams that reached lengths greater than 2 cm in all four areas. Diversity indices, as measured by the Shannon Wiener Index and the Simpson's Dominance Index, indicate a relatively diverse, evenly distributed community structure within the four LBI borrow areas evaluated (Borrow Areas A,B,D, and E) . Shannon Wiener Diversity Index (H), which includes a measure of taxa evenness, ranged from a low of 2.6 at Area E to a high of 3.4 at Area D (Scott and Kelley, 1998).

Simpson's Dominance Index (*D*) followed the same pattern as *H,* where the lowest value 0.70 occurred at Area E and the highest value 0.86, occurred at Area D. The macrobenthic assemblages present in the LBI inshore borrow areas were similar to the assemblages of the LBI reference area and other regional studies. More than 80% of the taxa present in the four borrow areas were also present in at least one of the LBI reference or regional areas. This indicates that none of the proposed inshore borrow areas contain a unique or rare benthic assemblage and the faunal assemblage of the borrow areas is common to the New Jersey coast.

The Atlantic surf clam, *Spisula solidissima*, was collected from all the LBI borrow areas using both a Young grab sampler and the hydraulic clam dredge. Juvenile and small adult surf clams were collected in more than 92% of the stations in the nearshore borrow areas using a Young grab device. Mean abundance of surf clams collected ranged from 183/m2 at Area D1 to 568/m2 at Area A. The abundance of clams greater than 2 cm in length also varied by borrow area. Biomass followed the same pattern as number of larger clams, in that Area A had the greatest mean biomass (29g/m2) and Area D1 had the lowest (0.9g/m2).

Densities of surf clams ranged from 65.6 clams/100 ft2 at Area E to 0.4 clams/100 ft2 in Area B. The total surf clam stock ranged from 12.0 million clams in Area A to 0.05 million clams in Area B. The average

number of bushels collected from the four nearshore borrow areas were variable relative to the regional surveys conducted by the New Jersey Department of Environmental Protection (NJDEP, 1995). The average number of bushels for Area A, which had the greatest average number of bushels collected per tow, was about 70% greater than the regional average.

The average number of bushels collected from Areas B and D1 were less than a third of the regional average. Borrow Area E most closely approximated the regional average of about 12 bushels collected/tow. Surf clams of the four nearshore borrow areas were of comparable size relative to those of the regional Atlantic coast. Ten additional mega and macroinvertebrate taxa were collected by the clam dredge tows. The most frequently collected invertebrate was the moon snail, which was present in 70% of all tows. All other invertebrates were collected at frequencies less than 40% for all tows.

A study (Scott and Bruce, 2008) was conducted to assess baseline macrobenthic and surf clam resources in the offshore Borrow Area D2, and entailed 17 sampling stations within the borrow area and 6 stations outside of the borrow area (reference sites) . This 2008 study employed the same field and laboratory methods as was used to assess the four nearshore borrow areas (A, B, D1, and E) in the Scott and Kelly (1998) study to allow for statistical comparison. The benthic community was found to be similar to other offshore sand areas in the mid-Atlantic with dominant taxa common to Areas A, B, D1 and E sampled in 1998. The majority of the benthic community in D2 was dominated by small organisms with opportunistic life histories, with one exception: the sand dollar (*Echinarachnius parma*), which was the second most abundant species.

Surfclam surveys were completed at 12 stations within Borrow Area D2 (Scott and Bruce, 2008). Bivalves, such as surf clams, were not very abundant compared to samples taken from the previously sampled borrow areas (A, B, D1, and E). The surf clam survey suggests that Area D2 currently supports a limited clam population. Adult densities were estimated to be about 0.7 clams per square foot, which was substantially less than estimates for nearshore Borrow Areas A, D1, and E sampled in 1997. The density is also less than the population density estimated by NJDEP in an area ranging from Barnegat Inlet to Absecon Inlet.

Borrow Areas D1 and D2 were again evaluated (Scott, 2012) for benthic macroinvertebrates after D1 was used in 2008 and 2010 for beach renourishment to assess dredging impacts. A comparison of surface sediment components at stations in Area D1 sampled both prior to and after dredging operations suggest that a slight shift in the surface sediment habitat occurred since the first sampling in 1997. Prior to dredging, the five stations contained mainly a mix of coarse sand to gravel type sediments. Subsequent to these dredging events, these sites were classified as having a fine-medium sand mix. Changes in the corresponding benthic community appear to be more highly associated with sampling year than to slight variances in sand percentages. Benthic data are inherently highly variable with many factors contributing to distribution patterns.

In the Scott (2012) benthic study, Area D3 was also sampled. Results suggest that the benthic community within the expansion Area D3 is not unique or uncommon to the Long Beach Island region. Most of the species collected were smaller species with adults reaching sizes less than 2 cm in length and have life history characteristics that will allow for quick recovery after a dredging disturbance. The dominant epifauna species were the small sessile, tunicate, Ascidiacea, and the small *Spirorbis corrugates*, both of which attach themselves to coarse sand particles. The dominant infauna taxa were also small, fast growing species including the polychaete worm *Polygordius* spp., the syllid worm

Parapionosyllis longicirrata, oligochaete worms, and the small tanaid crustacean *Tannaissus psammophilus*.

The NJDEP Department of Shellfisheries has conducted annual stratified random surf clam sampling along the New Jersey coast out to the three mile territorial limit offshore from Shark River Inlet south to Cape May since 1988. Typical sampling years collected from 250 to 330 stations. Versar (2008) was contracted by PCOE to compile the NJDEP surf clam data to enable the PCOE to select potential sand borrow sites in areas that would minimize impacts to surf clams. Versar (2008) compared surf clam densities in three strata. Average surf clam densities were consistently lower in the outermost strata (2-3 miles offshore) relative to the middle strata (1-2 miles offshore) and were generally highest in the inshore strata (0-1 mile offshore). Densities of the adult surf clam have been declining since 1997 in all three strata, as documented by the NJDEP adult surf clam surveys, but appear to drop off precipitously in the outermost sampling zone. However, juvenile-sized clams were collected from the borrow areas, indicating that this region continues to contain a habitat conducive to surf clam recruitment. In Area D3, the majority of juvenile clams were collected at stations located along the southern end of the borrow area. The Scott (2012) study showed that recruitment of clams in dredged areas continues to be similar to areas that are not dredged. Juvenile surf clams collected from the dredged area D1 were similar to Area D2 which has not been dredged.

Benthic community differences detected by cluster analysis results were associated with sediment microhabitat differences detected within the region. Although all of the stations sampled were classified as sand stations, differences in the size of sand particles were detected amongst the stations. Some stations within Area D1, D2, and D3 contained a higher percentage of coarse to gravel sized particles, some had more of a mix of medium to coarse sand, while others had a predominance of fine sand sediments. Although these differences are important for documentation of benthic community composition, the differences detected within these sediment habitats are not unique to the area.

3.2.4.3 Finfish

Important recreational and commercial fish in the nearshore and offshore project area include: American eel (*Anguilla rostrata*), white perch (*Morone americana*), blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), fluke (*Paralichthys dentatus*), bluefish (*Pomatomus saltatrix)*, spot (*Leiostomus xanthurus*), summer flounder (*Paralichthys dentatus*), northern puffer (*Sphoeroides maculatus*), weakfish (*Cynscion regalis*), Atlantic menhaden (*Brevoortia tyranus*), scup (*Stenotomus chrysops*), striped bass (*Monroe saxatilis*), spiny dogfish (*Squalus acanthias*), and winter flounder (*Pseudopleuronectes americanus*). Other fish found within the area, many which are important forage fish, include bay anchovy (*Anchoa mitchilli*), Atlantic silverside (*Menidia menidia*), three spine stickleback (*Gasterosteus aculeatus*), northern pipefish (*Syngnathus fuscus*), winter skate (*Raja ocellata*), clearnose skate (*Raja eglanteria*), southern stingray (*Dasyatis americana*), and northern kingfish (*Menticirrhus saxatilis*).

Nearshore and offshore areas along the Atlantic coast provide a migratory pathway and spawning, feeding and nursery area for many fish sought by sport fishermen common to the Mid-Atlantic region including black sea bass (*Centropristis striata*), striped bass, summer flounder, winter flounder, bluefish, Atlantic mackerel (*Scomber japonicus*), tautog (*Tautoga onitis*), scup, Atlantic menhaden, weakfish, and American shad (*Alosa sapidissma*). In addition, shipwrecks and artificial reefs along the coast provide habitat for a variety of fish including: Atlantic cod (*Gadus morhua*), red hake (*Urophycis chuss*), spotted

hake (*Urophycis regia*), white hake (*Urophycis tenuis*), black sea bass, pollock (*Pollachius virens*), mackerel, and bluefish. Shoal areas along the Atlantic coast are very productive areas for finfish. Such bathymetric contours provide important structure and feeding areas for finfish (Nairn *et al*., 2007; Slacum *et al*., 2006). Groins also provide structure within nearshore shallows that provide sites for attachment of sessile organisms on which finfish feed.

There are highly migratory pelagic species of finfish of the high seas that dwell in the OCS region of the Mid-Atlantic. The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265), and amended as a Reauthorization Act (P.L. 109-479), have established Regional Fishery Management Councils to exercise sound judgment in the stewardship of fishery resources and develop Fishery Management Plans (FMPs). Highly migratory fish species include such species as the bigeye tuna (*Thunnus obesus*), bluefin tuna (*Thunnus thynnus*), sailfish (*Istiophorus albicans*), skipjack tuna (*Katsuwonus pelamis*), yellowfin tuna (*Thunnus albacares*) and white marlin (*Tetrapturus albidus*).

3.2.4.4 Essential Fish Habitat

Section 2.2 of the 1999 EIS reviews nearshore and offshore Essential Fish Habitat (EFH) in more detail, only a brief summary is included here and updates species information. In accordance with provisions of the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA) and the 1996 Sustainable Fisheries Act, federal agencies are required to consult with NMFS regarding actions that may adversely affect EFH. EFH is defined as "*those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity*." *Waters* consist of aquatic areas and their associated physical, chemical, and biological properties that are currently utilized by fishes and may include areas historically used. *Substrate* is defined as sediment, hardbottom, structures beneath the waters, and any associated biological communities. *Necessary* means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. *Spawning, breeding, feeding*, or *growth to maturity* includes all habitat types used by a species throughout its life cycle. Only species managed under a Federal FMPs are protected under the MSA (50 Code of Federal Regulations [CFR] 600). The act requires federal agencies to consult on activities that may adversely influence EFH designated in the FMPs.

The use of nearshore and offshore borrow areas for beach nourishment on Long Beach Island may have an effect on EFH for the following species or species groups (Table 3-2): northeast multispecies (groundfish such as cod, haddock, flounders), Atlantic scallops, sea herring, monk fish, Atlantic salmon, summer flounder, scup, black sea bass, bluefish, squid, mackerel, butterfish, surf clams, ocean quahogs, dogfish, tilefish, highly migratory species (tuna, sharks), Atlantic billfishes, red drum, Spanish mackerel, king mackerel and golden crab, and skates. The Atlantic Fishery Management Council and the National Marine Fisheries Service have identified EFH for these species and the Corps has included an impact assessment in Section 5.9 of the EIS (1999). Any species additions following release of the 1999 EIS are included in the EFH assessment herein.

Shoals attract many different fish species, including some of species and species groups that fall under EFH. The Atlantic OCS region provides habitat that supports a wealth of species including commercially and recreationally important fish and shellfish and endangered and threatened species. Regional Fishery Management Councils are required to describe, identify, conserve and enhance areas designated as EFH. In addition, the councils must minimize adverse effects of fishing on EFH. These actions taken by the councils are to be informed by recommendations from NMFS. EFH descriptions currently exist for

species in the proposed project area where offshore Borrow Areas D2 and D3 are located. In 2003, NMFS issued an Amendment to the Fish Management Plans (FMP) for Atlantic tunas, billfish, and sharks which may travel through the proposed project area.

Table 3-2 provides a summary of EFH designation for the 10 x 10 minute square for the location of the combined Borrow Area D2/D3. This square is defined as follows:

> Waters within the square east within the Atlantic Ocean and west within Barnegat Bay, affecting from just north of Surf City , NJ., north along the northern part of Long Beach past Harvey Cedars, NJ., Loveladies Harbor, NJ., Barnegat Light and Barnegat Inlet, the Sedge Islands to Island Beach including waters affecting Clam Island, Vol Sledge and High Bar, and along with the entrance to the Forked River on the mainland, Slope Sedge, Sandy Island, eastern Carvel Island and eastern Harvey Sedges.

Table 3-2 Summary of Essential Fish Habitat (EFH) Designation

10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	39° 50.0' N	74° 00.0' W	39° 40.0' N	74° 10.0' W

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod *(Gadus morhua)*				X
haddock *(Melanogrammus aeglefinus)*				
pollock *(Pollachius virens)*				
whiting *(Merluccius bilinearis)*				
offshore hake *(Merluccius albidus)*				
red hake *(Urophycis chuss)*	X	X	X	
white hake *(Urophycis tenuis)*				
redfish *(Sebastes fasciatus)*	n/a			
witch flounder *(Glyptocephalus cynoglossus)*	X			
winter flounder *(Pseudopleuronectes americanus)*	X	X	X	X
yellowtail flounder *(Limanda ferruginea)*	X	X		
windowpane flounder *(Scophthalmus aquosus)*	X	X	X	X

American plaice *(Hippoglossoides platessoides)*				
ocean pout *(Macrozoarces americanus)*				
Atlantic halibut *(Hippoglossus hippoglossus)*				
Atlantic sea scallop *(Placopecten magellanicus)*				
Atlantic sea herring *(Clupea harengus)*			X	X
monkfish *(Lophius americanus)*	X	X		
bluefish *(Pomatomus saltatrix)*			X	X
long finned squid *(Loligo pealeii)*	n/a	n/a		
short finned squid *(Illex illecebrosus)*	n/a	n/a		
Atlantic butterfish *(Peprilus triacanthus)*			X	
Atlantic mackerel *(Scomber scombrus)*				
summer flounder *(Paralichthys dentatus)*		X	X	X
scup *(Stenotomus chrysops)*	n/a	n/a	X	X
black sea bass *(Centropristis striata)*	n/a		X	X
surf clam *(Spisula solidissima)*	n/a	n/a	X	X
ocean quahog *(Artica islandica)*	n/a	n/a		
spiny dogfish *(Squalus acanthias)*	n/a	n/a		
tilefish *(Lopholatilus chamaeleonticeps)*				
king mackerel *(Scomberomorus cavalla)*	X	X	X	X
Spanish mackerel *(Scomberomorus maculatus)*	X	X	X	X
cobia *(Rachycentron canadum)*	X	X	X	X
tiger shark *(Galeocerdo cuvieri)*		X		
dusky shark *(Carcharhinus obscurus)*		X		
sandbar shark *(Carcharhinus plumbeus)*		X	X	X

clearnose skate (*Raja eglanteria)*			X	X
little skate (*Raja erinacea)*			X	X
winter skate			X	X

Eight species considered as Coastal Migratory Pelagics by the NMFS Essential Fish Habitat Mapper (www.habitat.noaa.gov/protectin/efh/efhmapper/index.html) were identified for the project area. Those that are not included within the NMFS EFH Designation 10'x10' square for the project area provided above are the following: Atlantic bluefin tuna (*Thunnus thynnus*), scalloped hammerhead (*Sphyrna lewini*), shortfin mako (*Isurus oxyrinchus*), smooth dogfish (*Mustelus canis*), and white shark (*Carcharodon carcharias*). A description of the life history requirements and distribution of the managed species identified above, relative to the study area, is included in Appendix A.

3.3 Threatened and Endangered Species

Endangered species are those whose prospects for survival are in immediate danger because of a loss or change of habitat, over-exploitation, predation, competition or disease. Threatened species are those that may become endangered if conditions surrounding the species begin or continue to deteriorate. Species may be classified on a Federal or State basis. There are several listed or notable species of special concern that can be found along the New Jersey coast; most of these are transient in the area. The Federally-listed seabeach amaranth (*Amaranthus pumilus Rafinesque*) was listed as threatened throughout its range in 1993 (58 FR 18035 18042). Historically, this species occurred on coastal barrier island beaches from Massachusetts to South Carolina. Extant populations are currently known from South Carolina, North Carolina, Virginia, Delaware, Maryland, New Jersey, and New York. The number of plants and populations has increased in all states since it was listed in 1993; however, in North Carolina have generally been increasing since 2002. Primary habitats include overwash flats on the accreting ends of islands, lower foredunes, and the upper strand on non-eroding beaches. Seabeach amaranth is an annual, meaning that the presence of plants in any given year is dependent on seed production and dispersal during previous years. Seeds germinate from April through July. Flowering begins as early as June and seed production begins in July or August. Seeds are dispersed by wind and water. Seabeach amaranth is intolerant of competition; consequently, its survival depends on the continuous creation of newly disturbed habitats. Prolific seed production and dispersal enable the colonization of new habitats as they become available. A continuous supply of newly created habitats is dependent on dynamic and naturally functioning barrier island beaches and inlets (USFWS 1996b).

The piping plover (*Charadrius melodus*) is a Federally-listed endangered small pale shorebird on sandy beaches along the Atlantic and Gulf coasts, including areas within the vicinity of the project location. The roseate tern (*Sterna dougallii*) is a medium-sized tern and primarily tropical but breeds in scattered coastal localities in the northern Atlantic temperate zone. It is Federally-listed as endangered in the northeast region, including New Jersey, but has not been observed within the vicinity of the project area since the 1970s (Holgate).

There are five Federally-listed threatened or endangered sea turtles that can occur off the coast of New Jersey's ocean coast. The endangered Kemp's ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*) and hawksbill turtle (*Eretmochelys imbricata*), and the threatened green turtle (*Chelonia mydas*) and loggerhead turtle *(Caretta caretta*). With the exception of the loggerhead these

species breed further south from Florida through the Caribbean and the Gulf of Mexico. The loggerhead may have historically nested on coastal barrier beaches. No known nesting sites are within the project area. All five species of sea turtles are listed in the State of New Jersey.

There are six Federally-listed species of endangered whales that have been observed along the New Jersey Atlantic coast. The North Atlantic right (*Eubalaena* glacialis) , fin whale (*Balaenoptera physalus*), and humpback whale (*Megapter novaeangliae*) are found seasonally in waters off New Jersey. The sperm whale (*Physeter catodon*), Sei (*Balaenoptera borealis),* and blue whale *(Balaenoptera musculus*) may be present in deeper offshore waters. These are migratory animals that travel north and south along the Atlantic coast. All six species of whales are listed in the State of New Jersey. There are no areas within the project area designated as critical habitat for marine mammals.

The shortnose sturgeon (*Acipenser brevirostrum*) is a Federally-listed endangered species of fish that is also state listed in New Jersey. The shortnose sturgeon is an anadromous species that inhabits marine and estuarine waters, but spawns in freshwater. Shortnose sturgeon occur primarily in the Delaware River but may occur in the nearshore ocean waters (Brundage and Meadows, 1982).

In April 2012, NMFS added the Atlantic sturgeon (*Acipenser oxyrinchus*) to the Federally endangered list. Atlantic sturgeon has been recommended for endangered status listing in New Jersey. Atlantic sturgeon spawn in the freshwater regions of the Delaware River. By the end of their first summer the majority of young-of-the-year Atlantic sturgeon remain in their natal river while older subadults begin to migrate to the lower Delaware Bay or nearshore Atlantic Ocean. An acoustic tagging study conducted between 2008-2011 (Brundage and O'Heron, in press) found a few subadults, tagged within the Delaware River, in the Hudson River, Potomac River and off Cape Hatteras in the second year of the study. Older subadult Atlantic sturgeon are known to undertake extensive marine migrations, returning to their natal river in the late spring, summer, and early fall months (Dovel and Berggren, 1983).

The bald eagle (*Haliaeetus leucocephalus*) was listed as a Federally endangered species throughout the United States in 1978. Most bald eagle nests are located in large wooded areas associated with marshes and other water bodies. Based on improvements in bald eagle population figures for the contiguous United States, the U.S. Fish and Wildlife Service removed the bald eagle from the Endangered Species list in June 2007. The New Jersey Department of Environmental Protection reported that there were more than 100 pairs of bald eagles within the state in 2011. Although the bald eagle has been removed from the Endangered Species list, the bird is still protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. These laws prohibit killing, selling or otherwise harming eagles, their nests, or eggs. The bald eagle has remained a state-listed species in New Jersey.

Pergrine falcons (*Falco peregrinus*) were placed on the Endangered Species list as endangered in 1984, however, like the bald eagle, their numbers in the Northeast region have been steadily increasing (Steidl *et al*., 1991). The peregrine falcon was removed from the Endangered Species list in August 1999. The bird continues to be protected by the Migratory Bird Treaty Act, which prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the Interior Department. The peregrine falcon remains a state-listed species in New Jersey. The peregrine falcon is known to nest on the Barnegat Division of Edwin B. Forsythe National Wildlife Refuge in Stafford Township, Ocean County, New Jersey, however the refuge is not a proposed placement site for sand nourishment.

There are currently 34 bird species state-listed as endangered or threatened species in New Jersey. A few of these, such as the black skimmer (*Rynchops niger*), the least tern (*Sternula antillarum*), and the roseate tern (*Stena dougallii*) are likely to occur along the beaches of Long Beach Island (NJDEP, 2012). The piping plover and roseate tern are state-listed endangered species that have the potential to occur in the vicinity of the project areal. Several raptors occur in the vicinity of the project area include the state-listed endangered northern harrier (*Circus cyaneus*), short eared owl (*Asio flammeus*), osprey (*Pandion haliaetus*), and barred owl (*Strix varia*).

Although primarily found within the Delaware Bay shoreline and not the ocean coast, the red knot (*Calidris canutus*) is currently proposed for listing under Endangered Species Act protection by the U.S. Fish and Wildlife Service. The New Jersey Department of Environmental Protection reports that both horseshoe crabs and red knots numbers have declined by over 75 percent since the early 1990's. The state listed threatened black rail (*Laterallus* jamaicensis) nests in emergent tidal marshes in the surrounding area.

The harbor porpoise (*Phocoena phocoena*) and the bottlenose dolphin (*Tursiops truncatus*) are New Jersey species of special concern. These species, as are all marine mammals, are protected under the Marine Mammal Protection Act. While mid-Atlantic waters are the southern extreme of their distribution, stranding data indicate a strong presence of harbor porpoise off the coast of New Jersey, predominately during spring. The northern diamondback terrapin (*Malaclemys terrapin terrapin*), considered a "species of special concern", is known to occupy Barnegat Bay. The diamondback terrapin occupies brackish tidal marshes and nests on sandy bay beaches.

For more information concerning existing conditions in the project area, refer to the Barnegat Inlet to Little Egg Inlet Final Feasibility Report and Integrated Final Environmental Impact Statement (USACE, 1999).

3.4 Cultural Resources

In preparing the EIS, the Corps consulted with the New Jersey State Historic Preservation Office (NJ SHPO) and other interested parties to identify and evaluate historic properties in the project area in order to fulfill its cultural resources responsibilities under the National Historic Preservation Act of 1966, as amended, and it's implementing regulations, 36 CFR Part 800. As part of this work, a cultural resources investigation was conducted in the project area. The results of this investigation are presented in the draft report entitled *Phase I Submerged and Shoreline Cultural Resources Investigations and Hydrographic Survey, Long Beach Island, Ocean County, New Jersey* (Hunter Research, Inc. *et al.*, 1998).

The following brief discussion has been taken directly from the above referenced report and summarized. For more detailed information on the history of Long Beach Island, please refer to the report and to other studies listed in the reference section of the EIS. Previous cultural resource surveys have been completed in and close to the project area. In 1977 an archeological survey was conducted by R. Allen Mounier in conjunction with a proposed waste water collection facility for the town of Manahawkin and vicinity. As part of this investigation, Bonnet Island, a small body of land located in Manahawkin Bay, was subjected to a program of background research, field inspection and limited subsurface testing. Several historic cultural resources were identified on the mainland, however, none were located on Bonnet Island or within the general vicinity of the project area (Mounier 1977).

In 1990, A. K. Mounier completed a second investigation along a proposed transatlantic telecommunications cable alignment which was to cut across Manahawkin Bay and traverse Long Beach Island along Bergen Avenue in North Beach. No cultural resources of interest were found within the project corridor. Mounier noted severely disturbed landscapes on Long Beach Island from the ocean to the bay (Mounier 1990).

A statewide survey of archeological resources conducted in the early part of this century (Skinner and Schrabisch, 1913) and more recent cultural resource investigations have not identified any prehistoric sites either within the tidal zone of the current project area or on Long Beach Island itself. However, prehistoric artifacts have occasionally been recovered from the floor of Manahawkin Bay and many prehistoric sites are known to exist nearby on the mainland. No potentially significant historical archeological resources have been previously documented along the tidal shoreline and tidal zone of the current project area. Numerous shipwrecks, however, are known to have occurred along the beaches of Long Beach Island. A list of documented shipwrecks in the Long Beach Island vicinity is provided in Appendix A in Hunter's report (Hunter Research, Inc. *et al*., 1998).

Examination of maps and files of the New Jersey Historic Preservation Office indicate that there are several historic resources in the project vicinity currently listed in the State and National Registers of Historic Places. These are the Barnegat City Public School (now the Barnegat Light Museum), Barnegat Lighthouse, the Beach Haven Historic District, Converse Cottage, Sherbourne Farm and the Dr. Edward H. Williams House. The last four properties are all included within the Beach Haven Multiple Resource Area. In 1981, the New Jersey Historic Sites Survey inventoried the historic resources of Long Beach Island and generated an additional list of potentially eligible properties (see Table 1.1 in Hunter Research, Inc. *et al*., 1998). Of these previously identified historic properties, the only ones located in close proximity to the present study area are the Barnegat Lighthouse, the Ship Bottom Historic District and Aunt Hill.

The Barnegat Lighthouse is a mid-19th century 150-foot tall lighthouse located at the extreme northern tip of the island. The light keeper's house at 7 East 5th Street in Barnegat is a typical example of a late 19th century Long Beach Island cottage. The Ship Bottom Historic District is a district composed primarily of late 19th-century and early 20th-century summer cottages which on its east abuts the beach front. Aunt Hill is another late 19th-century cottage and is notable for being one of the oldest buildings in Spray Beach. Of these resources, only the Barnegat Lighthouse is actually listed in either the State or National Registers, and none are located directly on the beach or in the tidal zone.

As part of the 1999 feasibility study, a Phase I submerged and shoreline cultural resources investigation was conducted in four segments of the tidal and nearshore zone within the project area along an 18-mile stretch of the Atlantic coastline between Barnegat Inlet and Little Egg Inlet and totaling 10.5 miles and adjacent nearshore underwater acres totally 320 acres(Hunter Research, Inc. *et al.*, 1998). In addition, three potential sand borrow areas totaling approximately 1,055 acres were also investigated (Borrow Areas B, D and E). The fieldwork involved visual inspection and remote sensing. Visual inspection and magnetic survey were conducted within the four, shoreline areas at low tide. Comprehensive magnetic, acoustic and bathymetric remote sensing and hydrographic surveys were conducted within the four near-shore sand placement areas, as well as within the three proposed offshore sand borrow areas.

Five magnetic targets identified within the tidal zone may represent potentially significant cultural resources; however, placement of additional sand on the beach will protect the source of these magnetic targets and no further study was recommended. One magnetic target located during the Phase I submerged survey demonstrated characteristics of a possible shipwreck. Additional survey was recommended for this target, designated as Target 7:614.

In 2003, Hunter Research Inc. conducted near-shore and on-shore cultural resources investigations in the project area to assess for both submerged and shoreline terrestrial resources. Additionally, six submerged magnetic targets of potential interest were located both onshore and near shore during the 2003 investigations. The proposed beach nourishment will not impact these targets, but will serve to aid in their preservation. A two-part underwater archaeological investigation was conducted in the Atlantic Ocean offshore of Long Beach Island and included a Phase I level remote sensing survey conducted at the offshore borrow area D2 (Dolan Research, 2001). Analysis of the remote sensing data confirms that no potentially significant targets were identified within Borrow Area D2 and no additional investigations were recommended.

Phase 1 underwater archaeological investigations were also performed by Dolan Research at Offshore Borrow Area D3 in 2012. Tasks performed included: limited background and documentary research; magnetic and acoustic remote sensing with follow-up target analysis; and analysis of assembled research and field data into a technical report. The goal of the investigation was to identify targets suggestive of submerged and shoreline cultural resources that might be impacted by sand borrowing activities. Analysis of fieldwork data confirmed the presence of no magnetic and five sonar targets in the project area. However, none of the five target signatures is considered suggestive of a submerged cultural resource. No additional underwater archaeological investigations were recommended for Borrow Area D3.

3.5 Air Quality

Air quality is determined by the number and quantity of air toxics emitted from many types of sources: point, area, and mobile sources. The U.S. Environmental Protection Agency (EPA) prepared a comprehensive list of air toxics emissions for the entire country in 1999: the National-Scale Air Toxics Assessment (NATA). A summary of the emissions inventory for the state of New Jersey, based on the NATA, gives an indication of which may be the most important sources and areas of highest air toxic emissions. Broken down by county, areas in New Jersey with the largest air toxic emissions are generally those with the largest populations in the smallest space. Higher levels of air toxic emissions are directly related to high levels of vehicle use, solvent use, and other population-related types of activities. The immediate project placement area is residential and a prominent recreational tourism area. The air quality is relatively good since there are no major sources of emissions in the area.

NJDEP evaluates EPA's NATA air toxic emissions concentrations to chemical-specific health benchmarks to determine a risk ratio to assess which toxic emissions pose a potential human health problem within the state. If the risk ration for a specific chemical is greater than one, it may be of concern. There are 181 air toxics that EPA included in their 2005 NATA (http://www.state.nj.us/dep/airtoxics/nataest05.htm). One-third of these do not have toxicity values or corresponding health benchmarks. For those that do, NJDEP's state and county average air toxics concentrations indicate that 22 of the pollutants are "of concern", 21 of these are cancer-causing chemicals and one (acrolein) is evaluated as a noncarcinogen. Predicted concentrations of these

pollutants vary around the state, depending on the type of sources that emit them. In Ocean County 13 of the 22 pollutants of concern have a risk ration higher than 1, including some risk ratios based on noncarcinogenic effects (http://www.state.nj.us/dep/airtoxics/oceanavg05.htm).

3.5.1 General Conformity Rule

The Clean Air Act, and its subsequent amendments, established the National Ambient Air Quality Standards (NAAQS) for seven common pollutants: particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. These air pollutants are referred to as "criteria pollutants" by the EPA because they are regulated for permissible levels based on human health and environmentally based guidelines. The General Conformity Rule, under the Clean Air Act, applies to all Federal actions that are taken in designated nonattainment areas, with three exceptions: 1) actions covered by the transportation conformity rule; 2) actions associated with emissions below specified *de minimis* levels, and 3) other actions which are either exempt or presumed to conform.

The states have the primary responsibility to attain and maintain those standards. Through the State Implementation Plan (SIP), the New Jersey Department of Environmental Protection – Division of Air Quality manages and monitors air quality within the state. The goal of the SIP is to meet and enforce the primary and secondary national ambient air quality standards for pollutants. New Jersey air quality has improved significantly over the last 40 years, but exceeds the current standards for ozone (O_3) throughout the state and fine particles (PM_{10} or $PM_{2.5)}$ in many urban areas. New Jersey has attained the sulfur dioxide (SO_2) (except for a portion of Warren County), lead (Pb), and nitrogen dioxide (NO_2) and Carbon Monoxide (CO) standards (http://www.state.nj.us/dep/daq)

The Clean Air Act requires that all areas of the country be evaluated and then classified as attainment or non-attainment areas for each of the National Ambient Air Quality Standards. Areas can also be found to be "unclassifiable" under certain circumstances. The 1990 amendments to the act required that areas be further classified based on the severity of non-attainment. The classifications range from "Marginal" to "Extreme" and are based on "design values". The design value is the value that actually determines whether an area meets the standard. For the 8-hour ozone standard for example, the design value is the average of the fourth highest daily maximum 8-hour average concentration recorded each year for three years. Ground-level ozone is created when nitrogen oxides (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. NOx is primarily emitted by motor vehicles, power plants, and other sources of combustion. VOCs are emitted from sources such as motor vehicles, chemical plants, factories, consumer and commercial products, and even natural sources such as trees. Ozone and the pollutants that form ozone (precursor pollutants) can also be transported into an area from sources hundreds of miles upwind. The study area falls within the Northern New Jersey/New York City/Long Island Area (New Jersey Portion). The entire state of New Jersey is in non-attainment and is classified as being "Marginal." A "Marginal" classification is applied when an area has a design value of 0.085 ppm up to but not including 0.092 ppm (NJDEP, 2012 Ozone Summary).

4.0 ENVIRONMENTAL EFFECTS

4.1. Terrestrial

4.1.1 Dunes and Nearshore Habitat

Minimal adverse impacts are expected to occur at the placement site as there is little structure on the sand beaches. The dune, the active berm beach, and the offshore zone are dynamic high-energy areas, subject to the forces of wind and waves. Sand normally moves offshore in the winter and returns on-shore in the spring and summer. During beach nourishment, sand can be placed in any one, or all of these areas, and will redistribute to a more stable profile (NRC, 1995). Following sand placement, there are notable physical changes to a nourished beach. For example, sand is more compacted along a nourished beach, sometimes three to four times higher, which has been shown to increase over time for some beaches (Ryder, 1991).

Other physical changes from placement of sand include increased shear resistance (sand permeability), altered dry density, change in moisture content, different grain size and shape, silt/clay composition changes, and altered placement of sand grains throughout the nourished area (Parr *et al.,* 1978; Reilly and Bellis, 1978, 1983; Nelson and Dickerson, 1988; Ryder, 1991). Such sediment may cause changes in the hydrodynamic patterns in the intertidal zone. Deposition of material high in clay or silt content may cause temporary elevated turbidity in the immediate placement area. One positive impact is to down-drift beaches receiving sand moving alongshore from the nourished beach.

The use of earth-moving equipment to spread deposited sand on the beach can alter sedimentology, compaction, and the nature of the sands along the primary dune (Wells and McNinch, 1991). Wind is one of the major forces that form dunes, and sorts sediments according to grain size. Lindquist and Manning (2001) found that bulldozed dunes contain sediment that is more poorly sorted and has a higher percentage of coarse sands and gravel-sized particles.

4.1.2 Birds

Beach nourishment operations should have minimal effect on birds as the area is seasonally heavily used by people for recreation. Most birds in the area are either transient in nature or very adaptable to human activity. Since birds are highly mobile, they avoid the construction area due to the noise of construction activity, and on occasion, co-occupy the area with people. Other than gulls, and migratory shorebirds in early spring, not many avian species use the beach berm regularly.

Birds that use the target beach for nesting and breeding are more likely to be affected by beach nourishment than those species that use the area for feeding and resting during migration (USDOI/MMS, 1999). Birds may be displaced by dredges, pipelines, and other equipment along the beach, or may avoid foraging along the shore if they are aurally affected (Peterson *et al*., 2001). Sand that is placed on the beach has the potential to crush eggs, hatchlings, and adult birds (USDOI/MMS, 1999). If the sediment is too coarse or high in shell content it can inhibit the birds' ability to extract food particles in the sand. Fine sediment that reduces water clarity can also decrease feeding efficiency of birds (Peterson *et al*., 2001).

4.1.3 Wildlife

Placement of sand on the beach should have minimal effect on wildlife as the area is seasonally heavily used by humans. Most wildlife in the area is either transient in nature or very adaptable. Most wildlife would avoid the construction area due to the noise of construction activity, but would return after construction ends. Not many wildlife species use the berm part of the beach regularly. The increased berm size and planted dune grass would provide more habitat for beach nesting shorebirds.

4.2 Aquatic

4.2.1 Water Quality

The selected plan poses a short-term effect on water turbidity during berm placement and excavation at the borrow area. Dissolved oxygen (DO), pH, and temperature all influence the welfare of living organisms in water; without an appreciable level of DO, many kinds of aquatic organisms cannot exist (Priest, 1981). Elevated levels of particulate concentrations at the discharge location will dissipate after a short period in ocean currents. The borrow material, given its large grain size, is not expected to be chemically contaminated. Generally, the larger the grain sizes the smaller the area of impact. Turbidity resulting from resuspension of the sediments into the water column at the placement site is expected to be localized and temporary in nature. Dredging operations within the borrow area cause sediment to be suspended in the water column as well. Studies of past projects indicate that the extent of the sediment plume is generally limited to between 1,640-4,000 feet from the dredge (hopper) and that elevated turbidity levels are generally short-lived, on the order of an hour or less (Barnard, 1978; USACE, 1983; Hitchcock *et al*., 1999; MMS, 19999; Anchor Environmental, 2003; Wilber *et al*., 2006).

The length and shape of the plume depend on the hydrodynamics of the water column and the sediment grain size. Given that the dominant substrate at the borrow sites is sand, it is expected to settle rapidly and cause less turbidity and oxygen demand than finer-grained sediments. No appreciable effects on DO, pH, or temperature are anticipated because the dredge material has low levels of organics and low biological oxygen demand. Additionally, dredging activities would occur within the open ocean where the hydrodynamics of the water column are subject to mixing and exchange with oxygen rich surface waters. Any resultant water column turbidity would be short term (*i.e.* present for approximately 1 hour) and would not be expected to extend more than several thousand feet from the dredging operation. Accordingly, it is anticipated that the project would have only minor impacts on marine waters at the offshore borrow area.

The USEPA has stated that the preliminary results of the Biological Monitoring Plan (BMP) of the U.S. Army Corps of Engineers (COE)-New York District's Beach Erosion Control Project, which extended from the Asbury Park to Manasquan Section Beach, provided relevant insight into the impact arising from turbidity and suspended sediments generated by the beach fill. "The impact is limited to a relatively narrow swath of beach front and the observed concentrations decayed rapidly with dispersal through the surf zone. Moreover, the maximum Nephelometric turbidity units (NTUs) measured near the fill operations did not appear to be outside the range that organisms would be exposed to during periods of high wave energy."

4.2.2 Sound

Project-related noise at the placement site during construction will consist of the sound of dredged material passing through the pipe and discharging in a plume of water. Earth-moving equipment, such as bulldozers, will shape the newly deposited dredged material and produce engine noise in the nearby vicinity. Utilizing heavy machinery fitted with approved muffling apparatus reduces noise, and vibration will reduce noise impacts.

