

**FINDING OF NO SIGNIFICANT IMPACT
FLOOD CONTROL & COASTAL EMERGENCY REPAIR
INDIAN RIVER INLET NORTH SHORE, SUSSEX COUNTY, DELAWARE
FLOOD CONTROL AND COASTAL EMERGENCY ACT (PL 84-99)**

OVERVIEW

The United States Army Corps of Engineers (Corps) has evaluated the dredging of the flood shoal west of Indian River Inlet Bridge in Sussex County Delaware. The beneficial use of this dredged material will be to replace sand removed by Hurricane Sandy on the Delaware Seashore State Park. The Corps authority for the Indian River Inlet and Bay Project is the Flood Control and Coastal Emergency Act (PL 84-99). The project area for this action is the Indian River Inlet flood shoal adjacent to the U.S. Coast Guard (USCG) Facilities and Delaware Seashore State Park, located in Sussex County, Delaware. This work is being funded under the Flood Control and Coastal Emergency Act (PL 84-99).

PURPOSE AND SPECIFICATIONS

From 1957 to 1990, over 2 million cubic yards of sand were dredged from the inlet interior in order to obtain beachfill for the eroding shoreline north of the inlet. However, with the start of the Indian River Inlet sand bypassing program in 1990, no additional inlet interior dredging has been required or performed to obtain beachfill or for maintenance of the channel. In 2009-10 beneficial use of dredged materials was used to fill scour holes present on the northern shore adjacent to the USCG facility. Since 2010 there has been no further dredging of the flood shoal, and beach nourishment has been continually undertaken by DNREC from the sand bypass pump station, pumping on average 100,000 cubic yards (cy) of sand per year.

On October 29, 2012 Hurricane Sandy made landfall on the eastern coast of the United States. The impact of the landfall removed hundreds of thousands of cubic yards of sand from the Delaware Seashore State Park beach. Prior to hurricane Sandy it was estimated the beach was in need of 140,000 cy of sand for replenishment. The sand bypass system located at Indian River Inlet replenishes on average 100,000 cy of material each season. Following Hurricane Sandy it is estimated that the Delaware Seashore beach now needs approximately 520,000 cy of sand to properly nourish the beach and protect existing infrastructures, which is above and beyond the capabilities of the sand bypass system that is currently in place

The plan is to dredge the flood shoal to the authorized depth of -24 ft NAVD. Dredging the flood shoal provides advance maintenance of the channel by reducing infilling of adjacent sediments. The total estimated quantity of material needed from dredging is 520,000 cy. All dredged material will be beneficially used to stabilize and nourish the Delaware State Park beach and to construct a dune system to protect the existing roadway and newly constructed Indian River Inlet Bridge. The material dredged consists mostly of sand (approx. 90%).

In the proposed plan, the Delaware Seashore State Park beach will be replenished by the beneficial use of dredged materials taken from the flood shoal and a protective dune system will be rebuilt. The amount of material needed for replenishment is approximately 520,000 cy. The duration of the dredging operation should be approximately 2-3 months. Dredging and beneficial use of dredged material is the preferred alternative for beach replenishment because it is the most cost effective and least environmentally damaging alternative that would meet the project goals

If no action is taken to replenish beach sands and rebuild dunes, there is a high probability of the complete loss of the beach north of the jetty at Delaware Seashore State Park with potential for loss of infrastructure including the existing roadway and Indian River Inlet Bridge. This action would protect the bridge and roadway from potential failure and reestablish the beach and dune system removed by hurricane Sandy.

COORDINATION

The project was developed by the USACE and DNREC. The Environmental Assessment for the project was forwarded to the U.S. Environmental Protection Agency Region III, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, DNREC, and all other known interested parties.

ENDANGERED SPECIES IMPACT

Coordination with the U.S. Fish and Wildlife Service (FWS), and the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act has been initiated for this project. The EA has determined that there may be an effect from the project on federally listed species, but it's unlikely to be an adverse effect. Section 7 consultation with FWS and NMFS will be completed prior to project construction.

WATER QUALITY / CLEAN AIR ACT COMPLIANCE

There will be temporary impacts on the air and water quality during dredging. However, pursuant to Section 401 of the Clean Water Act, a 401 Water Quality Certificate will be obtained for this project from DNREC. In addition, a General Conformity analysis under the Clean Air Act has determined that emissions associated with the project are below the conformity threshold values established at 40 CFR 93.153 (b) for ozone (NOx and VOCs) in a Moderate Nonattainment Area (50 tons VOCs and 100 tons NOx per year). The project is not considered regionally significant under 40 CFR 93.153 (i).

COASTAL ZONE

Based on the information gathered during the 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 Delaware. A consistency determination from DNREC will be obtained for this project.

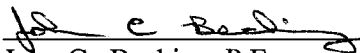
CULTURAL IMPACTS

Several cultural resource investigations have been conducted within and in the vicinity of the proposed project. A 1978 Cultural Resources Overview by Gilbert/Commonwealth of Indian River and Bay designated the original (1988) shoreline protection project area as a low sensitivity zone with respect to Native American archaeological resources. The Indian River Inlet was surveyed in 1984 as part of a larger Delaware inner continental shelf study. Since Indian River Inlet has historically been used for commerce, the potential for shipwrecks in the vicinity is high; however, due to an extensive history of dredging that has occurred in the proposed project area, it is our opinion that the project will have no adverse effects on historic or cultural resources. The selected alternative and the USACE determination of effects will be coordinated with the Delaware State Historic Preservation Officer, Federally Recognized Tribes and other consulting parties pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended and its implementing regulations 36 CFR Part 800.

RECOMMENDATION

Because the Environmental Assessment concludes that the work described is not a major Federal action significantly affecting the human environment, I have determined that an Environmental Impact Statement is not required.

25 April 2013
Date



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

ENVIRONMENTAL ASSESSMENT

**FLOOD CONTROL & COASTAL EMERGENCY REPAIR
INDIAN RIVER INLET NORTH SHORE, SUSSEX COUNTY, DELAWARE
FLOOD CONTROL AND COASTAL EMERGENCY ACT (PL 84-99)**

**PREPARED BY:
PHILADELPHIA DISTRICT
U.S. ARMY CORPS OF ENGINEERS
PHILADELPHIA, PENNSYLVANIA 19107**

April 2013

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1.0 Project Location

The project area for this action is the Indian River Inlet flood shoal and Delaware Seashore State Park beach north of the inlet jetty (Figure 1).

2.0 Project Authority

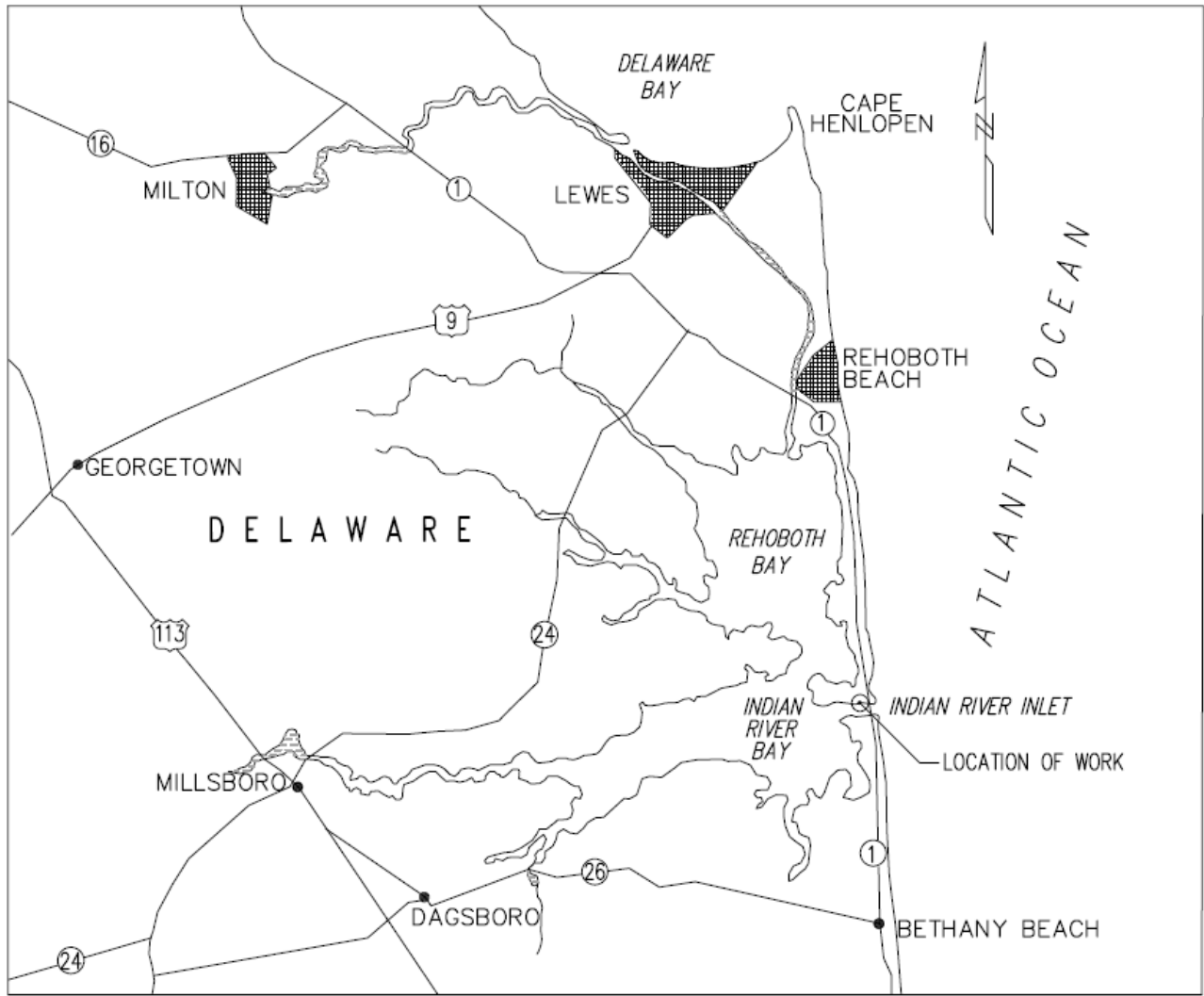
Indian River Inlet (Sand Bypass Facility) is authorized under the Delaware Coast, CapeHenlopen to Fenwick Island Project by Section 203 of the Flood Control Act of 1968 (Public Law No. 90-483; 82 Stat. 739) in accordance with Senate Document Number 90, 90th Congress, 2nd session, and modified by section 869 of the Water Resources Development Act of 1986 (Public Law No. 99-662, 100 Stat. 4182). The General Design Memorandum (GDM) for the sand bypassing component of the project was approved by the Chief of Engineers on January 21, 1986. The proposed work in this assessment is being funded under PL84-99 for Flood Control and Coastal Emergencies (33 U.S.C. 701n) in response to a Federal disaster declaration from Hurricane Sandy.

In accordance with the National Environmental Policy Act (NEPA) of 1969, this assessment supplements previous NEPA documents referenced as: Final Environmental Impact Statement (USACE, 1971), Final Environmental Impact Statement – Draft Supplement (USACE, 1975a), Final Environmental Impact Statement – Indian River Inlet Project Maintenance (USACE, 1975b), Environmental Assessment/Finding of No Significant Impact (FONSI) – Indian River Inlet Sand Bypass Plant (USACE, 1984) and Environmental Assessment/FONSI – Indian River Inlet and Bay Maintenance Dredging and Beneficial Use of Dredged Material Section 104, Navigation (USACE, 2009).

3.0 Purpose and Need for Action

The project area for this action is the Delaware Seashore State Park beach north of the Indian River inlet jetty located in Sussex County, Delaware. The project area encompasses the flood shoal borrow area located near the federal navigation channel within Indian River Inlet and the beach extending from the jetty for approximately 5,200 feet (ft) north. The north shore of Indian River Inlet has a long history of beach erosion due to the interruption of the northward flow of sand caused by the construction of the inlet jetties. This erosion has made the critical infrastructure of Delaware Route 1 and the approach to the Indian River Inlet Bridge more vulnerable to storm damages. To provide a consistent source of sand for the north shore, a sand bypass facility was constructed in 1990 by the Corps of Engineers and is operated and maintained by the State of Delaware. This sand bypass system basically mimics the natural net flow of sand from south to north by actively pumping sand from the south fillet across the inlet, and placed on the north shore. The sand pumping rates are variable, but are on average about 100,000 cubic yards (cy) per year.

Prior to the construction of the sand bypass system, sand was periodically obtained from the interior Indian River Inlet and placed on the north shore beach. From 1957 to 1990, over 2 million cy of sand were dredged from the inlet interior for the Federal navigation



LOCATION MAP

SCALE IN MILES

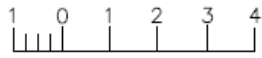


Figure 1. Indian River Inlet project location map.

channel, and to obtain beach fill for the eroding shoreline north of the inlet. However, with the start of the Indian River Inlet sand bypassing program in 1990 and subsequent work on scour holes located near the USCG facility in 2010, no additional inlet interior dredging has been required or performed to obtain beachfill or for maintenance of the channel.