At the offshore borrow areas, hydraulic suction dredging involves raising loosened material to the sea surface by way of a pipe and centrifugal pump along with large quantities of water. Suction dredgers produce a combination of sounds from relatively continuous sources including engine and propeller noise from the operating vessel and pumps and the sound of the drag head moving across the substrate. Based upon data collected by Reine *et al*. (in prep.), sediment removal and the transition from transit to pump-out would be expected to produce the highest sound levels as an estimated source level (SL) of 172 decibels (dB) at 3 feet. The two quietest activities would be seawater pump-out (flushing pipes) and transiting (unloaded) to the borrow site, with expected SLs of approximately 159 and 163 dB at 3 feet, respectively. Based upon attenuation rates observed by Reine *et al*. (in prep.), it would be expected that at distances approximately 1.6-1.9 miles from the source, underwater sounds generated by the dredges would attenuate to background levels. However, similar to in-air sounds, wind (and corresponding sea-state) would play a role in dictating the distance to which project-related underwater sounds would be above ambient levels and potentially audible to nearby receptors.

Robinson *et al.* (2011) carried out an extensive study of the noise generated by a number of trailing suction hopper dredgers during marine aggregate extraction. Source levels at frequencies below 500 hertz (Hz) were generally in line with those expected for a cargo ship travelling at modest speed. The dredging process is interspersed with quieter periods when the dragheads are raised to allow the dredge to change positions. Clarke *et al*. (2003) evaluated sound levels produced by a hopper dredge during its "fill" cycle working in a sandy substrate. They found that most of the sound energy produced fell within the 70 to 1,000 Hz range, with peak pressure levels in the 120 to 140 dB range at 40 meters from the dredge. These data correlate well with a study conducted in the United Kingdom which found trailing suction hopper dredge sounds to be predominately in the low frequency range (below 500 Hz), with peak spectral levels at approximately 122 dB at a range of 56 meters (DEFRA, 2003).

In a review by Southall *et.al.* (2007) several studies showed altered behavior or avoidance by dolphins to increased sound related to increased boat traffic. Clarke *et al.* (2004) found that cutterhead dredging operations are relatively quiet compared to other sounds in aquatic environments, whereas hopper dredges produce somewhat more intense sounds. Thomsen *et al.* (2009) conducted a field study to better understand if and how dredge-related noise is likely to disturb marine fauna. This study found that the low-frequency dredge noise would potentially affect low- and mid-frequency cetaceans, such as bottlenose dolphins. Noise in the marine environment has also been responsible for displacement from critical feeding and breeding grounds in several other marine mammal species (Weilgart, 2007). Noise has also been documented to influence fish behavior (Thomsen *et al*., 2009). Fish detect and respond to sound utilizing cues to hunt for prey, avoid predators, and for social interaction (LFR, 2004). High intensity sounds can also permanently damage fish hearing (Nightingale and Simenstad, 2001). It is likely that at close distances to the dredge vessel, the noise may produce a behavioral response in

mobile marine species, with individuals moving away from the disturbance, thereby reducing the risk of physical or physiological damage. Accordingly, any resulting effects would be negligible.

4.2.3 Upper Marine Intertidal

Infaunal organisms within the placement zone will be impacted by burial. Most of the organisms inhabiting these dynamic zones are highly mobile and respond to stress by displaying large diurnal, tidal, and seasonal fluctuations in population densities (Reilly *et al*., 1983). Despite the resiliency of intertidal benthic fauna, the initial effect of beachfill will result in some mortalities of existing benthic organisms. The ability of a nourished area to recover depends heavily on grain size compatibility of the material pumped on the beach (Parr *et al*., 1978). Macrofaunal recovery is usually rapid after pumping operations cease. Recovery of the macrofaunal community may occur within one or two seasons if borrow material grain sizes are compatible with natural beach sediments. Results obtained from the intertidal and surf zone of Folly Beach, South Carolina indicated that beach nourishment had a very brief effect on the infaunal abundance and number of species in the benthic communities (Lynch, 1994). Recolonizing infauna was observed in substantial numbers one day after nourishment. The abundances and species assemblages were generally not different from pre-nourishment samples after three months. Recolonization depends on the availability of larvae, suitable conditions for settlement, mobile organisms from nearby beaches, vertical migration of organisms through the placed material, and mortality. The benthic community can, however, be somewhat different from the original community. The seven year nourishment cycle provides sufficient recovery time.

4.2.4 Nearshore and Offshore

4.2.4.1 Offshore Geomorphology

Established dredging procedures limit dredge cuts to no more than 5-10 feet below current elevations to minimize geomorphological impacts to the ocean floor. Dredge cut depths can vary greatly depending on the type of dredge plant utilized. For each drag arm of a hopper dredge, cuts typically are about 4 feet wide and 3 feet deep. Hydraulic cutter suction dredges can cut lanes approximately 200 feet wide and about 5 feet deep with each pass. Seabed filling typically occurs following dredging events due to natural current processes and storms. Post-dredging bathymetric surveys typically demonstrate no substantial changes in borrow area sediment relative to pre-dredging conditions.

4.2.4.2 Benthic Resources

The primary ecological impacts of dredging a sand borrow site is the removal of existing benthic community organisms. This has an immediate localized effect on the benthic macroinvertebrate community. Survival of organisms during dredging varies widely (USACE, 1983). Mechanical disturbance of the substrate may generate suspended sediments and increase turbidity near the dredging operation and result in reduced light penetration temporarily. In addition to the physical disruption of the habitat, recolonization of the benthic community can be rapid, typically taking from a few months to a few years (Brooks *et al*., 2006; Maurer *et al*., 1981a,b; 1982, Maurer *et al., 1986*; Saloman *et al*., 1982; Van Dolah *et al*., 1984). Recovery of infaunal communities after dredging has been shown to occur through larval transport, along with juvenile and adult settlement, but can vary based on several factors including seasonality, habitat type, size of disturbance, and species' life history characteristics (*e.g*., larval development mode, sediment depth distribution) (Shull, 1997; Thrush *et al*.,

1996; Zajac and Whitlatch, 1991). Initial recolonization is dominated by opportunistic taxa whose reproductive capacity is high, and flexible environmental requirements allow them to occupy disturbed areas (Boesch and Rosenberg, 1981; McCall, 1977). Highly mobile organisms, such as amphipods, can escape to the water column and can directly resettle after dredging operations are completed (Conner and Simon, 1979). Mobile polychaetes are intermediate of amphipods and bivalves in their capacity to resettle directly after dredging. Bivalves are the least mobile organisms, although pelagic larvae of these species can result in high recruitment. Larval recruitment and horizontal migration from adjacent, unaffected areas initially recolonize the disturbed area (Van Dolah *et al*., 1984; Oliver *et al*., 1977).

Most studies indicate that dredging had only temporary effects on the infaunal community, and in some studies, differences in infaunal communities were attributed to seasonal variability or to hurricanes rather than to dredging (Posey and Alphin, 2002). Within months to years, and if environmental conditions permit, the initial surface-dwelling opportunistic species would be replaced by benthic species that represent a more mature community (Bonsdorff, 1983). Scott (2012) resampled undredged areas within Borrow Area D2 as well as resampled Borrow Area D1 (dredged both in 2008 and 2010). D2's expansion area (formerly referred to as Borrow Area D3) was initially sampled. The benthic community in Area D3 was not unique, containing typical east coast fast-growing, opportunistic epifaunal and infaunal species, and similar to other communities in and along the New Jersey coast. Cluster analyses detected benthic population groups associated with the surface sediments collected from each station. These same patterns between benthic community composition and sediment type existed at revisited sampling sites in Borrow Area D1 and D2. The overall benthic community composition, even within these sub-habitats, consists of species that can easily recruit after dredging disturbances.

Dredging may uncover sediments that are different in structure and changes in sediment characteristics can cause a shift in the corresponding benthic community. Five stations resampled in Area D1, which was subjected to two dredging events, suggested a slight shift in surface sediment habitat (*i.e.* coarse sand/gravel to fine/medium sand mix). The benthic community inhabiting these 5 sites in 2012 clustered separately from these same 5 sites sampled in 1997. However, these differences detected are also influenced by time. Stations sampled in nearby un-dredged Area D2 also had differing benthic communities in 2000 compared to 2011 (Scott, 2012). This suggests that although differences in benthic communities occur due to sediment variations, temporal variations in substrate are more likely the greater contributor to differences detected in the benthic community.

The PCOE has conducted living resource evaluations at inlets, nearshore and offshore regions of the New Jersey Atlantic Ocean coast for over 20 years (Stone and Webster, 1991; Kropp, 1995; Chaillou and Scott, 1997; Scott and Kelly, 1998; Scott, 2004; Scott, 2005; Scott 2007). The majority of abundant taxa found in these benthic communities have opportunistic life history strategies with fast-growing, short life-cycles of one year or less, allowing these organisms to recover rapidly and recruit into areas disturbed by dredging. Cluster analyses showed groups influenced more by station proximity and sediment type with no apparent influence from dredging operations occurring from two or more years previous, where dredging does not result in any significant changes to substrate type. For example, two stations sampled in 2005, collected from within an area at Great Egg Harbor Inlet dredged in 2003, closely grouped with nearby stations sampled in 1997 and 2003 that were undisturbed (Scott, 2007). Additionally, a reanalysis of the 2003 data collected specifically from dredged and undisturbed areas substantiated the conclusion that the benthic community did not display impacts 2-years post-dredging (Scott, 2004).

Similar results were found in these studies with respect to surf clam recruitment. The adult clams sampled in 1997 and 1998 were consistent with nearby areas and clams reaching adult sizes. When juvenile clam abundances collected since 1995 were mapped, the high recruitment ability of the clams was apparent within the Great Egg region. Areas of high recruitment and low recruitment were apparent but did not appear to be affected by previous sand dredging. The area of highest clam recruitment over the 10-year database was in the southwest corner of the borrow area where two past dredging operations had occurred.

The NJDEP's longterm annual stratified random surf clam sampling program demonstrates this as well. Versar's (2009) compilation of the NJDEP longterm data compared surf clam densities in three strata. Average surfclam densities were consistently lower in the outermost strata (2-3 miles offshore) where Borrow Areas D1 and D2 are located, relative to the middle strata (1-2 miles offshore) and were generally highest in the inshore strata (0-1 mile offshore). Densities of the adult surf clam have been declining since 1997 in all three strata, as documented by the NJDEP adult surf clam surveys, but appear to drop off significantly in the outermost sampling zone. The Scott (2012) study described in Section 3.2.4.1 showed that recruitment of clams in dredged areas continues to be similar to areas that are undredged. Juvenile surf clams collected from the dredged area D1 were similar to Area D2 which has not been dredged.

Dredging operations can mitigate impacts by creating ridges as opposed to large depressions, which allow for quicker benthic community recovery due to recruitment from neighboring unimpacted areas. Based on the existing benthic community found occurring within the offshore areas, it is expected that these organisms will recover quickly after dredging operations cease, provided the sediment substrate is not significantly altered and benthic studies conducted in these areas both prior to and after two dredging events demonstrated subtle changes in sediment characteristics with a slight shift in corresponding benthic community composition. No long term effects are expected as the benthic community that naturally exists in the area is dominated by species with opportunistic life histories and exhibit rapid recruitment capabilities.

4.2.4.2 Finfish

Beach placement of sand in shallow inshore waters as well as at the sand borrow area have limited and short-term impacts on finfish. With the exception of some small finfish and early developmental stages, most bottom dwelling and pelagic fishes are highly mobile and should be capable of avoiding turbidity impacts of dredging and placement. Due to suspension of food particles in the water column, some finfish are attracted to the turbidity plume. Few studies have addressed the effects of beach nourishment on surf zone fishes (Van Dolah *et al.*, 1994). The effects in the intertidal and nearshore zones may be similar, although on a smaller scale, to the effects of storms (Hackney *et al*., 1996). Even though fishes regularly occurring in the surf zone are adapted to high energy environments, rapid changes in habitat can cause mortality. Storms, and in particular, hurricanes have caused large changes in shore fish community structure and massive fish kills in Florida (Robins, 1957; Breder, 1962). Although the literature offers contradictory results and the effects of turbidity on surf zone fishes is unclear, elevated turbidity is implicated (Hayes *et al*., 1992).

The primary impact to fisheries is the disturbance of benthic and epibenthic communities. As mentioned above, the loss of benthos smothered during berm construction and removed during the

borrow dredging activity temporarily disrupts food resources in the impact areas (Hackney *et al*., 1996). This effect is expected to be temporary, as noted above, due to the documented rapid recolonization that can occur in these highly dynamic environments. Depending on the time of year, benthos food resources can recolonize from dredged areas rather quickly (*e.g.* within a year) via larval recruitment as well as from immigration of adults from adjacent, undisturbed areas (Burlas *et al*., 2001); Posey and Alphin, 2002; Byrnes *et al*., 2004). Recovery should be most rapid if dredging is completed before seasonal increases in larval abundance and adult activity in the spring and early summer (Herbich, 2000). Opportunistic benthic species are adapted to exploit suitable habitat when it becomes available post-dredging.

4.2.4.3 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" and covers all habitat types utilized by a species throughout its life cycle. The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 104-267) requires all Federal agencies to consult with National Marine Fisheries Service (NMFS) on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect EFH.

The selected borrow source plan was revised during the draft report comment period to eliminate borrow areas B and subsequently E to avoid impacts to EFH, as recommended by the state of New Jersey, USFWS, and NMFS. These revisions instigated a need to investigate additional sand borrow sources offshore (Area D2) in deeper waters. Modification of the selected plan conforms to Corps policy which states that damages to fish and wildlife resources will be prevented to the extent practicable thorough planning and design and incorporation CEQ mitigation principles (ER 1165-2-1 and ER 1105-2-100). The modified selected plan proposes to utilize borrow areas D1 and D2 for the life of the project.

Dredging within the offshore borrow area has the potential to impact EFH several ways: by direct entrainment of eggs and larvae; the creation of higher suspended sediment levels in the water column, reduce feeding success for site-feeding fish; and reduce water oxygen levels. All of these impacts are temporary in nature, during the actual dredging period. Substrate conditions typically return to preconstruction conditions and the benthic community recovers through recolonization. Impacts to fish species with designated EFH occurs primarily within inlets and estuaries (*i.e.*inshore) as a variety of fish species migrate in and out of inlets, such as summer flounder. Area D2 encompasses approximately 1034 acres in deep water (30-45 feet). Only a small fraction of the offshore borrow area bottom would be impacted by the dredge cutterhead in any given dredging operation and beach nourishment operations do not typically occur every year, thereby allowing benthic recovery in the smaller dredging zone. Dredging within the borrow site will not diminish topographic variability and will not create deep pits that allow for anoxia or siltation, environments unsuitable for recolonization.

A review of EFH designations and the corresponding 10' x 10' squares, which encompass the Barnegat Inlet to Little Egg Inlet study area was completed. The following is an evaluation of the potential effects associated with this project on EFH species:

Atlantic cod: no adverse effect is anticipated as adult fish are anticipated to avoid the project area during the temporary period when turbidity is high and feeding habitat is disrupted.
Atlantic butterfish: no adverse impacts are anticipated. All life history stages are pelagic and construction activities will take place on the bottom. Elevated turbidity effects are temporary.

Atlantic sea herring: no adverse effect is anticipated as adults and juveniles can move away from the project area during the temporary construction period.
Black sea bass: no adverse effect is anticipated on juveniles and adults as this species occurs primarily in areas with structure and they can avoid temporary impacts to the water column and prey species during the dredging period.
Bluefin tuna: no adverse effect is anticipated on eggs and larvae as these stages are pelagic in surface waters in the Gulf of Mexico and the Mediterranean, and juveniles and adults are anticipated to move out of the project impact area during dredging.
Bluefish: no adverse effect on juveniles and adults is anticipated because these life history stages can move away from the project area during the temporary construction period.
Clearnose skate: habitat for juveniles and adults is generally shallow soft bottoms or rocky, gravelly bottoms. Adults tend to move from shallow shores to deeper water in winter. Impacts may occur to larvae through entrainment. Juveniles and adults are highly mobile. Temporary disruption of benthic food prey organisms may occur.
Cobia: no adverse effect is anticipated for all life stages as they are all pelagic and construction activities will take place on the bottom.
Dusky shark: neonates and early juveniles inhabit shallow coastal waters and not likely to be present in the offshore borrow areas. No adverse impact is anticipated for neonates, juveniles or adults as these stages are expected to move out of the beach placement area during the temporary construction period. Pumping will occur above the high water line on the beach and proceed in sections to minimize turbidity impacts to surrounding areas.
King mackerel: no adverse effect on all life stages is anticipated as all life stages of this species are pelagic and construction activities will take place on the bottom.
Little skate: habitat consists of shallow coastal water over sand or gravel and up to 80 fathoms. Juveniles and adults are highly mobile. Larvae may be impacted through entrainment. A temporary disruption to benthic food prey organism may occur.
Monkfish: no adverse effect on eggs and larvae is anticipated because these life history stages are pelagic and work will be completed on the bottom during the temporary construction period.
Red hake: no adverse effect is anticipated on eggs and larvae because these life history stages are pelagic in surface waters and juveniles are anticipated to move away from the project area during the temporary construction period.
Sandbar shark: neonates and early juveniles are found in shallow coastal waters and not likely to be present in the offshore borrow areas. No adverse impact is anticipated for juveniles or adults as these stages are expected to move out of the construction area during the temporary construction period. Sand is pumped onto the beach above the mean high water line to minimize turbidity at the construction site.
Scalloped Hammerhead: Juveniles occur offshore of New Jersey and are highly pelagic and not likely to be impacted by dredging operations at the bottom.
Scup: no adverse effect on juvenile and adults is anticipated because they typically occur in estuaries and bays. No adverse impacts anticipated on adults in offshore demersal waters as they tend to migrate to coastal waters in summer and would be expected to avoid the immediate dredging area during temporary construction during winter. The disturbance within the offshore borrow area habitat could adversely impact scup feeding or migration. No anticipated impacts in shallow water at the placement site as any increase in turbidity at the placement site is minimal with pumping above the mean high water line.

Shortfin Mako: At this time, insufficient data is available to differentiate EFH impacts by size classess. The species is highly pelagic and not likely to be impacted by dredging operations on the bottom offshore.
Smooth dogfish: At this time, insufficient data is available for neonates and young-of-year, juveniles, and adult life stages. It is anticipated that this coastal shallow water species would not be impacted by placement operations as pumping of material onto the beach will occur above the mean high water line and thereby minimize turbidity and disruption of prey species composition.
Spanish mackerel: no adverse effect is anticipated for all life stages as they are all pelagic and not associated with bottom habitats and construction activities will take place on the bottom.
Summer flounder: no adverse effect is anticipated on eggs and larvae because they are pelagic and work will be conducted on the bottom during the temporary construction period.
No adverse effect is anticipated on juveniles and adults because they would be expected to move out of the dredging area. Impacts within the placement area are minimized due to pumping of material onto the beach above the mean high water line and reducing turbidity. Impacts to prey species in the intertidal zone will be temporary. The predominant benthic community composition consists of dominant small taxa, such as polychates and small bivalves, species with fast recruitment rates.
Surf clam: surf clams are found on the continental shelf out to approximately 25 miles. Dredging from an offshore borrow source area may impact juvenile and adult surf clams through direct removal and larval surf clams by the generation of turbidity, causing reduced light penetration which can in turn effect settlement and subject the larvae to increased predation. This impact is considered to be temporary as benthic studies have demonstrated recolonization of benthic communities following dredging operations within 13 months to two years. The proposed borrow areas were selected to minimize destruction of the benthic community by choosing areas where the surrounding macroinvertebrate community was similar to the borrow sites so that recruitment recolonization would be rapid. Surf clam populations are not expected to be high in the proposed offshore borrow area. The predominant benthic community composition consists of dominant small taxa, such as polychates and small bivalves, species with fast recruitment rates.
Tiger shark: Although it is possible that there may be tiger shark neonates, juveniles or adults in the offshore borrow area, it is unlikely that they would experience significant effects as a highly mobile species that would leave the area of temporary disturbance. Likewise in the placement site on the beach where turbidity will be minimized by positioning of the dredge pump out pipe abobve mean high water on the beach.
White shark: Although it is possible that there may be white shark neonates, juveniles or adults in the offshore borrow area, it is unlikely that they would experience significant effects as a highly mobile species that would leave the area of temporary disturbance. White shark life stages are not expected to occur in the intertidal zone where beach berm placement will occur.
Windowpane flounder: no adverse effect is anticipated on eggs and larvae as they are pelagic and work will be conducted on the bottom during the temporary construction period offshore. No adverse effect on juveniles and adults is anticipated in bottom habitats of the berm placement site as these life stages are anticipated to move away from the placement disturbance area during the temporary construction period. Pumping of material onto the beach will occur above the mean high water line and thereby minimize turbidity and disruption of prey species composition.
Winter flounder: no adverse effect is anticipated on adult and juveniles because both stages can move away from the project impact area during construction. Minimal adverse effect is expected on eggs and larvae. Although they are demersal at these life stages, impacts are minimal because dredge material is pumped onto the beach berm above the mean high water line. This also serves to minimize turbidity in the intertidal zone and reduce the impact to prey items.

Winter skate: habitat consists of shallow coastal water over sand or gravel and up to 80 fathoms. Juveniles and adults are highly mobile. Larvae may be impacted through entrainment. A temporary disruption to benthic food prey organism may occur.
Witch flounder: no adverse effect is anticipated on eggs because they are pelagic and rise in the water column as they develop. There is the potential to affect juvenile and adult demersal life stages and prefer deep water. It is likely that adults and juveniles would leave the immediate area of disturbance during dredging in the offshore borrow site.
Yellowtail flounder: no adverse effect is anticipated on eggs and larvae because they are pelagic and usually found in deep surface waters.

In conclusion, of the species identified with Fishery Management Plans, and highly migratory pelagic known to occur in the vicinity, the potential for adverse impacts to EFH is considered temporary and minimal. The proposed project could impact surf clams although the numbers that occur in the offshore borrow areas and placement zone are very low. The egg and larval stages of winter flounder, which occur predominantly in inlets, are less likely to be impacted in offshore deep water where the proposed borrow areas occur. The neonate stages of several shark species are predominately located in shallower coastal waters, not offshore deep water where the proposed borrow areas are located.

The effect on surfclams and other benthic organisms (that include food prey items) in the borrow areas is considered to be temporary as benthic studies have demonstrated recolonization following dredging operations within 13 months to 2 years. In addition, the dredging operation is designed to mitigate impacts by not only enhancing bottom topography by creating ridges as opposed to a large hole but also allowing for quicker recruitment from the immediately adjacent ridges where the benthic community is left intact. This is in contrast to the extended time period required for recruitment of benthic organisms in deep holes that alter hydrographic characteristics of the habitat. Elevation differences are also minimized with the creation of ridges as opposed to one large depression. The total impact to EFH is considered minimal due to the fact that only approximately 1,600 acres (to be used over a 50 year period in portions) of sandy bottom habitat is proposed for utilization of this shore protection project, as compared to the total quantity of similar offshore habitat (grain size and depth) off the New Jersey coast. Along the 22-mile coastline of Long Beach Island alone, there is more than ten times the quantity of sandy bottom habitat available, adjacent to the project area. Similar bottom habitat also exists offshore of Little Egg Inlet and Brigantine Inlet.

At the beach placement site (nearshore zone), the slurry of dredged material and water pumped onto the beach typically results in an increase in localized turbidity. The Atlantic States Marine Fisheries Commission (Greene, 2002) review of the biological and physical impacts of beach nourishment cites several studies on turbidity plumes and elevated suspended solids that drop off rapidly seaward of the sand placement operation. Other studies support this finding that turbidity plumes and elevated TSS levels are typically limited to a narrow area of the swash zone downcurrent of the discharge pipe (Burlas *et al*., 2001). Fish eggs and larvae are the most vulnerable to increased sediment in the water column and are subject to burial and suffocation. Given the location of the placement site (ocean coast as opposed to inlets) impacts to eggs and/or larvae is considered minimal. Juvenile fish and adults are capable of avoiding sediment plumes. Increased turbidity due to placement operations will temporarily affect fish foraging behavior and concentrations of food sources are expected to return to the nearshore zone once placement operations cease due to the dynamic nature of nearshore benthic communities (Burlas *et al*., 2001). Turbidity impacts are anticipated to be minimized by the placement of the dredge pipe above the mean high water line during pump-out and development of the raised beach berm

moving along the shoreline. Most shallow water coastal species will leave the area of disturbance at the immediate placement site.

4.3 Threatened and Endangered Species

There is the potential for short-term impact to threatened and endangered species during construction. This temporary impact would be limited to avoidance of the area, with the individuals returning after placement of sand ends. Piping plovers presently nest at three locations in the vicinity of the study area (Barnegat Light, between Harvey Cedars and Loveladies, and within the Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge, including Little Beach, an uninhabited barrier island that is part of the Refuge. Both the Barnegat Light area and the Holgate Unit have been removed from the project area. In accordance with Section 7 of the Endangered Species Act (87 Stat. 884 as amended, 16 U.S.C. 1531 et seq.) the Philadelphia District prepared a Biological Assessment (BA) for piping plovers. The recommendations developed in the BA will be followed for this project. Additionally, each township that receives beach nourishment must submit a Beach Management Plan to the U.S. Fish and Wildlife Service for approval and adhere to the post-construction procedures as outlined in the plan.

In accordance with the procedures outlined in the Biological Opinion on the *Effects of Federal Beach Nourishment Activities Along the Atlantic Coast of New Jersey Within the U.S. Army Corps of Engineers, Philadelphia District (2005)*, the USACE consults with the US Fish and Wildlife Service (USFWS) and the NJ Department of Environmental Protection, Division of Fish and Wildlife (NJDEP DFW) prior to any beach nourishment operations. Following Hurricane Sandy, the PCOE requested streamlined Tier 2 formal consultation with the USFWS for approved beach nourishment activities at the constructed beaches Harvey Cedars, Surf City and Brant Beach. This Tier 2 (28 February 2013) follows the USFWS's 2005 Programmatic Tier 1 Biological Opinion (BO) stated above. Upon approval of the 2013 Public Law 113-2 Disaster Relief Appropriations Act, the PCOE has coordinated with USFWS for Tier 2 consultation for the remaining portions of the LBI beach nourishment project in need of beachfill (*i.e.* Long Beach Township, Ship Bottom Borough, and Beach Haven Borough).

To minimize impacts to piping plovers associated with beach nourishment, the USFWS suggests seasonal restrictions and further consultation prior to initial nourishment and all subsequent renourishment activities. The District will comply with the Service's *Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act*, dated April 15, 1994. Several state-listed species of birds are found in the project vicinity, and may be temporally displaced from the construction area for alternate feeding sites. The black skimmer and least tern occur along beaches in the project area. Birds are transient in nature and construction activities should have limited impact on them. The roseate tern (*Sterna dougallii*) is a Federally-listed endangered species in the northeast region (includes New Jersey) but has not been observed in the project area, and like the black skimmer and least tern, is transient, wintering off the coast of South America. However, use of seasonal dredging restrictions and implementation of a comprehensive beach nesting bird management plan, coordinated with USFWS and NJDEP Endangered and Non-Game Species Program, will minimize impacts to these seasonal visitors.

Between June and November, New Jersey's Coastal waters may be inhabited by transient sea turtles, especially the loggerhead, green, leatherback, and the Kemp's ridley. Sea turtles can be adversely impacted during dredging operations. Coordination with NMFS, in accordance with Section 7 of the Endangered Species Act, has been undertaken on all Philadelphia District Corps of Engineers dredging

projects. A Biological Assessment that discusses Philadelphia District hopper dredging activities and potential effects on Federally threatened or endangered species of sea turtles was prepared and formally submitted to the NMFS. If a hopper dredge is used for the project, the November 1996 Biological Opinion provided by NMFS included an incidental take statement requiring monitoring of all hopper dredge operations in areas where sea turtles are present between June and November by trained endangered species observers. Adherence to the findings of the Biological Opinion (BO) would insure compliance with Section 7 of the Endangered Species Act. Other measures that have subsequently been implemented and eliminated the need for onboard endangered species observers is the use of rigid drag-arm deflectors and screens, serving the dual purpose of functioning to prevent unexploded ordnance from being pumped onto beaches as well as preventing sea turtle mortalities.

Shortnose sturgeon are included in the 1996 BO. At present, PCOE is conducting consultations with the NMFS on a project-by-project basis for the newly listed Atlantic sturgeon until completion of the formal Programmatic Biological Assessment (see Memorandum in Appendix C). Since implementation of NMFS's original Biological Opinion for dredging within the Philadelphia District in 1996, no sea turtles, whales or sturgeon have been taken during dredging in offshore and inlet borrow areas along the Atlantic Coast. Prior to the implementation of the UXO screening, all hopper dredging from June through November included turtle monitoring, which equates to approximately 15 years worth of monitoring in these areas with no takes.

Marine mammals would be expected to avoid the dredging operation. Section 7 of the Endangered Species Act of 1973 (ESA), as amended, requires federal agencies to consult with the NMFS to ensure that the action carried out is not likely to jeopardize the continued existence of any endangered species or threatened species or adversely modify or destroy designated critical habitat. The PCOE has initiated coordination with NMFS's Protected Resources Division (PRD) on this project and is in the process of preparing a programmatic biological assessment to cover beach nourishment projects along the New Jersey Atlantic coast. The impact to them should be minimal and operations are not expected to impact migratory pathways. There may be a temporary reduction in prey species in the area.

The diamondback terrapin inhabits marshes, tidal flats, and beaches associated with saltmarsh systems. The terrapin breeds in sandy substrate above the levels of normal high tides. It is expected that this species would not directly benefit from a beach berm restoration project; however, efforts to minimize erosion of beach habitat in areas where terrapin' breed can be considered an indirect benefit to the species. Berm restoration would not adversely impact the diamondback terrapin.

Although not present at the project placement area, the possibility exists that the Federally-listed plant species seabeach amaranth (*Amaranthus pumilus*) could become established subsequent to construction (Arroyo, 1994). To minimize the potential for impacts to future seabeach amaranth plants associated with beach nourishment and renourishment activities, the USFWS and local municipalities have established Beach Management Plans which requires townships to adhere to in the event that annual surveys result in the discovery of seabeach amaranth, and include the establishment of protective zones around the plants.

4.4 Cultural Resources

Proposed project construction has the potential to impact cultural resources in two areas. These are the existing beach area, including the underwater nearshore sand placement areas, and the underwater

offshore borrow areas. In the beach and nearshore sand placement areas, potential impacts to cultural resources could be associated with the placement and compaction of sand during berm and dune construction.

Dredging activities in offshore borrow areas could impact unknown submerged cultural resources. Federal undertakings will comply with the Archaeological and Historical Preservation Act of 1974 (16 USC 469-469c), the Abandoned Shipwreck Act of 1987 (PL 100-298; 43 USC 21012106), The National Historic Preservation Act of 1966, as amended (16 USC 470) and the Advisory Council on Historic Preservation's implementing regulations 36CFR800 (protection of Historic Properties). Section 106 of the National Historic Preservation Act requires Federal agencies to provide the State Historic Preservation Officer (SHPO) (as agent to the Advisory Council on Historic Preservation) reasonable opportunity to evaluate and comment on any Federal undertaking.

As summarized in Section 3.6, a Phase I submerged and shoreline cultural resource investigation was conducted on four segments (Areas A, B, C, D) of the tidal (beach) and near shore zone (submerged) within the project area along with three proposed offshore sand borrow areas (areas B, D, and E) in 1999. Six beach anomalies were located, five submerged anomalies were identified and one anomaly was located within Borrow Area D. The six beach and five submerged anomalies identified may represent potentially significant cultural resources; however, the placement of additional sand on the beach will protect the anomalies and no further study was recommended. Additional survey was recommended for the anomaly located in Borrow Area D, designated as Target 7:614.

In 2001, Dolan Research Inc. performed a two part underwater investigation within the project area which included a Phase I survey at borrow area D2 and a Phase I b/II investigation at the six previously recorded beach anomalies and five previously recorded submerged anomalies. Analysis of the remote sensing data confirmed that no potentially significant anomalies were identified within borrow area D2 and no additional investigations were recommended. Five of the six beach anomalies investigated resulted in a lack of sustained magnetic signatures and did not require additional investigation. The sixth beach anomaly, MA-4, proved to be a buried telecommunications cable. Two of the five submerged anomalies proved to be shipwreck sites potentially eligible for listing on the National Register of Historic Places (NRHP): Targets 4:735 and 9:643. A 200-foot radius buffer zone will be observed around the centroid of each shipwreck, as was previously coordinated with the SHPO. Target 7:614, located in Borrow Area D was not assessed during this investigation.

In 2003, Hunter Research Inc., conducted a cultural resource investigation with three main components: 1) remote sensing survey of Borrow Area A; 2) a Phase II investigation on Target 7:614, previously located in Borrow Area D; and, 3) a submerged and shoreline survey for sections of the project area that were not previously assessed during the 1999 survey, thus completing the 18-mile length of the project area. For Borrow Area A, no anomalies indicative of potential shipwrecks were found and no further work was recommended. Target 7:614 was found to be a bell buoy and not eligible for the NRHP. Four beach anomalies were located during the survey. The proposed beach nourishment will not impact these anomalies, but will serve to aid in their preservation. The only submerged anomaly of significance found was Target 9:643, which was discovered in a previous investigation.
In 2012, Dolan Research, Inc. performed a Phase I submerged cultural resource investigation of borrow area D3. No magnetic or sonar anomalies demonstrated characteristics of a possible shipwreck; therefore, no additional investigations were recommended for borrow area D3.

In conclusion, there are no historic properties eligible for inclusion in the NRHP in Borrow Areas A, B, D1, D2, D3 and E; four unevaluated beach anomalies will not be impacted by the beach nourishment project, but will instead be preserved in place; and, two submerged anomalies will be buffered by a 200-foot radius in order to ensure no impact to potentially significant historic properties by dredging, pipe placement, mooring or anchoring.

Since the proposed project will not be impacting any new areas, but will be utilizing previously surveyed and coordinated areas, the proposed emergency beach nourishment activities will have no effect to historic properties. The New Jersey SHPO concurred in a letter dated 22 January 2004 (Appendix C) and again 24 December 2013.

4.5 Air Quality

Emissions of criteria pollutants, greenhouse gases, and other hazardous air pollutants would result from operation of the dredge pumps and coupled pump-out equipment, dredge propulsion engines, and tugs, barges, and support vessels used in the placement and relocation of mooring buoys. In addition, air emissions would result from bulldozers, trucks, and other heavy equipment used in the construction of the berm, beach, and dunes. Carbon monoxide and particulate emissions at the project site, during construction, may be considered offensive; but are generally not considered far-reaching. Exhaust from the construction equipment will have an effect on the immediate air quality around the construction operation but should not impact areas away from the construction area. These emissions will subside upon cessation of operation of heavy equipment.

4.5.1. General Conformity Review and Emissions Inventory

The 1990 Clean Air Act Amendments include the provision of Federal Conformity, which is a regulation that ensures that Federal Actions conform to a nonattainment area's State Implementation Plan (SIP) thus not adversely impacting the area's progress toward attaining the National Ambient Air Quality Standards (NAAQS). In the case of the proposed project on Long Beach Island, the Federal action is to construct a berm and dune restoration project utilizing beachfill sand dredged from offshore sand sources in an area classified as marginal nonattainment for ozone (oxides of nitrogen [NOx].

There are two types of Federal Conformity: Transportation Conformity and General Conformity (GC). Transportation Conformity does not apply to this project because the project would not be funded with Federal Highway Administration money and it does not impact the on-road transportation system. However, GC is applicable to this project. Therefore, the total direct and indirect emissions associated with project construction must be compared to the GC trigger levels. Criteria pollutant emissions are estimated from power requirements, duration of operations, and emission factors for the various equipment types (See Appendix B).

Criteria pollutant emissions are dominated by NOx (which represents the sum of Nitric Oxide (NO) and Nitrogen dioxide (NO_2) emissions) with relatively small amounts of other criteria pollutants. Results indicate that the dredge plant is the major source of emissions from the project. Since the Federal OCS waters attainment status is unclassified, there is no provision for any classification under the Clean Air Act for waters outside of the boundaries of state waters. Calculating the increase in emissions that may occur within the state limits was done by subtracting out the dredging-related emissions within Borrow Area D2 since those activities would take place entirely on the OCS. Table 4-1 provides subtotals for

NOx emissions inside and outside of the State of New Jersey territorial limits (pers. comm. New York District USACE). Projected emissions of NOx are in excess of the *de minimis* emission threshold (100 tons/year) specified for a marginal ozone nonattainment area, requiring preparation of a general conformity determination per the requirements of 40 CFR 93 (Appendix B). Emissions estimated for other pollutants were below the *de minimus* thresholds.

The Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project will comply with the General Conformity (GC) requirement (40CFR§90.153) through the following options that have been coordinated with the New Jersey Department of Environmental Protection (NJDEP): statutory exemption, use of the Joint Base McGuire/Lakehurst GC State Implementation Plan budget, and /or the purchase of Environmental Protection Agency (EPA) Clean Air Interstate Rule (CAIR) ozone season oxides of nitrogen (NOx) allowances. This project is not *de minimis* under 40CFR§90.153, therefore one or a combination of these options will be used to meet GC requirements. The project-specific option(s) for meeting GC will be detailed in the Statement of Conformity (SOC), required under 40CFR§90.158, which will be issued prior to construction. Detailed analytical assumptions are provided in Appendix B. Operational data from similar nourishment projects were used to estimate power, loading, and duration for each phase of activity.

Table 4-1: General Conformity Emission Estimates.

Cubic Yards	**NOx Emissions in State Waters, tons per year***		
	2014	**2015**	**Total**
7,800,000	454.4	519.3	973.7
Out of state NOx emissions, tons per year*			
	103.6	118.5	222.1
Cubic Yards	**NOx Emissions in State Waters per construction year, tons per ozone season (1 May – 30 September)**		
	2014	**2015**	**Total**
7,800,000	259.7	259.7	519.4

(Starcrest Consulting Group, LLC)

***These estimates assume steady work flow each month of the project's duration, with no environmental window (12 months work in full calendar year). Unanticipated periods of down-time or schedule make-up time may change the annual emissions. Actual equipment chosen by the dredging contractor and the final volumes of dredged material will also affect the magnitude of emissions.**

In general, the total increases in emissions are relatively minor in context of the existing point and nonpoint and mobile source emissions in Ocean County. Projected emissions from the proposed action would not adversely impact air quality beyond the immediate construction area or for a sustained period of time given the relatively low level of emissions, relatively short duration of the project spanning more than one construction year, and the likelihood for prevailing offshore winds to disperse

the pollutants. Annual emissions monitoring will be performed during construction. Emissions calculations for the proposed project and a General Conformity Statement are provided in Appendix B.