In recent years, the annual pumping of the sand bypass alone at Indian River Inlet has not kept pace with erosion on the north side (due to a number of factors), which resulted in a diminished beach profile, and a higher vulnerability to storm damages. This vulnerability was exposed in October of 2012 when Hurricane Sandy eroded hundreds of thousands of cubic yards of sand from the northern side of the inlet. This resulted in Route 1 and the approach to the newly constructed Indian River Inlet bridge experiencing overwash from the storm surge. This overwash forced the closure of this critical highway for several days until State crews could remove thousands of cubic yards of sand, and make necessary repairs (Photos 1-2).

Following hurricane Sandy, an estimated 520,000 cy of sand will be needed to restore the beach template. This sand will be used to rebuild the dune system, which protects the roadway (Hwy 1), newly constructed Indian River Inlet Bridge, and to replenish the beach. Pumping of sand by DNREC occurs seasonally during non peak tourism months and deposits approximately 100,000 cy of material onto the beach north of the jetty. Replacement of sand on the beach is an emergency action. This area (Photos 3-4), if subjected to additional storm events, would likely fail completely allowing for impacts to transportation on the Highway 1 corridor and possible loss of infrastructure leading to even further costs and loss of coastal transportation and commerce by land. In addition, to the current need of 520,000 cy to repair the north shore beach, a sand source such as the proposed flood shoal sand source (borrow area) (Figure 2) may be required for future actions due to storms/emergency actions, and to supplement the existing annual sand nourishment from the sand bypass plant on an “as needed” basis.



Photo 1: State Route 1 and Indian River Bridge during a recent storm (March 6, 2013).



Photo 2: State Route 1 and Indian River Bridge during a recent storm (water pooling) (March 6, 2013).



Photo 3: North Shore Beach Existing Conditions (under bridge) (February 12, 2013).



Photo 4: North Shore Beach Existing Conditions (February 12, 2013).

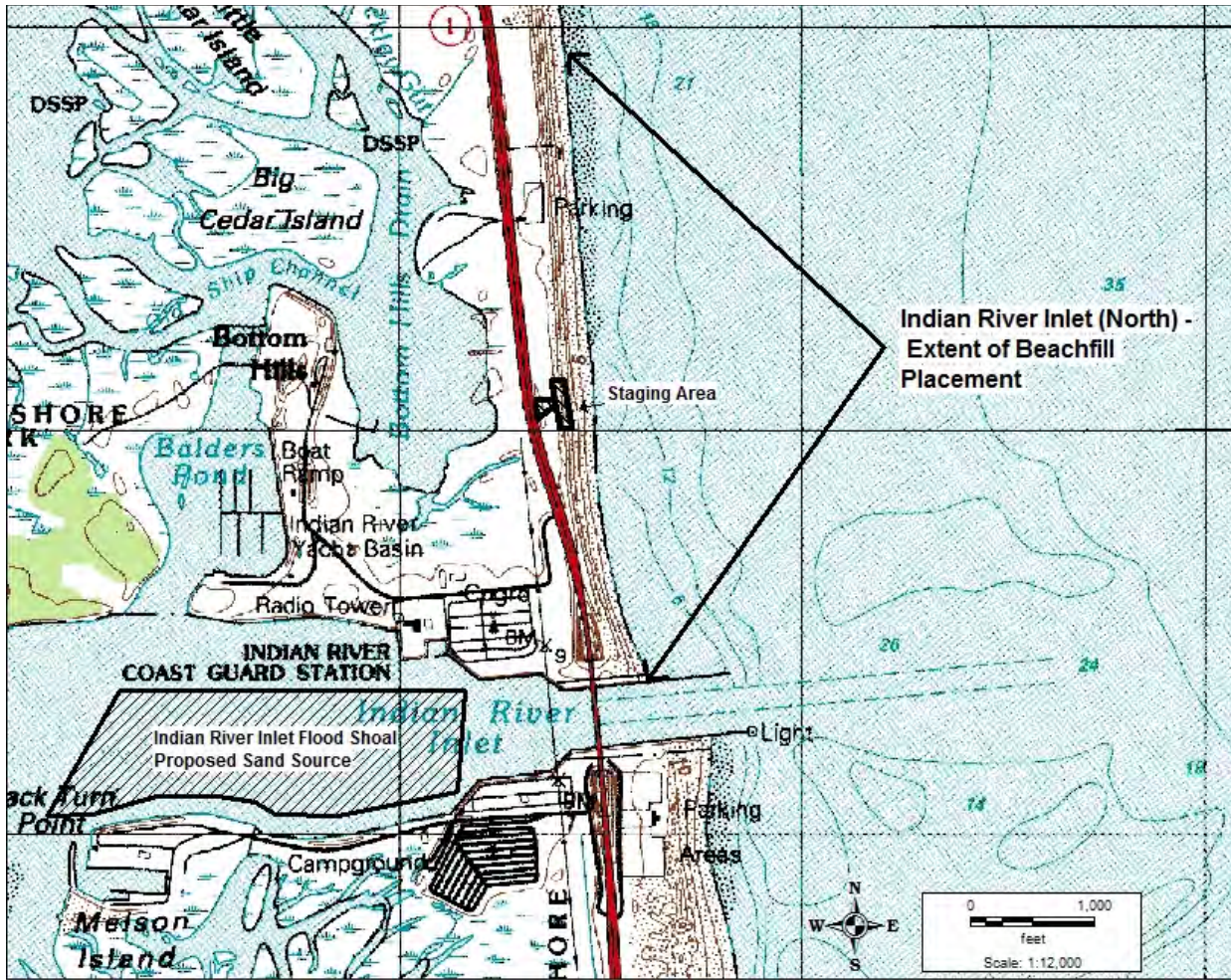


Figure 2. Indian River Inlet project vicinity.

4.0 Alternatives

Protecting the North Shoreline

Alternatives considered for protecting the north shoreline of Delaware Seashore State Park include: no action, dredging of materials from the flood shoal area, and trucking of material from other locations to the site. The alternatives were considered with respect to project cost, habitat loss due to construction activities, destruction of benthic organisms, turbidity increases, disturbances to fish and wildlife, during spawning, nesting, and migratory periods, and recreational uses of the area specifically Delaware's premiere surfing beach located in the State Park.

No Action

If no action is taken to nourish the beach, continued erosion will occur particularly during storm events until such a time that the roadway and newly constructed bridge will be endangered and or impassable. Loss of the inlet crossing is unacceptable as it is the only means of reaching the other side of the inlet versus driving the long way around. First responders and emergency personnel rely on the bridge and road network in the State Park to access areas in and around the Indian River area by land. Loss of the road during recent storm events has led to extended response and travel times involving first responders, complicating patient delivery to medical facilities in a timely manner and economic interruptions.

A significant quantity of sand is available within Indian River Inlet to replenish the beach. It would be necessary to dredge the shoal in the inlet to a depth of -24 NAVD, and place the sand in such a position as to provide storm damage reduction benefits.

Dredged material from flood shoal to replenish North shoreline

The preferred alternative is to dredge the flood shoal to a depth of -24 ft NAVD. Dredging the flood shoal also provides advance maintenance of the channel by reducing infilling of adjacent sediments. The total estimated quantity of material to be dredged is approximately 520,000 cy and will be removed from the flood shoal by hydraulic pipeline dredging. All dredged material will be beneficially used to nourish the beach, replenishing the sand there and to rebuild dunes removed by Hurricane Sandy. The material to be dredged consists mostly of sand (approx. 94%). In addition to the current need of 520,000 cy, this flood shoal sand source may be required for future actions due to storms/emergency actions, and to supplement the sand nourishment from the sand bypass plant on an "as needed" basis.

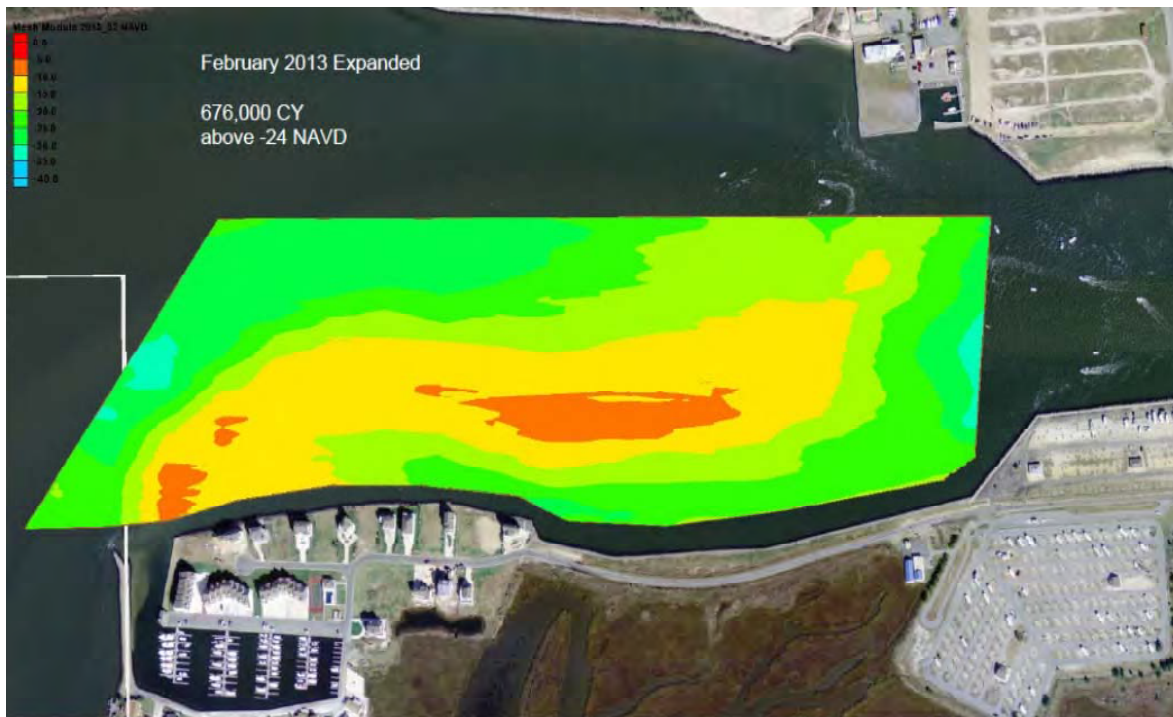


Figure 3. Flood shoal area showing existing bathymetry (February 2013). Proposed dredging depth is to -24 ft. NAVD and potentially includes entire colored area.

Trucking of material from sand quarries to the site

Adequate material is available and located inland in sand quarries. This material would be suitable to replenish sands lost on the beach and could be used to rebuild the dune system. This option would not be as desirable. Costs associated with transporting 500,000 plus cy of material at roughly 12 cy per truck, the wear and tear on the existing road system, increased emissions, and the increased traffic on an already congested roadway are all factors that negatively impact this project. Therefore, the trucking of materials is not recommended.

Contractors Staging Area

Regardless of the alternative used to replenish the beach contractor staging areas must be created. The alternatives for use of staging areas are, no staging area, and areas located directly under IRI bridge and on the beach approximately 2300 ft north of the jetty.

Staging Areas Under IRI Bridge

Two areas exist that were used by the contractor in the building of Indian River Inlet Bridge. These areas span two spaces directly under the newly constructed bridge and will be used as concurrent staging areas with an area on the beach. Storage of equipment and materials in these areas allots for mentioned items to be in close proximity to the location of proposed work. Problems arise as to daily movement of materials and equipment from these staging areas to the worksite, possible damage to the existing bridge could result from impacts and collisions from the movement of pipe sections and heavy equipment. A benefit is that these areas are already disturbed and no additional special measures would need consideration. (Figure 5)

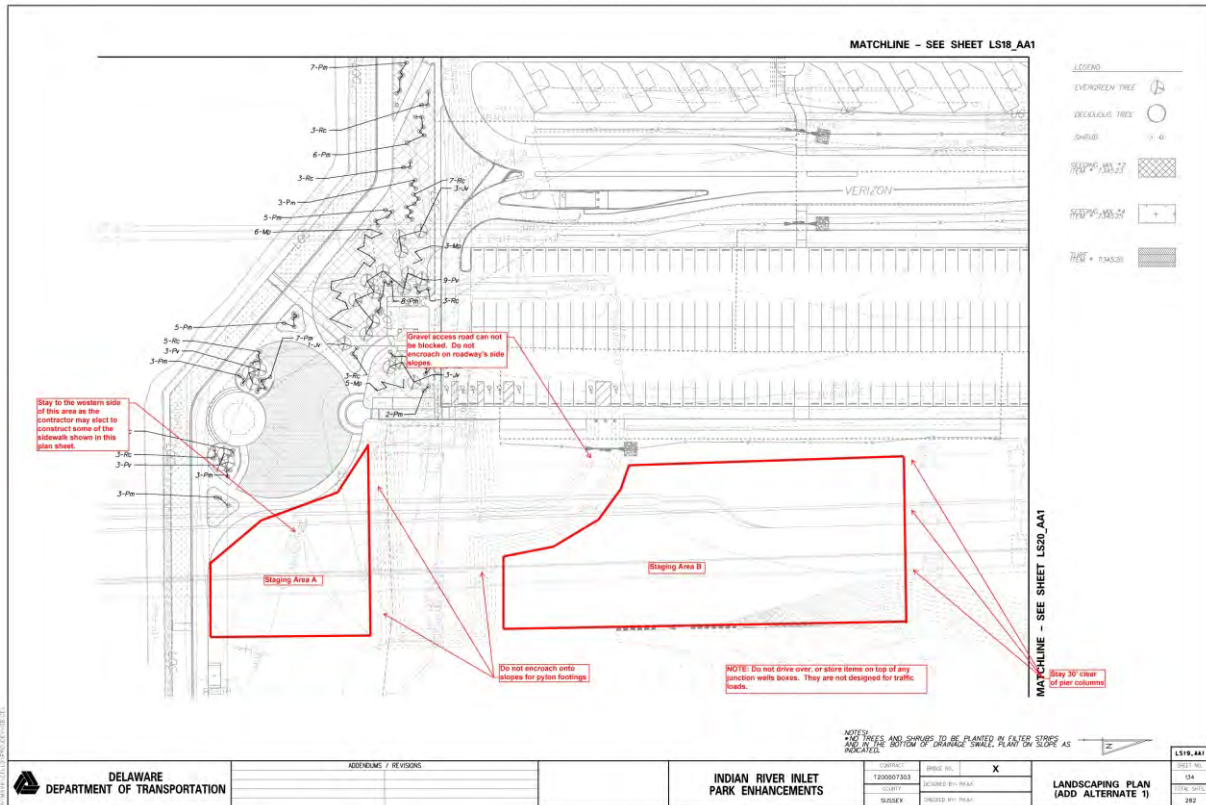


Figure 4: Proposed staging areas A and B under IRI bridge

Staging area on the beach

The concurrent staging area is a location on the beach roughly halfway up the proposed project area. The proposed staging area will be located 2,300 ft north of the jetty and encompass an area 400 ft long by 100 ft wide. Access to this area will be in the form of a temporary road that will be 25 ft wide by 100 ft long lined by geotextile and covered with gravel. Both access road and staging area will be delineated by 4-foot - plastic construction fence. The access road and staging area will be temporary in nature and will be removed when the staging area is no longer needed returning the beach and access road areas to pre construction conditions. Consultation with Delaware State Parks affirms that the likelihood of any threatened or endangered species in the area is unlikely, but surveys of the area for the federally listed piping plover and seabeach amaranth will be conducted prior to construction activity. A potential problem with the proposed area involves high tides as the area is located within the historical high tide zone. If an unseasonable or storm driven high tide occurs then equipment and materials will need to be relocated. (Figure 6).



Figure 5: Proposed staging area on beach



Photo 5: Indian River Inlet project area showing beach staging area

Preferred Design Alternative

The preferred design alternative for the project will be for dredging of the flood shoal area to a depth of -24 NAVD and beneficial use of dredged material to nourish the beach north of the jetty. This would be accomplished by dredging and filling of approximately 520,000 cubic yards of sand to restore a berm and dune system on the north shore for a length of approximately 5,200 linear feet beginning from the north jetty, and extending northward. The construction template will result in a 100 to 150-ft wide berm with an elevation of +9.0 ft NAVD and a foreshore slope of 5H:1V. The berm will have a dune on top with an overall dune crest elevation of +16.0 ft NAVD and width of 25 ft with 3H:1V slopes. The installation of dune fencing, crossovers and dune grass plantings would subsequently be conducted by the State of Delaware. A staging area will be needed for the contractor and a site designated 2,300 ft north of the jetty has been identified and will be used in conjunction with two areas located under the IRI bridge.

Overall, adverse environmental effects from dredging the flood shoal would be minor and short-lived for preferred alternatives. The beneficial use of dredged material would allow the immediate improvement of navigation in the Bay, as well as, protecting the shoreline north of the jetty there by preserving the newly constructed bridge and existing roadway from erosion. Environmentally, dredging the flood shoal has short-term, temporary impacts to the Indian River Inlet ecosystem, but should not have any long-term detrimental impacts on the area save the change from shallow water habitat to deep water habitat in the shoal area. The use of staging areas is beneficial to the project decreasing costs and emissions from the transport of personnel and equipment to the site. Environmental impacts from the staging areas will be minimal as the area under the IRI bridge has been previously disturbed and the area designated on the beach has

been scoured by hurricane Sandy lending to the belief that there exists very little chance of any threatened or endangered flora or fauna to be present in these areas. The preferred design alternative is the most cost effective and least environmentally damaging alternative that would meet the project goals. Representative plans (plan and cross section views) can be seen in Figures 7-10. In addition, a summary of the alternatives can be found in Table 1.