4.6 Hazardous, Toxic, and Radioactive Waste

Borrow area and beach nourishment activities are not expected to result in the identification and/or disturbance of HTRW, as it has been found that coarse-grained material in a high-energy area is unlikely to be contaminated with HTRW (USACE, 1994). Since small caliber UXO may be encountered in the borrow areas during dredging operations, as a safety precaution, the Corps requires that a screen be placed over the drag head to effectively prevent any of the UXO from entering the hopper and/or being subsequently placed on the beach; the screen will be made of vertical metal bars with a gap of no more than 1.5 inches. The magnetometer survey conducted of the borrow area identified a number of items to avoid; the contractor will not be permitted to dredge within a 200-foot radius of these items. In the event that ordnance is encountered in the borrow area, the screening and/or magnetometer sweeping will all but eliminate the possibility of any ordnance remaining on the new beach after construction.

The contractor would be responsible for proper storage and disposal of any hazardous material such as oils and fuels used during the dredging and beach nourishment operations. The U.S. EPA and U.S. Coast Guard regulations require the treatment of waste (*e.g*., sewage, gray water) from dredge plants and tender/service vessels and prohibit the disposal of debris into the marine environment. The dredge contractor will be required to implement a marine pollution control plan to minimize any direct impacts to water quality from construction activity.

4.7 Aesthetics

During dredging operations, equipment used for dredging would be visible several miles offshore, resulting in a temporary reduction in the aesthetic value for some; other beachgoers enjoy watching the operation in progress. During dredging, the use of the immediate area surrounding the dredge plant would be restricted due to public safety. These restrictions are of short duration and typically offseason with minimal impacts to recreational boaters and anglers. Resort towns in the study area draw on the high aesthetic values of the seashore environment (*i.e*. sandy beaches, dunes, ocean views, *etc*.). Adverse impacts to beachgoers at the placement site are temporary. Dredging contractors constructing beaches typically cordon off areas approximately 1,000 feet wide at a time, working about a week or less as they pump and shape the beach. The effects of beach nourishment to restore the beach berm and dunes lost due to storms are considered positive in that the aesthetic value of the seashore environment is restored for recreational users.

4.8 Environmental Regulations

The Barnegat Inlet to Little Egg Inlet Shore Protection Project has adhered to the following environmental quality protection statutes and other environmental review requirements.

Archeological Resources Protection Act of 1979, as amended	Full
Clean Air Act, as amended	Full
Clean Water Act of 1977	pending
Safe Drinking Water Act	Full
Coastal Zone Management Act of 1972, as amended	pending

Endangered Species Act of 1973, as amended	Full
Estuary Protection Act	Full
Federal Water Project Recreation Act, as amended	N/A
Fish and Wildlife Coordination Act	Full
Land and Water Conservation Fund Act, as amended	N/A
Magnuson-Stevenson Act, Essential Fish Habitat	Full
Marine Mammal Protection Act	Full
Marine Protection, Research and Sanctuaries Act	Full
Migratory Bird Treaty Act	Full
National Historic Preservation Act of 1966	Full
National Environmental Policy Act, as amended	Full
Rivers and Harbors Act	Full
Watershed Protection and Flood Prevention Act	N/A
Wild and Scenic Rivers Act	N/A
Coastal Barrier Resources Act	Full
EO 11988, Floodplain Management	Full
EO 11990, Protection of Wetlands	Full
EO 12114, Environmental Effects of Major Federal Actions	Full
EO 12898, Environmental Justice	Full
EO 13186, Protection of Migratory Birds	Full

4.9 Areas of Concern

This project would have temporary adverse impacts on water quality and on aquatic organisms. Dredging would increase suspended solids and turbidity at the point of dredging and at the berm and dune restoration site. The area to be dredged and the area where the material would be deposited would be subject to extreme disturbance. Many existing benthic organisms will be covered at the berm restoration site. Dredging would result in the temporary complete loss of the benthic community in the borrow area. These disruptions are expected to be of short duration and of minor significance if rapid recolonization by the benthic community occurs.

Dredging would consequently temporarily displace a food source for some finfish. Scott and Kelley (1998) and Scott (2012) showed that benthic organisms in this area rapidly recover (*i.e*. within two years) after multiple dredging areas in borrow areas along the New Jersey Coastline Seven offshore borrow areas were identified for this study (A, B, C, D, E, F and Barnegat Light Inlet). Areas C, F and Barnegat Light Inlet were eliminated due to inadequate material grain size, limited quantities and proximity to submerged cables. The four offshore borrow sites considered for further evaluation were A, B, D, and E. Surveys conducted at the borrow sites has shown that the benthic organisms in the sites are similar to those in the surrounding areas.

The New Jersey Department of Environmental Protection has identified two of the borrow areas as Prime Fishing Areas, as defined by the Rules on Coastal Zone Management N.J.A.C. 7:7E as amended July 18, 1994. The New Jersey CZM rules also state that development within surf clam areas is conditionally acceptable only if the development is of national security interest and no prudent and feasible alternative sites exist. The USFWS recommends avoidance of the use of Borrow Areas B and E, and reevaluating alternative borrow areas. The Service also suggests limiting hydraulic dredging during the period of lowest biological activity and rotational dredging of borrow areas. As a consequence of

coordination with natural resource agencies, borrow areas B and E were eliminated and Area D was expanded to include offshore former Areas D2 and D3. Areas D2 and D3 underwent further geotechnical evaluations and were subsequently revised to incorporate one 1034 acre site referred to as D2.

To minimize impacts to the Federally-listed piping plover, the USFWS recommends seasonal restrictions of dredging be applied to the maximum extent possible; further consultation prior to initial nourishment and all subsequent renourishment activities; monitoring, and compliance with the Services Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act", dated April 15, 1994. To minimize impacts to the Federally-listed threatened seabeach amaranth, the U.S. Fish and Wildlife Service suggest conducting surveys prior to construction activities. If seabeach amaranth is identified in the project area, a protective zone should be established around the plants (Arroyo, 1999).

Concerns regarding the potential impacts of dredging on Federally-listed threatened and endangered species (sea turtles and whales) were raised with respect to this project. Based on coordination with the National Marine Fisheries Service (NMFS), the PCOE would continue to employ measures more recently used (*i.e*. draghead/cutterhead) to reduce the likelihood of negatively impacting marine species. These and any other measures would be fully coordinated with NMFS prior to dredging. Coordination with NMFS with respect to the newly listed Atlantic sturgeon is ongoing.

State listed species of birds, such as the black skimmer, roseate tern, and least tern may occur along beaches in the project area. The District will coordinate with the NJ Endangered and Nongame Species Program prior to construction to develop and implement a comprehensive and beach nesting bird management plan.

The non-Federal sponsor for the Feasibility study is the New Jersey Department of Environmental Protection (NJDEP), and authorized by Congress for construction by Section 101(a)(1) of the Water Resources Development Act of 2000 and cost-shared with the nonfederal sponsor. The project is considered an ongoing construction project for purposes of PUBLIC LAW 113–2, issued 29 January 2013; The Disaster Relief Appropriations Act, 2013. PL 113-2, Chapter 4: for "repairs to projects that were under construction and damaged as a consequence of Hurricane Sandy" at full federal expense with respect to such funds.

4.10 Environmental Constraints

Appropriate measures must be taken to ensure that any resulting projects are consistent with local, regional, state, and Federal regulations. The proposed project will not have a disproportionately high adverse effect on minority or low income populations and is in compliance with EO 12898. The project would generally have beneficial social and economic effects and would generally affect all persons equally.

It must be evident that all necessary permits and approvals are issued by the regulatory agencies. Further environmental constraints relate to the protection and maintenance or control of flora and fauna species found within the ecosystem that may be affected by a project. This includes areas of prime fishing habitat, essential fish habitat and significant commercially harvestable surf clam areas. The following environmental and social well-being criteria were considered in the formulation of alternative plans:

a. Consideration should be given to public health, safety, and social well being, including possible loss of life.

b. Wherever possible, provide an aesthetically balanced and consistent appearance.

c. Avoid detrimental environmental and social effects, specifically eliminating or minimizing the following where applicable:

i. Air, noise and water pollution;

ii. Destruction or disruption of man-made and natural resources, aesthetic and cultural values, community cohesion, and the availability of public facilities and services;

iii. Adverse effects upon employment as well as the tax base and property values;

iv. Displacement of people, businesses, and livelihoods; and,

v. Disruption of normal and anticipated community and regional growth.

d. Maintain, preserve, and, where possible and applicable, enhance the following in the study area:

i. Water quality;

ii. The beach and dune system together with its attendant fauna and flora;

iii. Wetlands and other emergent coastal habitats;

iv. Commercially important aquatic species and their habitats;

v. Nesting sites for colonial nesting birds;

vi. Habitat for endangered and threatened species.

4.11 Unavoidable Adverse Environmental Impacts

The unavoidable adverse impact of the no-action alternative of obtaining offshore sand borrow sources due to insufficient suitable nearshore sand borrow sources would be continued erosion of the existing beach, which would result in loss of habitat and eventually damage to structures. Increased flooding would occur as beach loss continues. As the risk of storm damage increases, property values would decrease. The unavoidable adverse impact of both berm and dune restoration, as well as to offshore sand borrow areas, is a temporary decrease in benthic community standing stocks, which would be effected during dredging and placement operations. It is anticipated that these communities would recover in time and the displacement of benthic invertebrates is temporary. Visual, noise and air quality impacts that may occur during dredging operations are temporary and will cease upon completion of the dredging operation.

4.12 Short-term Uses of the Environment and Long-term Productivity

The use of available offshore sand when insufficient quantities are available for use in beach nourishment purposes will positively affect the economy of the project area by maintaining recreational beaches and further storm protection to the communities and natural beach and dune habitat over a 50-year period of analysis. Adverse impacts to the placement area, as well as the nearshore and offshore borrow areas, is short-term as the area fauna re-establishes through recolonization.

4.13 Irreversible and Irretrievable Commitments of Resources

Berm and dune restoration involves the utilization of time and fossil fuels, which are irreversible and irretrievable. Impacts to the benthic community would not be irreversible, as benthic communities would reestablish with cessation of placement activities.

4.14 Cumulative Effects

Cumulative impacts, as defined by CEQ regulations, is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Before 1930, the Federal government's involvement in shore erosion was limited to protection of public property. With the enactment of the River and Harbor Act of 1930 (Public Law 71-520, Section 2), the Chief of Engineers was authorized to make studies of the erosion problem, in cooperation with municipal and state governments, in efforts to prevent further erosion. Until 1946, the Federal aid was limited to studies and technical advice. In 1946 and 1956, the law was amended to provide Federal participation in the cost of a project and allowed limited contribution to the protection of privately owned shores which would benefit the public.

There are several Federal navigation projects in inlets and beachfill projects along the New Jersey ocean coast, as well as some at the State and municipal levels that utilize shoals or offshore areas. As previously mentioned in Section 2.1 (Selected Plan), portions of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) beach nourishment project have been constructed to date. These include beachfront in Surf City and Ship Bottom (2007, 2011), Harvey Cedars (2010), and Brant Beach (2012).

Since November of 2012, several of the authorized and constructed projects within the Philadelphia District have had beachfill placement to offset sand losses incurred during storm Sandy. These projects include portions of Long Beach Island, Brigantine Island, Absecon Island (Atlantic City and Ventnor), Townsends Inlet to Hereford Inlet (Avalon and Stone Harbor), and Cape May City. The Ocean City – Peck Beach (northern Ocean City) project and Lower Cape May Meadows project were scheduled for renourishment at the time Hurricane Sandy struck, and that work has been completed. The remaining authorized, but uncompleted Federal projects are Long Beach Island, Absecon Island (Margate & Longport), Great Egg Harbor Inlet to Townsends Inlet (southern Ocean City, Strathmere (part of Upper Township), and Sea Isle City), and Manasquan Inlet to Barnegat Inlet (Point Pleasant Beach, Bay Head, Mantoloking, Brick Township, Toms River Township, Lavallette, Seaside Heights, Seaside Park, and Berkeley Township).

These projects have all used either inlet borrow sites or offshore sites, which have impacted over 3,000 acres of marine habitat. The proposed Federal projects combined with the existing project would affect approximately 68 miles of beach along the New Jersey coast (south of Manasquan Inlet). This represents nearly 71% of beaches along this segment of coast.

In recent years, the New Jersey Coast has been affected by catastrophic coastal storms, most notably Hurricane Sandy in October 2012. In response to the devastation of the Atlantic coastal communities in New Jersey from Hurricane Sandy, the USACE and the Federal Emergency Management Agency (through aid to State and local municipalities) have undertaken unprecedented measures to repair and/or restore the affected beaches under P.L. 84-99 Flood Control and Coastal Emergencies (FCCE) and P.L. 113-2: Disaster Relief Appropriations Act. P.L. 84-99 allows for the repair of beaches with active Federal

projects to pre-storm conditions and P.L. 113-2 allows for the restoration of affected beaches to full template that have existing active Federal projects. Also, as part of P.L. 113-2, there is the funding to complete authorized, but unconstructed projects, which include the Great Egg Harbor Inlet to Townsends Inlet and the Manasquan Inlet to Barnegat Inlet projects. Figure 4-1 portrays the status of these projects along the New Jersey ocean coast.

Although nearly 71% of the beaches along the N.J. coast south of Manasquan Inlet could potentially be impacted by beachfill placement activities, the cumulative effect of these combined activities is expected to be temporary and minor on resources of concern such as benthic species, beach dwelling flora and fauna, water quality and essential fish habitat. This is due to the fact that flora and fauna associated with beaches, intertidal zones and nearshore zones are adapted to and resilient to frequent disturbance as is normally encountered in these highly dynamic and often harsh environments. Among the existing and proposed projects along this stretch of coast, renourishment cycles vary from two to seven years, which would likely preclude all of the beachfill areas from being impacted at one time.

Figure 4-1: Superstorm Sandy recovery projects along the New Jersey and Delaware Coastlines.

The majority of impacts associated with all these projects are related to the temporary disturbance to the benthic community, and do not represent a permanent loss of marine benthic habitat. The borrow areas for each project would be impacted incrementally over the 50-year project life with each periodic nourishment cycle. It is anticipated that the benthic community in offshore borrow areas would be recovered within several years after disturbance. For the Barnegat Inlet to Little Egg Inlet project,

recovery is expected to occur more quickly due to the dynamic nature of the beach borrow area (2.5 to 3 miles offshore).

Cumulative adverse impacts of past and proposed future coastal erosion control projects typically result from the effect these projects have on the borrow areas: 1) the benthic resource community and 2) the creation of hypoxic conditions by dredging deep holes. Impacts to the nourishment sites themselves are temporary displacement of benthic resources in the short-term and positive impacts to the beach ecosystem in the long-term (enhanced storm protection and increased habitat). Since the current project was designed to minimize adverse environmental effects of all types the project should not culminate in adverse cumulative impacts on ecological and socioeconomic resources, and should result in an overall improvement of the beach environment. Proposed offshore Borrow Areas D2 has not been previously utilized and there are no future plans to utilize the site as a sand source for other New Jersey beach nourishment projects. NJGWS calculated that the entire shoal contains approximately 64.2 mcy of sand and extends nearly 4 times the size of the proposed offshore borrow area (see Figure 2-7). The placement of 4.9 mcy from Area D2 constitutes less than 8% of sand identified in this shoal complex.

The cumulative impacts on Essential Fish Habitat (EFH) are not considered significant. Like the benthic environment, the impacts to EFH are temporary in nature and do not result in a permanent loss in EFH. The borrow site proposed for this project does not contain prominent shoal habitat features, wrecks and reefs, or any known hard bottom features that could be permanently lost due to the impacts from dredging. Some minor and temporary impacts would result in a loss of food source in the affected areas.

Projects of a restorative nature using beachfill are becoming increasingly common in coastal areas of high development as they become more susceptible to erosive forces. Numerous beach nourishment projects have been studied along the Atlantic Ocean coast of New Jersey since the 1960s by local, State, and Federal interests. Depending on site-specific circumstances, such as the methods utilized to alleviate coastal erosion and ensuing storm damages and the existing ecological and socioeconomic conditions, it is difficult to gauge the net cumulative effects of these actions. The scientific literature generally supports beachfill projects over structural alternatives, if properly planned, are short-term, and have minor ecological effects.

5.0 EVALUATION OF 404(b)(1) GUIDELINES

I. Project Description

A. Location

The proposed project site includes the communities of Long Beach Township, Barnegat Light, Harvey Cedars, Surf City, Ship Bottom, and Beach Haven. The site is located in Ocean County, New Jersey. The project would use nearshore and offshore sand borrow areas.

B. General Description

The purpose of the proposed project is to reduce impacts from Hurricanes and Storm damage, which results in erosion, inundation and wave attack along the oceanfront of Long Beach Island. The berm and dune restoration extends from groin 4 (Seaview Drive, Loveladies) to the terminal groin (groin 98) in Long Beach Township, approximately 17 miles. The Barnegat Light (northern end of the study area) area is not included in the nourishment aspect of the project because of minimal erosion and substantial dune/berm complex. The US Fish and Wildlife Service (USFWS, 1996) states that they do not consider beach nourishment on the Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge necessary. Hence, the Holgate Unit (southern end of study area) was also not included in the project.

Due to the fact that both ends of the project terminate at a groin, no tapers would be needed. The template for the plan is a dune at elevation of +22 ft NAVD, with a 30 foot dune crest width, 1V:5H slopes from dune crest down to a berm at elevation +8 ft NAVD, a berm width of 125 feet from centerline of dune (105 feet of dry beach from the seaward toe of dune to MHW), 1V:10H slopes from the berm to MLW, and maintenance of the profile shape from MLW to depth of closure (occurring at approximately -29 ft NAVD). From centerline of dune it ranges from a minimum of 1045 feet to a maximum of 4500 feet. Average dune widths for LBI are already at +29 feet NAVD. Dune elevations are at 19 feet on average while berm width averages are at 111 feet. As part of the berm and dune restoration approximately 1,030.85 acres would be covered, of these, approximately 365.10 acres would be above mean high water (MHW) and 665.75 acres would be below MHW. The elevation of MHW is 1.5 feet in NAVD datum. The above surface areas extend from the inland toe of the dune to MHW and from MHW to depth of closure at -29.0 feet NAVD.

C. Authority and Purpose

1. The authority for the project is The New Jersey Shore Protection Study which was authorized under resolutions adopted by the Committee on Public Works and Transportation of the U.S. House of Representatives and the Committee on Environment and Public Works of the U.S. Senate in December 1987.

2. The purpose of the project is to provide beach erosion control, hurricane protection, and storm damage reduction to the shoreline of Long Beach Island that is engineeringly, economically, and environmentally feasible.

D. General Description of Dredged or Fill Material

1. The proposed dredged material is fine to course sand as defined by the Unified Soil Classification System.

2. The design template plan required 4.95 million cubic yards of sand for initial berm placement, and 2.45 million cubic yards for dune placement over the entire project area (EIS, 1999). Approximately

1.9 million cubic yards would be needed for periodic nourishment every 7 years over a 50-year period of analysis. In order to complete initial construction, approximately 7.8 mcy of sand will be placed on the remaining unconstructed portions of the project area. An estimated additional 20-25% (of the estimated placement quantity of 7.8 mcy) may be dredged from Borrow Area D2 to account for potential losses during the dredging operation due to settlement and erosion or due to storms. Dredging of sand shall be accomplished by either a cutter suction or trailing suction hopper dredge. Cut characteristics at the borrow site can vary depending on which type of plan is used. An hydraulic cutter suction dredge typically cuts in lanes approximately 150 feet in length by approximately 4 feet wide. Contract specifications limit dredging cut depths to less than 10 feet. Hopper cut characteristics are dispersed over a broad area in between transiting and typical are 4 feet in width and 3 feet deep. Borrow Areas D1 and D2 are located in 35 to 65 feet of water.

3. Five offshore borrow areas were proposed as a source of sand for this project. Only Borrow Area D1 has been utilized for initial berm and dune restoration to date. Borrow Area D1 and offshore Area D2 are proposed for future nourishment.

E. Description of Proposed Discharge Site

1. The proposed discharge site is comprised of an eroding berm and dunes along the coastline of Long Beach Island, Ocean County, New Jersey.

2. The proposed discharge site is unconfined with placement to occur on a shoreline area.

3. The type of habitat present at the proposed location is intertidal and beach habitat.

4. The remaining portions for initial construction will require approximately 7.8 million cubic yards of sand for initial berm and dune placement along the municipalities of Long Beach Township, the Borough of Ship Bottom, and the Borough of Beach Haven. The constructed completed project includes berm and dune restoration that extends from groin 4 (Seaview Drive, Loveladies) to the terminal groin (groin 98) in Long Beach Township, approximately 17 miles. The Barnegat Light (northern end of the study area) area is not included in the project because of low erosion and healthy beaches. The US Fish and Wildlife Service (USFWS, 1996) states that they do not consider beach nourishment on the Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge necessary. Hence, the Holgate Unit (southern end of study area) was also not included in the project. Due to the fact that both ends of the project terminate at a groin, no tapers would be needed. The template for the plan is a dune at elevation +22 ft NAVD, with a 30 foot dune crest width, 1V:5H slopes from dune crest down to a berm at elevation +8 ft NAVD, a berm width of 125 feet from centerline of dune (105 feet of dry berm from toe of dune to MHW), 1V:10H slopes from the berm to MLW, and maintenance of the profile shape from MLW to depth of closure (occurring at approximately -29 ft NAVD). Average dune widths for LBI are already at +29 feet NAVD. Dune elevations are at 19 feet on average while berm width averages are at 111 feet. As part of the berm and dune restoration approximately 1,030.85 acres would be covered; of these, approximately 365.10 acres would be above mean high water (MHW) and 665.75 acres would be below MHW. The elevation of MHW is 1.5 feet in NAVD datum. The above surface areas extend from the inland toe of the dune to MHW and from MHW to depth of closure at - 29.0 feet NAVD.

F. Description of Placement Method

A hydraulic dredge or hopper dredge would be used to excavate the borrow material from the borrow area. The material would be transported using a pipeline delivery system to the berm and dune restoration site. Subsequently, final grading would be accomplished using standard construction equipment.

II. Factual Determination

A. Physical Substrate Determinations

1. The final proposed elevation of the beach substrate after fill placement would be +8.0 feet NAVD at the top of the berm and +22.0 feet NAVD at the top of the dune. The proposed profile of the berm would be 10H:1V from the toe of dune to MLW, and maintenance of the profile shape from there to the depth of closure. The dune would have a 1V:5H slope from dune crest down to the berm.

2. The sediment type involved would be sand.

3. The initial phase of construction would establish a construction template that is higher than the final intended design template or profile. It is expected that compaction and erosion would be the primary processes resulting in the change to the design template. In addition, the loss of fine-grained material into the water column would occur during initial settlement. Until the berm template is achieved and stabilized, sand will erode into the water column. The Corps plans for an approximate loss of 15% to 20% dredging losses. Material lost in establishing the template actually serves to create the area known as the depth to closure. The referenced quantities, 7.8 MCY initial and 1.9MCY for periodic nourishment, are pay quantities*, i.e*. the quantity required to be on the beach for payment. Assuming at most a 25% contingency for dredging losses due to sediment characteristic variability, shoreline change prior to construction, and erosion due to storms during construction dredging quantities, the project may require approximately 2.9 mcy from Area D1 and approximately 7.0 mcy from D2 for initial construction and 2.3 mcy dredged for each periodic nourishment.

4. The proposed construction would result in removal of the benthic community from the borrow areas, and burial of the existing beach and nearshore communities.

5. Other effects would include a temporary increase in suspended sediment load and a change in beach profile, particularly in reference to elevation.

6. Actions taken to minimize impacts include selection of fill material that is similar in nature to the pre-existing substrate. In addition, standard construction practices to minimize turbidity and erosion would be employed and complete elimination of borrow areas identified as essential fish habitat.

B. Water Circulation, Fluctuation and Salinity Determinations

1. Water. Consider effects on:

a. Salinity - No effect.
b. Water Chemistry - No significant effect.
c. Clarity - Minor short-term increase in turbidity during construction.
d. Color - No effect.
e. Odor - No effect.
f. Taste - No effect.

g. Dissolved gas levels - No significant effect.
h. Nutrients - Minor short-term effect
i. Eutrophication - No effect.
j. Others as appropriate – None.

2. Current patterns and circulation

a. Current patterns and flow - Circulation would only be impacted by the proposed work in the immediate vicinity of the borrow area, and in the placement areas where the existing circulation pattern would be offset seaward the width of the berm and dune restoration.

b. Velocity - No effect on tidal velocity and longshore current velocity regimes.

c. Stratification - Thermal stratification occurs beyond the mixing region created by the surf zone. There is a potential for both winter and summer stratification. The normal pattern should continue post construction of the proposed project.

d. Hydrologic regime - The regime is largely marine and oceanic. This would remain the case following construction of the proposed project.

3. Normal water level fluctuations - the tides are semidiurnal with a mean tide range of 4.1 feet and a spring tide range of 5.0 feet in the Atlantic Ocean. Construction of the proposed work would not affect the tidal regime.

4. Salinity gradients - There should be no significant effect on the existing salinity gradients.

5. Actions that would be take to minimize impacts - None are required, however, the borrow area would be excavated in a manner to approximate natural ridge slopes to ensure normal water exchange and circulation. Utilization of clean sand and its excavation with a hydraulic dredge would also minimize water chemistry impacts.

C. Suspended Particulate/Turbidity Determinations

1. Expected changes in suspended particulate and turbidity levels in the vicinity of the placement and borrow sites - There would be a short-term elevation of suspended particulate concentrations during construction phases in the immediate vicinity of the dredging and discharge activities. Elevated levels of particulate concentrations at the discharge location might also result from “washout” after beachfill is placed.

2. Effects (degree and duration) on chemical and physical properties of the water column

a. Light penetration - Short-term, limited reductions would be expected at the borrow and placement sites from dredge activity and berm washout.

b. Dissolved oxygen - There is a potential for a decrease in dissolved oxygen levels but the anticipated low levels of organics in the borrow material should not generate a high, if any, oxygen demand.

c. Toxic metals and organics - Because the borrow material is essentially all fine sand as defined by the Unified Soil Classification System, no toxic metals or organics are anticipated.

d. Pathogens - Pathogenic organisms are not known or expected to be a problem in the borrow or placement areas.

e. Aesthetics - Construction activities and the initial construction template associated with the fill site would result in a minor, short-term degradation of aesthetics.

3. Effects on Biota

a. Primary production, photosynthesis - Minor, short-term effects related to turbidity.

b. Suspension/filter feeders - Minor, short-term effects related to suspended particulates outside the immediate deposition zone. Sessile organisms would be subject to burial within the deposition area.

c. Sight feeders - Minor, short-term effects related to turbidity.

4. Actions taken to minimize impacts include selection of clean sand with a small fine grain component and low organic content. Standard construction practices would also be employed to minimize turbidity and erosion.

D. Contaminant Determinations

The discharge material is not expected to introduce, relocate, or increase contaminant levels at either the borrow or placement sites. This is assumed based on the characteristics of the sediment, the proximity of borrow sites to sources of contamination, the area's hydrodynamic regime, and existing water quality.

E. Aquatic Ecosystem and Organism Determinations

1. Effects on plankton -The effects on plankton should be minor and mostly related to light level reduction due to turbidity. Significant dissolved oxygen level reductions are not anticipated.

2. Effects on benthos - There would be a major disruption of the benthic community in the borrow area, when the fill material is excavated, and in the placement area due to burial or displacement. The loss is somewhat offset by the expected rapid opportunistic recolonization from adjacent areas that would occur following cessation of construction activities.

Recolonization is expected to occur at the placement site by vertical migration also. Surf clams are found in the borrow site, but evidence for their recovering is good.

3. Effects on Nekton - Only a temporary displacement is expected as the nekton would probably avoid the active work areas.

4. Effects on Aquatic Food Web - Only a minor, short-term impact on the food web is anticipated. This impact would extend beyond the construction period until recolonization of the buried area has occurred.

5. Effects on Special Aquatic Sites - No wetlands would be impacted by the project. Wetlands were found in the original study area. The placement site/project area has been reduced in scope to no longer include wetlands.

6.Threatened and Endangered Species - Several species of threatened and endangered sea turtles might be in the vicinity of the sand borrow areas depending on time of year. Sea turtles have been known to become entrained and subsequently destroyed by suction hopper dredges. However, current practices require the use of screens placed on the dredge draghead or cutterhead as well as the beach discharge pipe, for the prevention of ordnance deposition on beaches. This method serves to minimize impacts to sea turtles as well, and has been coordinated with the National Marine Fisheries Service.

The piping plover, a Federal and state threatened species, could potentially be impacted by construction of the proposed project. This bird nests on ocean beaches and nesting sites have occurred within the project area. Once constructed, the project could provide more suitable nesting habitat for the plovers and other beach nesters. Avoidance of nesting times could minimize the impact to plovers during construction. Maximum use of dredging during non-nesting seasons and implementation of a comprehensive beach nesting bird management plan coordinated with USFWS and NJDEP Endangered and Non-Game Species Program will also serve to minimize impacts to nesting least terns and black skimmers.

7. Other wildlife - The proposed plan would not affect other wildlife.

8. Actions to minimize impacts - Impacts to benthic resources can be minimized at the borrow area by dredging in a manner as to avoid the creation of deep pits, using one borrow area as the primary source of initial fill and alternating locations of periodic dredging. Current approximate depths in D1 range between -35 and -65 feet NAVD88 and -40 and -60 feet NAVD88 in D2. Hopper dredges typically make 4 feet wide by 3 feet deep cuts with each drag arm. Hydraulic cutter suction dredges cut lanes approximately 200 feet wide and about 5 feet deep with each pass. A maximum dredge cut depth is specified in the contract to limit cuts to no deeper than 5-10 feet of surrounding bathymetry. Employing dragarm and cutterhead intake screens minimizes the potential for impacts to Federal and state threatened or endangered sea turtles. Impacts to the Federal and state threatened piping plover can be avoided or minimized by establishing a buffer zone around nests during the nesting season. Impacts to the surf clam population may be minimized by selective use of borrow area(s) and the commercial harvest of surf clams prior to dredging.

F. Proposed Placement Site Determinations

1. Mixing zone determination

a. Depth of water - zero to 10 feet mean low water

b. Current velocity - there is no tidal current in the area, predominate current is longshore current which is wave dependent for its velocity

c. Degree of turbulence – Heavy.

d. Stratification – None.

e. Discharge vessel speed and direction - Not applicable.

f. Rate of discharge - Typically this is estimated to be 780 cubic yards per hour

g. Dredged material characteristics - fine sand as defined by the Unified Soil Classification System.

h. Number of discharge actions per unit time - Continuous over the construction period.

2. Determination of compliance with applicable water quality standards - a Section 401 Water Quality Certificate and consistency concurrence with New Jersey's Coastal Zone Management Program were obtained prior to initiation of construction.

3. Potential effects on human use characteristics

a. Municipal and private water supply - No effect.

b. Recreational and commercial fisheries - Short-term effects during construction.

c. Water related recreation - Short-term effect during construction.

d. Aesthetics - Short-term effect during construction.

e. Parks, national and historic monuments, national seashores, wilderness areas, etc. - no effect.

G. Determination of Cumulative Effects on the Aquatic Ecosystem - None anticipated.

H. Determination of Secondary Effects on the Aquatic Ecosystem - Any secondary effects would be minor and short in duration.

III. Finding of Compliance or Non-Compliance with the Restrictions on Discharge

A. No significant adaptation of the Section 404(b)(1) Guidelines was made relative to this evaluation.

B. The alternative measures considered for accomplishing the project are detailed in Section VII of the 1999 *Barnegat Inlet to Little Egg Inlet Feasibility Study and Environmental Impact Statement.*

C. A Section 401 Water Quality Certificate and Federal Consistency Determination has been obtained from the New Jersey Department of Environmental Protection and will be reviewed and modified by NJDEP to reflect addition of the offshore Borrow Area D2 prior to construction.

D. The proposed berm and dune restoration would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

E. The proposed berm and dune restoration would comply with the Endangered Species Act of 1973. Informal coordination procedures have been completed.

F. The proposed berm and dune restoration would not violate the protective measures for any Marine Sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.

G. The proposed berm and dune restoration would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on life stages of aquatic life and other wildlife dependent on the aquatic ecosystem; aquatic ecosystem diversity, productivity, and stability; and recreational, aesthetic, and economic values would not occur.

H. Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include selection of borrow material that is low in silt content, has little organic material, and is uncontaminated.

I. On the basis of the guidelines, the placement site for the dredged material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

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APPENDIX A

Essential Fish Habitat

Life History Requirements for Essential Fish Habitat Species

ATLANTIC COD (*Gadus morhua*)

Atlantic cod is an economically important member of the family *Gadidae*. This fish ranges in North America from southern Greenland and southeast Baffin Island, south to Cape Hatteras, North Carolina (winter) (Robins and Ray, 1986). The proposed project area is designated EFH for adult Atlantic cod, which are typically found in bottom habitats dominated by cobble, gravel or rock substrates (NEFMC, 1998). Adults prefer water temperatures below 50ºF (10ºC), depths from 33 to 492 feet (10 to 150 meters) and tolerate a wide range of salinities. Most cods are observed spawning during the fall, winter and early spring (NEFMC, 1998).

ATLANTIC BUTTERFISH (*Peprilus triacanthus*)

For juveniles, offshore EFH is the pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina. Inshore, EFH is the "mixing" and/or "seawater" portions of all the estuaries where juvenile butterfish are "common," "abundant," or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, juvenile butterfish are present in depths between 10 meters (33 feet) and 366 meters (1,200 feet) and temperatures between approximately 3°C (37°F) and 28°C (82°F).

Both juveniles and adults are found over the shelf during the winter months, and spend the spring and fall in the estuaries. Schools of adults and larger juveniles form over sandy, sandy-silt, and muddy substrates. During summer, butterfish move toward the north and inshore to feed and spawn. Spawning occurs from June to August, and peaks progressively later at higher latitudes. During winter, butterfish move southward and offshore to avoid cool waters. Butterfish are primarily pelagic, and form loose schools that feed upon small fish, squid, and crustaceans. Smaller juveniles evade predation by associating with floating objects and organisms such as jellyfish. Inshore and in the surf-zone, butterfish prey on plankton, thaliaceans, squid, and copepods (Overholtz, 2000).

Juvenile and adult butterfish may be present at the dredging area, but would likely temporarily vacate the shoal areas once dredging begins. No indirect impacts to juveniles or adults are expected due to dredging because butterfish are pelagic and their prey is largely found in the water column. The dredging area would be confined to portions of the two shoals and butterfish prey species are present throughout the surrounding areas. Dredging operations should not cause significant adverse impacts to the EFH for this species. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly localized and temporary.

ATLANTIC SEA HERRING (*Clupea harengus*)

For adults, EFH consists of pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where Atlantic herring adults are found: water temperatures below 10° C (50° F), water depths from 20 to 130 meters (66 to 427 feet), and salinities above 28 ppt.

Adult herring are found in pelagic waters and bottom habitats of the Mid-Atlantic Bight at water depths from 20 to 130 meters (65 to 426 feet). They primarily feed on zooplankton, krill, and fish larvae. Adult herring prefer temperatures below 10° C (50° F), and salinities above 28 ppt. Spawning occurs at depths of 15 to 46 meters (50 to 150 feet), at temperatures below 15°C, and salinities from 32 to 33 ppt. The bottom substrates on which they spawn consist of gravel, sand, and shell fragments, and eggs are occasionally found on aquatic macrophytes. The eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots, with the majority of spawning in and adjacent to the project area occurring between July and November.

Adult Atlantic herring may be present in the water column at the dredging areas. Atlantic herring are highly motile and would be able to vacate the shoal areas during dredging operations. Adult Atlantic herring are not generally associated with bottom habitats and are unlikely to be affected by activities in the proposed project area. No indirect impacts to adults are expected due to dredging as prey species are present throughout the surrounding areas.

BLACK SEA BASS *(Centropristus striata)*

EFH consists of: 1) north of Cape Hatteras, the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) estuaries where black sea bass were identified as common, abundant, or highly abundant in NOAA's Estuarine Living Marine Resources (ELMR) database. Generally, the habitats for the transforming (to juveniles) larvae are near the coastal areas and into marine parts of estuaries between Virginia and New York. When larvae become demersal, they are generally found on structured inshore habitat such as sponge beds. Wintering adults (November through April) are generally offshore, south of New York to North Carolina. Temperatures above 6° C (43^{o}F) seem to be the minimum requirements. Structured habitats (natural and man-made), and sand and shell substrate are preferred.

Black sea bass is a demersal species found in temperate and subtropical waters all along the Atlantic coast, from the Gulf of Maine to the Gulf of Mexico. In the Mid-Atlantic, black sea bass migrate to inshore coastal areas and bays in the springtime and offshore areas in the fall as the temperatures change. The species is strongly associated with structured habitats including jetties, piers, shipwrecks, submerged aquatic vegetation, and shell bottoms.

Potential impacts to the black sea bass EFH within both the offshore dredging site and the nearshore sand placement area are expected to be minimal and limited to temporary disturbance of bottom sediments. Significant displacement is not expected, as much of the underwater habitat (*i.e.*, structures) that the species is strongly associated with is not prevalent in the proposed project area.

BLUEFIN TUNA (*Thunnus thynnus*)

Spawning, eggs, and larvae: In the Gulf of Mexico from the 100 meter depth contour to the EEZ, continuing to the mid-east coast of Florida. Juveniles (<231 cm FL): In waters off North Carolina, south of Cape Hatteras, to Cape Cod. Adults (≥231 cm FL): In pelagic waters of the

central Gulf of Mexcio and the mideast coast of Florida. North Carolina from Cape Lookout to Cape Hatteras, and New England from Connecticut to the mid-coast of Maine.

BLUEFISH *(Pomatomus saltatrix)*

EFH consists of: 1) North of Cape Hatteras, pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ) most commonly above 49 feet (15 meters), from Montauk Point, New York, south to Cape Hatteras; 2) south of Cape Hatteras, 100% of the pelagic waters greater than 45 feet over the continental shelf (from the coast out to the eastern edge of the Gulf Stream) through Key West, Florida; and 3) the "slope sea" and Gulf Stream between latitudes 29^{o} 00' N and 40^{o} 00' N. Bluefish larvae are not generally found inshore so there is no EFH designation inshore for larvae. Generally, bluefish larvae are present April through September in temperatures greater than 18^{o} C (64^{o}F) in shelf salinities greater than 30 ppt. Bluefish adults are highly migratory and distribution varies seasonally and according to the size of the individuals comprising the schools. Bluefish are generally found in shelf salinities greater than 25 ppt.