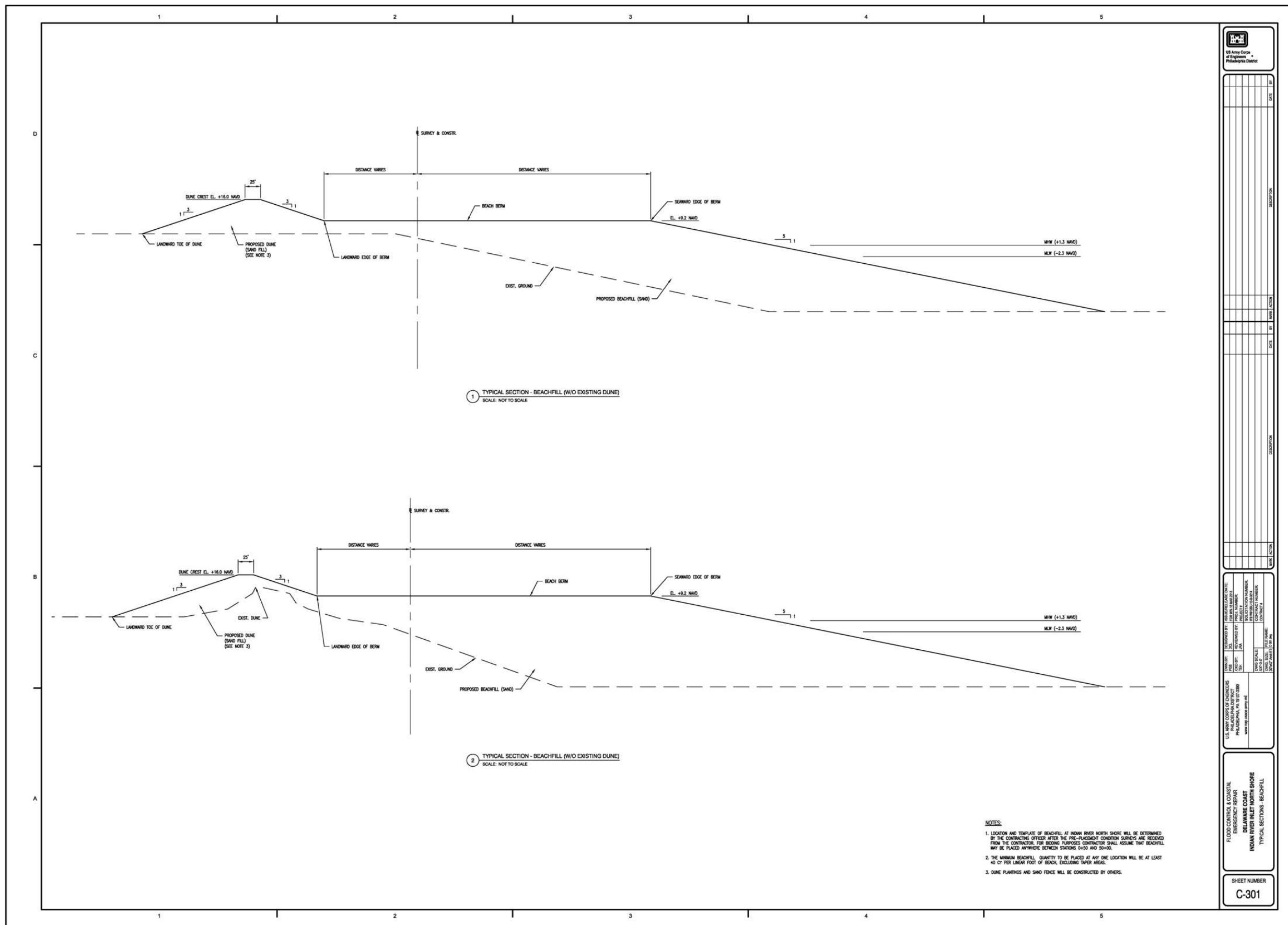


Figure 6: Typical cross section of Beach

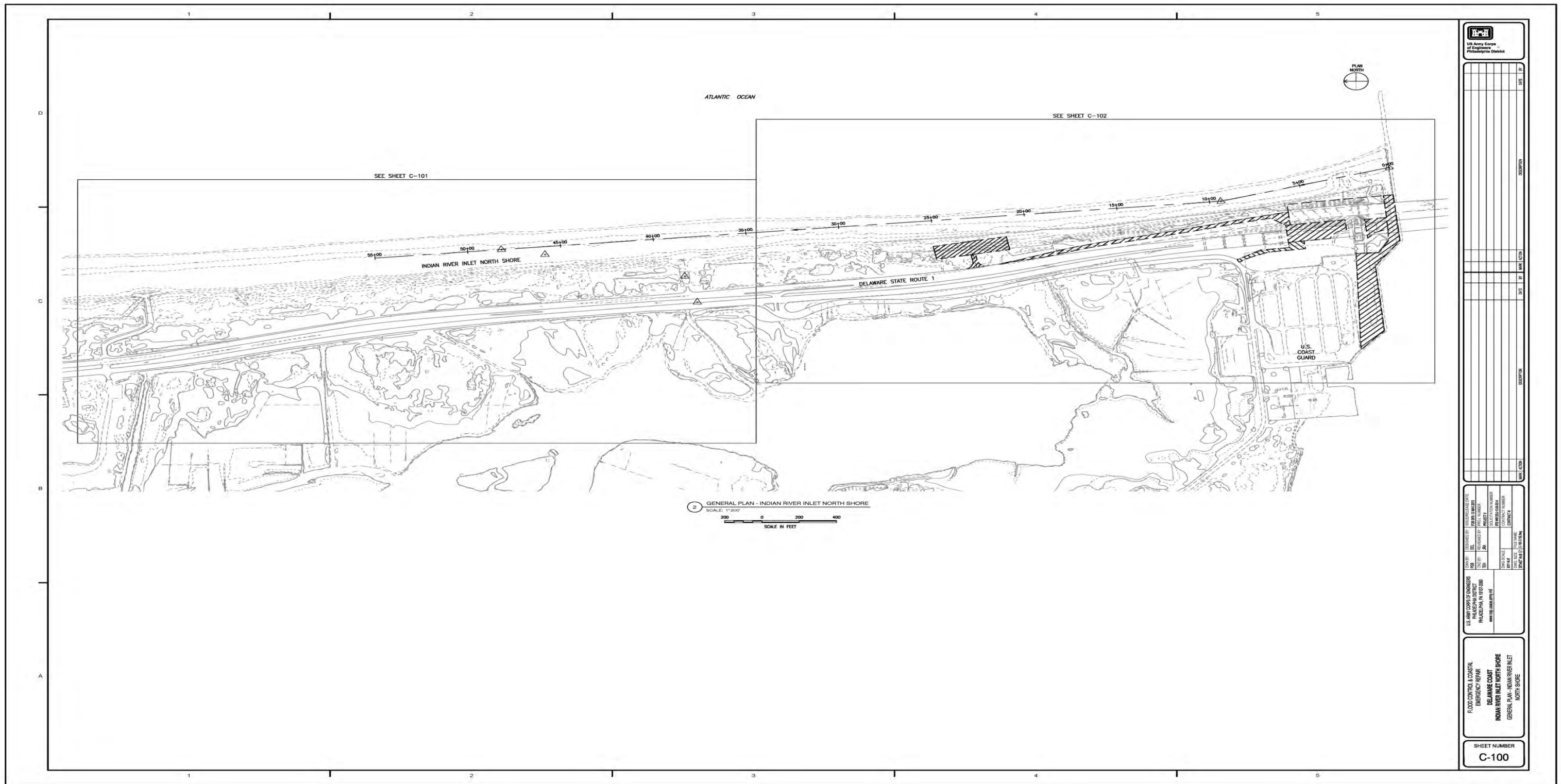


Figure 7: General Plan

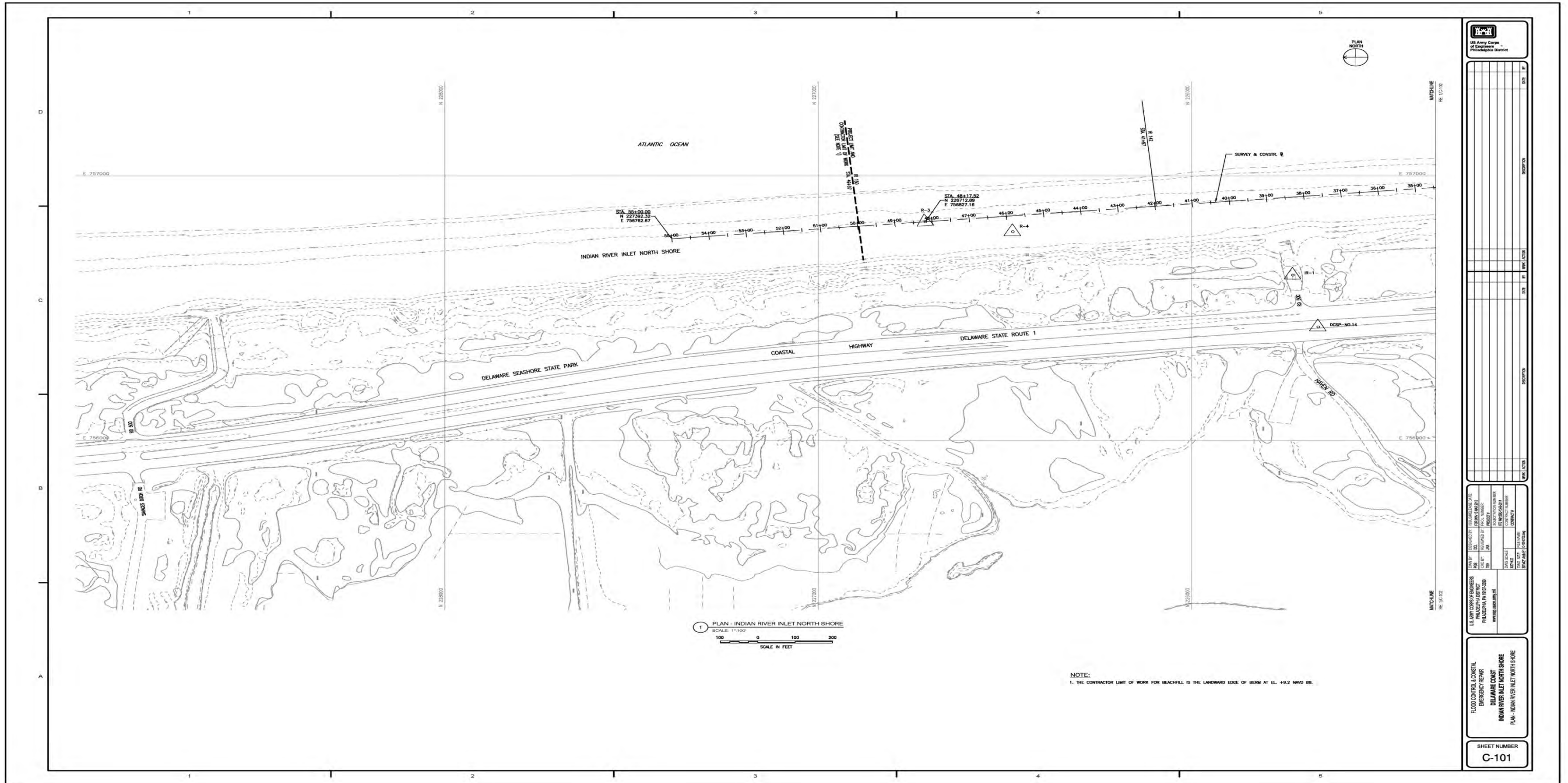


Figure 8: Plan view North Section

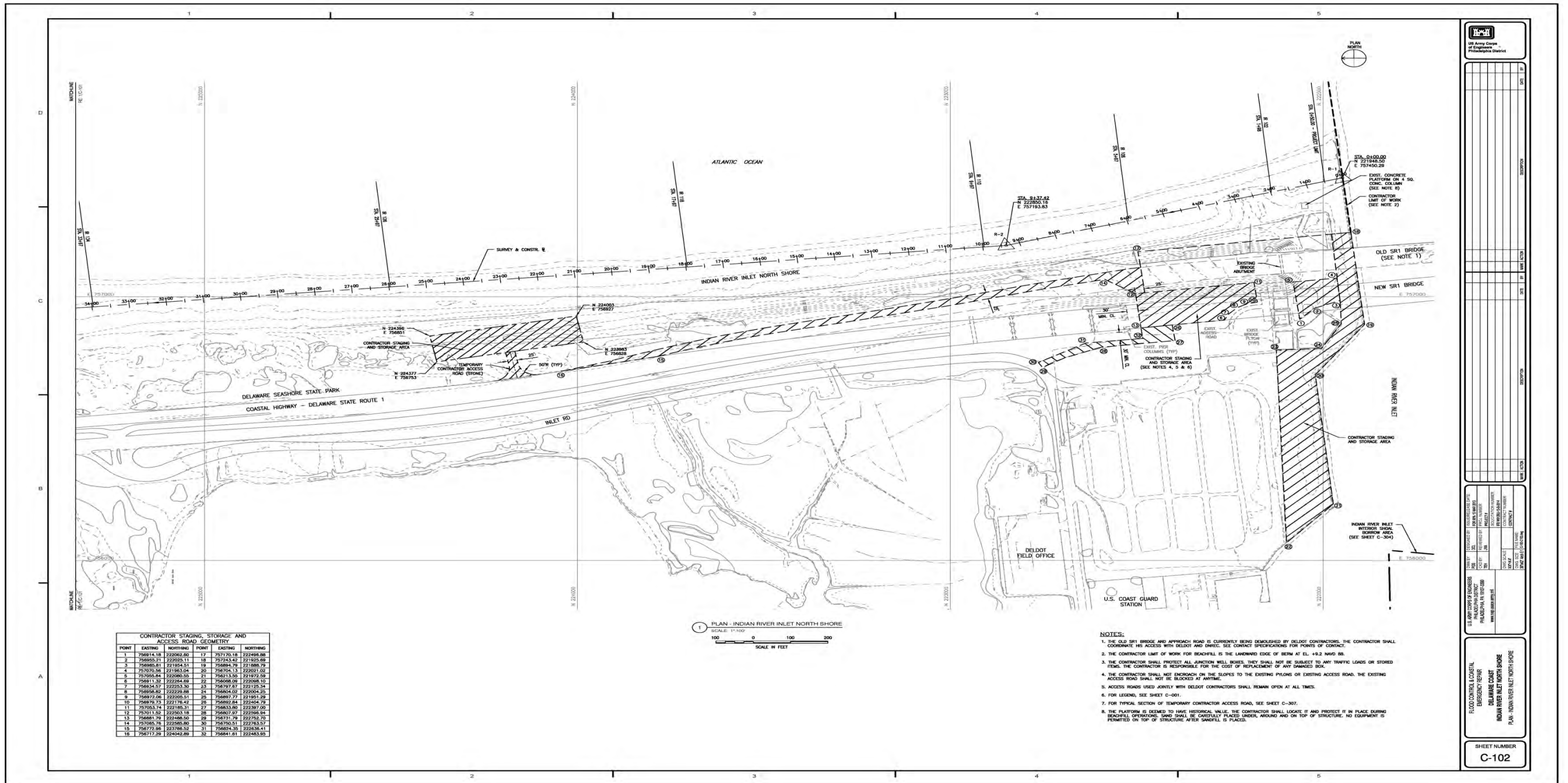


Figure 9: Plan view South Section

Table 1. Comparison of Major Alternatives for Protecting the Delaware Seashore State Park Beach north of the jetty

Alternative	Potential Issues / Support	Cost	Benefits	Conclusion
No Action	<ul style="list-style-type: none"> -Does not solve the problem. -Existing structures at risk. (inlet bridge, roadway, jetty/beach) -Significant economic damages 	\$0	None	Not recommended.
Dredging of Inlet Flood Shoal Area (beneficial use of dredged material)	<ul style="list-style-type: none"> - Short-term environmental impact during dredging/filling to aquatic biota and wildlife. - Temporary turbidity plume during dredging/filling -Temporary impacts on recreation (fishing, surfing, etc.) 	Low	<ul style="list-style-type: none"> -Storm damage reduction for critical infrastructure (IRI Bridge and Route 1 approach). - Provides for improved, safer navigation in the Inlet. - Provides deep water habitat in Inlet -Provides materials suitable for project with limited transportation costs 	Recommended.
Off site trucking of materials to project	<ul style="list-style-type: none"> - Most costly - Does not improve navigation in the Inlet. -Increased wear and tear on roads -Increased traffic on local roads -Increased construction duration 	High	<ul style="list-style-type: none"> -Storm damage reduction for critical infrastructure (IRI Bridge and Route 1 approach). - Will provide adequate amounts of material 	<p>Not recommended.</p> <p>Does not meet project goals.</p>

5.0 Existing Environment

The project area is the southern interior shoreline of Indian River Inlet (flood shoal) and the Delaware State Park beach north of the jetty, located in Sussex County, Delaware. Figure 3 illustrates the existing bathymetric conditions in Indian River Inlet.

A geotechnical investigation of the Indian River Inlet Flood Shoal was conducted from 5/18/2009 through 5/20/2009 for the Philadelphia District. O'Brien & Gere, a sub-contractor for the Philadelphia District, was used to conduct the investigation, complete the boring logs and classify the samples. O'Brien & Gere contracted Uni-Tech Drilling Co., Inc. to perform the borings. Three borings were advanced through the shoal using standard penetration testing (SPT) and the drive and wash method. The location and percent composition of the samples collected from each of the borings is shown in the table 3 below. All of the borings were advanced to a depth of 24 ft below the top of the shoal. All of the samples collected from the top of the shoal to the maximum dredge depth for this project were classified as poorly graded sand (averaged over the three samples to be 94%) (Table 3).

Table 2. Soil Composition of Samples Collected from the Proposed Dredging Area.

Sample Number	Northing	Easting	Classification	Percent Gravel	Percent Sand	Percent Fines
KFB-32	221309	753626	24	0-6	90-98	1-3
KFB-33	221396	754203	24	0-2	93-98	1-5
KFB-34	221481	754802	24	0-11	85-98	1-3

Additional geotechnical investigations of the Indian River Inlet Flood Shoal were conducted on February 13, 2013 by the Philadelphia District Army Corps of Engineers. Five grab samples were taken at different locations of the flood shoal. Grab samples were taken at a depth of six inches and subjected to a sieve analysis. All of the samples taken at the grab depth of six inches showed poorly graded sands (averaged over five samples to be 98%) (Table 4)

Table 3. Soil Composition of Grab Samples Collected from Proposed Dredging Area

Sample Number	Northing	Easting	Classification	Percent Gravel	Percent Sand	Percent Fines
Sample #1	221270.95	754804.84	Grab	0	99.8	0.2
Sample #2	221256.66	753824.39	Grab	0	99.4	0.6
Sample #3	221277.54	755555.90	Grab	1.7	97.3	1.0
Sample #4	221527.54	754825.19	Grab	1.3	98.5	0.1
Sample #5	220969.21	754795.83	Grab	0.2	99.3	0.5

The Indian River Inlet flood shoal was sampled by coring in May of 2009. Three cores were cut to -24 NAVD. Logs report acceptable material existing to a depth of at least -20 NAVD. USACE assumes elevations of top of sand have been restored since the 2009-2010 dredging. Current elevations of the flood shoal suggest the presence of appreciable amounts of suitable material for beach replenishment. Materials that have deposited since the 2009-2010 dredging are not directly represented by core sample logs generated in 2009, but recent grab samples are very likely good representations of current shoal composition.

5.1 Fishery Resources

Surveys conducted in the 1960s in the project area identified 38 species in Indian River Bay. Five of those species accounted for 92% of the catch. These species were striped killifish (*Fundulus majalis*), Atlantic silverside (*Menidia menidia*), mummichog (*Fundulus heteroclitus*), winter flounder (*Pseudopleuronectes americanus*), and bay anchovy (*Anchoa mitchilli*). Although Indian River Bay does not support a commercial fishery, it indirectly contributes by serving as a spawning and nursery area for several economically valuable species. Species known to spawn in the bay include winter flounder, bay anchovy, Atlantic menhaden (*Brevoortia tyrannus*), Atlantic silverside, and hogchoker (*Trinectes maculatus*). Species known to use the upper estuary as a nursery area, include spot (*Leiostomus xanthurus*), weakfish (*Cynoscion regalis*), Atlantic menhaden, and bluefish (*Pomatomus saltatrix*). Recreational fishing in Indian River Bay is popular and sport fishes include winter and summer flounder, snapper (*Lutjanus campechanus*), blue fish, striped bass (*Morone saxatilis*), and blowfish (*Sphoerides maculatus*). Diadromous species such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), striped bass and American eel (*Anguilla rostrata*) use the inlet to reach freshwater tributaries for spawning or growth to maturity (NMFS, 2013).

Essential Fish Habitat

Under provisions of the Magnuson-Stevens Act, areas along the Atlantic coast, including the proposed project area are designated as Essential Fish Habitat (EFH) for species with Fishery Management Plans (FMP's). The NMFS has identified EFH within 10' X 10' square coordinates. The study area contains potential EFH for various life stages for 27 species of managed fish. Table 5 presents the managed species and their life stage that EFH is identified in the Indian River Inlet area. The habitat requirements for the identified EFH species and their representative live stages are provided in Table 5.