EFH is defined within the project area for juvenile and adult bluefish. Eggs of this species are pelagic and highly buoyant; with hatching and early larval development occurring in oceanic waters in the MAB, a coastal region running from Massachusetts to North Carolina. The young move inshore to estuaries, which serve as chief habitat for juveniles. Adults travel northward in spring and summer and to the south in fall and winter. Southerly migration may be closer to shore than northerly movement, although movement in both directions is characterized by inshore-offshore movement. It is believed that estuarine and nearshore waters are important habitats for juveniles and adults from Maine to Florida (NMFS, 2006). Adult bluefish prey on squid and other fish such as silverside.

Bluefish are a schooling, pelagic species not associated with bottom habitats; therefore dredging operations should not significantly impact preferred habitat. Since bluefish are sight feeders, increased turbidity in the proposed project area may affect their ability to locate prey. Being highly mobile, however, bluefish should be able to avoid and/or quickly exit areas impacted by dredging operations. Wilber *et al.* (2003) reported in a study of the response of surf zone fish to beach nourishment in northern New Jersey that bluefish avoided areas of active beach fill operations. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly unlikely.

CLEARNOSE SKATE (*Raja eglanteria)*

The species occurs along the eastern U.S. coast from Nova Scotia to northeastern Florida, as well as in the northern Gulf of Mexico from northwestern Florida to Texas. Adults and juveniles are found year-round (bottom-trawls) and the species shows seasonal movements. In winter, most are found on the Continental shelf from the Delmarva Peninsula to Cape Hatteras to the 200 meter depth contour. In spring/summer, both adults and juveniles concentrate inshore in shallower waters. They are found on soft bottoms and rocky or gravelly bottoms. Egg cases are deposited in spring and early summer on the east coast and hatch mid-summer. Prey items

include polychaetes, amphipods, shrimps, crabs and small fish. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

COBIA *(Rachycentron canadum)*

EFH for all stages of cobia includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone. For cobia, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition the Gulf Stream is an EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For cobia. Cobia occur in the South and Mid-Atlantic Bights.

Cobia is a pelagic species found in small schools near piers, buoys, boats, and platforms, sandy shoals, and offshore sandbars. Cobia are also associated with large marine animals such as sea turtles, rays, and sharks; in fact, they are often mistaken for remora (suckerfish). While usually found in the coastal areas, they occasionally inhabit inshore bays and inlets. Females form large aggregations and spawn during the day in the inshore area just outside coastal bays, inside bays, and in other areas within estuaries from June to mid-August. Spawning occurs once every 9 to 12 days, often up to 15 times per season (Florida Museum of Natural History, 2009). Cobia eggs are planktonic, and float freely in the water column. In the spring, the adults migrate north from the warmer waters of the Florida Keys to the coastal waters of Virginia. Cobia feed on crustaceans, invertebrates, and occasionally other pelagic fish (NOAA, 2009).

This coastal migratory pelagic species may be impacted by proposed project activities, especially juveniles and adults which tend to feed on crabs and inhabit inshore environments. Disturbance to bottom habitat by dredging may affect prey availability in the project area. However, these adverse impacts are likely to be highly localized and temporary.

DUSKY SHARK *(Charcharinus obscurus)*

For neonate/early juveniles, EFH consists of shallow coastal waters, inlets and estuaries to the 25-meter (82-foot) isobath from the eastern end of Long Island, New York, to Cape Lookout, North Carolina; from Cape Lookout south to West Palm Beach, Florida, in shallow coastal waters, inlets and estuaries and offshore areas to the 100-meter (328-foot) isobath.
For late juveniles/subadults, EFH includes off the coast of southern New England, coastal and pelagic waters between the 25- and 200-meter (82- and 656-foot) isobaths; shallow coastal waters, inlets and estuaries to the 200-meter (656-foot) isobath from Assateague Island at the Virginia/Maryland border to Jacksonville, Florida (NOAA, 2008).

Dusky shark habitat ranges from shallow inshore waters to beyond the continental shelf. Although the shark feeds near the bottom, it can also be found anywhere in the water column up to 378 meters (1,240 feet) deep. Mating occurs in the spring, followed by a gestational period of either 8 or 16 months, depending on the number of birth seasons in a given year. While juveniles inhabit estuaries and shallow coastal waters, adults are not found in estuaries or waters with lower salinities. The dusky shark preys on a variety of fish and invertebrates, such as herring, grouper, sharks, skates, rays, crabs, squid, and starfish. The species is highly migratory, moving

north during the summer and wintering in warmer southern waters. Males and females make the seasonal migrations separately (Florida Museum of Natural History, 2009).

EFH for neonates and juveniles may be adversely affected by dredging operations associated with the proposed project, as the species is known to frequent the bottom habitats of coastal areas. The disturbance of bottom sediments associated with dredging could interfere with feeding, predation, avoidance, and migratory movements of this shark species. The dusky shark would experience a deficit of prey items in the immediate dredging area; however, this adverse impact is expected to be temporary and highly localized.

KING MACKEREL *(Scomberomorus cavalla)*

EFH for all stages of king mackerel includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, from the Gulf Stream shoreward, including *Sargassum.* For king mackerel, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is considered EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For king mackerel, EFH occurs in the South Atlantic and Mid-Atlantic Bights (USACE, 2009).

King mackerel live in large schools in pelagic waters at depths from about 23 to 34 meters (75 to 112 feet). Spawning takes place over the Outer Continental Shelf from May through October, with peaks between late May and early July, and between late July and early August. The larval stage of this species is very brief, with growth rates of 0.51 mm to 1.27 mm (0.02 to 0.05 inches) per day (Florida Museum of Natural History, 2009). Larvae are found in estuaries with water temperatures from 26° to 31° C (79° to 88° F). Juveniles prey on fish larvae, small fish such as anchovies, and squid. In addition to pelagic fish and squid, adults prey on mollusks, shrimp, and other crustaceans. The adult king mackerel is present in waters with temperatures above 20° C (68° F), so their migration along the Atlantic coast migration depends heavily on the temperature of the coastal waters.

King mackerel is a coastal, pelagic species not associated with bottom habitats. Therefore dredging operations should not significantly impact king mackerel EFH. Being highly mobile, king mackerel should be able to avoid and/or quickly exit areas impacted by dredging operations. Adverse impacts to king mackerel EFH, such as increased turbidity and decreased prey populations, would be highly localized and temporary.

LITTLE SKATE (*Leucoraja erinacea)*

The species is occurs from Nova Scotia to Cape Hatteras and is one of the dominant members of the demersal fish community of the Atlantic. The center of abundance is the northern section of the Mid-Atlantic Bight and on Georges Bank, where it is found year-round over almost the entire range of temperatures recorded for these areas. Little skate move seasonally (offshore/inshore) as well as move north to south with seasonal temperature changes. Both juveniles and adults are found out to the 200 meter depth contour in areas with sandy, gravelly bottoms and also occur in mud. The Little skate buries in depression during the day and more active at night. Eggs are laid in May-July and hatched November-January. Prey species include the invertebrates decapods

and amphipods, polychaetes, crabs, shrimps, bivalves, squid, and small fishes. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

MONKFISH *(Lophius americanus)*

For eggs, EFH consists of surface waters of the Gulf of Maine, Georges Bank, southern New England, and the Middle Atlantic south to Cape Hatteras, North Carolina. Generally, the monkfish egg veils are found at sea surface temperatures below 18° C (64° F), and water depths from 15 to 1000 meters (49 to 3,281 feet). Monkfish egg veils are most often observed from March to September. For larvae, EFH is the pelagic waters of the Gulf of Maine, Georges Bank, southern New England and the Middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where monkfish larvae are found: water temperatures 15° C (59°F) and water depths from 25 - 1000 meters (82 to 3,281 feet). Monkfish larvae are most often observed from March to September.

Monkfish are demersal, and prefer sand, mud, and shell habitats. They can be found from inshore up to 899 meters (2,950 feet) deep, at a wide range of temperatures. Fish, crustaceans, mollusks, shrimp, squid and even seabirds are prey for juvenile and adult monkfish. Larval monkfish prey on zooplankton in the water column. Spawning occurs from February to October, from the southern part of the range to the north. Monkfish are believed to spawn over inshore shoals and in deeper offshore waters.

Monkfish eggs and larvae may be present in the water column within the project area from March to September. If they are present at the offshore shoals during dredging, some eggs and larvae may be entrained during dredging operations; however, this will be temporary and localized to the area being dredged. In addition, eggs and larvae may be disturbed by the turbidity created in the water column. The sediment is expected to settle from the water column shortly after dredging activities cease. In addition, eggs and larvae may be when sand is pumped along the shoreline. It is expected that these adverse impacts to monkfish EFH, however, would be temporary and highly localized.

RED HAKE *(Urophycis chuss)*

EFH for eggs includes the surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, hake eggs are found in areas where sea surface temperatures are below 10° C (50° F) along the inner continental shelf with salinity less than 25 ppt. Eggs are most often present during the months from May through November, with peaks in June and July. EFH for larvae includes surface waters of Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, red hake larvae are found where sea surface temperatures are below 19° C (66° F), water depths are less than 200 meters, and salinity is greater than 0.5 ppt. Red hake larvae are most often observed from May through December, with peaks in September and October. EFH for juveniles consists of bottom habitats with a substrate of shell fragments, including areas with an abundance of live scallops, in the Gulf of

Maine, on Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, red hake juveniles are found where water temperatures are below 16° C (61° F), depths are less than 100 meters (328 feet), and salinity ranges from 31 to 33 ppt.

Red hake migrate seasonally,coming from as far north as Maine to the warmer southern waters of Virginia and North Carolina. Spawning for red hake populations throughout the eastern Atlantic occurs in the Mid-Atlantic Bight. Not much is known about the eggs, other than that they float near the surface and hatching occurs about a week after spawning. Larvae can be found in the upper water column from May through December. Juveniles are pelagic and stay close to floating debris and patches of *Sargassum* until they are approximately 2 months old, at which time they become demersal. Juveniles prefer silty, fine sand sediments while adults favor muddy substrates (NOAA, 1999b).

Potential impacts to red hake EFH would be limited to temporary disruption of juvenile habitats due to dredging operations. Because significant population centers for this species tend to occur from New Jersey northward of the project area, project impacts would negligible.

SANDBAR SHARK *(Charcharinus plumbeus)*

For neonates/early juveniles, EFH consists of shallow coastal areas to the 25-meter (82-foot) isobath from Montauk, Long Island, New York, south to Cape Canaveral, Florida (all year); nursery areas in shallow coastal waters from Great Bay, New Jersey, to Cape Canaveral, Florida, especially Delaware and Chesapeake Bays (seasonal-summer); shallow coastal waters to up to a depth of 50 meters (164 feet) on the west coast of Florida and the Florida Keys from Key Largo to south of Cape San Blas, Florida. Typical parameters include salinity greater than 22 ppt and temperatures greater than 21° C (70° F). For late juveniles/subadults, EFH includes offshore southern New England and Long Island, both coastal and pelagic waters; also, south of Barnegat Inlet, New Jersey, to Cape Canaveral, Florida, shallow coastal areas to the 25–meter (82-foot) isobath; also, in the winter, in the Mid-Atlantic Bight, at the shelf break, benthic areas between the 100- and 200-meter (328- and 656-foot) isobaths; also, on the west coast of Florida, from shallow coastal waters to the 50–meter (164-foot) isobath, from Florida Bay and the Keys at Key Largo north to Cape San Blas, Florida. For adults, EFH is on the east coast of the United States, shallow coastal areas from the coast to the 50-meter (164-foot) isobath from Nantucket, Massachusetts, south to Miami, Florida; also, shallow coastal areas from the coast to the 100-meter (328-foot) isobath around peninsular Florida to the Florida panhandle near Cape San Blas, Florida, including the Keys and saline portions of Florida Bay.

The sandbar shark is the most common gray shark along the Mid-Atlantic Coast (Chesapeake Bay Program, 2009). From late May to early June, females head to the inlets and coastal bays of Virginia to give birth to litters of between 6 and 13 pups. The pups remain in the area until September or October, when they school and migrate south, along with the adults, to the warmer waters of North Carolina and Florida. The sharks begin to return to the coastal waters of Virginia around April. Pups and juveniles feed primarily on crustaceans, graduating to a more diverse diet of fish from higher in the water column, as well as rays skates, mollusks, and crustaceans near or in the benthic layer. The sharks are bottom-dwellers found in relatively

shallow coastal waters 18 to 61 meters (60 to 200 feet) deep on oceanic banks and sand bars with smooth, sandy substrates. The adults can also occasionally be found in estuaries in turbid waters with higher salinity (Florida Museum of Natural History, 2009).

Because sandbar sharks favor habitats such as sand shoals, EFH may be adversely affected by dredging operations associated with the proposed project. No impacts to neonates/early juveniles are expected, as they tend to congregate in estuaries. Juveniles and adults are opportunistic bottom feeders whose prey items might be negatively impacted by dredging operations. The disturbance of bottom sediments associated with dredging could interfere with feeding, predation, avoidance, and migratory movements of this shark species. However, these adverse impacts are expected to be temporary and highly localized.

SCALLOPED HAMMERHEAD (*Sphyrna lewini*)

Neonate/YOY (≤60 cm TL): Coastal areas in the Gulf of Mexico from Texas to the southern west coast of Florida. Atlantic east coast from the mid-east coast of Florida to southern North Carolina. Juveniles (61 to 179 cm TL): Coastal areas in the Gulf of Mexico from the southern to mid-coast of Texas, eastern Lousainia to the southern west coast of Florida, and the Florida Keys. Offshore from the mid-coast of Texas to eastern Louisiania. Atlantic east coast of Florida through New Jersey. Adults (≥180 cm TL): Coastal areas in the Gulf of Mexico along the southern Texas coast, and eastern Lousainia through the Florida Keys. Offshore from southern Texas to eastern Louisiania. Atlantic east coast of Florida to Long Island, NY.

SCUP *(Stenotomus chrysops)*

For juveniles, EFH includes: 1) offshore, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) inshore, the estuaries where scup are identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general during the summer and spring, juvenile scup are found in estuaries and bays between Virginia and Massachusetts, in association with various sands, mud, mussel and eelgrass bed type substrates and in water temperatures greater than 7.2°C (45o F) and salinities greater than 15 ppt. For adults, EFH consists of: 1) offshore, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) inshore, the estuaries where scup were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally, wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 7.2° C (45o F).

Although EFH is not designated for eggs and larvae within the project areas, they can be found inshore from May through September in Virginia in waters between 13 and 23° C (55 o and 73o F) and in salinities greater than 15 ppt. Both juveniles and adults are demersal. Juveniles are found in a variety of benthic habitats in offshore waters, as well as inshore estuaries and bays in temperatures greater than 7° C (45o F) and salinities greater than 15 ppt. Adults are found both inshore and offshore of Virginia during warmer months. From November through April, they are found offshore in waters above 7° C (45o F). Scup form schools based on their body size, utilizing a wide range of areas, such as smooth and rocky bottoms, and around piers, rocks,

underwater infrastructure, wrecks, and mussel beds, at depths of 2 to 37 meters (6 to 120 feet) (MDFG, 2009). Migration occurs from the coastal waters in the summer to offshore waters in the wintertime (USACE, 2009).

The disturbance of bottom sediments associated with dredging could adversely impact scup EFH and interfere with the feeding, predation, avoidance, and migratory movements of scup juvenile and adult pelagic life stages. As a demersal species, there is a possibility that scup may become entrained in the dredge. However, no permanent effects to the species or the shallow water habitat are anticipated. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly localized and temporary.

SHORTFIN MAKO (*Isurus oxyrinchus*)

At this time, insufficient data is available to differentiate EFH by size classes, therefore, EFH is the same for all life stages. Neonate/YOY, Juveniles, and Adults: EFH designation for all life stages have been combined and are considered the same. Localized areas in the central Gulf of Mexico and the Florida Keys. In the Atlantic, localized areas off of Florida, South Carolina, and Maine, and from Cape Lookout though southern New England.

SMOOTH DOGFISH (*Mustelus canis*)

Neonate/YOY (≤59 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation. Juveniles (60 to 80 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation. Adults (≥81 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation.

SPANISH MACKEREL *(Scomberomorus maculatus)*

EFH for all stages of Spanish mackerel includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum.* All coastal inlets and all state designated nursery habitats are of particular importance to Spanish mackerel. EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is considered EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For Spanish mackerel, EFH occurs in the South Atlantic and Mid-Atlantic Bights.

Spanish mackerel eggs are found in open water off the coast of Virginia from April through September. The Spanish mackerel is most commonly found in waters with a temperature above 20° C (68° F) and salinity greater than 30 ppt. The species prefers the waters from the surf zone to shelf break from the Gulf Stream shoreward, especially sandy shoal and reef areas, and can occasionally be found in shallow estuaries and in grass beds. In the open ocean, Spanish mackerel feed on pelagic fish including herring, sardines, mullet, and anchovy; shrimp; crabs; and squid (NOAA, 2009). Spanish mackerel are a fast-swimming, highly migratory species

which is found in large schools. They winter in the warm pelagic waters of Florida, moving north along the coast to Virginia waters in April or May.

Spanish mackerel are a fast moving coastal, pelagic species not associated with bottom habitats. Therefore, dredging operations should not significantly impact Spanish mackerel EFH. Being highly mobile, Spanish mackerel should be able to avoid and/or quickly exit areas impacted by dredging operations. Adverse impacts, such as increased turbidity and absence of prey would be highly localized and temporary.

SUMMER FLOUNDER *(Paralicthys dentatus)*

EFH for larvae, juveniles and adults consists of: 1) north of Cape Hatteras, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; 2) south of Cape Hatteras, the waters over the continental shelf (from the coast out to the limits of the EEZ) to depths of 150 meters (500 feet) from Cape Hatteras, North Carolina, to Cape Canaveral, Florida; and 3) inshore, all of the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database for the "mixing" and "seawater" salinity zones. In general, juveniles use several estuarine habitats as nursery areas, including salt marsh creeks, seagrass beds, mudflats, and open bay areas in water temperatures greater than 3° C (37o F) and salinities from 10 to 30 ppt.

Generally summer flounder inhabit shallow coastal and estuarine waters during warmer months and move offshore on the outer continental shelf at depths of 150 meters (500 feet) in colder months. The geographical range of the summer flounder encompasses the shallow estuarine waters and outer continental shelf from Nova Scotia to Florida. Adult and juvenile summer flounder normally inhabit shallow coastal and estuarine water during the warmer months of the year. Adults seem to prefer sandy habitat in order to avoid predation and conceal themselves from prey. Seasonal temperature shifts appear to drive juveniles and adults in and out of estuary habitats (NOAA, 1999c). Juveniles prey on crustaceans, small pelagic fish and shrimp, and adults feed opportunistically on a variety of fish, crustaceans, squid, and polychaetes.

Larvae, juvenile and adult summer flounder may face minimal impacts from proposed project activities. The project area itself does not appear to offer favorable habitat to this species which seems to prefer estuarine environments. Minor temporary impacts, including disturbance of bottom habitat by dredging operations, may occur as the flounder enter into and exit the favored estuarine environments.. Also, flounder that remain on the bottom during dredging could be entrained and destroyed.

SURF CLAM *(Spisula solidissima)*

Juveniles and adults are found throughout the substrate, to a depth of 1 meter (3 feet) below the water/sediment interface, within Federal waters throughout the Atlantic Exclusive Economic Zone (EEZ), which is the area that extends 200 nautical miles from the United States coastline. The species generally occurs from the beach zone to a depth of about 61 meters (200 feet), but beyond about 38 meters (125 feet) abundance is low.

The surf clam is a bivalve mollusk which prefers substrates of fine to medium grained sand, in waters with salinities above 14 parts per thousand (ppt) (NJMSC, 2009). The clam rarely moves locations unless it becomes uncovered, it filter-feeds on plankton in its immediate area. Surf clams reproduce by releasing eggs and sperm directly into the water column. Larvae are planktonic for approximately three weeks, at which time they grow a hard shell and settle to the bottom (NEFSC, 2006).

The location of the offshore borrow areas fall within the area designated as EFH for the juvenile and adult surf clam. The dredging of these offshore sand shoals is expected to cause temporary adverse effects to this non-motile organism. Entrainment in the dredger would destroy surf clams in the areas of the shoals where sand is dredged, but the population would have the ability to rebound from undisturbed adjacent areas. Studies conducted from 1997 through 2012 do not indicate a prominent presence of surf clam in the proposed borrow areas. Previous studies indicate that benthic invertebrate communities destroyed by the dredge are able to rebound within a few years (Diaz et al., 2004). Dredging would also cause an increase in turbidity, which may temporarily impair the ability of the clams to feed by filtering plankton from the water.

TIGER SHARK *(Galeocerdo cuvieri)*

For tiger shark larvae (referred to as "neonates"), EFH extends from shallow coastal areas to the 200 m isobath in Cape Canaveral, Florida, north to offshore Montauk, Long Island, NY (south of Rhode Island); and from offshore southwest of Cedar Key, FL north to the Florida/Alabama border from shallow coastal areas to the 50 m isopath.

The tiger shark is found in turbid coastal and pelagic waters of the Continental shelf, at depths of up to 350 meters (1,148 feet), although the shark has a tolerance for a wide variety of marine habitats (MBS, 2009). Tiger sharks have been found in estuaries and inshore as well. Prey items for the tiger shark include fish, crustaceans, mollusks, and plankton. Little is known about the nursery areas for tiger sharks, though they are believed to occur in offshore areas (NMFS, 2006b). Females are thought to produce a litter of pups every other year.

Although it is possible that there may be tiger sharks in the project area, it is unlikely that they would experience significant adverse effects. A highly mobile species, the shark would be able to temporarily leave disturbed areas while dredging and placement of sand on the shoreline is occurring. Because of the shark's highly varied diet, the activities of the proposed action are not expected to cause difficulties in finding prey. Only short-term localized impacts on the tiger shark are anticipated.

WHITE SHARK (*Carcharodon carcharias*)

Neonate/YOY, Juveniles, and Adults: EFH designation for all life stages have been combined and are considered the same. Along the mid- and southern west coast of Florida in the Gulf of Mexico, and along the mid- and northern east coast of Florida, South Carolina, and North Carolina in the Atlantic. Maryland to Cape Cod.

WINDOWPANE FLOUNDER (*Scopthalmus aquosus*)

For eggs and larvae, EFH consists of pelagic waters around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, windowpane flounder larvae are found at sea surface temperatures less than 20° C (68° F) and water depths less than 70 meters (230 feet). Larvae are often present from February to November with peaks in May and October in the middle Atlantic and July through August on Georges Bank. EFH for juveniles is bottom habitat with a substrate of mud or fine-grained sand, around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, windowpane flounder juveniles are found at water temperatures below 25° C (77° F), at depths from 1 to 100 meters (3 to 328 feet), and salinities between 5.5 to 36 ppt. EFH for adults is comprised of bottom habitats with a substrate of mud or fine-grained sand around the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Generally, windowpane flounder adults are found in water temperatures below 26.8° C (80° F), depths from 1 to 75 meters (3 to 246 feet), and salinities between 5.5 to 36 ppt.

EFH for spawning adults is bottom habitats comprised of mud or fine-grained sand in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Spawning windowpane flounder are found in water temperatures below 21° C (70° F), depths from 1 to 75 meters (3 to 246 feet), and salinities between 5.5 to 36 ppt. Windowpane flounder are most often observed spawning during the months February to December with a peak in May in the middle Atlantic.

Windowpane flounder inhabit estuaries, nearshore waters, and the continental shelf of the middle Atlantic. The species is demersal and prefers substrates of sand or mud. Juveniles that settle in shallow inshore waters move to deeper waters as they grow, migrating to nearshore or estuarine habitats in the southern MAB in the autumn. Juvenile and adult windowpane feed on small crustaceans and various fish larvae.

There may be some limited adverse impacts to windowpane flounder, particularly juveniles and adults due to their presence year-round (slightly less in the warmest summer months) in bottom habitats like the type present at the dredging sites. The disturbance of benthic sediments organisms caused by dredging operations would likely cause a temporary, localized reduction in prey species.

WINTER FLOUNDER *(Pleuronectes americanus)*

For eggs, EFH consists of bottom habitats with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Generally, winter flounder eggs are found in water temperatures less than 10° C (50° F), salinities from 10 to 30 ppt, and water depths of less than 5 meters (16 feet). On Georges Bank, winter flounder eggs are generally found in water less than 8° C (46° F) and less than 90 meters (295 feet) deep. Winter flounder eggs are often observed from February to June with a peak in April on Georges Bank. For larvae, EFH consists of pelagic and bottom waters of Georges Bank, the inshore areas of then Gulf of Maine, southern New

England, and the middle Atlantic south to the Delaware Bay. Generally, winter flounder larvae are found in sea surface temperatures less than 15° C (59° F), salinities from 4 to 30 ppt, and water depths of less than 6 meters (20 feet). On Georges Bank, winter flounder larvae are generally found in water less than 8° C (46° F) and less than 90 meters (295 feet) deep. Winter flounder larvae are often observed from March to July with peaks in April and May on Georges Bank.

For juveniles, EFH is bottom habitats with a substrate of mud or fine grained sand on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, winter flounder juveniles are found in water temperatures below 28°C (82° F), depths from 0.1 to 10 meters, and salinities from 5 to 33 ppt. Juveniles over one year old prefer water temperatures below 25°C (77° F), depths from 1 to 50 meters (3 to 164 feet), and salinities between 10 and 30 ppt. For adults, EFH includes bottom habitats including estuaries with a substrate of mud, sand, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, winter flounder adults are found in water temperatures below 25° C (77° F), at depths from 1 to 100 meters (3 to 328 feet), and salinities between 15 and 33 ppt.

EFH for spawning adults consists of bottom habitats, including estuaries with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Spawning adults are found at water temperatures below 15° C (59° F), depths of less than 6 meters (20 feet), except on Georges Bank where they spawn as deep as 80 meters (262 feet), and salinities between 5.5 and 36 ppt. Winter flounder spawn from February through June.

Winter flounder eggs are found inshore on sandy bottoms and algal mats. Approximately six weeks after hatching, larvae become demersal and their left eye migrates to the right side of their body. The coloring of the winter flounder includes shades of light sandy brown, enabling the fish to blend in with the substrate. Juveniles inhabit these inshore areas with sand or sand-silt substrates until they reach one year of age. Adults are found in offshore waters during the warm summer months, where they feed on shrimp, clams, worms, and other invertebrates. Winter flounder feed during the day due to its dependence on eyesight to locate prey. During the winter, adults migrate to inshore coastal areas with sandy, clay, and gravel bottoms. The flounder buries itself so that only the eyes are above the substrate. Winter flounder spawn from winter through springtime in shallow inshore waters, usually at the same location each year.

Winter flounder are demersal and can be found on sandy bottoms similar to those found in the project area, and as a result EFH is likely to be adversely affected by the proposed project. If any adult or juvenile flounder are present at the dredging sites, they would likely vacate the area when dredging begins, however, juveniles may be more vulnerable because of slower swimming speeds.

WINTER SKATE (*Leucoraja ocellata)*

This species occurs from the south coast of Newfoundland and the southern Gulf of St. Lawrence to Cape Hatteras. Its center of abundance is on Georges Bank and in the northern section of the

Mid-Atlantic Bight, but in both areas it is second in abundance to the Little Skate (*Leucoraja erinacea*). It is not quite evident if Winter skate undergo seasonal movements from collection data, however adults were collected in fewer numbers than juveniles during spring and fall Massachusetts inshore trawl surveys.

Adults and juveniles generally range from the shoreline to 371 meters in depth, and most abundant at depths less than 111 meters as year-round residents. Winter skate has been recorded over a temperature range of -1.2 to 19 degrees C and in to sandy and gravelly bottoms and sometimes mud bottoms. Like the Little skate, Winter skate are known to remain buried in depressions during the day and are more active at night, most likely due to diel foraging. Food prey items are generally polychaetes and amphipods, decapods, isopods, bivalves, and fishes. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

WITCH FLOUNDER *(Glyptocephalus cynoglossus)*

EFH for eggs consists of surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Witch flounder eggs are generally found at sea surface temperatures below 13° C (55° F) over deep water with high salinities. Eggs are most often observed during March through October.

Witch flounder eggs are spawned from March through October, with May and June as the peak months. Eggs are spawned close to the bottom of deep pelagic waters, but they rise to the top of the water column where they develop and hatch. Eggs and larvae are found in waters with a temperature between 4° to 13° C (40° to 55° F). After metamorphosis, juveniles become demersal and generally remain in waters from 30 to 150 meters (98 to 492 feet), including the continental slope off Virginia (NOAA, 1999a).

YELLOWTAIL FLOUNDER (*Pleuronectes ferruginea*)

Yellowtail flounder is a right-eye flounder (family *Pleuronectidae*) that ranges in North America from southern Labrador south to Chesapeake Bay (Robins and Ray, 1986). The proposed project area is a designated EFH for eggs, and larvae of this species. Yellowtail flounder eggs are usually found in surface water below 59^{o}F (15^{o}C). They are found in water from 98 to 295 feet (30 to 90 meters) deep with salinities ranging from 32 to 34 ppt. Eggs are most commonly seen from mid-March to July, with a peak from April to June. Yellowtail flounder larvae usually inhabit surface waters from 33 to 295 feet (10 to 90 meters) deep. They prefer waters below 63^{o}F (17^{o}C) and salinities from 32 to 34ppt.

References: www.nero.noaa.gov
www.nefsc.noaa.gov

APPENDIX B

Air Quality Emissions

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
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CHRIS CHRISTIE
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KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

November 4, 2013

Colonel Paul E. Owen, P.E
Commander-NY District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Lieutenant Colonel John C. Becking, P.E (Chris)
Commander-Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Re: Clean Air Act and Superstorm Sandy Coastal Restoration and Repair Projects

Dear Colonel Owen and Colonel Becking:

The purpose of this letter is to assist the United States Army Corps of Engineers (USACE) in complying with the requirements of the Clean Air Act as USACE performs coastal restoration and repair projects in New Jersey.

Superstorm Sandy significantly diminished the protective value of New Jersey's beach and dune system, leaving New Jersey coastal communities vulnerable to damage from future storms. The New Jersey Department of Environmental Protection has been working with your Districts to ensure that federal emergency coastal restoration and repair projects start as quickly as possible.

Emissions of oxides of nitrogen (NO_x) for several of the Authorized but Unconstructed beach and dune repair/restoration projects will be greater than 100 tons/calendar year. As a result, USACE must demonstrate that those projects meet the so-called "General Conformity" requirements of the Clean Air Act. Under the General Conformity rule, federal agencies must work with state governments in a nonattainment area (such as New Jersey) with the goal of ensuring that federal actions conform to the air quality plans established by the state.

USACE must demonstrate compliance for the following projects:

1. Sea Bright to Ocean Township Beach Erosion Control Project (Elberon to Loch Arbour)
2. Manasquan Inlet to Barnegat Inlet
3. Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island)
4. Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island)
5. Great Egg Harbor Inlet to Townsends Inlet

NJDEP does not have the authority to exempt USACE from General Conformity requirements.

Due to the extraordinary nature of the emergency created by Sandy and the ongoing threat to health and safety that would arise from any delay in undertaking these projects, all compliance options should be jointly considered, including invoking the emergency exemption in the Conformity Rules at 40 C.F.R. § 93.153(e), and seeking a Presidential exemption under section 118(b) of the Clean Air Act.

Alternatively, the USACE may comply with General Conformity for the projects by purchasing ozone season NOx allowances created pursuant to the federal Clean Air Interstate Rule (CAIR) (an emissions program created by the United States Environmental Protection Agency to reduce emissions from power generation facilities). The Department requests that USACE give greater weight to allowances from facilities close to New Jersey in its purchases. See N.J.A.C 7:27-18.5(c) Table 2. USACE may also use Surplus NO_x emission Offsets (SNEOs) that were generated by USACE and others as part of the New York - New Jersey Harbor Deepening Project. Further, the Department of Defense may be willing to reallocate to USACE emissions from its emissions budget for Joint Base McGuire and Lakehurst.

Coastal restoration and repair projects will enhance the sustainability of New Jersey's coastline and diminish the impacts of future storms. I would like to acknowledge the coordinated effort between USACE and the Department's staff to identify opportunities for these projects to meet their regulatory obligations and move forward in a timely manner. I appreciate your time and attention to this matter. Should you have any further questions or need for assistance, please do not hesitate to contact Jane Kozinski, Assistant Commissioner, at (609) 292-2795.

Sincerely,

Bob Martin
Commissioner

c: Jane Kozinski, Assistant Commissioner, NJDEP
Chris Salmi, Assistant Director, Division of Air Quality, NJDEP

Attachment B

General Conformity Related Emission Estimates

Emissions have been estimated using project planning information developed by the Philadelphia District, consisting of anticipated equipment types and estimates of the horsepower and operating hours of the diesel engines powering the equipment. In addition to this planning information, conservative factors have been used to represent the average level of engine load of operating engines (load factors) and the average emissions of typical engines used to power the equipment (emission factors). The basic emission estimating equation is the following:

E = hrs x LF x EF

Where:

E = Emissions per period of time such as a year or the entire project.
hrs = Number of operating hours in the period of time (e.g., hours per year, hours per project).
LF = Load factor, an estimate of the average percentage of full load an engine is run at in its usual operating mode.
EF = Emission factor, an estimate of the amount of a pollutant (such as NO_x) that an engine emits while performing a defined amount of work.

In these estimates, the emission factors are in units of grams of pollutant per horsepower hour (g/hphr). For each piece of equipment, the number of horsepower hours (hphr) is calculated by multiplying the engine's horsepower by the load factor assigned to the type of equipment and the number of hours that piece of equipment is anticipated to work during the year or during the project. For example, a crane with a 250-horsepower engine would have a load factor of 0.43 (meaning on average the crane's engine operates at 43% of its maximum rated power output). If the crane were anticipated to operate 1,000 hours during the course of the project, the horsepower hours would be calculated by:

250 horsepower x 0.43 x 1,000 hours = 107,500 hphr

The emissions from diesel engines vary with the age of an engine and, most importantly, with when it was built. Newer engines of a given size and function typically emit lower levels of pollutants than older engines. The NO_x emission factors used in these calculations assume that the equipment pre-dates most emission control requirements (known as Tier 0 engines in most cases), to provide a reasonable "upper bound" to the emission estimates. If newer engines are actually used in the work, then emissions will be lower than estimated for the same amount of work. In the example of the crane engine, a NO_x emission factor of 9.5 g/hphr would be used to estimate emissions from this crane on the project by the following equation:

$$\frac{107{,}500 \text{ hphr} \times 9.5 \text{ g } NO_x/\text{hphr}}{453.59 \text{ g/lb} \times 2{,}000 \text{ lbs/ton}} = 1.1 \text{ tons of } NO_x$$

As noted above, information on the equipment types, horsepower, and hours of operation associated with the project have been obtained from the project's plans and represent current best estimates of the equipment and work that will be required. Load factors have been obtained from various sources depending on the type of equipment. Marine engine load factors are primarily from a document associated with the New York and New Jersey Harbor Deepening Project (HDP): "Marine and Land-Based Mobile Source Emission Estimates for the Consolidated Schedule of 50-Foot Deepening Project, January 2004," and from EPA's 1998 Regulatory Impact Analysis (RIA): "EPA Regulatory Impact Analysis: Control of Commercial Marine Vessels." Land-side nonroad equipment load factors are from the documentation for EPA's NONROAD emission estimating model, "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, EPA420-P-04-005, April 2004."

Emission factors have also been sourced from a variety of documents and other sources depending on engine type and pollutant. The NO_x emission factors for marine engines have been developed primarily from EPA documentation for the Category 1 and 2 standards (RIA, "Control of Emission from Marine Engines, November 1999) and are consistent with emission factors used in documenting emissions from the HDP, while the VOC emission factors for marine engines are from the Port Authority of New York and New Jersey's "2010 Multi-Facility Emissions Inventory" which represent the range of marine engines operating in the New Jersey harbor and coastal region in terms of age and regulatory tier level. Nonroad equipment NO_x emission factors have been derived from EPA emission standards and documentation, while the nonroad VOC emission factors have been based on EPA's Diesel Emissions Quantifier (DEQ, accessed at: *www.epa.gov/cleandiesel/quantifier/*), run for moderately old equipment (model year 1995). On-road vehicle emission factors have also been developed from the DEQ, assuming a mixture of Class 8, Class 6, and Class 5 (the smallest covered by the DEQ) on-road trucks.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions. Actual project emissions will be estimated and tracked during the course of the project and will be based on the characteristics and operating hours of the specific equipment chosen by the contractor to do the work.

The following pages summarize the estimated emissions of pollutants relevant to General Conformity, NO_x and VOC, in sum for the project and by calendar year based on the schedule information also presented (in terms of operating months per year). Following this summary information are project details including the anticipated equipment and engine information developed by the Philadelphia District, the load factors and emission factors as discussed above, and the estimated emissions for the project by piece of equipment.