Table 4. Summary of Essential Fish Habitat (EFH) Designation for Indian River Inlet (NMFS Correspondence, 2013).

Species	Eggs	Larvae	Juveniles	Adults
little skate (<i>Raja erinacea</i>)			X	X
winter skate (<i>Leucoraja ocellata</i>)			X	X
clearnose skate (<i>Raja eglanteria</i>)			X	X
bluefin tuna (<i>Thunnus thynnus</i>)	X	X	X	X
red hake (<i>Urophycis chuss</i>)	X	X	X	
skipjack tuna (<i>Katsuwonus pelamis</i>)	X	X	X	X
winter flounder (<i>Pseudopleuronectes americanus</i>)	X	X	X	X
windowpane flounder (<i>Scophthalmus aquosus</i>)	X	X	X	X
Atlantic sea herring (<i>Clupea harengus</i>)			X	X
monkfish (<i>Lophius americanus</i>)	X	X		
bluefish (<i>Pomatomus saltatrix</i>)			X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)			X	X
summer flounder (<i>Paralichthys dentatus</i>)		X	X	X
scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
black sea bass (<i>Centropristis striata</i>)	n/a		X	X
smooth dogfish (<i>Mustelus canis</i>)	X	X	X	X
white shark (<i>Carcharodon carcharias</i>)	X	X	X	X
king mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	X	X
cobia (<i>Rachycentron canadum</i>)	X	X	X	X
sand tiger shark (<i>Carcharias taurus</i>)*		X		X
common thresher shark (<i>Alopias vulpinus</i>)	X	X	X	X
Atl. sharpnose shark (<i>Rhizopriondon terraenovae</i>)				X
dusky shark (<i>Carcharhinus obscurus</i>)*		X		
sandbar shark (<i>Carcharhinus plumbeus</i>)		X	X	X
scalloped hammerhead shark (<i>Sphyrna lewini</i>)			X	
tiger shark (<i>Galeocerdo cuvieri</i>)		X		

*Species of concern

Table 5. Habitat Utilization of Identified EFH Species Identified in the Indian River Inlet (NMFS Website, 2013)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
little skate (<i>Raja erinacea</i>)				Continental shelf, but will occasionally come into shallow waters during the summer months. Juveniles and adults have been found, in Delaware Bay and sporadically in the Hudson-Raritan estuary.
winter skate (<i>Leucoraja ocellata</i>)				Continental shelf waters, but rarely inshore.
clearnose skate (<i>Raja eglanteria</i>)				Continental shelf, but will occasionally come into shallow waters during the summer months. Juveniles and adults have been found, in Delaware Bay and sporadically in the Hudson-Raritan estuary.
bluefin tuna (<i>Thunnus thynnus</i>)	In pelagic and near coastal surface waters	In pelagic and near coastal surface waters	All inshore and pelagic surface waters warmer than 12 C	In pelagic waters from the 50 m isobath
skipjack tuna (<i>Katsuwonus pelamis</i>)	In offshore waters, from the 200 m isobath	In offshore waters, from the 200 m isobath	In pelagic surface waters from 20 to 31 C	In pelagic surface waters from 20 to 31 C
red hake (<i>Urophycis chuss</i>)	Surface waters of inner continental shelf, peaks in June and July. Temps <10 C <25% salinity	Surface waters, peaks in Sept and Oct. Temps <19 C >0.5% salinity <200 m depth	Bottom habitats with shell fragments Temps <16 C 31-33% salinity <100 m depth	Bottom habitats in depressions (mud or sand) Temps <12 C 33-34% salinity 10-130 m depth
winter flounder (<i>Pleuronectes americanus</i>)	Bottom habitats (muddy sand, sand, gravel), February to June. Temps <10 C 10-30% salinity <5 m depth	Pelagic and bottom waters, March to July. Temps <15 C 4-30% salinity <6 m depth	Bottom habitats (mud or fine grained sand) Temps <25 C 10-30% salinity 1-50 m depth	Bottom habitats (mud, sand, gravel) Temps <25 C 15-33% salinity 1-75 m depth
windowpane flounder (<i>Scopthalmus aquosus</i>)	Surface waters, peaks May and Oct Temps <20 C <70 m depth	Pelagic waters, peaks May and Oct Temps <20C <70 m depth	Bottom habitats (mud or fine grained sand) Temps <25 C 5.5-36% salinity 1-100 m depth	Bottom habitats (mud or fine grained sand) Temps <26.8 C 5.5-36% salinity 1-100 m depth
Atlantic sea herring (<i>Clupea harengus</i>)			Pelagic waters and bottom habitats Temps <10 C 26-32% salinity 15-135 m depth	Pelagic waters and bottom habitats Temps <10 C >28% salinity 20-130 m depth
monkfish (<i>Lophius americanus</i>)	Surface waters, March to Sept Temps <18 C 15-1000 m depth	Pelagic waters, peaks March to Sept Temps 15 C 25-1000 m depth		
bluefish (<i>Pomatomus saltatrix</i>)			Pelagic waters, Mid-Atlantic estuaries May to Oct Temps 19-24 C 23-36% salinity	Pelagic waters, Mid-Atlantic estuaries April to Oct Temps 14-16 C >25% salinity

Table 5. Habitat Utilization of Identified EFH Species Identified in the Indian River Inlet (NMFS Website, 2013)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
Atlantic butterflyfish (<i>Peprilus triacanthus</i>)			Pelagic waters, estuaries spring to fall Temps 3-28 C 3-37% salinity 1-365 m depth (most <120)	Pelagic waters, estuaries summer to fall Temps 3-28 C 4-26% salinity 10-365 m depth (most <120)
summer flounder (<i>Paralichthys dentatus</i>)		Pelagic waters, peaks May and Oct Temps 9-12 C 23-33% salinity 10-70 m depth	Demersal waters (mud, but prefers sand) Temps >11 C 10-30% salinity 0.5-5 m depth	Demersal waters and estuaries 0-25 m depth
scup (<i>Stenotomus chrysops</i>)			Demersal waters, spring and summer in estuaries and bays Temps >7 C >15% salinity 0-38 m depth	Demersal waters and inshore estuaries Temps >7 C >15% salinity 2-185 m depth
black sea bass (<i>Centropristis striata</i>)			Estuaries in spring and summer; rough bottom, shellfish, and eelgrass beds Temps >6 C >18% salinity 1-38 m depth	Inshore estuaries from May to Oct; structured habitat sand and shell substrates preferred Temps >6 C >20% salinity 20-50 m depth
king mackerel (<i>Scomberomorus cavalla</i>)	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity
Spanish mackerel (<i>Scomberomorus maculatus</i>)	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >30% salinity
cobia (<i>Rachycentron canadum</i>)	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity	All coastal inlets; sandy shoals, rock bottom, surf zone Temps >20 C >25% salinity
smooth dogfish (<i>Mustelus canis</i>)				
white shark (<i>Carcharodon carcharias</i>)			in pelagic waters from the 25 to 100 m isobath	
sand tiger shark (<i>Odontaspis taurus</i>)		Shallow coastal waters <25 m depth		Shallow coastal waters <25 m depth
common thresher shark (<i>Alopias vulpinus</i>)		in pelagic waters deeper than 50 m	in pelagic waters deeper than 50 m	in pelagic waters deeper than 50 m
Atl. sharpnose shark (<i>Rhizopriondon terraenovae</i>)				Shallow coastal waters <25 m depth

Table 5. Habitat Utilization of Identified EFH Species Identified in the Indian River Inlet (NMFS Website, 2013)

MANAGED SPECIES	EGGS	LARVAE	JUVENILES	ADULTS
dusky shark (<i>Carcharhinus obscurus</i>)		Shallow coastal waters, inlets, and estuaries <25 m depth		
sandbar shark (<i>Carcharhinus plumbeus</i>)		Shallow coastal waters <25 m depth	Shallow coastal waters <25 m depth	Shallow coastal waters <50 m depth
scalloped hammerhead shark (<i>Sphyrna lewini</i>)			Shallow coastal waters <200 m depth	
tiger shark (<i>Galeocerdo cuvier</i>)		Shallow coastal waters <200 m depth		

5.2 Aquatic and Terrestrial Biological Resources

The invertebrate community in the vicinity of Indian River Inlet is productive and diverse. Sampling in this area conducted in the 1970s identified blue crabs (*Callinectes sapidus*), hydroids, bryozoans, snails, limpets, polychaete worms, hermit crabs, lady crabs (*Ovalipes ocellatus*), and amphipods. The hard clam (*Mercenaria mercenaria*) was found within one mile of the west end of the inlet channel. This is the most commercially valuable shellfish resource in Indian River Bay, though production has declined due to extensive harvesting and a lack of suitable substrate. The number of commercial oyster landings has also declined, and blue crabs are only harvested for recreation.

This portion of Indian River Bay is highly utilized by waterfowl, sea, and wading birds. The most common species of waterfowl are American brant (*Branta bernicla*), canvasback (*Aythya valisineria*), scaup (*Aythya affinis*), scoter (*Melanitta americana*), and merganser (*Mergus merganser*). Other avifauna using this area include heron (*Ardeidae sp.*), egret (*Egretta sp.*), rail (*Rallidae sp.*), sandpiper (*Scolopacidae sp.*), osprey (*Pandion haliaetus*), and tern (*Sternidae sp.*).

Marine mammals, which are indicative of the coastal zone may occur in and around the project area; however, they are typically migratory in nature and not likely to stay in the project area. The Indian River Inlet and Inland Bays provide foraging areas for Atlantic bottlenose dolphins (*Tursiops truncatus*), harbor seals (*Phoca vitulina*), harp seals (*Phoca groenlandica*) along with an occasional sighting of a manatee (*Trichechus manatus*). In addition, the reptile: northern diamondback terrapin (*Malaclemys terrapin*) inhabits the inland bays, Indian River Inlet, tidal marshes, and nests in sand dunes.

The Delaware Seashore State Park shoreline and dune ecosystem supports a variety of species. Common avians include many species of gull to include the herring gull (*Larus smithsonianus*), laughing gull (*Leucophaeus atricilla*), and terns (*Sternidae sp.*). Other avians common to the dune and shore area vary on the time of year, but encompass a wide range of species including: sandpipers like the killdeer (*Charadrius vociferus*), wrens such as the Carolina wren (*Thryothorus ludovicianus*) and a multitude of migratory song birds including but not limited to: warblers, sparrows, robins, and finches. The dune and upper beach area supports many terrestrial species including the ghost crab (*Ocypode quadrata*), velvet ant (*Mutillidae sp.*), and wolf spider (*Lycosidae sp.*) and is host to many coastal plant communities. The predominant vegetation growing on the existing dune areas consists of American beachgrass (*Ammophila breviligulata*), seaside goldenrod (*Solidago sempervirens*), sea rocket (*Cakile dentata*) and beach clotbur (*Xanthium echinatum*). Because most of the dune present within the affected area is a primary dune, fauna inhabiting the dune is scarce, but may include several species of passerine birds, and typical mammalian species such as the eastern cottontail (*Sylvilagus floridanus*). Some of the plants found on the dune may also be found on the upper

beach, which transitions into a mostly barren area above the high tide line with little biological activity. Several species of gulls (*Larus* spp.) may be present within the upper and lower beach and may be observed feeding on carrion, plant matter or invertebrates within the beach wrack. The lower beach including the intertidal zone is frequently inhabited by shorebirds including sanderling (*Calidris alba*), semipalmated sandpiper (*C. pusilla*), and western sandpiper (*C. mauri*), which utilize these areas to feed on invertebrate infauna.

Delaware Seashore State Park contains a number of interdunal wetlands that have formed within depressions or blow out areas between dunes. These wetlands represent unique valuable habitats in the marine coastal areas that exhibit freshwater bog-like conditions. A review of the National Wetlands Inventory identified one area (a palustrine scrub-shrub wetland) within the project area located about 2,200 feet north of the inlet. However, this wetland has since been eliminated due to erosion and overwash, and is currently a flattened sandy area with sparse vegetation (personal communication with Eileen Butler- DE State Parks on 3/20/2013). This location is proposed as a temporary staging area for this project.

5.3 Air and Water Quality

Ambient air quality is monitored by the Delaware Department of Natural Resources and Environmental Control's (DNREC) Division of Air and Waste Management and is compared to the National Ambient Air Quality Standards (NAAQS) throughout the state, pursuant to the Clean Air Act of 1970. Six principal "criteria" pollutants are part of this monitoring program, which include ozone (O₃), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), and lead (Pb). Sources of air pollution are broken into stationary and mobile categories. Stationary sources include power plants that burn fossil fuels, factories, boilers, furnaces, manufacturing plants, gasoline dispensing facilities, and other industrial facilities. Mobile sources include vehicles such as cars, trucks, boats, and aircraft.

Sussex County, Delaware within which the Federal Action will take place is classified as moderate nonattainment for ozone (oxides of nitrogen [NO_x] and volatile organic compounds [VOCs]). The Indian River Inlet project site is within the Philadelphia-Wilmington-Atlantic City Nonattainment Area (PA-NJ-DE-MD).

Indian River Bay is an estuary fed by freshwater streams and tidal flushing from the Atlantic Ocean. Freshwater inflow is estimated to be on the order of one percent of the volume attributed to tidal flushing. Freshwater inflow comes into the bay through three major tributaries. Tides are semidiurnal with a mean range of 2.3 feet at the U.S. Coast Guard Station gage at the inlet.

Water quality in Indian River Bay is generally good and considered suitable for primary contact recreation. Mild eutrophication, resulting in increased primary productivity, is common in the shallow open bay during the summer. This eutrophication is attributed to non-point source pollution such as fertilizer runoff and malfunctioning septic systems.

5.4 Hazardous, Toxic and Radioactive Waste (HTRW)

A review of the Delaware Environmental Navigator (DEN) (<http://maps.dnrec.delaware.gov/navProgramMap/>) was conducted on March 19, 2013 to identify any areas of concern that may contain HTRW. This review identified three SIRS (Site Investigation and Restoration Site) sites, leaking underground storage tanks (LUSTS), underground storage tanks (USTS), above ground storage tanks (ASTS) and an NPDES (National Pollution Discharge Elimination System) discharge.

Three sites are listed in the Delaware's SIRS database that are identified in the general vicinity of the project. One site is the discovery of a chlorine gas cylinder at Delaware Seashore State Park near Indian River Inlet (DE -026) in 1992. In a memo from DNREC dated April 21, 2010, the disposal action was completed in 1992 and the status is now inactive.

A second site, The Indian River Life Saving Station (IRLSS) property (DE-1349), is about 4,000 feet to the north of the beachfill project boundary. The IRLSS is a historical property that was once used by the United States Lifesaving Service, which was later changed to the U.S. Coast Guard. This property was later turned over to the DNREC Division of Soil and Water Conservation for offices and storage of heavy equipment, which vacated the site in the mid-1990's. The site now houses a museum and gift shop. Due to the presence of leaking underground storage tanks (LUSTS), this site was part of a preliminary assessment and site investigation. Remedial activities were conducted in 1998 where three UST's were removed along with 38 tons of petroleum-impacted soils from the site. This action included the backfilling of clean soil. Based on this, the Delaware UST Management Branch issued a "No Further Action Required" letter with a cautionary note requiring that a Contaminated Soil Management Plan be developed in the event of future intrusive activities at the site. Recent sample results show slightly elevated levels of arsenic, iron and some petroleum hydrocarbons within the location of the former USTs, but no widespread areas of contamination. Based on this information, the EPA does not anticipate any further action under the Federal Superfund Program unless new information or conditions change that warrant further Superfund consideration (letter from U.S. EPA Region III to DNREC dated 2/20/2008).

A third site is the North Artillery Range, which is part of the Formerly Used Defense Sites (FUDS) program (C03DE006402), is about 6,000 feet to the north of the beachfill project boundary. This site is approximately 364 acres in size, and was used as an automatic weapons firing point for anti-aircraft target practice by the U.S. Army. This site is now part of Delaware Seashore State Park. A Site Inspection Report (USACE, 2010) investigated the potential for munitions and explosives of concern (MEC) and munitions constituents (MC) at the site. The types of munitions identified in this report that were likely used at this range include small arms, 40 mm HE (high explosive) HEI (high explosive incendiary), Mark II and 3.25 -inch target rockets, MK1. After a thorough inspection of the property, which included sampling the soils and sediments for explosives and explosive residues and metals, this investigation concluded that the land portion of this site has no reports of MEC or MD (munitions debris) that are known to exist; and surface soil, subsurface soil and sediment analyses yielded no explosive MC detections. This report further concluded that no Chemicals of Potential Concern (COPC) or Chemicals of Potential Ecological Concern (COPEC) were identified in any of the media at this site.

Two LUSTS were identified in the vicinity by the DEN. One of the LUSTS sites is at the Indian River Life Saving Station (discussed above) where three tanks were removed in 1998. The other LUST was identified at the U.S. Coast Guard Station (N9110231) in Indian River Inlet where an underground storage tank was removed in 1990. A letter from DNREC Division of Air and Waste Management (dated 10/10/91) concluded that residual "low levels of contamination near the tank location pose no threat to human health or the environment, and no further action is required at the present time"

Several existing underground storage tanks (USTs) in the general project vicinity were identified by the DEN at the Coast Guard Station, Indian River Life Saving Station, Old Inlet Bait and Tackle, South Shore Marina, and the DNREC sand bypass facility. Above ground storage tanks (ASTs) were identified at the Indian River Sand Bypass Facility, Indian River Inlet Delaware Seashore State Park, U.S. Coast Guard Station, the Indian River Inlet Bridge Area, and the Indian River Life Saving Station. No further information was available on the DEN for these AST or UST locations.

One historical NPDES wastewater discharge was located in the inlet area and was operated by the Delaware Seashore State Park. This discharge was discontinued in 2000, and is now treated through the Sussex County South Coastal Wastewater Treatment Facility.

5.5 Threatened and Endangered Species

Based on coordination of the project with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), there is the potential of federally-listed species to be found in the project area. . Discussions with Delaware Seashore State Park staff, Delaware Natural Heritage Program and FWS determined that

there was no recent history of endangered or threatened species on the beach within the project area; though it is possible with the change in beach conditions that the area may become attractive to the Federally listed piping plover (*Charadrius melodus*), and based on historical evidence that the seabeach amaranth (*Amaranthus pumilus*) has a tendency to appear on disturbed areas after storm events. Surveys of the respective areas will need to be conducted prior to construction. A number of marine species could be present in the project impact areas including the aforementioned marine mammals; sea turtles including the loggerhead (*Caretta caretta*), Kemp's ridley sea turtle (*Lepidochelys kempi*) and green sea turtle (*Chelonia mydas*). Fish within the range include the endangered New York Bight Distinct Population Segment Atlantic sturgeon (*Acipenser oxyrinchus*) and the candidate river herring species: alewife and blueback herring. Discussions with NMFS have concluded the possibility of sea turtles, specifically the loggerhead sea turtle, and the Atlantic sturgeon as being found in the project area.

5.6 Cultural Resources

Project Area of Potential Effect

The Area of Potential Effect (APE) of the selected alternative includes the dredging of the Indian River Inlet Flood Shoal. It also includes beach nourishment activities along 5,200-foot long section of shoreline north of the Indian River Inlet with access and staging.

Archaeological Resources

There are a significant number of prehistoric and proto-historic archaeological sites recorded within the larger Indian River and Bay area. Four of these sites are listed on the National Register of Historic Places. They include the Townsend Island Site, the Possum Point Site, and Swan Creek (No. 2) Site which together comprise the Indian River Middle Woodland Archaeological complex. The fourth prehistoric archaeological resource is the Poplar Thicket Site. All of these sites fall outside of the current project's area of potential effect.

The 1978 Cultural Resources Overview by Gilbert/Commonwealth of Indian River and Bay designated the original (1987) shoreline protection project area as a low sensitivity zone with respect to prehistoric archaeological resources. The Philadelphia District's 1984 Environmental Assessment noted that the entire surface north of the inlet now appears to be covered by dredged material of varying depths. An on-site inspection of the project area by the District Archaeologist in 2004 revealed no cultural deposits exposed in the eroding shoreline.

Historic Resources

Four historic properties are located in the general area: White House Farm, Prince George Chapel, the Isaac Harmon Farm, and the Indian River Life Saving Station. White House Farm is an early eighteenth century brick plantation house on the north side of Indian River Bay that is oriented towards the river. Prince George Chapel is a mid-eighteenth century wood frame public structure in the community of Dagsboro. The Isaac Harmon Farm is a mid-nineteenth century vernacular structure on the Nanticoke Indian community north of Indian River. The Indian River Life Saving Station is a late nineteenth century wood frame structure of Victorian design located north of the bay inlet on the Atlantic coast. All of these historic properties are outside of the current project's APE.

There is a submerged concrete structure (the foundation of an old Coast Guard observation tower), which is exposed annually due to wind and wave action. This structure alone does not appear to be eligible for listing on the National Register of historic places.

5.7 Recreation

Many forms of recreation occur in the project area. The significant forms of recreation that take place within the project area include but are not limited to recreational fishing, sun bathing, beachcombing, swimming, and collection of historical artifacts in the form of colonial half pennies. Because of the favorable wave climate, the north shore of Indian River Inlet is considered a premier Delaware surfing destination, and has received the status as a state

designated surfing beach.

6.0 Environmental Impacts

6.1 Fishery Resources

Direct impacts on most finfish would be minimal due to their ability to avoid the dredging equipment and project area during the construction period. The dredging operation will increase turbidity levels in the inlet and surf zone on the ocean side on a short-term basis, which could reduce fish utilization of the project area. There will be a complete removal of the benthic community within the dredging location and burial of benthic organisms within the beachfill location. However, this loss of the benthic community will be temporary as these areas would be re-colonized within a few weeks to months following the disturbance. In addition, a temporary disturbance to the area could limit the quantity of food organisms available to some species of fish. Fish populations would most likely utilize a different portion of the bay and return after the disturbance is completed, and benthic food resources recover. Many of the benthic organisms represent a food source for resident and migratory fish. Initial elimination of the benthic community through dredging would reduce the amount of forage habitat for some fish species within the immediate affected area. This effect is expected to be short-term as bottom-feeding fish would shift to other similar nearby unaffected or recolonized areas and then return to the area to feed after benthic recolonization occurs.

Essential Fish Habitat

Assesment: Based on the listed habitat utilization by the designated EFH species (see Section 5.2), it appears that most of the species will not be found in the immediate project area, due to a depth requirement or the fact that they are very migratory in nature (i.e, the sharks). There is the potential for a few species to be found in the project area and these would include: winter flounder, windowpane flounder, summer flounder, scup, king mackerel, Spanish mackerel, and cobia. Most of the listed fish species are not estuarine resident species and therefore only utilize this area on a seasonal basis, primarily in the warmer summer months. During the summer months the estuary is typically utilized as a forage area for juveniles and adults and nursery area for larvae and young of the year life stages. The only apparent exception to this is winter flounder which spawns in the estuary, generally from February through June. The proposed dredging is scheduled to be undertaken in early to late Summer 2013 (June-Sept). Since adults and juveniles of the listed species are mobile, it is expected that they will avoid the areas of disturbance and therefore will not be impacted. In addition, early life stages of winter flounder require bottom depths no deeper than 5 m (eggs) or 6 m (larvae). To obtain enough sand to complete the beach repair to the appropriate template, a dredge depth to -24 feet NAVD is required, which will not allow the area to be used by early life stages of winter flounder in the immediate future. Hence, there could be a temporary impact to the winter flounder population in this area. It is estimated that approximately 37.4 acres of egg habitat (< 5 meters mlw in depth) and approximately 44.8 acres of larval habitat (< 6 meters mlw in depth) would be impacted by the dredging.

Based on these effects, the NMFS provided EFH Conservation Recommendations in a letter dated April 10, 2013, which recommended (1) the avoidance of dredging from January 1 to September 30 and (2) the depth of dredging should be limited to no more than 5 meters to ensure that the flood shoal remains EFH for winter flounder eggs and larvae. However, based on timing constraints imposed by the need to repair the beach due to the vulnerability to damages to infrastructure and the sand quantities required to achieve the appropriate protection, these conservation recommendations cannot be implemented for the upcoming 2013 dredging for this project. To meet the timing needs of the project, the dredging could start as early as June 1, 2013. Based on coordination with NMFS and DNREC, the NMFS and DNREC will not object to this emergency dredging/beach nourishment if conducted this summer (2013).

Cumulative Effects on Essential Fish Habitat: It is anticipated that there will be limited cumulative effects associated with this project on EFH and managed species. Direct impacts will be encountered by the winter flounder early life stages that inhabit the flood shoal area during the dredging, but with the emergency nature of the project, dredging restrictions are being waived. The project will change the habitat for fish from a sandy shallow shoal to a temporary deeper trough area. This could result in a change in species utilizing the area. However, based on historical data, the estimated sediment (sand) deposition rate for the shoal is approximately 70,000 cubic yards/year (USACE - GDM Report, 1984), so it is anticipated that the early life stages for winter flounder habitat in that area would be restored in

approximately 3-5 years. It is concluded that the project will have a limited direct effect on EFH, and not result in cumulative impacts to EFH.

Conclusion: Based upon the project design and the minimal long-term impacts associated with the dredging operation and beachfill placement, the Corps believes that the potential adverse impacts to EFH will not be substantial. In addition, the emergency action is necessary and a waiver of dredging window restrictions was agreed to by DNREC and NMFS. A one-time waiver on timing restrictions was provided by these agencies (March 6, 2013 teleconference between the Corps, NMFS, and DNREC) Because of the dynamic nature of the inlet and EFH present for a number of important species, any future use / dredging of the Indian River Inlet flood shoal by the Corps will require the re-initiation of EFH consultation.