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
General Conformity Related Emission Estimates
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Summary of emissions estimated using NAP-provided equipment and activity data

Project	Total Emissions NOx (tons)	VOC
Barnegat Inlet to Little Egg Inlet (LBI)	973.7	32.0

Project	Cubic yards	Estimated In-State Emissions, tons per year 2013	2014	2015	2016	2017	2018
NOx							
Barnegat Inlet to Little Egg Inlet (LBI)	7,800,000	0.0	454.4	519.3	0.0	0.0	0.0
VOC							
Barnegat Inlet to Little Egg Inlet (LBI)	7,800,000	0.0	14.9	17.1	0.0	0.0	0.0

Schedule by month:

Project	Total months	Calendar months of operation 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	15		June	Aug			

Months per year:

Project	Total months	Operating months per year 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	15		7	8			

Months per ozone season (the ozone season is 1 May - 30 Sept each year):

Project	Total O_3 Season Months	Operating months per ozone season 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	8		4	4			

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Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors NOx (g/hphr or g/mi)	Emission factors VOC (g/hphr or g/mi)	Emissions In state waters NOx (tons)	Emissions In state waters VOC (tons)	Emissions Out of state waters NOx (assume all mob/demob in state waters)	Emissions Out of state waters VOC (assume all mob/demob in state waters)
Marine - mob/demob											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	273.6	0.80	9.7	0.37	21.1	0.80	0.0	0.0
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	273.6	0.40	7.5	0.20	0.9	0.02	0.0	0.0
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	273.6	0.69	9.7	0.37	2.0	0.08	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	273.6	0.50	9.7	0.37	0.1	0.01	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	1	200	273.6	0.40	7.5	0.20	0.2	0.00	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	273.6	0.69	9.7	0.37	1.0	0.04	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	273.6	0.43	7.5	0.20	0.0	0.00	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	0	0.59	9.5	0.19	0.0	0.00	0.0	0.0
Land-side, onroad	Truck, small			680		10.3	0.54	0.3	0.01	0.0	0.0
Mob/Demob subtotal								**25.8**	**1.0**	**0.0**	**0.0**
Marine											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	8,172	0.80	9.7	0.37	514.3	19.62	114.8	4.4
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	8,172	0.40	7.5	0.20	21.6	0.58	5.4	0.1
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	8,172	0.80	7.5	0.20	60.3	1.61	101.9	2.7
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	8,172	0.69	9.7	0.37	60.3	2.30	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	8,172	0.40	7.5	0.20	1.4	0.04	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	8,172	0.50	9.7	0.37	4.4	0.17	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	8,172	0.40	7.5	0.20	1.1	0.03	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	2	200	8,172	0.40	7.5	0.20	10.8	0.29	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	2	40	8,172	0.40	7.5	0.20	2.2	0.06	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	8,172	0.43	9.5	0.20	191.4	4.03	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	8,172	0.43	9.5	0.20	7.4	0.15	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	8,172	0.69	9.7	0.37	30.1	1.15	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	8,172	0.43	7.5	0.20	1.2	0.03	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	12,470	0.59	9.5	0.19	31.6	0.63	0.0	0.0
Land-side, nonroad	Other diesel engines	1	87	9,390	0.59	9.5	0.19	5.0	0.10	0.0	0.0
Land-side, onroad	Truck, small	1		12,722		10.3	0.54	5.1	0.26	0.0	0.0
Beachfill subtotal									**31.0**	**222.1**	**7.2**
Total project emissions								**973.7**	**32.0**	**222.1**	**7.2**

On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.
Assumed average on-road speed, mph: 35

U.S. Army Corps of Engineers
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Barnegat Inlet to Little Egg Inlet (LBI)
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Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors NOx (g/hphr or g/mi)	Emission factors VOC (g/hphr or g/mi)	Emissions In state waters NOx	Emissions In state waters VOC (tons)	Emissions Out of state waters NOx (assume all mob/demob in state waters)	Emissions Out of state waters VOC (assume all mob/demob in state waters)
Marine - mob/demob											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	273.6	0.80	9.7	0.37	21.1	0.80	0.0	0.0
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	273.6	0.40	7.5	0.20	0.9	0.02	0.0	0.0
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
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Derrick Barge - Prime Engine	Dredge auxiliary	1	200	273.6	0.40	7.5	0.20	0.2	0.00	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	273.6	0.69	9.7	0.37	1.0	0.04	0.0	0.0
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Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
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Total project emissions								**973.7**	**32.0**	**222.1**	**7.2**

On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.
Assumed average on-road speed, mph: 35

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
Conformity Related Emission Estimates
Factors used in these project calculations
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Load Factors / Emission Factors - Marine

		Emission factors, g/hphr	
Marine Engines	**Load Factor**	**NOx**	**VOCs**
Blast barge - auxiliary	0.40	7.50	0.20
Blast barge - compressor	0.43	7.50	0.20
Booster pump	0.43	9.50	0.20
Clamshell - conventional	0.43	9.70	0.20
Clamshell - diesel electric	0.43	9.70	0.20
Crewboat auxiliary	0.40	7.5	0.20
Crewboat propulsion	0.50	9.70	0.37
Dredge auxiliary	0.40	7.50	0.20
Excavator - conventional	0.59	9.70	0.20
Excavator - diesel hydraulic	0.59	9.70	0.20
Hopper Dredge, auxiliary	0.40	7.50	0.20
Hopper Dredge, compressor	0.80	7.50	0.20
Hopper Dredge, propulsion	0.66	9.70	0.37
Hopper Dredge, pumps	0.80	7.50	0.20
Hydraulic Pipeline Dredge - Main Pump	0.80	9.70	0.20
Hydraulic Pipeline Dredge - Secondary	0.43	7.50	0.20
Hydraulic Pipeline Dredge - El. Generator	0.43	7.50	0.20
Ocean tow - auxiliary	0.40	7.5	0.20
Ocean tow - propulsion	0.69	9.70	0.37
Other diesel engines	0.75	11.00	0.20
Tender auxiliary	0.40	7.5	0.20
Tender propulsion	0.69	9.70	0.37

Load Factors / Emission Factors - Land-side

		Emission factors, g/hphr	
Equip Types	**Load Factor**	**NOx**	**VOCs**
Backhoe	0.21	9.50	0.19
Booster pump	0.43	9.50	0.19
Compactor	0.59	9.50	0.19
Compressor	0.43	9.50	0.19
Concrete saw	0.59	9.50	0.19
Conveyor	0.43	9.50	0.19
Crane	0.43	9.50	0.19
Crawler tractor	0.21	9.50	0.19
Dozer	0.59	9.50	0.19
Drilling rig	0.43	9.50	0.19
Excavator	0.59	9.50	0.19
Forklift	0.59	9.50	0.19
Generator	0.43	9.50	0.19
Grader	0.59	9.50	0.19
Light plants	0.43	9.50	0.19
Off-road truck	0.59	9.50	0.19
Other diesel engines	0.57	9.50	0.19
Pump	0.43	9.50	0.19
Rubber tired loader	0.59	9.50	0.19
Screen	0.43	9.50	0.19
Skid Steer Loader	0.21	9.50	0.19
Winch	0.43	9.50	0.19

Emission factor source: EPA emission standards (NOx); PANYNJ air emissions inventory (VOCs)
2010 PANYNJ Emissions Inventory, marine vessel emisison factors used as a reasonable surrogate for the variety of vessels in use in the New York/New Jersey area in the absence of specific information regarding the vessels to be used on any specific project.

2010 PANYNJ Emissions Inventory		**VOC**
Propulsion (g/kWhr)	Table 5.35	0.50
Propulsion (g/hphr)		0.37
Auxiliary (g/kWhr)	Table 5.35	0.27
Auxiliary (g/hphr)		0.2

Off-road: DEQ results for representative 600 hp crawler tractor (MY 1995)

Default hrs/year:	936	
Horsepower:	600	
Emissions, short tons per year:		0.1925
Estimated EF, g/hphr:*		0.183
Conversion factor, VOC/THC		1.053
Estimated VOC EF, g/hphr:		0.19

* Hydrocarbons provided by DEQ converted to VOC

Assumed LF for off-road: 0.59 (from PANYNJ Emissions Inventory)
Conversion factor 0.7457 kW/hp
g/kWhr x kW/hp = g/hphr

On-road emission factors
DEQ results (using MOVES)
Short Haul | Class 6 (19,501-26,000 lbs); Run with defaults, 2004 MY assumed, CY 2015, 1 truck
Short Haul | Class 8a (33,001-60,000); Run with Class 7 defaults (no Cl 8 short haul), 2004 MY assumed, CY 2015
Short Haul | Class 5 (16,001-19,500 lbs); Run as closest to 8,600-lb vehicle available in DEQ, 2005 MY, 2015 CY

Truck type	**miles**	**gallons**		**NOx**	**VOC***
Short Haul | Class 6	45,149	5,526	tpy	0.4061	0.038
			g/mi	8.16	0.764
Short Haul | Class 8a	45,149	6,060	tpy	0.5334	0.033
			g/mi	10.72	0.669
Short Haul | Class 5	19,610	2,448	tpy	0.2232	0.012
			g/mi	10.33	0.536

* Hydrocarbons provided by DEQ converted to VOC

Lookup table for emission estimating equations:

	Emission factors, g/mile	
	NOx	**VOC***
Truck, large	10.72	0.67
Truck, medium	8.16	0.76
Truck, small	10.33	0.54

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

REPLY TO
ATTENTION OF

CENAP-PL-E

United States Army Corps of Engineers, Philadelphia District
FINAL General Conformity Determination Notice

On October 30, 2012, New York State (DR-4085) and New Jersey State (DR-4086) declared Super Storm Sandy a Major Disaster. In response to the unprecedented breadth and scope of the damages sustained along the New York and New Jersey coastlines, the U.S. Congress passed Public Law (PL) 113-2 "Disaster Relief Appropriations Act 2013", also known as House Resolution (H.R.) 152-2 Title II which was signed into law on January 29, 2013. PL 113-2, which states "That the amounts... are designated by the Congress as being for an emergency requirement pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985", provides funding for numerous projects to repair, restore and fortify the coastline in both states as a result of the continuing emergency as people and property along the coast remain in a vulnerable condition until the coastline is restored and fortified. To this end, New Jersey Governor Christie signed Executive Order No. 140 on September 25, 2013, which authorized the means for the State to acquire all lands outside the State's ownership needed to ensure the sustainability of its coastline, and improve safeguards to diminish the impacts of future storm events, including flood protection for coastal communities that were impacted by the storm. To protect the investments by the Federal, State, local governments and individuals to rebuild damaged sites, it is imperative that these emergency disaster relief projects proceed as expeditiously as possible.

There are a number of coastal projects that were previously proposed and authorized but unconstructed (ABU). The Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island) [WRDA 2000, Title 1, §101a (1)] project is an ABU project that is anticipated to start construction after April 2014 and this document represents the General Conformity Determination required under 40CFR§93.154 by the United States Army Corps of Engineers (USACE). USACE is the lead Federal agency that will contract, oversee, approve, and fund the project's work, and thus is responsible for making the General Conformity determination for this project.

USACE has coordinated this determination with the New Jersey Department of Environmental Protection (NJDEP) [see NJDEP letter provided as Attachment A]. The Philadelphia-Wilmington-Atlantic City PA-New Jersey-Maryland-Delaware nonattainment area is currently classified as "marginal" nonattainment for the 2008 8-hour ozone standard. Ozone is controlled through the regulation of its precursor emissions, which include oxides of nitrogen (NOx) and volatile organic compounds (VOCs).

The equipment associated with this project that is evaluated under General Conformity (40CFR§93.153) includes direct and indirect nonroad diesel sources, such as dredging equipment and land based earth-moving equipment. The primary precursor of concern with this type of equipment is NOx, as VOCs are generated at a significantly lower rate. The NOx emissions associated with the project are estimated to range from 455 to 520 tons per calendar year for 2014 and 2015 respectively (see emissions estimates provided as Attachment B). The project exceeds the NOx trigger level of 100 tons in any calendar year and as a result, the USACE is required to fully offset the emissions of this project. The project does not exceed the VOC trigger level of 50 tons in any calendar year.

USACE is committed to fully offsetting the emissions generated as a result of the disaster relief coastal work associated with this project. USACE recognizes that the feasibility and cost-effectiveness of each offset option is influenced by whether the emission reductions can be achieved without introducing delay to the construction schedule that would prevent timely disaster relief.

USACE will demonstrate conformity with the New Jersey State Implementation Plan by utilizing the emission offset options listed below. The demonstration can consist of any combination of options, and is not required to include all or any single options to meet conformity. The options for meeting general conformity requirements include the following:

a. Emission reductions from project and/or non-project related sources in an appropriately close vicinity to the project location. In assessing the potential impact of this offset option on the construction schedule, USACE recognizes the possibility of lengthening the time period in which offsets can be generated as appropriate and allowable under the general conformity rule (40CFR§93.163 and §93.165).
b. Use of a portion of the Department of Defense Joint Base McGuire and Lakehurst State Implementation Plan emissions budget, as determined by the NJDEP, and in coordination with the United States Environmental Protection Agency (EPA).
c. Use of Clean Air Interstate Rule (CAIR) ozone season NOx Allowances with a distance ratio applied to allowances, similar to the one used by stationary sources found at N.J.A.C 7:27-18.5(c) Table 2.
d. Use of Surplus NOx Emission Offsets (SNEOs) generated under the Harbor Deepening Project (HDP). As part of the mitigation of the HDP, USACE and the Port Authority of New York & New Jersey developed emission reduction programs coordinated through the Regional Air Team (RAT). The RAT is comprised of the USACE, NJDEP, EPA, New York State Department of Environmental Conservation, and other stakeholders. SNEOs will be applied in concurrence with the agreed upon SNEO Protocols to ensure the offsets are real, surplus, and not double counted.

Due to unpredictable nature of dredge-related construction and the preliminary estimates of sand required to restore the integrity of the coastlines, the project emissions will be monitored as appropriate and regularly reported to the RAT to assist the USACE in ensuring that the project is fully offset.

In summary, USACE will achieve conformity for NOx using the options outlined above, as coordinated with the NJDEP and coordinated through the RAT.

19 Dec 2013
Date

John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

APPENDIX C

Correspondence

Post-1999 EIS Natural Resource Agency Coordination Letters

24 September 1999 PCOE letter to NMFS: Response to NMFS recommendations to eliminate borrow areas B and E from the selected plan and provide an EFH assessment.

13 January 2000 USFWS letter to PCOE: providing recommendations to minimize impacts: eliminate Borrow Areas B and E, avoid creation of deep pits, rotational dredging, and avoid shellfish and finfish spawning areas.

27 June 2000: **NMFS letter to PCOE**: providing conservation recommendations for EFH. Identify Borrow Areas A, D1, and D2 and recommend monitoring.

10 April 2001: PCOE letter to USFWS: submittal of Programmatic Biological Assessment.

27 December 2005: USFWS letter to PCOE: Final Programmatic Biological Opinion from USFWS.

11 October 2006 USFWS letter to PCOE: ESA coordination and response to streamlined (Tier 2) consultation. Requesting documentation notifying affected municipalities to provide site specific Beach Management Plans.

19 September 2006 PCOE letter to USFWS: Requesting streamline (Tier 2) consultation for Surf City.

1 February 2007 PCOE letter to USFWS: ESA coordination to confirm non-discretionary obligation to ensure municipality responsibility for beach management planning.

27 February 2007 USFWS letter to PCOE: Response to formal (ESA) consultation request for Surf City.

18 August 2008 PCOE letter to USFWS: Requesting streamlined (Tier 2) consultation (ESA) for Harvey Cedars.

6 October 2008 USFWS letter to PCOE: Response to ESA consultation for Harvey Cedars.

19 April 2010 NMFS letter to PCOE: EFH assessment review. Identify impacts to summer flounder EFH at Borrow Area A. FWCA coordination suggesting seasonal restrictions for inlet dredging.

9 June 2010 PCOE letter to NMFS: ESA coordination and hopper dredge observer waiver request using Discarded Military Munitions screens.

18 January 2011 PCOE letter to USFWS: Requesting streamlined Tier 2 consultation for Surf City.

9 June 2011 USFWS letter to PCOE: Provides Tier 2 consultation for Surf City.

6 July 2011 PCOE letter to USFWS: Requesting streamlined Tier 2 consultation for Brant Beach.

19 March 2012 USFES letter to PCOE: ESA coordination letter with suggested recommendations for seabeach amaranth.

20 September 2012 PCOE letter to NMFS: Notification of BOEM serving as a cooperative agency and request any comments/concerns relevant to offshore borrow areas.

20 September 2012 PCOE letter to USFWS: Notification of BOEM serving as a cooperative agency and request any comments/concerns relevant to offshore borrow areas.

6 February 2013 PCOE letter to USFWS: Requesting streamlined Tier 2 consultation for Harvey Cedars, Surf City, and Brant Beach.

28 February 2013 USFWS letter to PCOE: Response for Tier 2 streamlined consultation for Harvey Cedars, Surf City, and Brant Beach.

6 August 2013 PCOE letter to NMFS: notification of plan to complete construction at remaining beaches under the Disaster Relief Appropriations Act; ESA and EFH coordination; and names BOEM as cooperating agency.

8 August 2013 PCOE letter to USFWS: Requesting consultation for Long Beach Township, Ship Bottom Borough, and Beach Haven Borough.

29 August 2013 USFWS letter to PCOE: Response for Tier 2 streamlined consultation for renourishment of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough.

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439, Trenton, NJ 08625-0439
Fax # (609) 777-3656
www.state.nj.us/dep/landuse

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

Bernard J. Moore, Administrator
Division of Engineering and Construction
1510 Hooper Avenue
Toms River, New Jersey 08753

JUL 27 2000

RE: Land Use Regulation Program File No. 1500-99-0001.2
Federally Authorized Beachfill Project from
Barnegat Inlet to Little Egg Inlet

Dear Mr. Moore:

This is in reference to your letter dated June 1, 2000 regarding the above referenced project. As you are aware, the Final Consistency Determination issued by this office required that in the PED phase of the project the process of identifying lands that can be used for public access and parking shall be coordinated with the Land Use Regulation Program, and must address the items listed below. I would like to establish a schedule for completing these outstanding items and hoped you could provide this schedule at our quarterly Project Status Coordination Meeting, which is to be held on August 3, 2000. I would also like to get your agreement to provide a status report on this project at each of our quarterly meetings.

a) The Final Report recommends only additional parking in North Beach. The NJDEP Division of Engineering and Construction has notified the Municipality of Long Beach Township by letter dated December 7, 1999 the that there is insufficient public parking and access to the beach from Long Beach Boulevard in Loveladies as well, and suggests 3 parking areas in Loveladies at Block 20-68, Lot1, Block 21.10, Lot 1, and the Station Avenue paper-street. It is my understanding that your staff has indicated that they have not begun looking into potential parking and access areas in North Beach. This appears to conflicts with the information provided in the ACOE's Final Feasibility Report.

b) Please identify the locations of the 811 public parking spaces in Loveladies, and the locations of the 120 existing parking spaces in North Beach.

c) Please provide a map showing all existing and proposed parking areas, and identifying the specific number of parking spaces.

d) The Final Feasibility Plan identifies 3 sites in North Beach for potential future parking of 100 cars, however, lot 18.67 is not a vacant lot. There are relatively new houses on the tract, therefore, this does not appear to be a feasible parking area. Provide a plan for the parking areas on North Beach tracts 18.35, 18.11, and a substitute lot for 18.67, or for other sites that may be identified for parking. The plan shall include, but not limited to, the minimum number of parking spaces proposed at

each site, and details regarding whether grading, the placement of gravel, or paving will occur. Provide the same information for the 3 potential parking areas in Loveladies at Block 20-68, Lot1, Block 21.10, Lot 1, and the Station Avenue paper street, or for other sites that may be identified for parking.

e) Provide a schedule for acquisition for the North Beach and Loveladies tracts, or other equivalent proposed parking areas. Acquisition and necessary improvements must occur prior to the placement of sand in the North Beach and Loveladies sections of Long Beach Township.

f) The Final Feasibility Report that is under review recommends tract 18.65 for proposed public access in North Beach, however, this site is already an existing public access point in North Beach. Therefore, it appears that the final plan proposes 3 access points for the 1.3 mile area, which is less than 1 per ¼ mile required by the Program. We need further information that there will be a minimum of 1 access point every ¼ mile in North Beach.

g) If acquisition of the tracts in North Beach is untenable, the Final Feasibility Plan calls for the local sponsor to provide parking on Long Beach Boulevard by removal of the bike paths and median. This does not appear to be a reasonable alternative to providing parking lots as it will cause a hazard to pedestrians and bicyclers, and pose a traffic hazard. We ask that it be removed from consideration.

h) The ACOE plan calls for the removal of current restrictions that prohibit parking on one side of streets from 9:00 am Wednesday through 9:00 pm Sunday. To gain the maximum public use from existing parking this should be revised to allow parking to begin early in the morning, for example 6:00 am, and allow parking every day of the week.

i) The final location an dimensions of the access points and dune walkovers shall be coordinated with the sponsor, the local community, and the Land Use Regulation Program, and shall be designed in accordance with N.J.A.C. 7:7E-3A.3 Standards Applicable to Dune Creation and Maintenance. A "roll out boardwalk" structure is proposed for the dune walkovers. Be advised that this rule states that the construction of elevated dune walkover structures, particularly at municipal street ends and other heavily used beach access points, is preferred to the construction of pathways or walkways through the dunes.

If you have any questions regarding this letter, or my requests, please do not hesitate to call me at (609) 984-3444.

Sincerely,

Richard H. Kropp, P.E.
Director
Land Use Regulation Program

Date 7/27/00

c: Cari Wild, Assistant Commissioner, Natural & Historic Resources
Robert Callegari, U.S. ACOE, Philadelphia District

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Land Use Regulation
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JON S. CORZINE
Governor

LISA P. JACKSON
Commissioner

JUL 2 0 2006

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Chief, Planning Division
Department of the Army
Philadelphia District, Corps of Engineers
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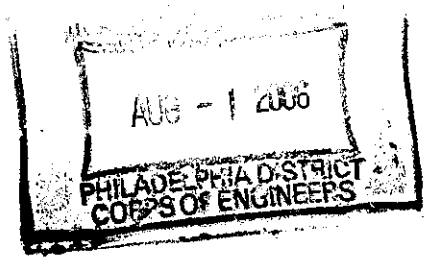
100 Penn Square East
Philadelphia, Pennsylvania 19107-3391



RE: Barnegat Inlet to Little Egg Inlet Final Feasibility Report and Integrated Final Environmnetal Impact Statement
Federal Consistency Determination and Section 401 Water Quality Certification
Land Use Regulation Program File No. 1500-99-0001.1 & .2

Dear Mr. Arabatzis:

This letter is in response to your request dated May 24, 2006 requesting a letter of condition compliance for the previously issued Federal Consistency Determination and Section 401 Water Quality Certification (Division of Land Use Regulation File No. 1500-99-0001.1 & .2.

Proposed Project

The proposed project provides shore protection and storm damage reduction for communities between Barnegat Inlet and Little Egg Inlet (Long Beach Island), Ocean County, New Jersey. Currently, the communities of Harvey Cedars, Surf City, Ship Bottom, Beach Haven, and portions of Long Beach Township (Brant Beach, Beach Haven Crest, Brighton Beach, Peahala Park, Beach Haven Park, Haven Beach, Beach Haven Terrace, Beach Haven Gardens, Spray Beach, North Beach Haven, Beach Haven Heights, Beach Haven Inlet and Holgate) are the subject of this Federal Consistency condition compliance letter. The communities of Loveladies and North Beach, both in Long Beach Township, are not the subject of this Consistency Determination condition compliance letter due to the inability of those communities to comply with the Public Access portion of the previously issued Federal Consistency. The previously approved plan was for the construction of a beach berm and sand dune restoration utilizing sand from approved offshore borrow areas. Funding restraints have resulted in the segmentation and phasing of the storm reduction project.

The proposed beach nourishment project will create a 125-foot wide beach berm at elevation +8.0-feet (NAVD) and will taper on a slope of 10H:1V. The proposed beach berm will actually have varying widths depending on site conditions but will not exceed a maximum width of 125-feet. Sand dunes will be constructed to an elevation of +22.0-feet (NAVD) with a crest width of 30-feet and a slope of 5H:1V. Dune grasses and 547,000 linear feet of sand fencing will be placed through the dune system for stabilization. Initial construction will require placement of a portion of the 7 to 9 million cubic yards of sand fill. About 2 million cubic yards of sand would be required for periodic nourishment, on average, at 7-year intervals for a period of 50-years. All sand for the proposed beach fill and dune creation will be taken from previously designated, and approved, offshore borrow areas using a hydraulic dredge. The project will also provide public access throughout all applicable municipalities with pedestrian (including handicapped) and vehicular cross-over structures. It is the requirement of the non-Federal sponsor to acquire all public access easements for this Consistency Determination to be valid.

The Division has reviewed the information and specification plans for the proposed project provided to this office and has determined that the following are the status of the conditions of the original Federal Consistency Determination. **This consistency determination is issued subject to compliance with ALL of the conditions of the original Federal Consistency Determination.**

Endangered or Threatened Wildlife Species Habitat (N.J.A.C. 7:7E-3.38) and Critical Wildlife Habitat (N.J.A.C. 7:7E-3.39)

The original Federal Consistency Determination required the ACOE and the non-federal sponsor to coordinate with all of the municipalities to develop, adopt and implement a comprehensive beach nesting bird management plan, with the assistance of the NJDEP, Endangered and Nongame Species Program (ENSP) and the US Fish and Wildlife Service (USFWS). In addition, a subsequent Federal Consistency Modification (DLUR #1500-02-0007.1 CDT 050001) for the placement of sand within the Borough of Harvey Cedars required the Borough to adopt a management plan for the protection of endangered and threatened species. This management plan needed to be approved by the USFWS and ENSP by October 1, 2006. It is the responsibility of the non-federal sponsor to ensure that the plan is adopted and implemented.

The USFWS, NGESP, ACOE, DLUR and BEC all agreed, at a meeting a few months back, that all LBI municipalities will be required through the State Aid Agreement to develop a management plan based upon the Sea Bright plan and must coordinate with USFWS by deadline. Per the State Aid Agreement all municipalities must comply with the USFWS "Guidelines" until the plan is approved by USFWS. This segment of the Consistency Determination is outstanding.

Coastal Engineering (N.J.A.C. 7:7E-7.11) & Public Access to the Waterfront (N.J.A.C. 7:7E-8.11)

Public access, including parking where appropriate, must be provided to publicly funded shore protection structures and to waterfront areas created by public projects unless such access would create a safety hazard to the user. Physical barriers or local regulations which unreasonably interfere with access to, along, or across a structure are prohibited.

Due to the fact that the communities of Loveladies and North Beach, both in Long Beach Township, have not been able to obtain the appropriate conservation easements for public access, these communities are not a part of this Consistency Determination condition compliance letter. However, as part of the original Federal Consistency Determination, all other communities listed above must comply with the following conditions prior to the commencement of any proposed work:

In the PED phase of the project, the process of identifying lands that can be used for public access and parking shall be coordinated with the Land Use Regulation Program, and must address the following items:

(a) The Final Report recommends only additional parking in North Beach. The NJDEP, Division of Engineering and Construction has notified the Municipality of Long Beach Township by letter dated December 7, 1999 that there is insufficient public parking and access to the beach from Long Beach Boulevard in Loveladies as well. The sponsor suggests 3 parking areas in Loveladies at Block 20-68, Lot 1, Block 21.10, Lot 1, and the Station Avenue paper-street. By personal communication they indicated that they have not begun looking into potential parking and access areas in North Beach. This conflicts with the information provided in the ACOE's Final Feasibility Report.

(b) Identify the locations of the 811 public parking spaces in Loveladies, and the locations of the 120 existing parking spaces in North Beach.

(c) Please provide a map showing all existing and proposed parking areas, and identifying the specific number of parking spaces.

(d) The Final Feasibility Plan identifies 3 sites in North Beach for potential future parking of 100 cars, however, lot 18.67 is not a vacant lot. There are relatively new houses on the tract, therefore, this does not appear to be a feasible parking area. Provide a plan for the parking areas on North Beach tracts 18.35, 18.11 and a substitute lot for 18.67, or for other sites that may be identified for parking. The plan shall include, but not limited to, the minimum number of parking spaces proposed at each site, and details regarding whether grading, the placement of gravel, or paving will occur. Provide the same information for the 3 potential parking areas in Loveladies at Block 20-68, Lot 1, Block 21.10, Lot 1, and the Station Avenue paper-street, or for other sites that may be identified for parking.

(e) Provide a schedule for acquisition for the North Beach and Loveladies tracts, or other equivalent proposed parking areas. Acquisition and necessary improvements must occur prior to the placement of sand in the North Beach and Loveladies sections of Long Beach Township.

(f) The Final Feasibility Report that is under review recommends tract 18.65 for proposed public access in North Beach, however this site is already an existing public access point in North Beach. Therefore, it appears that the final plan proposes 3 access points for the 1.3-mile area, which is less than 1 per ¼-mile required by the Program. Please demonstrate that there will be a minimum of 1 access point every ¼-mile in North Beach.

(g) If acquisitions of the tracts in North Beach is untenable, the Final Feasibility Plan calls for the local sponsor to provide parking on Long Beach Boulevard by removal of the bike paths

and median. The Program has determined that this is not a reasonable alternative to providing parking lots as it will cause a hazard to pedestrians and bicyclers, and pose a traffic hazard. This alternative must be removed from the plan.

(h) The ACOE plan calls for the removal of current restrictions that prohibit parking on one side of streets from 9:00 a.m. Wednesday through 9:00 p.m. Sunday. To gain the maximum public use from existing parking this should be revised to allow parking to begin early in the morning, for example 6:00 a.m., and allow parking every day of the week.

(i) The final location and dimensions of the access points and dune walkovers shall be coordinated with the sponsor, the local community, and the Land Use Regulation Program, and shall be designed in accordance with N.J.A.C. 7:7E-3A.3 Standards Applicable to Dune Creation and Maintenance. A "roll-out boardwalk" structure is proposed for the dune walkovers. Be advised that this rule states that the construction of elevated dune walkover structures, particularly at municipal street ends and other heavily used beach access points, is preferred to the construction of pathways or walkovers through the dunes.

These conditions have not been satisfied for the Municipalities of North Beach and Loveladies, both in Long Beach Township, due to fact that neither community has verified and/or obtained any public access easements, including parking spaces and restroom facilities. As a result, North Beach and Loveladies have been removed from the Federal Consistency Determination and are no longer a part of the final project.

The remaining communities within Long Beach Island, as listed above in this letter, have or are in the process of verifying and/or obtaining all of the necessary public access easements that were required under the original Federal Consistency Determination. However, no work may commence until such time as all of the required public access easements are obtained either by the Corps or the local sponsor. This shall include, but not be limited to, all required parking spaces, access points and restroom facilities.

Surf Clam Areas (N.J.A.C. 7:7E-3.3) & Prime Fishing Areas (N.J.A.C. 7:7E-3.4)

This segment of the Consistency Determination required that the ACOE use borrow areas A, D1 and D2 for project construction. The proposed borrow areas were conditionally acceptable to the Division under these rules.

This condition is complied with, as those designated borrow areas are to be utilized for the beach nourishment project.

Submerged Infrastructure Routes (N.J.A.C. 7:7E-3.12)

Because of the presence of offshore cable lines in the vicinity of borrow areas D-1 and D-2, the ACOE was required to coordinate with AT&T to determine the appropriate buffer zone for dredging operations.

The required coordination with AT&T has taken place to ensure that an appropriate buffer zone is established during dredging operations. The ACOE will continue coordination efforts as circumstances arise. This condition has been complied with to the satisfaction of the Division.

Dunes (N.J.A.C. 7:7E-3.16) & Standards Applicable to Dune Creation and Maintenance (N.J.A.C. 7:7E-3A.3)

This segment of the Consistency Determination stated that any community wishing special beach access appurtenances that would require construction of additional walkovers, vehicle access points, or the modification of proposed access paths shall coordinate with the Division of Land Use Regulation during the PED phase of the project, and shall comply with the Dunes (N.J.A.C. 7:7E-3.16) and Standards for Beach and Dune Activities (N.J.A.C. 7:7E-3A) rules.

The proposed beach access paths and vehicle access points complied with all applicable rules under the original Consistency Determination. The ACOE and the non-federal sponsor both realize that any change in the proposed access points, whether they are physical changes or location changes, would require authorization from the Division. This segment of the Consistency Determination has been complied with satisfactorily.

Historic & Archaeological Resources (N.J.A.C. 7:7E-3.36)

This segment of the Consistency Determination required the ACOE to address recommendations made by the NJDEP, State Historic Preservation Office. These included the following:

(a) The USACOE shall complete Section 106 (of the National Historic Preservation Act) coordination with the Historic Preservation Office to identify historic properties and mitigate and/or avoid effects to historic properties. This coordination shall include, but not be limited to the following:

1. Cultural resource investigations within all areas of potential project effects shall be completed. These investigations shall be coordinated with the Historic Preservation Office.

2. A program of controlled, periodic archaeological monitoring shall be undertaken during and immediately following, the beach replenishment operation to identify any archaeological materials originating in the offshore sand borrow areas. The details of this program shall be coordinated with the Historic Preservation Office.

3. A program to ensure protection of magnetic anomalies identified along the shoreline and in near shore areas shall be undertaken during the placement of sand. The details of this program shall be coordinated with the Historic Preservation Office.

A January 22, 2004 letter from the New Jersey Historic Preservation Office stated that "the proposed project will have no effect to prehistoric or historic terrestrial cultural resources in the near shore zone, the tidal zone or along the shoreline within the four shoreline/near shore zone survey areas." In addition, the ACOE is coordinating a cultural monitoring program prior to project construction. The program is being led by the Historic Preservation Office and the ACOE's Environmental Resources Branch (Philadelphia District), and is being performed by Hunter Research of Trenton, New Jersey. The ACOE has complied with the requirements of this segment of the Consistency Determination.

This letter is written based on those conditions that have been complied with from the original Federal Consistency Determination. Please be aware that **ALL** conditions stated in that Consistency Determination and as outlined above must be complied with prior to any work taking place within the project area.

If you have any questions regarding this letter please do not hesitate to call John Policarpo of our staff at (609) 984-0288.

Sincerely,

Kevin J. Broderick, Manager
Division of Land Use Regulation

7/20/2006
Date

cc: Kim Springer, NJDEP, Office of Coastal Planning

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

REPLY TO
ATTENTION OF

Planning Division

07 NOV 2003

HISTORIC PRESERVATION OFFICE

CONCUR

04-0258-1 DF
A2004-143
ATTN: Robert Dunn

JAN 22 2004
DEPUTY STATE HISTORIC
PRESERVATION OFFICER

Ms. Dorothy P. Guzzo, Administrator
New Jersey Historic Preservation Office
New Jersey Department of Environmental Protection
CN 404
Trenton, New Jersey 08625

Dear Ms. Guzzo:

This letter reports on the second phase of cultural resources investigations for the Long Beach Island berm and dune restoration project utilizing sand obtained from several offshore borrow sources. This is the same project described in the *Barnegat Inlet to Little Egg Inlet Final Feasibility Report and Integrated Final Environmental Impact Statement* that you reviewed and commented upon in 1999 and 2000. Your last comments on and recommendations for the project were included in a letter dated June 15, 2000 from Mr. Richard H. Kropp, Director, Land Use Regulation Program, New Jersey Department of Environmental Protection.

We have now completed the requested cultural resources investigations within all areas of potential project effect and would like to begin a dialogue with you and your staff on a program of "controlled, periodic archaeological monitoring during and immediately following the beach replenishment program." To that end we will first report on the results of our latest contracted investigations for the project documented in two reports by Hunter Research, Inc and Dolan Research, Inc. (see Enclosures 1 and 2).

The 2003 report by Hunter Research (*Phase Ib/II Submerged and Shoreline Cultural Resource Investigations, Beach Haven Borough, Long Beach Township, Ship Bottom Borough, and Surf City Borough (Long Beach Island), Ocean County, New Jersey)* is a comprehensive follow-up study to the Phase I investigation performed in 1998 for Philadelphia District by Hunter Research, Inc. Your review comments in 2000 were directed at this earlier Hunter Research study, the results of which were summarized in the Corps' 1999 feasibility report and integrated EIS.

Summary table 7.1 in the 2003 report by Hunter Research provides the basis for our determination that the project will have no effect to prehistoric and historic terrestrial cultural resources in the near-shore zone, the tidal zone, or along the shoreline within the four shoreline /near-shoreline survey areas. Four magnetic targets of potential interest were also discovered onshore within the tidal zone (Survey Areas A, C, and D) and two additional magnetic targets were identified in the near-shore zone (Survey Areas A and B). Because the proposed beach

nourishment will not impact these targets and actually aid in their preservation, no further study has been recommended. However, care will be taken to avoid damaging these onshore, magnetic target locations by the use of heavy machinery on the beach. Phase II investigations of magnetic target # 7:614 in offshore borrow area D identified it as a modern bell buoy that does not meet the criteria of eligibility for the National Register of Historic Places (NRHP). No significant cultural resources were associated with the magnetic targets in borrow area A.

The enclosed report by Dolan Research, Inc. is an offshore underwater archaeological investigation that complements the Hunter Research report by focusing on a new offshore borrow area (Area D2) and the investigation of eleven previously recorded magnetic target locations. Analysis of the remote sensing data confirmed that no potentially significant targets were identified within borrow area D2. No additional underwater archaeological investigations have been recommended within the D2 borrow area.

Five of the magnetic targets investigated by Dolan Research were located in the near-shore portion of the project area and six were located in the beach/ocean tidal zone. Shipwreck sites were found at two of the underwater magnetic target locations: 4:735 and 9:643. Both sites appear to meet the criteria of eligibility for the NRHP. Target 4:735 is described in detail on pages 9-12 of the Dolan Research report. It is a wooden-hull sailing vessel likely dating to the mid-19th century that appears to retain significant research potential. Target 9:643, described on pages 12-14 is also a wooden-hull sailing vessel that used iron components to reinforce its wooden hull and is representative of the transitional phase of shipbuilding in the mid 19th century. No other magnetic targets were found to be historically significant (see Dolan Research's discussion of underwater targets 7:444, 4:816, and 4:1009 and onshore targets MA1, MA3, MA4, MA7, MD4, and MD6).

Recent discussions with the project manager and design engineers for the Long Beach Island beach replenishment project indicate that both the historic shipwrecks (4:735 and 9:643) fall outside the current project's area of potential effect. The plans and specifications maps shown in Enclosures 3a and b show the location of these shipwrecks as outside the project's construction impact zone. A buffer zone of not less than 200 feet will be observed around each shipwreck. We will also ensure that particular attention will be paid to the avoidance of these shipwrecks in the plans and specifications issued to potential bidders for the construction project. A draft time schedule for the project shows the award of the construction contract by mid-summer of 2004.

Given these precautions we have determined that the project, as now planned, will have no effect to significant cultural resources. Pursuant to 36 CFR 800.4(d)(1) we request your concurrence within thirty days. We also request your review comments on the enclosed draft reports by Hunter Research and Dolan Research. Thank you for your strong advocacy of historic

preservation in New Jersey. The Philadelphia District looks forward to working with you in developing a monitoring plan for the Long Beach Island project. For additional information please contact Mr. Robert Dunn of our staff at (215) 656-6556.

Sincerely,

Robert C Johnson

for Minas M. Arabatzis
Chief, Planning Division

Enclosures

Copy Furnished: B. Bogle

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

NOV 29 2013

Environmental Resources Branch

NOV 20 2013

Daniel Saunders, Deputy State Historic Preservation Officer
Mail Code 501-04B
State of New Jersey
Department of Environmental Protection
Historic Preservation Office
PO Box 420
Trenton, NJ 08625-0420

14-0736-1
JWR
L2013-341

Dear Mr. Saunders:

The US Army Corps of Engineers, Philadelphia District (USACE) in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, are requesting your review and comment of the draft Environmental Assessment (EA) for the Barnegat Inlet to Little Egg Inlet (LBI) Storm Damage Reduction Project. This environmental assessment is intended to present and evaluate new information for this project subsequent to the previously released Final Feasibility Report and Integrated Environmental Impact Statement (EIS, 1999). A Record of Decision (ROD) was signed February, 2001.