6.2 Aquatic and Terrestrial Biological Resources

Initial construction activities would result in a loss of some benthic organisms, especially non-motile species in the immediate vicinity through burial or displacement. This would be a short-term impact as benthic recovery normally begins soon after the disturbance has ended, and is usually completed within a few months to a few years. Bowen and Marsh (1988) compared a recently dredged offshore borrow pit for beach renourishment with a 5-year old borrow pit, and determined that relative to the old pit, the new pit showed complete recovery within a year based on several aspects of community structure, but differences in species composition were evident. USACE (2001) conducted benthic investigations of borrow areas off of the northern New Jersey coast and concluded that after initial impacts on the infaunal assemblage, including decreases in abundance, biomass, taxa richness and the average size of the biomass dominant; the abundance, biomass, and taxa richness recovered quickly after the first dredging operation with no detectable difference between the dredged and undisturbed areas by the following spring. It can be expected that after the dredging operation, the affected areas would first be colonized by surface-dwelling opportunistic species. This may gradually change within a few years to a more-deeper burrowing community composed of larger-sized organisms. The long-term impact to the benthic community would not be significant due to the availability of a similar sandy substrate. Since Hurricane Sandy removed the preexisting dune system through wind and wave action, the communities of organisms that typically inhabited the dune systems are virtually nonexistent and only limited impacts will result through burial of species clinging to the area. The majority of terrestrial and avian species, which inhabit the shoreline area are highly mobile, and should experience limited impacts as beach nourishment and dune building take place. Once the dune system has been rebuilt and beach sands replenished, the shoreline ecosystem will have been returned to its pre-storm state allowing for the common residents of the ecosystem to re-colonize the area.

6.3 Air and Water Quality

General Conformity Review and Emission Inventory Indian River Inlet

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 Indian River Inlet, the Federal Action is to conduct dredging in the Indian River Inlet and Bay channel and beneficially use the dredged material to replenish beach sands on the Delaware Seashore State Park beach north of the jetty. The U.S. Army Corps of Engineers, Philadelphia District would be responsible for construction. Sussex County, Delaware within which the Federal Action will take place is classified as moderate nonattainment for ozone (oxides of nitrogen [NO_x] and volatile organic compounds [VOCs]). The Indian River Inlet project site is within the Philadelphia-Wilmington-Atlantic City Nonattainment Area (PA-NJ-DE-MD).

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. GC however is applicable. Therefore, the total direct and indirect emissions associated with the Indian River Inlet Maintenance Dredging and

Beneficial Use project must be compared to the GC trigger levels presented below.

Pollutant	General Conformity Trigger Levels (tons per year)
NOx	100
VOCs	50

Table 1 (see Appendix A) provides the NOx and VOC emission factors selected for each equipment/engine category and shows the estimated hp-hr required for each equipment/engine category. Hp-hr was calculated using the following equation:

$$\text{hp-hr} = \# \text{ of engines} * \text{hp} * \text{LF} * \text{hrs/day} * \text{days of operation}$$

The second calculation is to derive the total amount of emissions generated from each equipment/engine category by multiplying the power demand (hp-hr) by an emission factor (g/hp-hr). The following equations were used:

$$\text{emissions (g)} = \text{power demand (hp-hr)} * \text{emission factor (g/hp-hr)}$$

$$\text{emissions (tons)} = \text{emissions (g)} * (1 \text{ ton}/907200 \text{ g})$$

Tables 2 and 3 (see Appendix A) present the emission estimates for NOx and VOCs, respectively. The tables present the emissions from each individual equipment/engine category and the combined total. Table 4 (Appendix A) presents the pollutant emissions from employee vehicles and also summarizes the total emissions for the project.

The total estimated emissions that would result from construction of the Indian River Inlet Maintenance Dredging and Beneficial Use of Dredged Material Project are 15.8 tons of NOx and 2.2 tons of VOCs. These emissions are below the General Conformity trigger levels of 100 and 50 tons per year for each pollutant. General Conformity under the Clean Air Act, Section 176 has been evaluated for the project according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project because the total direct and indirect emissions from the project are below the conformity threshold values established at 40 CFR 93.153 (b) for ozone (NOx and VOCs) in a Moderate Nonattainment Area (100 and 50 tons of each pollutant per year). The project is not considered regionally significant under 40 CFR 93.153 (i).

Impacts to water quality are considered to be short-term and minor. Turbidity and sedimentation resulting from the construction would be minor due to the heavy nature of the sandy dredged material, USACE anticipates that there would be no long-term adverse impacts to water quality resulting from the project.

Dredging within the borrow area may encounter anoxic sands, which could initially appear darker in color and produce a sulfurous odor (hydrogen sulfide gas) on the recipient beach. This effect would be short-lived as the sands would quickly oxidize and bleach out in the air and sunlight.

6.4 Hazardous, Toxic and Radioactive Waste (HTRW)

A review of the DEN identified several sources of potential HTRW in the general vicinity of the project. Based on the documentation of remedial activities and distances away from the project activities, it is unlikely that HTRW would be encountered during project construction activities.

Formal Section 7 consultation was conducted for dredging projects within the Philadelphia District to address potential effects on sea turtles and marine mammals, which culminated in the preparation of a Biological Opinion (NMFS, 1996). The proposed project would adhere to the conservation recommendations established in the Biological Opinion. The proposed project will be using a hydraulic pipeline and listed species of sea turtles are not known to be vulnerable to entrainment or impingement in this type of dredge. There will temporarily be additional suspended sediment in the project area; as well as a modification to the benthic environment. The Indian River Inlet is a very dynamic system (average depth velocity of 4 ft. /sec during spring tides) with strong currents influencing the project area throughout the daily tidal cycle. So, it is likely the sediment plume associated with the dredging would be a small disturbance in such a dynamic system. The disruption of the benthic environment would possibly cause a displacement of some potential prey species (crustaceans) for the loggerhead sea turtle (*Caretta caretta*). This benthic environment will eventually be restored as the affected areas are expected to be rapidly recolonized with benthic invertebrates within a few months after dredging.

The impact of hydraulic dredging on the endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is less certain. The New York Bight DPS of Atlantic Sturgeon would be the likely DPS affected by this proposed project. Possible impacts to sturgeon from dredging include: entrainment of all life stages; disruption of migration; disturbance of spawning, foraging or refuge areas; or destruction of benthic food resources. While it is possible for Atlantic sturgeon to become entrained in the dredge during dredging operations, this is unlikely due to the transient nature of the species in the marine environment, their tendency to avoid dredging operations and the fact that a hydraulic dredge is being used for this action. 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 for this project. Atlantic sturgeon could be found in the project area, but likely in low numbers. Overall, there may be an affect from the project, but it's unlikely to be an adverse effect on the species.

The historical occurrences of piping plover and seabeach amaranth on Delaware beaches will need to be accounted for and surveys for the species will need to be conducted prior to construction beginning. If beach surveys turn out to be negative, the U.S. Fish and Wildlife Service (FWS) believes that no threatened or endangered species under their jurisdiction are likely to occur in the project impact area (G.Ruddy, Personal Communication, 2013). Should either species be found, buffer zones will be erected to create a protective area as per Federal regulation. Coordination under Section 7 of the Endangered Species Act with NMFS is in process and will be completed prior to project construction.

Prior to the dredging of the flood shoal in 2010, maintenance dredging of the IRI federal channel has not been completed by the USACE in 25 years. The flood shoal area proposed for dredging at IRI has been dredged, in whole or in part, on six occasions since 1970 for purposes of obtaining sandy beachfill for the chronically eroding ocean beach north of IRI or for filling in deep scour holes, but not for purposes of improving navigation through IRI. The dates and dredged quantities of these five operations are: 1973 ~774,000 cy, 1975 ~143,000 cy, 1978 ~700,000 cy, 1984 ~468,000 cy, and 1990 ~175,000 cy, and 2010 ~220,000 cy . The typical dredged depth of these previous dredging operations was -20 ft MLW. The proposed depth for this action is -24 ft. NAVD. Since this is deeper than what was previously dredged, there is a possibility of buried shipwrecks within the APE; however, based on the results of previous surveys of the area, the probability is relatively low.

There are no recorded archaeological sites along the 5,200-ft stretch of shoreline eligible for or listed on the National Register of Historic Places. The placement of sand along this stretch of shoreline will have no effect on historic properties.

Based on the above information and the historical dredging that has occurred in the project APE, the USACE has

determined that the selected alternative will have no adverse effect on historic properties eligible for or listed on the National Register of Historic Places. Since there is a potential for submerged cultural resources below the previously dredged depth of -20 ft MLW, the USACE recommends using an Archaeological Monitor during all beach fill activities.

The selected alternative APE, the USACE determination and the archaeological monitoring plan will be coordinated with the Delaware State Historic Preservation Office, the Delaware Nation, the Delaware Tribe, the Eastern Shawnee, the Oneida Nation, the Stockbridge Munsee Community of Mohican Indians, and other consulting parties.

6.7 Recreation

Impacts to recreation in the area will be moderate to severe during construction, but short term in nature. Fishing from the jetty will be temporarily impacted due to construction activity. Beach goers who utilize the beach north of the jetty for recreation will need to relocate as sands are distributed and the dune system is rebuilt. Sand distribution and dune rebuilding take place during daylight hours when tides allow and it is unsafe for recreational enthusiasts to be in close proximity to the equipment being used to conduct such work. To minimize construction hazards, beachfill segments are typically fenced off to the public in sections of about 1,000 ft. Once the beachfill operation in a segment is completed (typically in 1-2 weeks), the fencing is removed, and recreational activities may resume. The addition of sands to the beach will also impact artifact collectors that use this area for the collection of colonial half pennies. This area is also known as “coin beach” and regularly draws enthusiasts looking for the coins. Surfing is a popular activity in this area. Surfers will not be impacted by construction activities other than accessing the beach as the nature of surfing leaves surfers in the off shore environment. It is worthy of note that there is a concern for the potential to affect the surf break on the north shore. Based on the quantities of sand to be placed and the method of placement, a temporary shore break may exist within this area immediately after construction. However, this shore break is expected to adjust and flatten out as the waves and currents re-shape the beach profile. This is supported by the fact that the construction template will not exceed previous beachfills in the area, and that the grain sizes of the beachfill (fine to medium sands) will favor a flatter beach profile. Based on the time constraints allotted for the project and the time frame given for completion, impacts to recreation will be short term and have no long term effects.

7.0 Relationship of Selected Plan to Environmental Requirements, Protection Statutes, and Other Requirements

In accordance with Section 401 of the Clean Water Act, a Water Quality Certification has been requested from DNREC. Based on the information gathered during the preparation of the Environmental Assessment, and the application of appropriate measures to minimize project impacts, USACE judges that the project is in accordance with Section 307(C) of the Coastal Zone Management Act of 1972 and that the plan complies with and can be conducted in a manner that is consistent with the approved Coastal Zone Management Program of Delaware. A CZM determination has been requested from the Delaware Coastal Zone Management Program to determine if the project is consistent with the State Coastal Zone Plan. In addition, no cumulative impacts are anticipated to the environment as a result of this project.

TABLE 6. Compliance with Appropriate Environmental Quality Protection Statutes and Other Environmental Review Requirements.

STATUTE	COMPLIANCE STATUS
Clean Water Act	Full
Coastal Zone Management Act	Full
Endangered Species Act	Partial
Fish and Wildlife Coordination Act	Full

STATUTE	COMPLIANCE STATUS
National Historic Preservation Act	Full
National Environmental Policy Act	Full
Magnuson-Stevens Act (Essential Fish Habitat)	Full
Clean Air Act	Full

NOTE:

Full Compliance: Having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.
Partial Compliance: Some requirements of the statute, E.O., or other policy and related regulations remain to be met.
 *All applicable laws and regulations will be fully complied with upon completion of the environmental review, obtaining State water quality certification, coastal zone consistency determination, and concurrence with our determination on cultural resources.
Noncompliance: None of the requirements of the statute, E.O., or other policy and related regulations remain to be met.

8.0 Public Coordination

During preparation of the Environmental Assessment, several agencies were contacted and provided information. The draft Environmental Assessment was circulated to various state and federal agencies for comments. Discussions concerning the project have been conducted with the USFWS, NMFS, and DNREC as well as other agencies and individuals with interests in the project. . In addition, on March 14, 2013 Philadelphia District staff met with members of the Surfrider Foundation to discuss the project and answer any questions.

9.0 References

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U.S. Army Corps of Engineers (USACE). 2001 The New York District’s Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project Final Report. Prepared by M. Burlas, G. Ray, and D. Clarke. U.S. Army Corps of Engineers Engineer Research and Development Center, Vicksburg, MS.

10.0 Section 404(b)(1) Analysis

A review of the impacts associated with discharges to waters of the United States for the Indian River flood shoal dredging and Delaware Seashore State Park beach nourishment project, Sussex County, Delaware is required by Section 404(b)(1) of the Clean Water Act, as amended (Public Law 92-500).

I. Project Description

A. Location. The project area is located in Sussex County, Delaware (Figure 1).

B. General Description. Indian River is located in Sussex County, Delaware (Figure 1). The goals of the project are to conduct dredging in the Indian River Inlet flood shoal area and beneficially use the dredged material to replenish sands on the Delaware State Park beach, and rebuild dunes, along the Northern Shoreline of Indian River Inlet.