This project was authorized in 2000, and is being funded in accordance with The Disaster Relief Appropriations Act of 2013, reference 1(a) (PL 113-2), which was passed by Congress and signed into law on 29 January 2013 in response to the devastating coastal storm, known as Hurricane Sandy that struck the Eastern region of the United States in October 2012. The legislation provides funding and authority for the Corps of Engineers related to the consequences of Hurricane Sandy, which may include previously authorized but unconstructed projects and any projects under study for reducing flooding and coastal storm damage risks.

The project area is located in southern New Jersey and extends approximately 20 miles. The selected plan for restoring LBI calls for berm and dune placement along the shoreline from Seaview Drive, Loveladies to the terminal groin in Holgate, Long Beach Township and entails the placement of approximately 4.95 million cubic yards (mcy) of sand for initial berm placement and 2.45 mcy for dune placement. The Feasibility Report (1999) estimated that approximately 1.9 million cubic yards (mcy) of sand would be needed for periodic nourishment every 7 years over the authorized 50-year period. The project received a Federal Consistency Determination and Section 401 Water Quality Certification from the New Jersey Department of Environmental Protection September 2005 and August 2006 (NJDEP

Land Use Regulation File No. 1500-99-00011 & 2). Initial construction has occurred along 4.5 miles of the LBI coastline within some sections of the island (*i.e.* the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township). To date, a 683-acre borrow area, centered approximately 2.5 miles off Harvey Cedars in state waters, has been utilized as the borrow source. Additional sand sources are needed to complete initial construction. An area 1034 acres in size, referred to as Borrow Area D2 in Outer Continental Shelf (OCS) waters, has been identified and evaluated. Under Public Law 103-426, enacted 31 October 1994, we are requesting a cooperative agency agreement with the Bureau of Ocean Energy Management (BOEM) to utilize OCS sand resources for this project. The current EA was prepared to update and incorporate additional data collection on the proposed project and proposed offshore borrow area D2.

The Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project EA can be downloaded from the following internet link:
http://www.nap.usace.army.mil/publicnotice

The proposed project will not be impacting any new areas but will be utilizing previously assessed and coordinated areas; therefore, we request your review of the referenced document and your concurrence in our determination that the proposed beach nourishment activities will have No Effect on historic properties eligible for or listed on the National Register of Historic Place pursuant to 36 CFR Part 800.4(d)(1).

Thank you for your cooperation in this review process. If you have any questions concerning our review or if we can be of further assistance, please contact Nicole Cooper Minnichbach via email at nicole.c.minnichbach@usace.army.mil, or phone (215) 656-6556, or fax (215) 656-6543.

Sincerely,

for C. MacIntosh
Peter R. Blum, P.E.
Chief, Planning Division

CONCUR

12/24/13
Daniel D. Saunders — DATE
DEPUTY STATE HISTORIC PRESERVATION OFFICER

State of New Jersey
MAIL CODE 501-04B
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL & HISTORIC RESOURCES
HISTORIC PRESERVATION OFFICE
P.O. Box 420
Trenton, NJ 08625-0420
TEL. (609) 984-0176 FAX (609) 984-0578

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

January 14, 2014

Nicole Minnichbach
Cultural Resources Specialist
United States Army Corps of Engineers
Philadelphia District
The Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Ms. Minnichbach:

As Deputy State Historic Preservation Officer for New Jersey, in accordance with 36 CFR Part 800: Protection of Historic Properties, as published in the *Federal Register* on December 12, 2000 (65 FR 77725-77739) and amended on July 6, 2004 (69 FR 40544-40555), I am providing continuing Consultation Comments for the following proposed undertaking:

Ocean County, Harvey Cedars Borough
Phase I Underwater Survey
Long Beach Island Offshore Borrow Area D3
United States Department of the Army, Corps of Engineers

800.4 Identification of Historic Properties

The Historic Preservation Office (HPO) has been provided the opportunity to review and comment on the following cultural resource report, received at the HPO on December 16, 2013, for the above-referenced undertaking:

Cox, J. Lee, Jr.
2012 *Phase I Underwater Archaeological Survey, Long Beach Island Borrow Area D3, Atlantic Ocean, Ocean County, New Jersey*. Prepared for United States Department of the Army, Corps of Engineers, Philadelphia District. Prepared by Dolan Research, Inc. Newtown Square, Pennsylvania.

According to the above-referenced report, Phase I underwater archaeological investigations were performed at the Long Beach Island Offshore Borrow Area D3 off of Atlantic County, New

Jersey. Investigations included background research in conjunction with magnetic and acoustic remote sensing with follow-up target analysis. The report states that no magnet targets were identified within the project's area of potential effects (APE) during the survey. Five sonar targets were identified within the APE, however further analysis by the consultant did not consider these targets as suggestive of submerged cultural resources. As a result, the report recommends that no further archaeological consideration is necessary for Long Beach Island Offshore Borrow Area D3. *The HPO concurs with this recommendation.*

Therefore, I concur with your finding that there are **no historic properties affected** within the project's area of potential effects. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Additional Comments

Thank you for providing the opportunity to review and comment on the above-referenced archaeological survey. Please reference the HPO project number 14-0952, in any future calls, emails, or written correspondence to help expedite your response. Please do not hesitate to contact Jesse West-Rosenthal (609-984-6019) of my staff with any questions.

Sincerely,

Daniel D. Saunders
Deputy State Historic
Preservation Officer

MEMORANDUM FOR: The Record

FROM: Charles MacIntosh
Acting Chief, Planning Division

SUBJECT: Reinitiating Section 7 Consultation for Beach Nourishment Projects due to the listing of the Atlantic sturgeon

The US Army Corps of Engineers (Corps), Philadelphia District has an on-going beach nourishment program along the Atlantic Coast of New Jersey and Delaware for the purpose of storm damage reduction. The Corps has previously completed formal consultation on these and other projects throughout the District pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Specifically, in September 1995, the Philadelphia District initiated formal consultation under the Endangered Species Act with regard to potential impacts associated with dredging projects permitted, funded or conducted by the Philadelphia District. "A Biological Assessment of Federally Listed Threatened and Endangered Species of Sea Turtles, Whales, and the Shortnose Sturgeon within Philadelphia District Boundaries: Potential Impacts of Dredging Activities" was forwarded to NMFS for their review. A Biological Opinion was issued by NMFS on November 26, 1996 (NMFS, 1996) for all dredging projects carried out by the District. The Opinion stated that dredging projects within the Philadelphia District may adversely affect sea turtles and shortnose sturgeon, but are not likely to jeopardize the continued existence of any threatened or endangered species under the jurisdiction of NMFS. For projects within the Philadelphia District, the anticipated incidental take by injury or mortality is three (3) shortnose sturgeon. This Opinion was amended with a revised Incidental Take Statement (ITS) on May 25, 1999.

On October 6, 2010, NMFS published a Notice in the Federal Register proposing to list three Distinct Population Segments (DPSs) of Atlantic sturgeon in the Northeast Region of NMFS. The New York Bight Distinct Population Segment, which includes all Atlantic sturgeon whose range occurs in watersheds that drain into coastal waters, including Long Island Sound, the New York Bight, and the Delaware Bay, from Chatham, MA to the Delaware-Maryland border on Fenwick Island, as well as wherever these fish occur in coastal bays, estuaries, and the marine environment from Bay of Fundy, Canada, to the Saint Johns River, FL, was proposed for listing as endangered. On February 6, 2012, NMFS issued two final rules (77FR 5880 and 77 FR 5914) listing five DPSs of Atlantic sturgeon as threatened or endangered under the ESA. The effective date of the listing was April 6, 2012. In response to this listing, the Corps participated in a conference call with NMFS to discuss the listing and the potential impact of the listing on on-going Corps projects. In subsequent discussions, the Corps and NMFS agreed that an updated Biological Assessment would be completed to address potential impacts to the Atlantic sturgeon for all the District's dredging projects.

The purpose of this memorandum is to reinitiate consultation on the District's beach nourishment projects and to document the determination that allowing the beach nourishment projects to continue during the reinitiation period will not violate ESA sections 7(a)(2) and 7(d). Absent any unforeseen circumstances, we expect the reinitiation period to extend until approximately December 31, 2013. At the end of the reinitiation period, the Corps will replace the 1995 Biological Assessment with a new assessment that will analyze the effects of the beachfills along the Atlantic of New Jersey and Delaware on listed species, including the newly listed species of Atlantic sturgeon, and consider more recent information on sea turtles and other species that has become available since the 1996 Biological Opinion was completed.

Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of taking specified in the incidental take statement is exceeded; (2) new information reveals effects of the action that may not have been previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to listed species; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. As indicated below, the Corps and NMFS have determined that formal Section 7 consultation on the District's beach nourishment projects must be reinitiated due to the new listing of the Atlantic sturgeon Distinct Population Segments (DPSs).

The Atlantic sturgeon population has been divided into 5 distinct population segments (DPSs) (Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic). These DPSs were configured to account for the marked difference in physical, genetic, and physiological factors within the species, as well as the unique ecological settings and unique genetic characteristics that would leave a significant gap in the range of the taxon if one of them were to become extinct (ASSRT, 2007). On February 6, 2012, the Northeast Region of NMFS listed the Gulf of Maine population as threatened and the New York Bight (NYB) and Chesapeake Bay (CB) DPSs as endangered. The Philadelphia District's Atlantic Coast Beach Nourishment Projects fall within the boundaries of the NYB population.

Atlantic sturgeon spend a majority of their adult phase migrating through marine waters. Consequently, they may be present in borrow areas being used for beach nourishment activities. Incidental take from dredges is possible. Therefore, we have determined that Atlantic sturgeon may be affected by beach nourishment projects within the Philadelphia District.

In light of changes to the project status and conditions and the availability of new information on several listed species, the Corps will reassess the effects and jeopardy analyses for sea turtles, shortnose sturgeon and whales in a new Biological Assessment. In the process, we will also consider whether there is a need to revise the analysis of the status of the species, environmental baseline, and cumulative effects. Additionally, we will reflect the change in the listing of loggerhead sea turtles from a single species to separate DPSs, a change that did not previously trigger reinitiation.

Section 7(a)(2) Analysis for the Reinitiation Period

The Section 7(a)(2) analysis below for Atlantic sturgeon is only applicable to the proposed action during the reinitiation period and does not address the Corps' obligation to insure the action over

a longer term is not likely to jeopardize listed species. A jeopardy determination commensurate with the temporal scope of the action is appropriately made only in the new Opinion. The dredging and placement activities associated with the Philadelphia District's beach nourishment program do not affect any critical habitat; therefore, critical habitat will not be addressed below.

Scope of the Analysis

In the analysis below, the Corps determines whether, during the reinitiation period, the Corps continues to ensure that potential impacts of beach nourishment activities are not likely to jeopardize the NYB Atlantic sturgeon DPS. The period of impacts to be considered begins now until completion of a new Opinion. Barring unforeseen circumstances, it is anticipated that a new Opinion will be completed by approximately December 31, 2013. Therefore, the period of analysis will be from now until December 31, 2013.

Effects of the Beach Nourishment Activities During the Reinitiation Period

"To jeopardize the continued existence of" means to engage in an action that reasonably would be expected , directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). To make a jeopardy determination, the Corps will consider whether there will be a reduction in reproduction, numbers, or distribution. If there is a reduction in one or more of those factors, it must be determined whether that reduction will cause an appreciable reduction in the likelihood of survival and recovery of the species.

Atlantic sturgeon

With regard to potential physical injuries to Atlantic sturgeon, the potential exists for them to become entrained during dredging operations. Dickerson (2006, as cited by ASSRT, 2007) believes that direct physical impacts to sturgeon is associated with dredging machinery *(i.e*. drag arms, pumps). It is expected, however, that most adult sturgeon would actively avoid a working dredge. O'Herron *et al.* (1985) did a study of shortnose sturgeon in the upper tidal Delaware River to assess potential impacts of maintenance dredging of the Duck Island and Perriwig ranges between June and November 1983. They found no evidence of sturgeon killed or injured by the dredging operation. They also observed that adult shortnose sturgeon had a tendency to move away from the dredge and returned only after the dredge had left the area. The chance of the dredges being used for these projects coming into contact with an Atlantic sturgeon during the dredging operations is extremely small. Unlike the more confined area of river dredging, dredging in the Inlet and offshore borrow areas currently proposed for use represent a very small percentage of the habitat available to Atlantic sturgeon. In addition, since the coastal environment represents a migration area, as opposed to a spawning area, potential impacts are expected to be minimal.

The dredging associated with the beach nourishment would result in short-term adverse impacts to water quality in the immediate vicinity of the dredging and beach nourishment operations. Dredging in the proposed borrow areas will generate turbidity, resulting in sedimentation impacts within the immediate vicinity of the operations. Short-term increased turbidity can affect organisms in several ways. Primary production in phytoplankton and/or benthic algae may become inhibited from turbidity. Suspended particulate matter can clog gills and inhibit filter-feeding species. Reilly *et al*., 1983 determined that high turbidity could inhibit recruitment by

pelagic larval stocks. In addition, midwater nekton like finfish and mobile benthic invertebrates may migrate outside of the area where turbidity and deposition occur.

The amount of turbidity and its associated plume is mainly dependent on the grain size of the material. Generally, the larger the grain-size, the smaller the area of impact. The period of turbidity is also less with larger grain-sized materials. The proposed borrow locations contains medium to fine sands, which are coarser grained than silts and clays. Turbidity resulting from the resuspension of these sediments is expected to be localized and temporary in nature.

Similar water quality effects on aquatic organisms could likely be incurred from the deposition of borrow material on the beach. Increased turbidity resulting from the deposition of a slurry of sand will be temporary in nature and localized. This effect will not be significant as turbidity levels are naturally high in the high-energy surf zone. Organisms in the surf zone versus deep water areas will be less likely to suffer adverse effects from turbidity because they have already adapted to these conditions. Material taken from the proposed borrow areas will have low quantities of silt, therefore, high levels of turbid waters after deposition should not persist.

Depending upon the duration, location, distance to the fish, and type of sound (i.e., explosions vs. vessel sounds), man-made noise in the marine environment has the potential to impact Atlantic sturgeon. Studies have found that there are a wide range of potential impacts in response to sounds by fish, ranging from death to behavioral responses. According to Normandeau, 2012, little research has been done on the effects of sound from dredging on marine life, and therefore, little data is available. Behavioral reactions to dredging are to be expected, however, with possible negative consequences. Behavioral changes could consist of a mild "awareness" of the sound, a startle response (but otherwise no change in behavior) (Wardle *et al*., 2001), small temporary movements for the duration of the sound, or larger movements that might displace fish from their normal locations for short or long periods of time. Depending upon the level of behavioral change, there may be no significant impact on individual fish or fish populations or there may be a substantial change (e.g. movement from a feeding or breeding site) which could negatively impact the survival of a population (Popper and Hastings, 2009).

The noise associated with dredging and sand placement activities will be fairly continuous throughout the course of the construction activities but they are not expected to have a significant impact on the sturgeon. It is expected that sturgeon will avoid the borrow areas during construction but will return once work is complete. Due to the open water nature of the borrow areas, this temporary movement away from the borrow area does not constitute a significant effect to the species.

Through the implementation of protective measures for Atlantic sturgeon the Corps believes it will be possible to minimize and in some cases eliminate any impacts to the species. Since the implementation of NMFS's original Biological Opinion for dredging within the Philadelphia District in 1996, no sea turtles, whales or sturgeon have been taken during dredging in offshore and inlet borrow areas along the Atlantic Coast. Prior to the implementation of the UXO screening, all hopper dredging from June through November included turtle monitoring, which equates to approximately 15 years worth of monitoring in these areas with no takes.

Based on this information, the Corps has determined that the continued implementation of the Philadelphia District's beach nourishment projects during the reinitiation period is not likely to jeopardize the continued existence of the Atlantic sturgeon NYB DPS.

Section 7(d) Considerations

Section 7(d) of the Endangered Species Act (ESA) prohibits Federal agencies from making any irreversible or irretrievable commitment of resources with respect to the agency action that would have effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives at the conclusion of the consultation. This prohibition is in force until the requirements of section 7(a)(2) have been satisfied. Section 7(d) does not prohibit all aspects of an agency action from proceeding during consultation; non-jeopardizing activities may proceed as long as their implementation would not violate section 7(d). As explained above, continuation of the District's beach nourishment projects under the 1996 Opinion pending completion of reinitiated consultation will not result in jeopardy to listed species. Congress intended section 7(d) to prevent an action agency from "steamrolling" a project by developing it to a stage at which options that would avoid jeopardizing listed species, and that would have been available a the onset of the action, are not longer reasonable and prudent due to the foregone commitment of resources to the original project design.

Since the beach nourishment activities that would be conducted during the reinitiation period are nourishment cycles for previously approved and constructed projects, this work would not preclude the implementation of reasonable and prudent measures for future nourishment activities. Nourishment of these projects generally takes place on 2 to 6 year cycles. Due to impacts from Hurricane Sandy, some of the projects are being nourished outside of their normal cycles. If consultation results further conservation recommendations, these recommendations will be included in all future beach nourishment activities.

Conclusions

While it is possible for Atlantic sturgeon to become entrained in the dredge during dredging operations, this is highly unlikely due to the transient nature of the species in the marine environment and their tendency to avoid dredging operations. Minor and temporary impacts to water quality and prey resources are expected within the borrow and placement areas. Minor and temporary impacts associated with regard to noise are also expected. In order to minimize impacts to all listed species, hydraulic cutterhead dredges will be used to the greatest extent possible.

Based on this analysis, we have determined that reinitiation of consultation for beachfill projects within the Philadelphia District is required and that allowing dredging to continue during the reinitiation period will not violate section 7(a)(2) or 7(d). This 7(a)(2) determination is only applicable during the reinitiation period (i.e., until approximately December 31, 2013) and does not address the Corps' longer term obligation to ensure the action is not likely to jeopardize the continued existence of listed species.

References:

Atlantic Sturgeon Status Review Team (ASSRT). 2007. Status review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Report to National Marine Fisheries Service, Northeast Regional Office. 174 pp.

Dickerson, D. 2006. Observed takes of sturgeon and turtles from dredging operations along the Atlantic Coast. Supplemental data provided by U.S. Army Engineer R&D Center Environmental Laboratory, Vicksburg, Mississippi.

Normandeau Associates, Inc. 2012. Effects of Noise on Fish, Fisheries and Invertebrates in the U.S. Atlantic and Arctic from Energy Industry Sound-Generating Activities. A Literature Synthesis for the U.S. Department of the Interior, Bureau of Ocean Energy Management. Contract #M11PC00031.

O'Herron, J.C. II, and R.W. Hastings. 1985. A Study of the Shortnose Sturgeon (*Acipenser brevirostrum*) population in the upper tidal Delaware River: Assessment of impacts of maintenance dredging (Post- dredging study of Duck Island and Perriwig ranges), Draft final report. Prepared for the U.S. Army Corps of Engineers, Philadelphia District by the Center for Coastal and Environmental Studies, Rutgers, the State University of New Jersey, New Brunswick, NJ.

Popper, Arthur N., Mardi C. Hastings. 2009. The Effects of Human-generated Sound on Fish. Integrative Zoology 2009: 4: 43-52.

Reilly, Francis J. Jr. and Bellis, Vincent J. 1983. The Ecological Impact of Beach Nourishment with Dredged Materials on the Intertidal Zone at Bogue Banks, NC. U. S. Army Corps of Engineers Coastal Engineering Research Center.

U.S. Army Corps of Engineers (USACE) Philadelphia District. 1995. A Biological Assessment for Federally Listed Threatened and Endangered Species of Sea Turtles, Whales and the Shortnose Sturgeon Within Philadelphia District Boundaries: Potential Impacts of Dredging Activities.

Wardle, C. S., T.J. Carter, G.G. Urquhart, *et al*. 2001. Effects of Seismic Air Guns on Marine Fish. Continental Shelf Research 21, 1005-27.

Environmental Branch

SEP 19 2012

Mr. Robert P. LaBelle
Bureau of Ocean Energy Management
1849 C Street, NW
Washington, DC 20240

Re: Request to designate "Areas of Significant Sand Resources" offshore New Jersey in Outer Continental Shelf waters.

Dear Mr. LaBelle:

The Philadelphia District U.S. Army Corps of Engineers (PCOE) is committed to the coastal management strategy of maintaining healthy beaches through beach nourishment. Beaches along the Atlantic Ocean coastline of New Jersey act as buffers to reduce damages from coastal storms for both coastal towns and the diverse wildlife habitat behind them. In addition, healthy beaches also serve as destinations for recreation and tourism, and are the foundations forthe economic wellbeing of the coastal communities and the State of New Jersey.

Under the New Jersey Shore Protection Study, a Final Feasibility Report and Integrated Environmental Impact Statement was completed in 1999 for beach and dune nourishment on a 17-mile stretch of the New Jersey Atlantic Ocean coastline between Barnegat Inlet and Little Egg Inlet, known as Long Beach Island (LBI). The LBI plan will require approximately 7.4 million cubic yards of sand for the initial beach nourishment; 4.95 million cubic yards for the initial berm placement and 2.45 million cubic yards for dune placement. Approximately 1.9 million cubic yards of sand will be needed for periodic nourishment every 7 years over the authorized 50-year period of analysis. Initial construction has occurred along 4.5 miles of the LBI shoreline within some sections of the island (*i.e.* the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township. To date, area D1, a 509 acre area centered approximately 2.5 miles off Harvey Cedars in state waters, as been utilized as the borrow source.

Offshore sources within state waters are presently used to supply sand to these beachfront communities along the Atlantic shoreline; however, some of the sand source locations have been deemed environmentally sensitive and are no longer available for use. Additionally, since the discovery of Discarded Military Munitions (DMM) within area D1 during the initial beachfill operation for the project, the Philadelphia District has been employing munitions screens on the dredging intake pipes for beach nourishment projects to prevent DMM from being deposited on

the beaches. Over time, this has resulted in "armoring" of the borrow material as any pebbles, stones or hardened biological substances (*i.e.* crustacean, molluscan shells, *etc.*) larger than the diameter of the screens remain in the borrow area after pumping, rendering less material available for beach nourishment.

Without supplemental sources from other nearshore borrow areas, Area D1 has insufficient quantities to complete the project without imposing adverse environmental impact to the marine habitat with deeper cuts. The PCOE has identified two areas in Outer Continental Shelf (OCS) waters that contain compatible sediments for beach nourishment projects. These areas are identified on the attached map as "D2" and "D3". A 572 acre area directly east of D1, named D2, was identified and sampled in 2001-2002, and directly southeast of D2, a 542 acre area named D3, was delineated and sampled in 2009 and 2012.

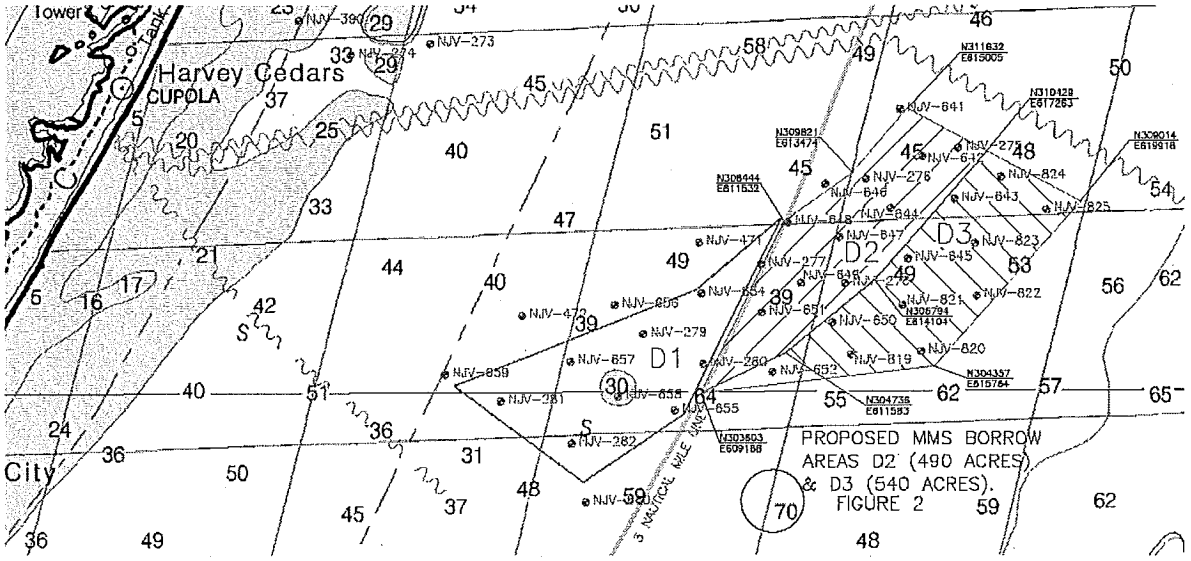
Under Public Law 103-426, enacted October 31, 1994, we are requesting a cooperative agency agreement (*i.e.* a Memorandum of Agreement) to address the potential use of OCS sand resources. In addition to the above-mentioned 1999 Feasibility Study and Integrated Environmental Impact Statement for this project, a subsequent Environmental Assessment (2012) is being prepared to update and incorporate additional data collection on the proposed project and offshore borrow areas for this cooperative agency agreement. Upon completion, this EA will be forwarded to you for your review. The EA will address all National Environmental Policy Act requirements, such as, but not limited to, the Coastal Zone Management Act, the Essential Fish Habitat Assessment, the Endangered Species Act, the National Historical Preservation Act, the Marine Mammal Protection Act, and the Clean Water Act. Coordination with various natural resource agencies, such as the U.S. Environmental Protection Agency, the New Jersey Department of Environmental Protection, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, is ongoing for this beach nourishment project.

We request that these areas in OCS waters be designated as "Areas of Significant Sand Resources" by the Bureau of Ocean Energy Management (BOEM). We expect this designation allows BOEM to provide lease restrictions to either avoid potential sand resource areas or mitigate damages to potential areas. Attached is a map showing the proposed sand resource areas in OCS waters. Thank you for considering our request for OCS sand source designation. Please contact Ms. Barbara Conlin of our Environmental Resources Branch at 215-656-6557 if you have any questions.

Sincerely,

for C. MacIntosh
Minas M. Arabatzis
Chief, Planning Division

Enclosure
Borrow Areas D1, D2, and D3.


Harvey Cedars
CUPOLA
Tower
Tank
City
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D3
NJV-273
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NJV-277
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NJV-824
NJV-825
3 NAUTICAL MILE LIMIT
PROPOSED MMS BORROW AREAS D2 (490 ACRES) & D3 (540 ACRES).
FIGURE 2

Environmental Branch

JUN 17 2013

Ms. Rene Orr
Bureau of Ocean Energy Management
U.S. Department of the Interior
Strategic Resources Office
1849 C Street, NW
Mail Stop 5238
Washington, DC 20240

Re: Request to designate "Areas of Significant Sand Resources" offshore New Jersey in Outer Continental Shelf waters.

Dear Ms. Orr:

The Philadelphia District U.S. Army Corps of Engineers (PCOE) is committed to the coastal management strategy of maintaining healthy beaches through beach nourishment. Beaches along the Atlantic Ocean coastline of New Jersey act as buffers to reduce damages from coastal storms for both coastal towns and the diverse wildlife habitat behind them. In addition, healthy beaches also serve as destinations for recreation and tourism, and are the foundations forthe economic wellbeing of the coastal communities and the State of New Jersey.

The U.S. Army Corps of Engineers, Philadelphia District requests to enter into a non-competitive negotiated Agreement with the U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM) in regard to the use of sand from an area on the Outer Continental Shelf (OCS) post-Hurricane Sandy for construction of a federal shore protection project on Long Beach Island, Ocean County, New Jersey.

Under the New Jersey Shore Protection Study, a Final Feasibility Report and Integrated Environmental Impact Statement was completed in 1999 for beach and dune nourishment on the 17-mile stretch of Atlantic Ocean coastline between Barnegat Inlet and Little Egg Inlet, known as Long Beach Island (LBI). The LBI plan will require approximately 7 million cubic yards of sand (see attached Figures). This project has been expedited through the Sandy Relief Act (PL-113-2) for the LBI project to be funded 100% federal and to be built in the upcoming contract currently scheduled to begin September 2013. This was confirmed upon release of the Sandy Relief Act, Second Interim report from the Corps to Congress, dated 30 May 2013.

Initial construction has occurred along 4.5 miles of the LBI shoreline within some sections of the island (*i.e.* the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township). To date, area D1, a 683-acre area centered approximately 2.5 miles off Harvey Cedars in state waters, was utilized as the borrow source.

Sand sources within state waters have been used to supply sand to New Jersey beachfront communities along the Atlantic shoreline; however, some of the sand source locations have been deemed environmentally sensitive and are no longer available for use. Additionally, since the discovery of Discarded Military Munitions (DMM) within area D1 during the initial beachfill operation for the project, the Philadelphia District has been employing munitions screens on the dredging intake pipes for beach nourishment projects to prevent DMM from being deposited on the beaches. Over time, this has resulted in "armoring" of the borrow material as any pebbles, stones or hardened biological substances (*i.e.* crustacean, molluscan shells, *etc.*) larger than the diameter of the screens remain in the borrow area after pumping, rendering less material available for beach nourishment.

Without supplemental sources from other nearshore borrow areas, Area D1 has insufficient quantities to complete the project without imposing adverse environmental impact to the marine habitat with deeper cuts. The PCOE has identified an area 1034 acres (see attached Figure) referred to as D2 in Outer Continental Shelf (OCS) waters that contain compatible sediments for beach nourishment projects. This 1034 acre site was previously identified and evaluated in earlier assessments as two separate areas: D2 and D3. D2, directly east of D1, was delineated and sampled in 2001-2002, and directly southeast of D2, area D3 was delineated and sampled in 2009 and 2012. We propose to utilize hopper dredges within this area as this type of dredge is most effective at maneuvering across large swaths making shallow cuts to minimize detrimental bottom habitat impacts that would result from deeper dredge holes. Hopper dredge lane cuts create relief bottom habitat preferred by many species of fish and offer more flexibility to maximize obtaining suitable grain size for beach nourishment purposes

Under Public Law 103-426, enacted October 31, 1994, we are requesting a cooperative agency agreement (*i.e.* a Memorandum of Agreement) to address the potential use of OCS sand resources. In addition to the above-mentioned 1999 Feasibility Study and Integrated Environmental Impact Statement for this project, a subsequent Environmental Assessment (EA) was prepared and provided to your office in December 2012 for your review. This 2012 EA was prepared to update and incorporate additional data collection on the proposed project and proposed offshore borrow areas (D2 and D3) for this cooperative agency agreement. The EA addresses all National Environmental Policy Act requirements, such as, but not limited to, the Coastal Zone Management Act, the Essential Fish Habitat Assessment, the Endangered Species Act, the National Historical Preservation Act, the Marine Mammal Protection Act, and the Clean Water Act. Coordination with various natural resource agencies, such as the U.S. Environmental Protection Agency, the New Jersey Department of Environmental Protection, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, is ongoing for this beach nourishment project.

The public benefits of the proposed activity are significant and include shore protection and storm damage reduction and preservation of the beach resource. We request that area D2 (formerly referred to as D2 and D3), be designated as "Areas of Significant Sand Resources" by the Bureau of Ocean Energy Management (BOEM). We expect this designation allows BOEM to provide lease restrictions to either avoid potential sand resource areas or mitigate damages to potential areas. The attached figures identify this area as well as the proposed placement locations. Thank you for considering our request for OCS sand source designation. Please contact Mr. Keith Watson of our Program Management Branch at 215-656-6287 or Ms. Barbara Conlin of our Environmental Resources Branch at 215-656-6557 if you have any questions.

Sincerely,

for C. MacIntosh

Peter R. Blum
Chief, Planning Division

Enclosures

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Mr. Peter R. Blum
Chief, Planning Division
Philadelphia District, U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Blum:

Thank you for your letter dated June 17, 2013, requesting to enter into a non-competitive negotiated agreement with the U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM). The request is specifically for the use of 9 million cubic yards of sand from borrow area D2 (formerly known as borrow areas D2 and D3), located on the Outer Continental Shelf, for the purpose of nourishing 11.5 miles of Atlantic Ocean coastline between Barnegat Inlet and Little Egg Inlet, known as Long Beach Island.

We have reviewed your request and find that it does meet the standard for a negotiated agreement under the Outer Continental Shelf Lands Act, and the best instrument for leasing the requested material is a two-party Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers (USACE) and BOEM. The executed MOA will contain all of the terms and conditions that BOEM will require to extract and place sand for this nourishment cycle.

There are certain requirements that must be completed prior to the issuance of a negotiated agreement to fulfill applicable statutes, including compliance with the National Environmental Policy Act, consultation with the National Marine Fisheries Service related to Essential Fish Habitat, and consultation with U.S. Fish and Wildlife Service regarding the Endangered Species Act. In addition, Coastal Zone Management Act consistency concurrence must be obtained prior to issuance of the MOA. We ask that you continue to work with the Office of Environmental Assessment through Jennifer Culbertson on meeting these requirements. Dr. Culbertson can be reached at (703) 787-1742, or by email at Jennifer.Culbertson@boem.gov.

The Leasing Division, Marine Minerals Program coordinator for this project will be Jennifer Rose, who can be reached at (703) 787-1223, or by email at Jennifer.rose@boem.gov.

Thank you for your request to designate the D2 borrow area as a significant sand resource. At this time, BOEM is internally assessing how such a process might be designed and implemented. We will actively engage with you and all of our stakeholders as we continue to explore this and other mechanisms to effectively manage these very important resources.

If you have any questions, please do not hesitate to call me at (703) 787-1215. We look forward to working with you on this endeavor.

Sincerely,

Colleen Finnegan

Colleen Finnegan
Acting Chief, Marine Minerals Branch

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

FEB 0 6 2013

Mr. Eric Davis, Supervisor
U.S. Fish and Wildlife Service
927 North Main Street, Bldg D
Pleasantville, New Jersey 08232

Dear Mr. Davis,

The Philadelphia District, U.S. Army Corps of Engineers initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. Periodic nourishment of the entire project is estimated to require a total of 1.9 MCY of sand at 7-year intervals. To date, portions of the Federal project construction include Surf City, Harvey Cedars, and Brant Beach.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area. In November 2012, the U.S. Army Corps of Engineers, Philadelphia District prepared a Project Information Report (PIR) for the Federal HSPP project.

The Philadelphia District proposes to use Flood Control and Coastal Emergencies funding (FCCE) to conduct emergency beachfill operations for these beaches along the Long Beach Island coastline that have already been initially constructed. All beach fill will be obtained from the permitted offshore borrow areas. The recommended rehabilitation of the Barnegat Inlet to Little Egg Inlet HSPP will consist of the placement of approximately 2,000,000 cubic yards (CY) of dredged sand.

Coordination with the natural resource agencies is ongoing, as each portion of the project is constructed. No endangered species have been identified within the three beaches proposed for emergency beachfill placement. If endangered species are found to occur in the proposed

placement areas, the construction schedule would adhere to any established environmental windows through coordination with your office.

Subsequent to completion of the Environmental Impact Statement and permitting process, the Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) was added to the endangered species list by the National Marine Fisheries Service in April 2012. The Philadelphia District will be undergoing a formal Section 7 consultation with NMFS, and is preparing a programmatic biological assessment (BA) for all District coastal projects. However, if formal consultation is not completed in time for the beach repairs, informal consultation will be conducted in the interim to insure compliance with the Endangered Species Act. The Coastal Zone Consistency Determination and Water Quality Certificate (WQC) were issued 15 June 2000 and 20 July 2006. The borrow site(s), quantity, and work will fall within the scope of that authorized by the WQC.

In accordance with procedures outlined in the Biological Opinion on the Effects of Federal Beach Nourishment Activities Along the Atlantic Coast of New Jersey within the U.S, Army Corps of Engineers, Philadelphia District on the Piping Plover (Charadrius melodus) and Seabeach Amaranth (Amaranthus pumilus), this letter serves to request initiation of streamlined (Tier 2) formal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 et seq.) with regard to the proposed beach nourishment activities at the above-mentioned areas. A review of historical nesting information indicates that the project areas have not been utilized by nesting piping plovers in over 15 years and no seabeach amaranth plants have been observed within or in the immediate vicinity of the proposed placement areas. Based on the above information, and the fact that the Corps will follow any conservation measures proposed in our Biological Assessment necessary to protect any listed species that may occur in the project areas, and the reasonable and prudent measures outlined in the Service's Biological Opinion, we have concluded that the proposed beach fill plan is not likely to directly impact piping plover or seabeach amaranth through burial or habitat alteration. These impacts, including potential indirect, secondary, and cumulative impacts, have been fully covered in the Biological Opinion, and are "not likely to adversely affect" either species. Therefore, we believe that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

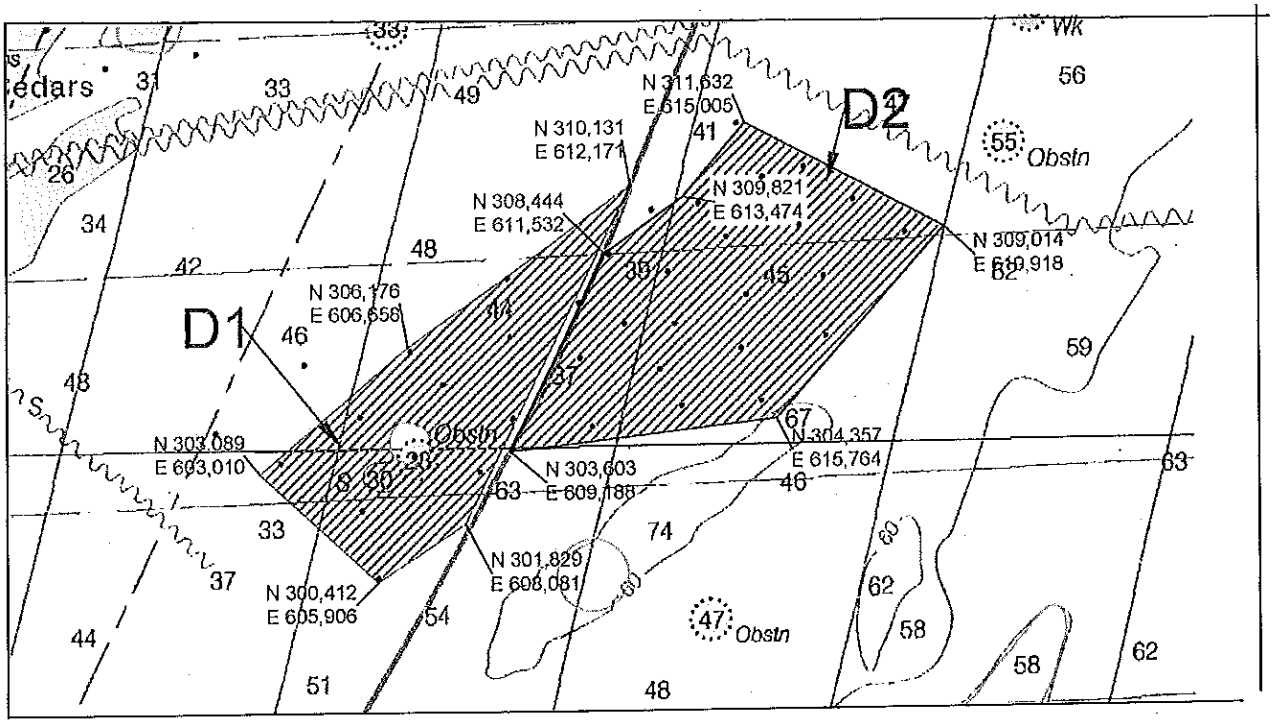
At this time, we are requesting a written response indicating your concurrence with our proposed course of action with regard to direct and indirect impacts to threatened species. We anticipate that the Service's response will conclude the Section 7 consultation process for this phase of the project. We appreciate your attention in this matter. If you have any questions or require additional information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at (215) 656-6557.

Sincerely,

C. MacIntosh

Charles MacIntosh
Acting Chief of Planning

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 0 8 2013

Mr. Eric Schrading, Acting Supervisor
U.S. Fish and Wildlife Service
927 North Main Street, Bldg D
Pleasantville, New Jersey 08232

Dear Mr. Schrading:

The Philadelphia District, U.S. Army Corps of Engineers (PCOE) initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. To date, portions of the Federal project have been constructed and include Surf City, Harvey Cedars, and Brant Beach. The proposed beach template design has not changed from that which was presented in the 1999 EIS. Section 401 Water Quality Certification and a Coastal Zone Consistency Determination were issued by the New Jersey Department of Environmental Protection on 15 June 2000 and 20 July 2006.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area. In November 2012, the PCOE prepared a Project Information Report (PIR) for the Federal HSPP project and requested Tier 2 consultation with you in February 2013 specifically for the three proposed beaches receiving renourishment.

Under the Disaster Relief Appropriations Act (PL 113-2) the PCOE proposes to place beachfill on the remaining unconstructed portions of the project (*i.e.* Long Beach Township, Ship Bottom Borough, and Beach Haven Borough), as is described in detail in the 1999 EIS. All beachfill will be obtained from the permitted offshore borrow area D1, and upon completion of a Memorandum of Agreement with the Bureau of Ocean

Energy Management (BOEM), Area D2 (a 1034 acre site located in federal waters immediately adjacent to D1). The PCOE, in cooperation with the BOEM, is currently preparing an Environmental Assessment to evaluate the use of Borrow Area D2 in federal waters for the proposed project and a copy of this draft report will be provided for your review upon completion. The PCOE is serving as the lead agency for this Endangered Species Act (ESA) Section 7 consultation. Under the Outer Continental Shelf Lands Act (43 U.S.C. Section 1337(k)), the BOEM has sole jurisdiction over the proposed use of sand from the D2 borrow area because it is located on the Outer Continental Shelf (OCS) in federal waters. The PCOE has jurisdiction over all other aspects of the project in state waters (see attached map depicting Borrow Areas D1 and D2 relative to Long Beach Island).

In accordance with procedures outlined in the Biological Opinion on the Effects of Federal Beach Nourishment Activities Along the Atlantic Coast of New Jersey within the U.S. Army Corps of Engineers, Philadelphia District on the Piping Plover *(Charadrius melodus)* and Seabeach Amaranth (*Amaranthus pumilus*), this letter serves to request initiation of streamlined (Tier 2) formal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) with regard to the proposed remaining beach nourishment activities. Approximately 11.9 mcy of sand will be dredged (*i.e.* approximately 2.9 mcy from Area D1 and 9 mcy from Area D2) and placed along the Atlantic Ocean shoreline of Long Beach Island from Station 103+00 in northern Long Beach Township to Station 860+00 at the southern end of the island adjacent to, but not including, the Edwin B. Forsythe National Wildlife Refuge (approximately 14 miles in length but excluding the previously constructed beaches at Surf City, Harvey Cedars, and Brant Beach. The proposed construction is expected to take 18-24 months and the work is tentatively scheduled to begin in March 2014. The project area is eroded and has very low habitat suitability for piping plovers. The project area also has had no history of either nesting piping plovers or seabeach amaranth in more than 10 years. This project is needed to address severe coastal erosion and storm damage that resulted from Hurricane.

Coordination with the natural resource agencies is ongoing. The PCOE coordinates regularly with Mr. Todd Pover of the New Jersey Department of Environmental Protection to determine if any listed species are observed in the proposed fill area. If endangered species are found to occur in the proposed placement areas, the construction schedule would adhere to any established environmental windows through coordination with your office.

Based on the above information, and the fact that the Corps will follow any conservation measures proposed in our Biological Assessment necessary to protect any listed species that may occur in the project areas, and the reasonable and prudent measures outlined in the Service's Biological Opinion, we have concluded that the proposed beach fill plan is not likely to directly impact piping plover or seabeach amaranth through burial or habitat alteration. These impacts, including potential indirect, secondary, and cumulative impacts, have been fully covered in the Biological Opinion, and are "not likely to adversely affect" either species. Therefore, we believe

that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

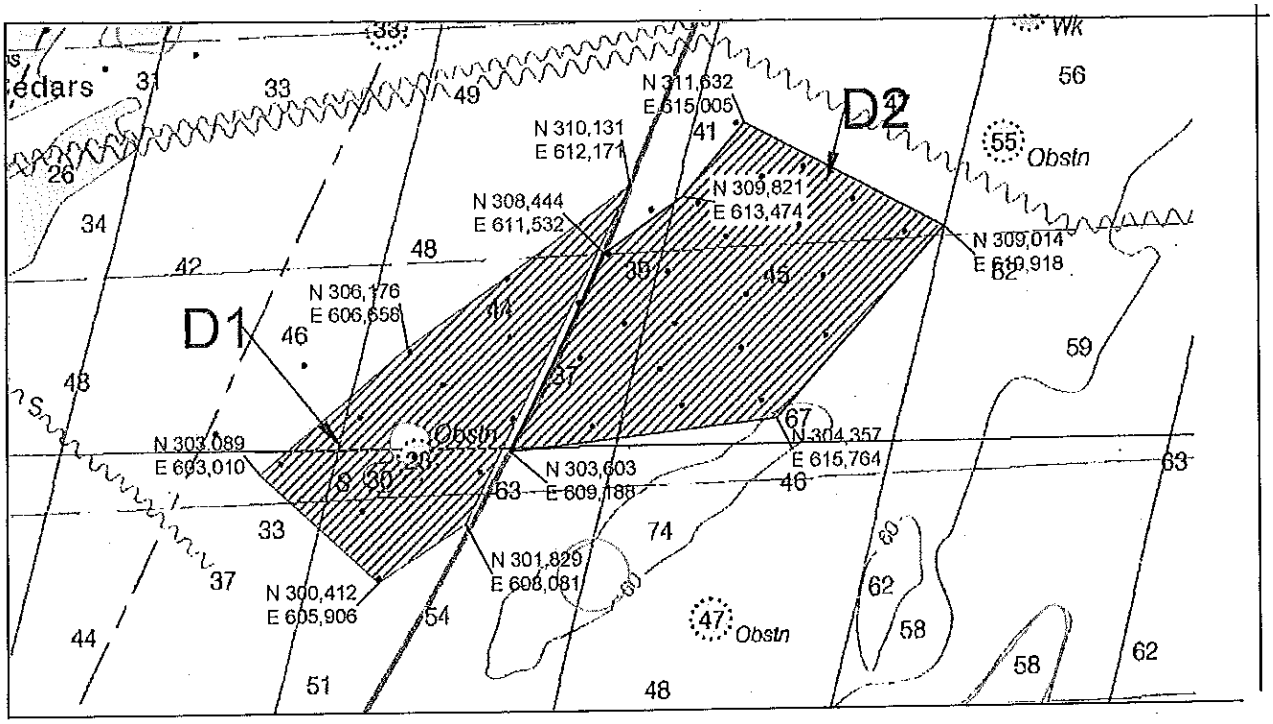
At this time, we are requesting a written response indicating your concurrence with our proposed course of action with regard to direct and indirect impacts to threatened species. We anticipate that the Service's response will conclude the Section 7 consultation process for this phase of the project. We appreciate your attention in this matter. If you have any questions or require additional information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at (215) 656-6557.

Sincerely,

Peter R. Blum, P.E.
Chief, Planning Division

Cc: Dr. Jennifer Culbertson, BOEM

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
http://www.fws.gov/northeast/njfieldoffice

In Reply Refer To:
13-CPA-0282

Peter Blum, Chief
Planning Division
Philadelphia District
U.S. Army Corps of Engineers
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390
ATTN: Barbara Conlin

AUG 2 9 2013

Dear Mr. Blum:

The U.S. Fish and Wildlife Service (Service) received your August 8, 2013 request for streamlined (Tier 2) formal consultation regarding U.S. Army Corps of Engineers, Philadelphia District (Corps) proposed beach re-nourishment activities in the approved Barnegat Inlet to Little Egg Inlet, Ocean County, New Jersey Federal Hurricane and Shore Protection Project. Specifically, the Corps proposes to re-nourish the following segments:

- Long Beach Township
- Ship Bottom Borough
- Beach Haven Borough

This response serves as Tier 2 streamlined consultation pursuant to the Service's December 2005 Programmatic (Tier 1) Biological Opinion on the Effects of Federal Beach Nourishment, Re-nourishment, Stabilization, and Restoration Activities along the Atlantic Coast of New Jersey within the Corps, Philadelphia District on the Federally Listed (threatened) Piping Plover (*Charadrius melodus*) and Seabeach Amaranth (*Amaranthus pumilus*) (PBO). This Tier 2 (streamlined) consultation covers only the subject re-nourishment event, including potential direct and indirect effects to federally listed species that may occur during and after construction. Subsequent re-nourishment events will be considered separate Federal actions and will require individual Tier 2 consultations.

AUTHORITY

This response is provided pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of

endangered and threatened species and does not address all Service concerns for fish and wildlife resources. These comments do not preclude separate review and comment by the Service directed to the Corps via the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*) for any permits required pursuant to Section 404 of the Clean Water Act (33 U.S.C.1 344 *et seq.*); or comments on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 *et seq.*).

CONSULTATION HISTORY

A chronology of key correspondences among the Service, Corps, and New Jersey Department of Environmental Protection – Endangered and Nongame Species Program (ENSP) regarding the subject project is provided below.

August 8, 2013	The Corps requested consultation for the subject project and indicated that coordination was conducted with Mr. Todd Pover with the Conserve Wildlife Foundation (CWFNJ - representing the ENSP).

PROJECT DESCRIPTION

The project would entail re-nourishing the municipalities of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough. A maximum of 11,900,000 cubic yards of sand is proposed to be placed on the subject beaches from the approved offshore area D1 and 9,000,000 from D2, the latter upon completion of a Memorandum of Agreement with the Bureau of Ocean Energy Management. The berm profile will be returned to the +8.0 feet NAVD design criteria with a 30-foot-wide dune crest at elevation +22 feet NAVD. The Corps tentatively proposes to begin construction in March 2014 and complete the project within 18-24 months. The Edwin B. Forsythe National Wildlife Refuge (Forsythe NWR) will be excluded.

ADHERENCE TO MEASURES TO MINIMIZE IMPACTS TO FEDERALLY LISTED SPECIES

Relevant conservation measures proposed by the Corps for protection of federally listed species, and reasonable and prudent measures (RPMs) imposed by the Service to minimize take of federally listed species, are specified within the PBO and are applicable to all Tier 2 projects carried out under the Corps' program. All applicable measures to protect piping plovers will be followed during the 2013 re-nourishment of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough:

- The beach nourishments will be conducted within the piping plover nesting season. No nesting has occurred in the proposed fill area in the last 10 years. With a proposed starting date of March 2014, the Corps will be unable to obtain nesting data from Mr. Todd Pover prior to project implementation. The Corps

will abide by all Reasonable and Prudent Measures (RPMs) specified in the PBO in the event plovers nest within or near the project area.

- The Corps will notify the Service, ENSP, and CWFNJ of the precise starting date, if the project will be modified, and end date as it approaches completion.

There have been no known occurrences of seabeach amaranth in the proposed areas to be re-nourished.

STATUS OF THE SPECIES

Relevant biological and ecological information for the piping plover and seabeach amaranth was provided to the Corps in the PBO. That information remains pertinent and was considered by the Service in formulating this Tier 2 Biological Opinion.

ENVIRONMENTAL BASELINE

The environmental baseline for the Corps' overall program for Federal beach nourishment, re-nourishment, stabilization, and restoration activities along the Atlantic Coast of New Jersey within the Philadelphia District was established and fully described within the PBO. New information regarding the status of the piping plover and seabeach amaranth within the project area since issuance of the PBO has become available. Specifically, no piping plovers have nested within the proposed re-nourishment areas in the last 10 years, and no seabeach amaranth plants were found during surveys. All other information described within the PBO remains pertinent and was considered by the Service in formulating this Tier 2 Biological Opinion.

EFFECTS OF THE ACTION

Following review of the information provided by the Corps regarding the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough nourishment project, the Service has determined that the potential effects of the project are consistent with those addressed in the PBO and are hereby incorporated by reference. Beach habitats within the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough project area have been degraded by beach erosion, and no piping plover or seabeach amaranth were present within the project area in the past ten years.

The proposed re-nourishment area does not presently provide suitable piping plover nesting habitat. Therefore, no direct adverse impacts to these species are anticipated unless plovers occupy the project area during the 2014 or subsequent nesting seasons.

Following beach nourishment in other areas of New Jersey, piping plovers have established nesting in previously unoccupied sites, and seabeach amaranth has colonized suitable habitats created by beach re-nourishment. However, piping plover nesting and productivity on such stabilized beaches (where no habitat enhancement occurs) is generally lower than on un-stabilized beaches where over-wash zones and or tidal pools

are available. Therefore, it is likely that at least one pair of piping plovers may nest or attempt to nest within the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough project area following the fill, and productivity is anticipated to be lower than on un-stabilized beaches or stabilized beaches with habitat enhancement.

CONCLUSION

Actions and effects associated with the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment permit are consistent with those identified and discussed within the PBO. After reviewing the size and scope of the project, the environmental baseline, the status of federally listed species within the project area, and the effects of the action, it is the Service's Biological Opinion that the 2014-15 Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment permit is not likely to jeopardize the continued existence of the piping plover or seabeach amaranth. No Critical Habitat has been designated for these species within the project area; therefore, no Critical Habitat will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and the Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in the death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of carrying out an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action is not considered a prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement. The type and amount of anticipated incidental take is consistent with that described in the PBO and does not cause the total annual level of incidental take in the PBO.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

To be exempt from the take prohibitions of Section 9 of the ESA, the Corps must implement all RPMs and terms and conditions, as stipulated in the PBO, to minimize the impact of anticipated incidental take of plovers. The Service has determined that the following new reasonable and prudent measures beyond those specified in the December 2005 Tier I Programmatic Biological Opinion are needed to minimize the impact of

incidental take anticipated for the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment project:

- The Corps shall obtain nesting data from the ENSP/CWFNJ prior to and during project implementation and abide by all RPMs specified in the PBO in the event plovers nest within or near the project area.

The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to demonstrate clear compliance with the RPMs and their implementing terms and conditions in this Biological Opinion; or (2) fails to require Corps staff, contractors, cooperators, and/or permittees to adhere to the terms and conditions of the incidental take statement; and/or (3) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section7(o)(2) of the ESA may lapse.

REINITIATION - CLOSING STATEMENT

This concludes Tier 2 formal consultation on the effects of the Corps' proposed 2014-15 beach re-nourishment of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough, Ocean County, New Jersey. As provided in 50 CFR § 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or Critical Habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or Critical Habitat that was not considered in this opinion; or, (4) a new species is listed or Critical Habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

As a reminder, this Tier 2 consultation covers only the 2014-15 Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment event, including potential impacts to federally listed species that may occur during and after this cycle of re-nourishment. Subsequent re-nourishment events will be considered separate Federal actions and will require individual Tier 2 consultations. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you have any questions or require further assistance regarding threatened or endangered species.

Sincerely,

Eric Schrading
Acting Field Supervisor

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 0 8 2013

Ms. Mary Colligan
Assistant Regional Administrator
National Marine Fisheries Service
One Blackburn Drive
Gloucester, MA 01930

Dear Ms. Colligan:

The Philadelphia District, U.S. Army Corps of Engineers (PCOE) initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. The proposed beach template design has not changed from that which was presented in the 1999 EIS. Section 401 Water Quality Certification and a Coastal Zone Consistency Determination were issued by the New Jersey Department of Environmental Protection on 15 June 2000 and 20 July 2006.
To date, portions of the Federal project have been constructed and include Surf City, Harvey Cedars, and Brant Beach.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area.

Under the Disaster Relief Appropriations Act (PL 113-2) the PCOE proposes to place beachfill on the remaining unconstructed portions of the project (*i.e.* Long Beach Township, Ship Bottom Borough, and Beach Haven Borough), as is described in detail in the 1999 EIS. All beachfill will be obtained from the permitted offshore borrow area D1, and upon completion of a Memorandum of Agreement with the Bureau of Ocean Energy Management (BOEM), Area D2 (a 1034 acre site located in federal waters immediately adjacent to D1).

The PCOE proposes to place approximately 11.9 million cubic yards (MCY) of sand from Borrow Areas D1 and D2 along 14 miles of Atlantic Ocean shoreline on Long Beach Island, New Jersey from Station 103+00 in northern Long Beach Township to Station 860+00 at the southern end of the island adjacent to, but not including, the Edwin B. Forsythe National Wildlife Refuge (and excluding the previously constructed beaches at Surf City, Harvey Cedars, and Brant Beach). The proposed construction is expected to take 18-24 months and the work is tentatively scheduled to begin in March 2014. The project is needed to address severe coastal erosion and storm damage that resulted from Hurricane Sandy.

The PCOE, in cooperation with the BOEM, is currently preparing an Environmental Assessment to evaluate the use of Borrow Area D2 in federal waters for the proposed project and a copy of this draft report will be provided for your review upon completion. The PCOE is serving as the lead agency for this Endangered Species Act (ESA) Section 7 consultation. Under the Outer Continental Shelf Lands Act (43 U.S.C. Section 1337(k)), the BOEM has sole jurisdiction over the proposed use of sand from the D2 borrow area because it is located on the Outer Continental Shelf (OCS) in federal waters. The PCOE has jurisdiction over all other aspects of the project in state waters (see attached map depicting Borrow Areas D1 and D2 relative to Long Beach Island).

A programmatic Biological Opinion (BO) was prepared by your office for all dredging projects within the Philadelphia District (NMFS, 1996). The BO evaluates impacts to dredging projects on shortnose sturgeon, sea turtles, and marine mammals. The BO and an amendment to the BO provide incidental take statements for these species. Specifically, the use of hopper dredges in the Lower Delaware Bay and along the Atlantic Ocean coasts of New Jersey and Delaware requires that sea turtle/marine mammal observer be on-board the dredge to monitor for sea turtles and marine mammals for 50% of the actual dredging time between June 1 and November 30. The use of monitors and the installation of screens on the overflow insure compliance with Section 7 Endangered Species Act Consultation. Since 2007, the Philadelphia District has been required to use UXO (munitions) screening on all beach nourishment jobs. The use of these screens renders the need for turtle monitors on hopper dredges ineffective. Since the implementation of the BO in 1996, no sea turtles, whales or sturgeon have been taken during dredging in offshore and inlet borrow areas along the Atlantic Coast. Prior to the implementation of the UXO screening, all hopper dredging from June through November included turtle monitoring, which equates to approximately 15 years worth of monitoring in these areas with no takes.

Subsequent to completion of the Environmental Impact Statement and permitting process, the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was added to the endangered species list in April 2012. The Philadelphia District is preparing a programmatic biological assessment (BA) for all District coastal projects. However, in the event that formal consultation is not completed in time for the proposed beach placement operations, we request informal consultation in the interim to insure compliance with the Endangered Species Act. The Coastal Zone Consistency

Determination and Water Quality Certificate (WQC) for this project were issued 15 June 2000 and 20 July 2006. The PCOE and the BOEM will implement all reasonable and prudent measures and associated terms and conditions of the existing incidental take statement and/or those issued with a revised biological opinion. It is our view that potential impacts to Atlantic sturgeon are unlikely in the proposed placement area and offshore borrow areas, and therefore, we request informal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) with regard to the proposed remaining beach nourishment. Potential impacts to endangered species have been fully evaluated in the EIS (1999) and any potential indirect, secondary, or cumulative impacts to Atlantic sturgeon are not likely to adversely affect the species. Therefore, we believe that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

Please provide a written response regarding this concurrence. If you have any questions or require additional information, please contact Ms. Barbara Conlin at Barbara.E.Conlin@USACE.army.mil or at 215-656-6557.

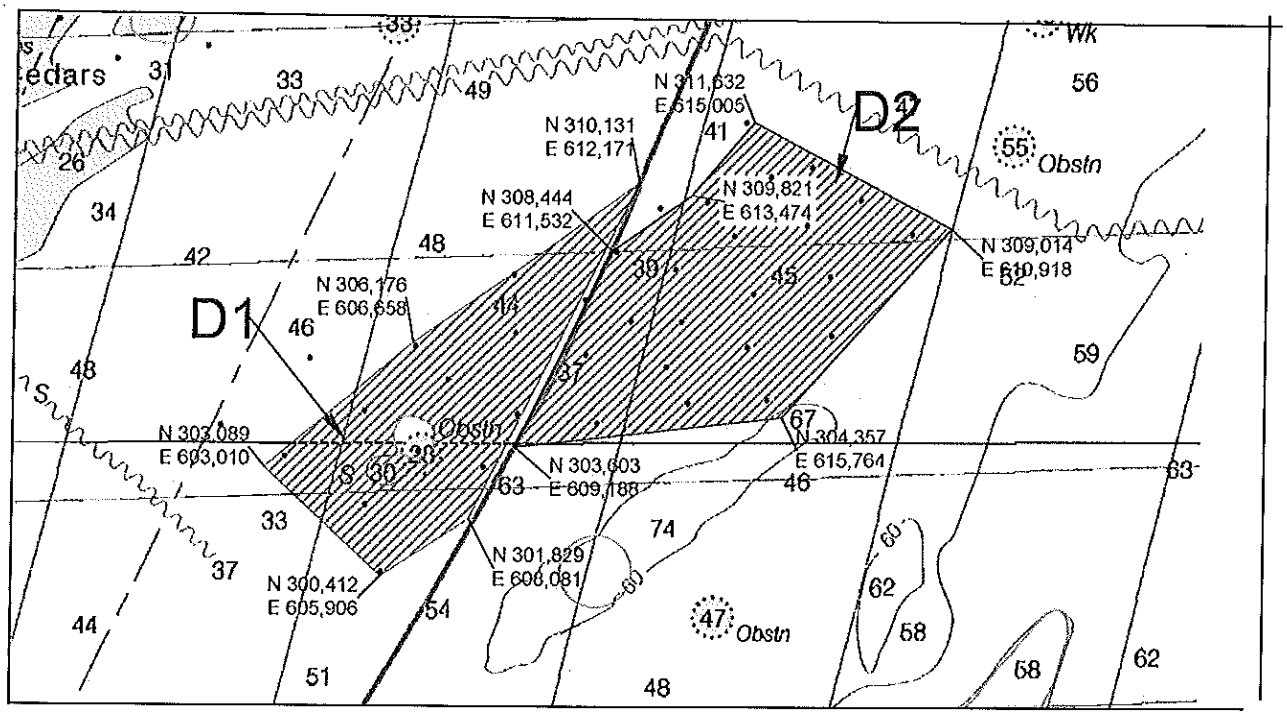
Sincerely,

for C. MacIntosh

Peter R. Blum, P.E.
Chief, Planning Division

Cc: Dr. Jennifer Culbertson, BOEM

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

DEC 23 2013

Peter Blum, Chief
Planning Division
Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Barbara Conlin, Project Biologist
RE: Draft Environmental Assessment, Barnegat Inlet to Little Egg Inlet (Long Beach Island) Storm Damage Reduction Project

Dear Mr. Blum:

We have reviewed the draft environmental assessment (DEA) for the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project dated November 2013. The 50-year plan selected by your agency involves the placement approximately 7.4 million cubic yards (cy) of sand along approximately 17 miles of coastline from Barnegat Inlet to Little Egg Inlet, including 4.95 million cy for the initial berm placement and 2.45 million cy for the dune placement. The 1999 *Final Feasibility Report and Integrated Environmental Impact Statement* (FS/EIS) estimated that 1.9 million cy would be needed for periodic nourishment every seven years. Since 2006, you have constructed 4.5 miles of the project within the municipalities of Surf City, Ship Bottom, Harvey Cedars and Brant Beach, New Jersey.

As you are aware, the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act require Federal agencies to consult with one another on projects such as this. Insofar as a project involves essential fish habitat (EFH), as this project does, this process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH Assessments and generally outlines each agencies obligations in this consultation procedure. We offer the following comments and recommendations on this project pursuant to the above referenced regulatory process.

General Comments

Over the past decade, we have provided you with comments on various documents and reports prepared for this project. Most recently in April 2010, we commented on EFH issues for the use of borrow areas (D1 and D2) offshore of Long Beach Island and one just outside the Barnegat Inlet (A). Only borrow area D1, a 683-acre area centered approximately 2.5 miles off Harvey Cedars, has been used in the partial construction of the project to date. The purpose of this environmental assessment is to evaluate your proposed expansion of borrow area D2, as well as any new information that has become available since the completion of the FSA/EIS in 1999.

According to the DEA, there are no economically viable land-based sources of sand for the large quantities of beach fill required. Consequently, the 1999 FS/EIS evaluated a number of offshore borrow areas to supply the sand for this project. At that time, several borrow areas were excluded from consideration due to environmental concerns, proximity to trans-Atlantic communication cables, and incompatible materials. The 1999 plan proposed the use of borrow areas A, B, D1 and E located offshore of Long Beach Island. Subsequently, borrow areas B and E were eliminated from consideration because they were identified as Prime Fishing Areas under New Jersey's Rules on Coastal Zone Management (N.J.A.C 7:7E, as amended July 18, 1994). Borrow area A was eliminated due its grain size compatibility and the potential effects on the longshore sediment transport. To offset the loss of material due to the elimination of these sand sources, you have identified a 572- acre area directly east of D1, designated as D2, and a 542-acre area southeast of D2, designated as D3 as borrow areas for this project. Following additional geotechnical and geophysical sampling, D2 and D3 have been combined into a 1043-acre area now known as D2. This area is located with the Outer Continental Shelf (OSC) and is under the jurisdiction of the Bureau of Ocean Energy Management (BOEM).

Magnuson Stevens Act (MSA)

The dredging of sand for beach nourishment has the potential to impact both the EFH of a particular species as well as the organisms themselves in a variety of ways. Dredging can damage fishery resources and their habitats through direct impingement of eggs and larvae, through the creation of undesirable suspended sediment levels in the water column, and through deposition of sediments on immobile eggs and early life stages. Such suspended sediment levels can also reduce dissolved oxygen, can mask pheromones used by migratory fishes, and can smother immobile benthic organisms and newly-settled juvenile demersal fish (Auld and Schubel 1978; Breitburg 1988; Newcombe and MacDonald 1991; Burton 1993; Nelson and Wheeler 1997). Sustained water column turbulence can reduce the feeding success of sight-feeding fish such as winter flounder, tautog, and summer flounder. According to Olla *et al.* (1974 and 1975 in Collette and Klein-MacPhee 2002), tautog are opportunistic sight feeders. Winter flounder are also sight feeders and are diurnally active in both inshore and offshore waters (Pearcy 1962 in Collette and Klein-MacPhee 2002).

Dredging can also remove the substrate used by federally managed species as spawning, refuge and forage habitat. Benthic organisms that are food sources for federally managed species may also be removed during the dredging. These impacts may be temporary in nature if the substrate conditions return to preconstruction condition and benthic community recovers with the same or similar organisms. The impacts may be permanent if the substrate is altered in a way that reduces its suitability as habitat, if the benthic community is altered in a way that reduces its suitability as forage habitat or if the dredging occurs so often that the area does not have time to recover.

The EFH assessment included in the DEA evaluates many of the potential impacts to EFH and federally managed species. Overall, the dredging and placement of sand along the coastline will have an adverse effect on EFH and some federally managed species due to the entrainment of early life stages in the dredge, alteration or loss of benthic habitat and forage species, and altered

forage patterns and success due to increased, noise, turbidity and sedimentation. We agree that some effects will be temporary. However, there are several potential adverse effects that are not evaluated adequately in the EFH assessment including the long-term or permanent alteration of the sediment characteristics and topography of the borrow area, and the individual and cumulative effects to surf clams and their EFH.

The mining of sand from the borrow areas may change the geomorphic characteristics of the borrow area. Offshore shoals, including D1, D2, and others typically targeted for use as sand borrow areas are irreplaceable geologic features of the near shore continental shelf. Shoals are dynamic features that diversify the sea floor, producing a variety of substrate types and foraging opportunities for finfish and epibenthic fauna. These areas also serve as congregating features for finfish and provide guiding features for coastal migratory species. In past discussions on this project, we have highlighted the importance of the shoals and the need to maintain the area's geomorphic integrity. In the original EFH assessment prepared for this project and dated September 24, 1999, you stated the dredging operations were designed to mitigate for impacts and to enhance the bottom topography by creating ridges. However, no data has been provided to show that this has been done, and anecdotal information from fisherman suggests that shoal habitat in the region has been significantly impacted.

We are also concerned about the potential permanent alteration of the sediment characteristics in the borrow area. According to the DEA, the use of munitions screens on the dredge intakes to prevent discarded military munitions from being deposited in the beaches, has resulted in borrow area D1 becoming armored with pebbles, stones and hardened biological materials (i.e., crustacean, mulluscan shells, etc.) that are larger than the diameter of the screens. This alteration of the sediment characteristics may result in permanent or long-term effects on EFH and federally managed species that were not considered in the EFH assessment. To determine if any long-term adverse effects have occurred, you should conduct sampling of the borrow area a regular intervals to monitor sediment characteristics and use of the area by benthic organisms, including surf clams, as noted in our original January 2000 consultation on this project. As a monitoring plan has not been developed to date, we continue to recommend that you work with us and the New Jersey Department of Environmental Protection to develop an appropriate monitoring plan. To more fully characterize the cumulative effects of the numerous beach nourishment projects you have in various stages planning and construction, the monitoring program should include all projects along New Jersey's Atlantic coast that are being planned, studied or under construction.

Over the 50-year life of the project, the EFH in the project area will be adversely affected numerous times as each dredging and beach nourishment event occurs. Currently, there is no reporting of acres affected annually or notification to us when construction commences for each project segment or cycle. EFH designations may be modified, the status of a species' stock may change in a manner that warrants additional management measures, or other new information may become available that may change the basis of our EFH conservation recommendations during the life of this project. To ensure that we meet our joint responsibilities to protect, conserve and enhance EFH and minimize adverse effects to living marine resources and their

habitats, you should notify us prior to the commencement of each dredging event so that we may confirm that the EFH determinations and EFH conservation recommendations remain valid, and a full reinitiation of the EFH consultation is not required. This notification should be done prior to the solicitation of bids for the contract so sufficient time is allowed for any recommended modifications to be including in the bid documents. It should also include the location of the segment to be nourished, volumes of sand to be dredged, depth of sand to be removed and the boundaries of the dredging within the borrow area.

To track the cumulative effects of the project on EFH and to monitor the recovery of the borrow area, bathymetric mapping of the borrow area should be provided to us following the completion of each dredging event to demonstrate that the dredge contractor has maintained the ridge and valley structure of the borrow area as agreed to in our 1999 coordination on this project. You should also provide us with annual reporting of the acres of area dredging, volumes removed and depth of removal so that the annual adverse effects to EFH can be quantified.

Finally, we remain concerned about the direct and cumulative effects on surf clams and their EFH. According to the EFH assessment, you have concluded that impacts to surf clams and surf clam EFH would be temporary, and that surf populations are expected to recover. However, from the information in the DEA, it does not appear that you plan to monitor or to demonstrate that recovery has occurred. As discussed above, the repeated dredging may alter the sediment characteristics of the borrow area and change the topography in a manner that may make the borrow area less suitable as EFH for surf clams. To address this concern, we recommend that you include sampling of surf clam densities within the borrow area as part of the regional monitoring program discussed above. Current sampling data should be displayed on a map over the borrow area. Depths and sediment data should be included on the map as well. A similar map should be produced after each monitoring event. Areas of high densities of surf clam should be avoided, such as the southern edge of D2.

Essential Fish Habitat Conservation Recommendations
Pursuant to Section 305 (b) (4) (A) of the MSA, we recommend the following EFH conservation recommendations be incorporated into the project:

1. Dredging should be designed and undertaken in a manner that maintains geomorphic characteristics of the shoals

2. Notification should be provided to our office prior to commencement of each dredging event. Annual reporting to our office should occur regarding acres of borrow area disturbed, the location of the dredging, cubic yardage removed, depth of removal and post-dredging bathymetry of the borrow area.

3. A regional monitoring program of all sand borrow sites should be developed to evaluate recovery of benthic communities (including surf clams) and at all borrow areas used by your agency, and,

4. Areas of high surf clam densities, including the southern end of borrow area D2, should be avoided

Please note that Section 305 (b)(4)(B) of the MSA requires you to provide us with a detailed written response to these EFH conservation recommendations, including the measures adopted by you for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with our recommendations, Section 305 (b) (4) (B) of the MSA also indicates that you must explain its reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with us over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate or offset such effect pursuant to 50 CFR 600.920 (k).

Please also note that a district and further EFH consultation must be reinitiated pursuant to 50 CRF 600.920 (j) if new information becomes available, or if the project is revised in such a manner that affects the basis for the above EFH conservation recommendations.

Endangered Species Act
A number of federally listed threatened or endangered species under our jurisdiction are known to occur in the vicinity of the project area. The species that are likely to be present include threatened loggerhead (*Caretta caretta*) sea turtles as well as endangered Kemp's ridley (*Lepidochelys kempi*), leatherback (*Dermochelys coriacea*) and green *(Chelonia mydas)* sea turtles. In addition, threatened and endangered Atlantic sturgeon (*Acipenser oxyrhynchus oxyrinchus)* are known to occur within the nearshore, coastal waters of the Atlantic Ocean, primarily using these bodies of water throughout the year as a migratory pathway to and from spawning, overwintering, and/or foraging grounds throughout their range.

The federally endangered North Atlantic right (*Eubalaena glacialis*), fin (*Balaenoptera physalus*), and humpback whales (*Megaptera novaeangliae*) are found seasonally in the waters off of New Jersey. North Atlantic right whales are likely to occur in the identified waters between November 1 and April 30. Humpback whales feed during the spring, summer, and fall over a range that encompasses the eastern coast of the United States. Fin whales may also be present off the coast of New Jersey year round. Sei (*Balaenoptera borealis*) and sperm (*Physter macrocephalus*) whales may also be present in the deeper offshore waters. Humpback and fin whales have been observed off the coast of New Jersey.

Section 7 of the Endangered Species Act of 1973 (ESA), as amended requires federal agencies to consult with us to ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or adversely modify or destroy designated critical habitat. You have initiated coordination with our Protected Resources Division (PRD) on this and other beach nourishment projects along the New Jersey coast. PRD is currently awaiting the receipt of a programmatic biological assessment from your office. Once the assessment is received, PRD will begin its review. If you have any questions regarding the section 7 process, or section 7 coordination, please contact Julie Crocker of our Protected Resources Division at (978)282-8480 or julie.crocker@noaa.gov.

We look forward to continued coordination with your office on this project as it moves forward. If you have any questions or need additional information, please do not hesitate to contact Karen Greene at karen.greene@noaa.gov or (732) 872-3023.

Sincerely,

for Louis A. Chiarella,
Assistant Regional Administrator
for Habitat Conservation

cc: NJDEP – Office of Dredging - S. Dietrick
Bureau of Shellfisheries – J. Normant
FWS- Pleasantville- C.Popolizio
EPA – Region II – D. Montella
MAFMC
NEFMC
ASMFC

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DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF
CENAP-PL-E

FEB - 5 2014

Louis A. Chiarella
Assistant Regional Administrator
For Habitat Conservation
United States Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930-2276

Dear Mr. Chiarella:

This is in response to your letter dated 23 December 2013 providing review comments on the draft Environmental Assessment (EA) for the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project, dated November 2013. The 50-year plan proposed to initially place approximately 7.4 million cubic yards (mcy) of sand along approximately 17 miles of coastline from Barnegat Inlet to Little Egg Inlet, including 4.95 mcy for the berm placement and 2.45 mcy for dune placement. The 1999 Final Feasibility Report and Integrated Environmental Impact Statement (EIS) reported an estimated 1.9 mcy would be needed for periodic nourishment every seven years. Since 2006, 4.5 miles of the project within the municipalities of Surf City, Ship Bottom, Harvey Cedars and Brant Beach have been constructed.

Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation Management Act requires a detailed written response to you your Essential Fish Habitat (EFH) conservation recommendations, including the measures we have adopted to avoid, mitigate, or offset impacts of the project on EFH. The enclosure to this letter provides our responses. Consultation with NMFS will be reinitiated pursuant to 50 CRF 600.920 (l) if new information becomes available, or if the project is revised in such a manner that affects the basis for the EFH conservation recommendations. Thank you for your review and comments on the draft EA. Additional language has been added to the EA to elaborate information that your review has brought to our attention.

With respect to your comments regarding Endangered Species Act, we anticipate that our Section 7 consultation and coordination with your Protected Resources Division will continue for this project, as well as other beach nourishment projects along the New Jersey coast, on a project-by-project basis until our programmatic biological assessment has been completed and submitted for review.

The final Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project EA will be provided at the following link: http://www.nap.usace.army.mil/publicnotice. If you have any further questions regarding this project, please contact Ms. Barbara Conlin of the Environmental Resources Branch at (215) 656-6557.

Sincerely,

for C. MacIntosh

Peter Blum, P.E.
Chief, Planning Division
U.S. Army Corps of Engineers

Enclosure

USACE Responses to NMFS Recommendations Provided In the December 23, 2013 Letter Regarding the Draft Environmental Assessment for the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project

1. Dredging should be designated and undertaken in a manner that maintains geomorphic characteristics of the shoals.

Additional wording has been added to the EA to describe the dredging methodology that has been followed in past dredging cycles at Borrow Area D1, and will be implemented in the current project to minimize impacts of natural topographic features, such as sand ridges within the borrow sites. As standard practice, the Corps does not permit dredges to cut deeper than 5-10 feet below existing elevation to avoid the creation of deep pits and the potential for depressions conducive to anoxia. Limiting dredge depth cut also minimizes the potential of exposing strata of differing physical characteristics within the borrow area and avoids altering the benthic habitat.

Current depths in the borrow areas are variable. Borrow Area D1 depths range between -35 and -65 feet NAVD88 and between -40 and -60 feet NAVD88 in Borrow Area D2. Dredge cut depths can vary greatly depending on the type of dredge plant utilized. For each drag arm of a hopper dredge, cuts typically are about 4 feet wide and 3 feet deep. Hydraulic cutter suction dredges can cut lanes approximately 200 feet long and about 5 feet deep with each pass.

Section 3.2.4.1 of the EA presented information on the sand shoal complex as being four times larger in surface area size than the delineated offshore borrow area acreage. Only a portion of the borrow area is dredged per cycle. The proposed dredged quantity for construction comprises about 8% of the shoal sand quantity. Additional geomorphological descriptive information has been added to the EA. Post dredging bathymetric surveys of the borrow areas can be forwarded to your office upon completion of construction.

2. Notification should be provided to our office prior to commencement of each dredging event. Annual reporting to our office should occur regarding acres of borrow area disturbed, the location of the dredging, cubic yardage removed, depth of removal and post-dredging bathymetry of the borrow area.

The District consults with NMFS staff in both the Habitat Conservation Division on Essential Fish Habitat (EFH), and with the Protected Resources Division for species protected under the Endangered Species Act (ESA) prior to project construction for each individual project. However, the Barnegat Inlet to Little Egg Inlet project has been constructed, to date, in sections over the past seven years, as necessary coordination, approvals, and funding became available. In this case, consultation and notification to natural resources agencies has been conducted several times over the seven year period as each section was scheduled for construction. Estimated quantities to be dredged, the borrow area (and boundaries) to be used, the beach segment to be nourished, and the volumes of sand to be dredged are all described in the EA for the remaining unconstructed portions of the project and in all consultation letters. Specifications require the dredging contractor to adhere to all requirements in the Biological Opinion, as directed by your office. As mentioned above as standard practice, the Corps does not permit dredges to cut deeper than 5-10 feet below existing elevation in any borrow site regardless of how deep suitable sand resources occur within the borrow area.

3. A regional monitoring program of all sand borrow sites should be developed to evaluate recovery of benthic communities (including surf clams) and at all borrow areas used by your agency, and

4. Areas of high surf clam densities, including the southern end of borrow area D2, should be avoided.

Additional wording and references have also been added to the EA to further expand upon the discussion of dredging impacts at the borrow site. The revised text elaborates on the discussion of the results of the three studies that were conducted between 1998 and 2012 (both pre- and post-dredging) that are specific to the Borrow Areas D1, and D2 for this project to characterize sediment characteristics and slight changes observed in some samples for grain size, benthic community composition, including surf clams populations, and distribution (Scott and Kelly, 1998; Scott and Bruce, 2008; and Scott, 2012). These slight changes observed in a dynamic environment are not considered significant or permanent alterations. Most studies indicate that dredging has only temporary effects on the infaunal community, and in some studies, differences in infaunal communities were attributed to seasonal variability or to hurricanes rather than to dredging (Posey and Alphin, 2002).

Many studies demonstrate that recolonization of the benthic community can be rapid after a dredging operation, typically taking from a few months to a few years (Brooks *et al.*, 2006; Maurer *et al.*, 1981a,b; 1982, Maurer *et al., 1986;* Saloman *et al.*, 1982; Van Dolah *et al.*, 1984). Recovery of infaunal communities after dredging has been shown to occur through larval transport, along with juvenile and adult settlement, but can vary based on several factors including seasonality, habitat type, size of disturbance, and species' life history characteristics (*e.g.*, larval development mode, sediment depth distribution) (Shull, 1997; Thrush *et al.*, 1996; Zajac and Whitlatch, 1991). Initial recolonization is dominated by opportunistic taxa whose reproductive capacity is high, and flexible environmental requirements allow them to occupy disturbed areas (Boesch and Rosenberg, 1981; McCall, 1977). Highly mobile organisms, such as amphipods, can escape to the water column and can directly resettle after dredging operations are completed (Conner and Simon, 1979). Mobile polychaetes are intermediate of amphipods and bivalves in their capacity to resettle directly after dredging. Bivalves are the least mobile organisms, although pelagic larvae of these species can result in high recruitment. Larval recruitment and horizontal migration from adjacent, unaffected areas initially recolonize the disturbed area (Van Dolah *et al.*, 1984; Oliver *et al.*, 1977).

Scott (2012) resampled undredged areas within Borrow Area D2 as well as resampled Borrow Area D1 (dredged both in 2008 and 2010). D2's eastern expansion area (formerly referred to as Borrow Area D3) was initially sampled so that baseline data would be available for analysis with post-construction data. The benthic community in Area D3 (*i.e.* the easternmost portion of Area D2) was not found to be unique, containing typical east coast fast-growing, opportunistic epifaunal and infaunal species, and similar to other communities in and along the New Jersey coast. Cluster analyses detected benthic population groups associated with the surface sediments collected from each station. These same patterns between benthic community composition and sediment type existed at revisited sampling sites in Borrow Area D1 and D2 as well. The overall benthic community composition, even within these sub-habitats, consists of species that can easily recruit after dredging disturbances.

Benthic community differences detected by cluster analysis results were associated with sediment microhabitat differences detected within the region. Although all of the stations sampled were classified as sand stations, differences in the size of sand particles were detected amongst the stations. Some stations within the borrow areas contained a higher percentage of coarse to gravel sized particles,

some had more of a mix of medium to coarse sand, while others had a predominance of fine sand sediments. Although these differences are important in documenting and determining the benthic community composition currently existing within the proposed expansion borrow area, the differences detected within the sediment habitats is not unique to the area but will assist in post-dredge analysis.

Benthic organisms of the Atlantic Ocean coast (including prey species within EFH) evolved to exist in highly dynamic environments and quickly re-establish populations within disturbed areas from neighboring recruits. The habitats within dynamic environments transition in their community composition. The USACE has conducted living resource evaluations at inlets, nearshore and offshore regions of the New Jersey Atlantic Ocean coast for over 20 years (Stone and Webster, 1991; Scott and Bruce, 1999; Kropp, 1995; Chaillou and Scott, 1997; Scott and Kelly, 1998; Scott, 2004; Scott, 2005; Scott 2007; Scott and Bruce, 2008; and Scott, 2012). The majority of abundant taxa found in these benthic communities have opportunistic life history strategies with fast-growing, short life-cycles of one year or less, allowing these organisms to recover rapidly and recruit into disturbed areas resulting from storms or dredging. Cluster analyses showed groups influenced more by station proximity and sediment type with no apparent influence from dredging operations occurring from two or more years previous, where dredging does not result in any significant changes to substrate type. For example, two stations sampled in 2005, collected from within the vicinity off Great Egg Harbor Inlet dredged in 2003, closely grouped with nearby stations sampled in 1997 and 2003 that were undisturbed (Scott, 2007). Additionally, a reanalysis of the 2003 data collected specifically from dredged and undisturbed areas substantiated the conclusion that the benthic community did not display impacts two years post-dredging (Scott, 2004).

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The dredging contractor requires access to the entire delineated borrow area in order to adhere to the dredging methodology required in the project specifications and obtain the necessary quantities for construction. As mentioned above in response to Conservation Recommendation #1, the Corps does not permit dredges to cut deeper than 5-10 feet below existing elevation to avoid the creation of deep pits or exposing differing strata to minimize changes to benthic habitat. Borrow Area D2 comprises a fraction (roughly 8%) of the entire offshore shoal complex and not all of surface area of the borrow area is dredged in any given dredging cycle. Dredge cuts described above for both hopper and hydraulic cutter suction dredges serve to minimize impacts to natural geomorphic features, such as sand ridges.

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State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF PERMIT COORDINATION AND ENVIRONMENTAL REVIEW
P.O. Box 420 Mail Code 401-07J Trenton, New Jersey 08625-0420
Telephone Number (609) 292-3600
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CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

December 30, 2013

Mr. Peter R. Blum
Chief, Planning Division
Philadelphia District, Corps of Engineers
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390

RE: Barnegat Inlet to Little Egg Inlet, Long Beach Island
Coastal Storm Damage Reduction Project
Long Beach Township, Ocean County

Comments on Draft Environmental Assessment

Dear Mr. Blum:

The New Jersey Department of Environmental Protection's (NJDEP) Office of Permit Coordination and Environmental Review (PCER) distributed, for review and comment, the Draft Environmental Assessment for the proposed **Barnegat Inlet to Little Egg Inlet, Long Beach Island** Coastal Storm Damage Reduction Project. We received this EA on December 3, 2013. Based on the information received, we offer the following comments for your consideration.

Cultural Resources

HPO- L2013-342
HPO Project #14-0736-2

Thank you for providing the Historic Preservation Office (HPO) with the opportunity to review and comment on the potential for the above-referenced project to affect historic and archaeological resources. The HPO has previously had the opportunity to comment on the proposed undertaking through consultation with the United States Department of the Army, Corps of Engineers (Corps) under their obligations pursuant to Section 106 of the National Historic Preservation Act, as amended. In a response dated December 24, 2013 (14-0736-1/L2013-341), the HPO concurred with the Corps determination that, as proposed, the undertaking will have no effect on historic properties within the project's area of potential effects. As a result, no further cultural resource consideration is necessary prior to permit issuance. However, if project plans change or additional resources are discovered during project implementation, pursuant to 800.13 of the National Historic Preservation Act, further review by the Historic Preservation Office will be necessary.

If additional consultation with the HPO is needed for this undertaking, please reference the HPO project number 14-0736 in any future calls, emails, submissions or written correspondence to help expedite your review and response. If you have any questions, please feel free to contact me.

Natural Resources

The NJ Endangered and Non-game Species Program (ENSP) has no current or recent occurrences of breeding (listed) beach nesting birds (piping plover, least tern, black skimmers) in the project area of disturbance. Furthermore, although beach nesting birds are consistently present at Barnegat Light (municipal and state park) and Holgate (Forsythe NWR), they are not close enough to the project area to raise concerns. Both of those aforementioned areas are outside the project area. Additionally, with some minor exceptions (small stretches of beach more recently renourished) nearly all of the habitat in the project area is not suitable for nesting. Bottom line: the likelihood of nesting activity in the project area is very low.

However, ENSP cannot entirely rule out possible nesting if construction activity occurs during the breeding season (March 15-August 31 – combining the species there for those dates). Also, depending on how the project proceeds - it is an especially long/big project, some beaches within the project area may become more suitable as the project begins or moves forward.

ENSP recommends:

The ACOE/contractor would be required to hire a monitor if nesting activity was detected.

If ACOE/contractor work during the nesting season, as soon as any nesting activity were detected, they would have to coordinate/consult with USFWS and ENSP to insure adequate protection of those species, which at the minimum meets the guidelines/requirements of the USFWS for piping plover and state of NJ for least terns and black skimmers.

Also, any towns which do not already have a Beach Management Plan, will be require to develop one on a schedule and means set by the USFWS and ENSP. At the moment, only Surf City and Harvey Cedars are the towns within the project area that have such plans. Those two towns will additionally have to make sure they are continuing to implement their plans.

MARINE & SHELLFISHERIES:

The NJ Marine & Shellfish Bureaus concur with the recommendations of NMFS, to include:

"The project will affect EFH adversely. Individual and cumulative effects are not adequately evaluated and adverse effects have not been minimized.

1. Provide a current map of surf clam densities - a map, show sample locations and densities.
2. Avoid areas of high densities of surf clams. The DEA notes that the majority of clams collected were at the southern end of D2.
3. Maintain geomorphic characteristic of the borrow area. The borrow area should be dredged in manner such at the relative heights of the ridges and valleys remain the same. Dredging should also not occur deeper than the surrounding areas. Provide post- dredging bathymetric surveys to document this.
4. Post dredging surveys of benthic communities done at set intervals after dredging.

Air Quality

The Bureau of Air Quality Planning (BAQP) has reviewed the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Project and will not be submitting any comments on this project.

Land Use

With reference to the above project, we offer the following comments and/or conditions:

1. The National Marine Fisheries Service has reviewed the EA and feel that the proposed work will adversely affect EFH because individual and cumulative impacts have not been adequately evaluated and adverse impacts have not been minimized. The NMFS recommends the following:
   a. Provide a current map of surf clam densities and show the sample locations and densities.
   b. Avoid areas of high densities of surf clams.
   c. Maintain geomorphic characteristics of the borrow area. The borrow area should be dredged in a manner such that the relative heights of the ridges and valleys remain the same. Dredging should also not occur deeper than the surrounding areas. Please provide post-dredging bathymetric surveys to document this.
   d. Post-dredging surveys of benthic communities must be done at set i9ntervals after dredging.
   e. You must notify the NMFS prior to each dredging event.
   f. You must report, annually, the number of acres dredged, the depth of sand removal and volumes of sand removed.
   g. For future reference, it is the opinion of the NMFS that areas identified as Prime Fishing habitats are not acceptable for use as sand borrow areas.

2. The Department has received comment from Todd Pover at Conserve Wildlife NJ and they recommend a timing restriction for the breeding season for beach nesting birds (piping plover, least tern and black skimmer) from March 15 through August 31 of any given year. Further, if nesting activities are detected by the ENSP, the USACOE/contractor shall hire a biological construction monitor for any work during the breeding season under protocol established by the USFWS and ENSP.

Thank you for giving the New Jersey Department of Environmental Protection the opportunity to comment on the Draft Environmental Assessment for the proposed **Barnegat Inlet to Little Egg Inlet, Long Beach Island** Coastal Storm Damage Reduction Project.

Sincerely,

Ruth Foster, PhD., Section Chief
Office of Permit Coordination
and Environmental Review

C: John Gray, NJDEP-PCER
Jesse West-Rosenthal, NJDEP- HPO
Kelly Davis, NJDEP – DFW
Angela Skowronek, NJDEP – BAQP
Eric Virostek, NJDEP – Land Use
Cynthia Coritz, Barnegat Lighthouse State Park

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

FEB - 5 2014

Ruth Foster
Section Chief
Office of Permit Coordination
and Environmental Review
New Jersey Department of Environmental Protection
P.O. Box 420 (mail code 401-07J)
Trenton, New Jersey 08625-0420

Dear Dr. Foster:

This is in response to your 30 December 2013 letter providing review comments on the draft Environmental Assessment (EA) for the *Barnegat Inlet to Little Egg Inlet (Long Beach Island) Coastal Storm Damage Reduction Project*. Thank you for reviewing the draft EA. Your comments and concerns are being considered in preparation of the final EA. The enclosed provides USACE responses to your comments. If you require any further information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at 215.656.6557 or Barbara.E.Conlin@USACE.army.mil.

Sincerely,

for C. MacQuoid

Peter R. Blum, P.E
Chief, Planning Division

Enclosure

USACE Responses to NJDEP Comments Provided In the December 30, 2013 Letter Regarding the Draft Environmental Assessment for the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project

Cultural Resources

The New Jersey Historic Preservation Office (HPO) has concurred with our determination that, as proposed, the undertaking will have no effect on historic properties within the project's area of potential effects. If project plans change, or additional resources are discovered during project implementation, pursuant to 800.13 of the National Historic Preservation Act, further review by the HPO will be necessary. The EA has been revised to include HPO's letter dated 24 December 2013, provided subsequent to the release of the draft document for public review.

Natural Resources

In response to ENSP recommendations, project specifications require the contractor to submit an Environmental Protection Plan for review and approval prior to commencing work. The Environmental Protection Plan is a comprehensive overview of known or potential environmental issues and the steps taken to minimize interference with, disturbance to, and damage to fish, wildlife and plants and their habitats. The protection of threatened and endangered animal and plant species, including their habitat, is the contractor's responsibility in accordance with Federal, state, regional and local laws and regulations.

USACE developed and submitted a programmatic Biological Assessment (BA) for the piping plover and seabeach amaranth as part of formal consultation requirements to the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act in 2001. In 2005, the USFWS developed a Biological Opinion (BO) based upon their review of the BA. The requirements outlined in the BO were addressed as conservation measures in order to comply with this statute. Reasonable and prudent measures and the accompanying terms and conditions provided in the BO are nondiscretionary and were designed to minimize incidental take of piping plover as a result of Corps of Engineers activities along the coast, which includes this project. Formal consultation will be ongoing throughout the LBI project life where the USFWS requires individual Tier 2 consultation prior to construction and each periodic nourishment cycle. The Section 7 consultation process is expected to result in monitoring before, during and after construction, imposing timing restrictions if piping plover nests are found or in areas where recent nesting activities have occurred, construction of temporary protective fencing, and avoidance during the construction with buffer zones. Other issues to be addressed include dune fence orientation, local practices such as beach raking, off-road vehicles, permanent easements for monitoring and management activities, and general public access in or near nesting locations. The project area, specifically the foredune area, would be periodically monitored for the seabeach amaranth. Contingency plans for the presence of seabeach amaranth at the

time of initial construction or periodic maintenance may involve avoidance of the area (if possible), collection of seeds to be planted in non-impacted areas, and timing restrictions.

Although the likelihood of nesting activity by piping plover, least tern or black skimmers within the project area is low, the contractor must ensure that all employees are aware of the potential presence of these species. In the event that any of these beach-nesting species are sighted in the project area between 15 March and 31 August, the contractor must ensure that a bird monitor is on site to monitor construction activities and immediately notify the Corps. The Corps will then coordinate with both the ENSP and USFWS to determine the necessary steps taken to establish sufficient fenced buffer zones between any construction activity and birds exhibiting territorial or breeding behavior. No personnel, vehicles or equipment will be permitted within the buffer zone.

In the event that piping plovers are observed nesting the project vicinity, the contractor may work greater than 1,000 meters from a known nesting area in non-nesting portions of the project after 1 July, with written concurrence from USFWS and ENSP, provided no piping plover activity has been observed within the remaining construction area after 8 monitoring days over the previous 2-week period. Piping plover monitoring shall begin 15 March and continue until all chicks from adjacent nesting sites have fledged or construction-related activities have terminated.

The nonfederal sponsor, the NJDEP, recognizes the requirement for each municipality to develop a Beach Management Plan approved by the USFWS and the New Jersey Division of Fish & Wildlife for those towns scheduled to receive sand replenishment. The Corps is currently working with the NJDEP to implement the Project Partnership Agreement and will continue to work with the NJDEP towards this purpose.

Marine and Shellfisheries

Studies have demonstrated that adverse impacts to Essential Fish Habitat (EFH) and benthic resources (*i.e.* potential EFH prey species) are temporary and not significant. Additional studies (and references) have been added to the EA to address individual and cumulative effects raised in your letter as concerns. This additional information expands upon the discussion of dredging impacts at the borrow site. The revised text elaborates on the results of the three studies that were conducted between 1998 and 2012 (both pre- and post-dredging) that are specific to the Borrow Areas D1, and D2 for this project to characterize sediment characteristics and slight changes observed in some samples for grain size, benthic community composition, including surf clams populations, and distribution (Scott and Kelly, 1998; Scott and Bruce, 2008; and Scott, 2012). These slight changes observed in a dynamic environment are not considered significant or permanent alterations. Most studies indicate that dredging has only temporary effects on the infaunal community, and in some studies, differences in infaunal communities were attributed to seasonal variability or to hurricanes rather than to dredging (Posey and Alphin, 2002).

Many other studies have demonstrated that recolonization of the benthic community can be rapid after a dredging operation, typically taking from a few months to a few years (Brooks *et al.*, 2006; Maurer *et al.*, 1981a,b; 1982, Maurer *et al., 1986*; Saloman *et al.*, 1982; Van Dolah *et al.*, 1984). Recovery of infaunal communities after dredging has been shown to occur through larval transport, along with juvenile and adult settlement, but can vary based on several factors including seasonality, habitat type, size of disturbance, and species' life history characteristics (*e.g.*, larval development mode, sediment depth distribution) (Shull, 1997; Thrush *et al.*, 1996; Zajac and Whitlatch, 1991). Initial recolonization is dominated by opportunistic taxa whose reproductive capacity is high, and flexible environmental requirements allow them to occupy disturbed areas (Boesch and Rosenberg, 1981; McCall, 1977). Highly mobile organisms, such as amphipods, can escape to the water column and can directly resettle after dredging operations are completed (Conner and Simon, 1979). Mobile polychaetes are intermediate of amphipods and bivalves in their capacity to resettle directly after dredging. Bivalves are the least mobile organisms, although pelagic larvae of these species can result in high recruitment. Larval recruitment and horizontal migration from adjacent, unaffected areas initially recolonize the disturbed area (Van Dolah *et al.*, 1984; Oliver *et al.*, 1977).

Scott (2012) resampled undredged areas within Borrow Area D2 as well as resampled Borrow Area D1 (dredged both in 2008 and 2010). D2's eastern expansion area (formerly referred to as Borrow Area D3) was initially sampled so that baseline data would be available for analysis with post-construction data. The benthic community in Area D3 (*i.e.* the easternmost portion of Area D2) was not found to be unique, containing typical east coast fast-growing, opportunistic epifaunal and infaunal species, and similar to other communities in and along the New Jersey coast. Cluster analyses detected benthic population groups associated with the surface sediments collected from each station. These same patterns between benthic community composition and sediment type existed at revisited sampling sites in Borrow Area D1 and D2 as well. The overall benthic community composition, even within these sub-habitats, consists of species that can easily recruit after dredging disturbances.

Benthic community differences detected by cluster analysis results were associated with sediment microhabitat differences detected within the region. Although all of the stations sampled were classified as sand stations, differences in the size of sand particles were detected amongst the stations. Some stations within the borrow areas contained a higher percentage of coarse to gravel sized particles, some had more of a mix of medium to coarse sand, while others had a predominance of fine sand sediments. Although these differences are important in documenting and determining the benthic community composition currently existing within the proposed expansion borrow area, the differences detected within the sediment habitats is not unique to the area but will assist in post-dredge analysis.

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Similar results were found in these studies with respect to surf clam recruitment. The adult clams sampled in 1997 and 1998 were consistent with nearby areas and with clams reaching adult sizes. When juvenile clam abundances collected since 1995 were mapped, the high recruitment ability of the clams was apparent within the Great Egg region. Areas of high recruitment and low recruitment were apparent but did not appear to be affected by previous sand dredging. The area of highest clam recruitment over the 10-year database was in the southwest corner of the borrow area where two past dredging operations had occurred. Figures and data sheets detailing the sample locations and macrobenthic species and surf clam abundances are available for the studies completed to date. The results of these studies were summarized in the EA.

Additional wording has been added to the EA to describe the dredging methodology that has been followed in past dredging cycles at Borrow Area D1, and will be implemented in the current project to minimize impacts of natural topographic features, such as sand ridges within the borrow sites. As standard practice, the Corps does not permit dredges to cut deeper than 5-10 feet below existing elevation to avoid the creation of deep pits and the potential for depressions conducive to anoxia. Limiting dredge depth cut also minimizes the potential of exposing strata of differing physical characteristics within the borrow area and avoids altering the benthic habitat.

Current depths in the borrow areas are variable. Borrow Area D1 depths range between -35 and -65 feet NAVD88 and between -40 and -60 feet NAVD88 in Borrow Area D2. Dredge cut depths can vary greatly depending on the type of dredge plant utilized. For each drag arm of a hopper dredge, cuts typically are about 4 feet wide and 3 feet deep. Hydraulic cutter suction dredges can cut lanes approximately 200 feet long and about 5 feet deep with each pass.

Section 3.2.4.1 of the EA presented information on the sand shoal complex as being four times larger in size than the delineated offshore borrow area acreage. Only a

portion of the borrow area is dredged per cycle. The proposed dredged quantity for construction comprises about 8% of the shoal sand. Additional geomorphological descriptive information has been added to the EA. Post dredging bathymetric surveys of the borrow areas can be forwarded to your office upon completion of construction.

The dredging contractor requires access to the entire delineated borrow area in order to adhere to the dredging methodology required in the project specifications and obtain the necessary quantities for construction. As previously mentioned, the Corps does not permit dredges to cut deeper than 5-10 feet below existing elevation to avoid the creation of deep pits or exposing differing strata to minimize changes to benthic habitat. Borrow Area D2 comprises a fraction (roughly 8%) of the entire offshore shoal complex and not all of surface area of the borrow area is dredged in any given dredging cycle. Dredge cuts described above for both hopper and hydraulic cutter suction dredges serve to minimize impacts to natural geomorphic features, such as sand ridges.

Air Quality

No response required.

Land Use

As mentioned above, the Corps does not believe that individual and cumulative impacts to EFH are either permanent or significant. Over twenty years of pre- and post-monitoring studies have been conducted at New Jersey offshore borrow areas to scientifically evaluate dredging impacts to EFH habitat, including benthic organisms and geomorphology.

The Corps consults with NMFS staff in both the Habitat Conservation Division on EFH, and with the Protected Resources Division for species protected under the Endangered Species Act prior to project construction for each individual project. However, the Barnegat Inlet to Little Egg Inlet project has been constructed, to date, in sections over the past seven years, as necessary coordination, approvals, and funding became available. In this case, consultation and notification to natural resources agencies has been conducted several times over the seven-year period as each section was scheduled for construction. Estimated quantities to be dredged, the borrow area (and boundaries) to be used, the beach segment to be nourished, and the volumes of sand to be dredged are all described in the EA for the remaining unconstructed portions of the project and in all consultation letters. Specifications require the dredging contractor to adhere to all requirements in NMFS' Biological Opinion. The Corps is currently coordinating with NMFS on a project-by-project basis until completion of an updated programmatic Biological Assessment for all New Jersey beach nourishment projects, pursuant to Section 7 of the Endangered Species Act.

The Corps recognizes the NMFS position on Prime Fisheries habitats. The 1999 EIS for this project describes in detail how previously proposed (and some used) borrow

areas have been eliminated from further consideration for this project due to their status as Prime Fisheries Habitat.

Necessary steps required by the contractor to avoid impacting beach nesting birds is described above under "Natural Resources".

References

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

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In Reply Refer To:
14-CPA-0071

Peter R. Blum, Chief
Planning Division
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

JAN 0 7 2014

Dear Mr. Blum:

The U.S. Fish and Wildlife Service (Service), New Jersey Field Office has reviewed the *Draft Environmental Assessment for the Barnegat Inlet to Little Egg Inlet Storm Damage Reduction Project* presenting and evaluating new information pertaining to the U.S Army Corps of Engineers' (Corps) 1999 Final Feasibility Report and Integrated Environmental Impact Statement for the placement of beachfill sand within the 20-mile-long study area.

The Corps proposes to create a 125-foot-wide beach berm at elevation +8.0 North American Vertical Datum (NAVD) and a dune at an elevation of +22 feet NAVD. The dune would be 30-feet wide at its crest and incorporate 347 acres of planted dune grasses and 540,000 linear feet of sand fencing. For initial construction of the project, the Corps proposes to obtain approximately 2.9 million cubic yards (mcy) from Borrow Area D1 and approximately 4.9 mcy from Borrow Area D2. Borrow areas D1 and D2 are located in the Atlantic Ocean east of Surf City, New Jersey. The borrow areas are contiguous, with D1 within State Waters and D2 outside of State Waters. About 2 mcy of sand will be required for periodic re-nourishment at 7-year intervals for a period of 50 years.

AUTHORITY

The following comments are provided pursuant to the National Environmental Policy Act (83 Stat. 852:42 U.S.C. 4321 *et seq.*), the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*), Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), and the Migratory Bird Treaty Act of 1918 (40 Stat.755; 16 U.S.C. 703-712) as amended, ensuring the protection of federally listed endangered and threatened species, and migratory birds.

FEDERALLY LISTED SPECIES

Piping Plover

The federally listed (threatened) piping plover (*Charadrius melodus*) in 2013 was documented nesting at Barnegat Light and within the Holgate Wilderness Area of the Edwin B. Forsythe National Wildlife Refuge (Forsythe NWR). Barnegat Light has adequate dune and berm profiles and is not included in the project. The designation as wilderness requires the Forsythe NWR to maintain the Holgate Unit in its natural state; therefore, it also is excluded from the project.

Piping plovers, as well as the State-listed least tern (*Sterna antillarum*) and black skimmer (*Rhyncops niger*), have not nested within the project area in recent years as the habitat is almost entirely unsuitable. The likelihood of nesting activity in the project area is very low. However, we cannot entirely rule out possible nesting if construction activity occurs during the breeding season (March 15-August 31). Rather than requiring the Corps to hire a biological construction monitor for any work during the breeding season under the protocol established by the Service and the New Jersey Endangered and Nongame Species Program (ENSP), we recommend that the Corps hire a monitor only if nesting activity is detected in 2014 during the initial re-nourishment event. If any nesting activity is detected, the Corps shall coordinate/consult with the Service and ENSP to ensure adequate protection of piping plovers, least terns, and black skimmers.

Individual Tier 2 consultation with the Corps remains required prior to construction and for each periodic nourishment cycle. The Corps shall not rely on Service Tier 2 letters for any nourishment cycle that is later cancelled, delayed, or otherwise modified, but shall rather re-submit updated project information to the Service for further individual Tier 2 consultation.

Seabeach Amaranth

There are no records of the federally listed (threatened) seabeach amaranth (*Amaranthus pumilus*) occurring within the project area since 2002. It is very unlikely that seabeach amaranth will occur in the project area in 2014 but, if detected, we request that the Corps contact this office to coordinate protective measures for this species.

OTHER COMMENTS AND RECOMMENDATIONS

As a condition for receiving Federal assistance for beach nourishment, all municipalities are required to develop a Beach Management Plan approved by the Service and the New Jersey Division of Fish and Wildlife. At the moment, only Surf City and Harvey Cedars are the towns within the project area that have such plans.

The Corps shall require all municipalities within the study area to coordinate with the Service and ENSP prior to placing sand fencing and planting dune-stabilizing native vegetation following each re-nourishment event.

Finally, the Service concurs with the recommendations provided by the National Marine Fisheries Service in their letter to the Corps dated December 23, 2013. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you have any questions pertaining to this correspondence.

Sincerely,

Eric Schrading
Field Supervisor

cc: todd.pover@conservewildlifenj.org
kara.turner@dep.state.nj.us

NJFO:ES:cpopolizio:RP:ES:cap:1/2/14

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DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

FEB - 5 2014

Mr. Eric Schrading
Field Supervisor
U.S. Fish and Wildlife Service
New Jersey Field Office, Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232

Dear Mr. Schrading:

This is in response to your 7 January 2014 letter providing your review comments on the draft Environmental Assessment (EA) for the proposed *Barnegat Inlet to Little Egg Inlet (Long Beach Island) Coastal Storm Damage Reduction Project*. Thank you for reviewing the draft EA and providing comments that have enabled us to revise the report in order to further address these issues.

The USACE developed and submitted a programmatic Biological Assessment (BA) for the piping plover and seabeach amaranth as part of formal consultation requirements to the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act in 2001. In 2005, the USFWS developed a Biological Opinion (BO) based upon their review of the BA. The requirements outlined in the BO were addressed as conservation measures in order to comply with this statute. Reasonable and prudent measures and the accompanying terms and conditions provided in the BO are nondiscretionary and were designed to minimize incidental take of piping plover as a result of Corps of Engineers activities along the coast, which includes this project. Formal consultation will be ongoing throughout the LBI project life where the USFWS requires individual Tier 2 consultation prior to construction and each periodic nourishment cycle. The Section 7 consultation process is expected to result in monitoring before, during and after construction, imposing timing restrictions if piping plover nests are found or in areas where recent nesting activities have occurred, construction of temporary protective fencing, and avoidance during the construction with buffer zones. Other issues to be addressed include dune fence orientation, local practices such as beach raking, off-road vehicles, permanent easements for monitoring and management activities, and general public access in or near nesting locations. The project area, specifically the foredune area, would be periodically monitored for the seabeach amaranth. Contingency plans for the presence of seabeach amaranth at the time of initial construction or periodic maintenance may involve avoidance of the area (if possible), collection of seeds to be planted in non-impacted areas, and timing restrictions.

Concerning your comments specific to piping plovers and the state-listed species of beach nesting birds (*i.e.* least tern and black skimmer), recommendations from both the Service and New Jersey's Endangered and Nongame Species Program (ENSP) are included in the project specifications. The contractor is required to submit an Environmental Protection Plan for review and approval prior to commencing work. The Environmental Protection Plan is a comprehensive overview of known or potential environmental issues and the steps taken to minimize interference with, disturbance to, and damage to fish, wildlife and plants and their habitats. The protection of threatened and endangered animal and plant species, including their habitat, is the contractor's responsibility in accordance with federal, state, regional and local laws and regulations.

Although the likelihood of nesting activity by piping plover, least tern or black skimmers within the project area is low, the contractor must ensure that all employees are aware of the potential presence of these species. In the event that any of these beach-nesting species are sighted in the project area

between 15 March and 31 August, the contractor must ensure that a bird monitor is on-site to monitor construction activities and immediately notify the Corps. The Corps will then coordinate with both the ENSP and the Service to determine the necessary steps taken to establish sufficient fenced buffer zones between any construction activity and birds exhibiting territorial or breeding behavior. No personnel, vehicles or equipment will be permitted within the buffer zone.

In the event that piping plovers are observed nesting the project vicinity, the contractor may work greater than 1,000 meters from a known nesting area in non-nesting portions of the project after 1 July, with written concurrence from the Service and ENSP, provided no piping plover activity has been observed within the remaining construction area after 8 monitoring days over the previous 2-week period. Piping plover monitoring shall begin 15 March and continue until all chicks from adjacent nesting sites have fledged or construction-related activities have terminated.

Concerning your comments on seabeach amaranth, the Corps has coordinated with your office for New Jersey shoreline protection projects and has incorporated the following in the project specifications for this project: the contractor will take all necessary actions to ensure protection of the seabeach amaranth plant. The plant's growing season runs from May through November. The contractor will ensure that all employees are aware of the potential presence of the species and provide sufficient information describing the plant to all on-site personnel. A photograph of seabeach amaranth is included in the project specifications. The contractor must notify the Corps immediately if seabeach amaranth plants are located within the project area. Information obtained from surveys conducted by the ENSP prior to construction shall be provided to the contractor regarding the location of any seabeach amaranth plants located within the project vicinity. If any plants are found, the contractor shall be responsible for establishing a 3-meter buffer zone around any plant and construction activities must avoid any delineated areas until the plant dies back or can be relocated by the appropriate agency.

The nonfederal sponsor, the NJDEP, recognizes the requirement for each municipality to develop a Beach Management Plan approved by the Service and the New Jersey Division of Fish & Wildlife for those towns scheduled to receive sand replenishment. The Corps is currently working with the NJDEP to implement the Project Partnership Agreement and will continue to work with the NJDEP towards this purpose.

If you require any further information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at 215.656.6557 or Barbara.E.Conlin@USACE.army.mil.

Sincerely,

C. MacIntosh

for Peter R. Blum
Chief, Planning Division

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

FEB - 5 2014

Mr. David Fanz
Assistant Director
Coastal Land Use Planning
Division of Land Use Management
New Jersey Department of Environmental Protection
P.O. Box 420
501 E. State Street, Second Floor
Trenton, NJ 08609

Dear Mr. Fanz:

This letter follows our 20 November 2013 letter requesting your review and comment on the 2013 draft Environmental Assessment (EA) for the Barnegat Inlet to Little Egg Inlet (LBI) Storm Damage Reduction Project. We are in receipt of your agency's comments on the draft report (letter dated 30 December 2013) and we are currently preparing the final EA.

The purpose of this letter is to request modification of the existing Section 401 Water Quality Certification and Federal consistency concurrence with the New Jersey Coastal Zone Management Program. The EA evaluates the potential environmental impacts and any new information since completion of the 1999 EIS. The beach nourishment design template is the same as was evaluated in the 1999 EIS. The New Jersey Department of Environmental Protection (NJDEP) is the non-Federal sponsor. This project was authorized in 2000, and is being funded in accordance with The Disaster Relief Appropriations Act of 2013, reference 1(a) (PL 113-2), which was passed by Congress and signed into law on 29 January 2013 in response to the devastating coastal storm, known as Hurricane Sandy, that struck the Eastern region of the United States in October 2012. The legislation provides funding and authority for the Corps of Engineers related to the consequences of Hurricane Sandy, which may include previously authorized but unconstructed projects and any projects under study for reducing flooding and coastal storm damage risks.

The project area is located in southern New Jersey (Long Beach Island) and extends approximately 20 miles. Coastal Zone Federal Consistency concurrences and Section 401 Water Quality Certifications were issued by NJDEP September 2005 and August 2006 (NJDEP Land Use Regulation File No. 1500-99-00011 & 2). Initial construction has occurred along 4.5 miles of the LBI coastline within some sections

of the island (*i.e.* the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township). To date, a 683-acre borrow area, centered approximately 2.5 miles off Harvey Cedars in state waters, has been utilized as the borrow source (Borrow Area D1). Additional sand sources are needed to complete initial construction. An area 1034 acres in size, referred to as Borrow Area D2 in Outer Continental Shelf (OCS) waters, has been identified and evaluated in the draft EA. Under Public Law 103-426, enacted 31 October 1994, we have requested a cooperative agency agreement with the Bureau of Ocean Energy Management (BOEM) to utilize OCS sand resources for this project.

The project will comply with all applicable regulations and policies of New Jersey's approved coastal zone management program. The proposed action would be conducted in a manner that would not violate New Jersey Surface Water Quality Standards. Please provide Section 401 Water Quality Certification and your concurrence with our determination of Coastal Zone Consistency.

If you have any questions regarding this project, please contact Ms. Barbara Conlin of the Environmental Resources Branch at (215) 656-6557 or Mr. Keith Watson of the Project and Program Management Division at (215) 656-6287. Thank you.

Sincerely,

for C. MacIntosh

Peter R. Blum, P.E.
Chief, Planning Division