C. Purpose. Hurricane Sandy accelerated the depletion of sand on Delaware State Park beach, DNREC operates a sand bypass system to replenish beach sands, but after the storm event the volume of sand needed for replenishment is beyond the scope of the single pump station to achieve in any relative amount of time preceding the next storm event.

D. General Description of Dredged or Fill Material.

1. General Characteristics of Material: sand (94%).
2. Quantity of Discharge (estimated): sand {520,000 cubic yards (cy)}.
3. Source of Material: flood shoal.

E. Description of Discharge Site.

1. Location: The location of the discharge site will be along the Delaware State Park beach for a distance of 5,200 ft. Approximately 383,000 cy of the total fill volume (520,000 cy) will be placed seaward of MHW.
2. Size (acres): 30 acres (the approximate footprint of fill below MHW)
3. Type of Site: aquatic/shoreline.
4. Type of Habitat: tidal/estuarine/beach.
5. Timing and Duration of Discharge: approximately 2-3 months for total project construction.

F. Description of Discharge Method. Material will be placed using a hydraulic pipeline dredge.

II. FACTUAL DETERMINATIONS

A. Physical Substrate Determinations.

1. Substrate Elevation and Slope: The beachfill construction template will have a berm elevation of +9.2 ft NAVD with a foreshore slope of 5 Horizontal:1 Vertical. This slope is expected to become flatter as wave action redistributes the beachfill, which will change the profile after construction.
2. Sediment Type: > 90% sand.
3. Fill Material Movement: sand will move with tide.
4. Physical Effects on Benthos: temporary, major effect.
5. Actions taken to Minimize Impacts: based on previous projects, benthos will recover in the intertidal and subtidal area quickly (< 1 year).

B. Water Circulation, Fluctuation and Salinity Determinations.

1. Water:
 - a. Salinity - no effect.
 - b. Water Chemistry – no significant effect.
 - c. Clarity - short-term increase in suspended particles.
 - d. Color - no effect.
 - e. Odor – no effect.
 - f. Taste - no effect.
 - g. Dissolved Gas Levels – minor short-term effect.
 - h. Nutrients – no effect
 - I. Eutrophication - no effect.
 - j. Temperature- no effect.
2. Current Patterns and Circulation:
 - a. Current Patterns and Flow – Minor impacts to circulation patterns and flow in the beach zone and nearshore where the existing circulation pattern and flow would be offset seaward the width of the beachfill placement.
 - b. Velocity – No effects on tidal velocity and longshore current velocity regimes
 - c. Stratification – Thermal stratification normally occurs beyond the mixing region created by the surf zone. The normal pattern should continue after construction.
3. Normal Water Level Fluctuations – semi-diurnal tidal changes, mean tidal range of 3.6 ft
4. Salinity Gradients - isohaline

5. Actions That Will Be Taken To Minimize Impacts: Construction best management practices will be used to minimize impacts.

C. Suspended Particulate/Turbidity Determinations.

1. Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of dredge site: Minor effect. There is the potential for a short-term increase in suspended particles/turbidity levels during construction.
2. Effects on Chemical and Physical Properties of the Water Column:
 - a. Light Penetration: temporary, major effect.
 - b. Dissolved Oxygen: minor effect.
 - c. Toxic Metals and Organics: no effect.
 - d. Pathogens: no effect.
 - e. Aesthetics: Minor adverse and temporary effects limited to the construction period.
 - f. Temperature: no effect.
3. Effects on Biota:
 - a. Primary Production, Photosynthesis: Minor, short-term effects related to increases in turbidity during dredging activity.
 - b. Suspension/Filter Feeders: Minor, short-term effects related to increases in turbidity during dredging activity.
 - c. Sight feeders: no effect.
4. Actions Taken to Minimize Impacts: Due to the coarse nature of the material (sand), none are required.

D. Contaminant Determinations.

N/A

E. Aquatic Ecosystem and Organism Determinations.

1. Effects on Plankton: no effect.
2. Effects on Benthos: Major effect on benthos in construction area.
3. Effects on Nekton: no effect
4. Effects on Aquatic Food Web: temporary, minor effect.
5. Effects on Special Aquatic Sites:
 - (a) Sanctuaries and Refuges: none.

- (b) Wetlands: none.
- (c) Tidal flats: none.
- (d) Vegetated Shallows: None.

- 6. Threatened and Endangered Species: Possible effect to be determined by survey prior to construction
- 7. Other Wildlife: Temporary, minor effect.
- 8. Actions to Minimize Impacts: Attempt to complete project as quickly as possible (emergency action). Direct effect to larval and young of the year life stages waived by DNREC and NMFS

F. Proposed Disposal Site Determinations.

- 1. Mixing Zone Determinations:
 - a. Depth of water: 0 ft.
 - b. Current velocity: none
 - c. Degree of turbulence: none
 - d. Stratification: None
 - e. Discharge vessel speed and direction: N/A
 - f. Rate of discharge: Continuous during construction
 - g. Fill material characteristics: Sand
- 2. Determination of Compliance with Applicable Water Quality Standards:
A section 401 Water Quality Certificate has been requested from DNREC.
- 3. Potential Effects on Human Use Characteristics:
 - a. Municipal and Private Water Supply: No effect.
 - b. Recreational and Commercial Fisheries: Temporary, minor effect during construction, and permanent loss of flood shoal habitat.
 - c. Water Related Recreation: Temporary effect during construction and relocation of surf break.
 - d. Aesthetics: Temporary, minor effect.
 - e. Parks, National and Historical Monuments, National Seashore, Wilderness Areas, Research Sites, and Similar Preserves: Temporary effect during const.

G. Determination of Cumulative Effects on the Aquatic Ecosystem.
No significant adverse effects are anticipated.

H. Determination of Secondary Effects on the Aquatic Ecosystem.
No significant secondary effects are anticipated.

III. FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGE

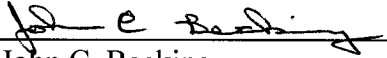
- A. Adaptation of the Section 404(b)(1) Guidelines to this evaluation - No significant adaptation of the guidelines were made relative to this evaluation.
- B. Compliance With Applicable State Water Quality Standards - The selected plan is not expected to violate any applicable state water quality standards in Delaware.
- C. Compliance With Applicable Toxic Effluent Standards or Prohibition Under Section 307 of the Clean Water Act - The proposed discharge is not anticipated to violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- D. Compliance With Endangered Species Act of 1973 -The selected plan will comply with the Endangered Species Act of 1973. Informal Section 7 consultation will be completed with the U.S. Fish and Wildlife Service for this the project prior to project construction.
- E. Compliance With Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972 - No Marine Sanctuaries, as designated in the Marine Protection, Research, and Sanctuaries Act of 1972, are located within the project area.
- F. Evaluation of Extent of Degradation of Waters of the United States - The proposed project will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish and shellfish, wildlife, and special aquatic sites. The long-term life stages of aquatic life and wildlife will not be adversely affected. Significant adverse impacts on aquatic ecosystem diversity, productivity and stability, and recreation, aesthetics and economic values will not occur as a result of the project.
- G. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem – The use of best management construction practices will be used to minimize potential adverse impacts of discharging material on the shoreline ecosystem.

10.0 CLEAN AIR ACT STATEMENT OF CONFORMITY

**CLEAN AIR ACT STATEMENT OF CONFORMITY
INDIAN RIVER INLET MAINTENANCE DREDGING AND BENEFICIAL
USE OF DREDGED MATERIAL
SUSSEX COUNTY, DELAWARE**

I have determined that the selected plan conforms to the applicable State Implementation Plan (SIP). The Environmental Protection Agency had no adverse comments under their Clean Air Act authority. No comments from the State air quality management district were received during coordination of the draft environmental assessment. The selected plan would comply with Section 176 (c)(1) of the Clean Air Act Amendments of 1990.

25 Apr 2013
Date



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

Appendix A

Clean Air Assessment

DELAWARE COAST, INDIAN RIVER INLET NORTH SHORE PROTECTION EMISSION INVENTORY

TABLE 1 - PROJECT EMISSION SOURCES AND ESTIMATED POWER

Equipment/Engine Category	Task	# of Engines	HP	Load Factor (LF)	Hrs/Day	days of operation*
24" dia. pipeline dredge, prime engine	Mob/Demob	1	3400	0.10	24	24
24" dia. pipeline dredge, electric generator	Mob/Demob	1	480	0.80	24	24
24" dia. pipeline dredge, dredge pump	Mob/Demob	1	1900	0.10	24	2
Tugboat, prime engine	Mob/Demob	1	250	0.80	24	20
Tugboat, 2nd engine	Mob/Demob	1	50	0.20	24	20
24" dia. pipeline dredge, prime engine	Beachfill	1	3400	0.40	16	63
24" dia. pipeline dredge, electric generator	Beachfill	1	480	0.40	16	63
24" dia. pipeline dredge, dredge pump	Beachfill	1	1900	0.80	16	63
Tugboat, prime engine	Beachfill	1	250	0.40	16	63
Tugboat, 2nd engine	Beachfill	1	50	0.20	16	63
Crew/survey boat, prime engine	Beachfill	1	100	0.40	16	63
Crew/survey boat, 2nd engine	Beachfill	1	40	0.20	16	63
Derrick barge, prime engine	Beachfill	1	200	0.40	16	63
Derrick barge, 2nd engine	Beachfill	1	40	0.20	16	63
Fuel/water barge	Beachfill	1	10	0.50	16	63
Floating booster pump, prime engine	Beachfill	0	3000	0.80	16	63
Floating booster pump, 2nd engine	Beachfill	0	150	0.40	16	63
Truck (Suburban), 4x4, 2-axle	Shore Crew	1	165	0.57	16	63
Dozer crawler, D-9H	Shore Crew	2	410	0.64	16	63
Loader, front end, wheeled, 1.75 CY bucket	Shore Crew	1	95	0.57	16	63
Loader, front end, wheeled, 2.75 CY bucket	Shore Crew	0	145	0.57	16	63

Mob/demob Crew: Crew of 45 will travel to work 1 day. Crew of 45 will travel from work 1 day.

Beachfill Crew: Crew of 45 will travel to work 63 days. Crew of 45 will travel from work 63 days.

Shore Crew: Crew of 3 will travel to work 3 days. Crew of 3 will travel from work 3 days.

Shore Crew: Crew of 6 will travel to work 63 days. Crew of 6 will travel from work 63 days.

* Dredge time = 2.06 mo x 30.42 day/mo = 62.66 days, Use 63 days

Page 1 of 2

TABLE 1 - PROJECT EMISSION SOURCES AND ESTIMATED POWER (Continued)

Equipment/Engine Category	task	# of engines	hp	load factor (LF)	hrs/day	days of operation*
Truck, highway, 6x4, 3-axle	Dune work	1	350	0.57	8.00	63
Truck, highway, 4x4, 2-axle, 3/4 ton pickup	Dune work	1	165	0.57	8.00	63
Loader, front end, wheeled, 2.75 CY bucket	Dune work	1	145	0.57	8.00	63
Crane, hyd, rough terrain, 20T, 70' boom	Dune work	1	105	0.57	8.00	63

Dune Work Crew: Crew of 5 will travel to work 63 days. Crew of 5 will travel from work 63 days.

Load Factor represents the average percentage of rated horsepower used during a source's operational profile.

hp-hr = # of engines x hp x LF x hrs/day x days of operation

Table 2. Emission Factors

Emission Factors taken from the General Conformity Review and Emission Inventory for the Delaware River Main Channel Deepening Project. (May 2003). Prepared for the U.S. Army Corps of Engineers, Philadelphia District by Moffatt & Nichol Engineers.

Equipment/Engine Category	NOx Emission Factors (g/hp-hr)	VOC Emission Factors (g/hp-hr)
24" dia. pipeline dredge, prime engine	8.162	0.197
24" dia. pipeline dredge, electric generator	8.839	0.556
24" dia. pipeline dredge, dredge pump	7.923	0.7
Tugboat, prime engine	8.162	0.197
Tugboat, 2nd engine	8.839	0.556
24" dia. pipeline dredge, prime engine	8.162	0.197
24" dia. pipeline dredge, electric generator	8.839	0.556
24" dia. pipeline dredge, dredge pump	7.923	0.7
Tugboat, prime engine	8.162	0.197
Tugboat, 2nd engine	8.839	0.556

Crew/survey boat, prime engine	8.162	0.197
Crew/survey boat, 2nd engine	8.839	0.556
Derrick barge, prime engine	8.162	0.197
Derrick barge, 2nd engine	8.839	0.556
Fuel/water barge	8.839	0.556
Floating booster pump, prime engine	7.923	0.07
Floating booster pump, 2nd engine	8.162	0.197
Truck (Suburban), 4x4, 2-axle	9.2	1.3
Dozer crawler, D-9H	9.2	1.3
Loader, front end, wheeled, 1.75 CY bucket	9.2	1.3
Loader, front end, wheeled, 2.75 CY bucket	9.2	1.3
Truck, highway, 6x4, 3-axle	9.2	1.3
Truck, highway, 4x4, 2-axle, 3/4 ton pickup	9.2	1.3
Loader, front end, wheeled, 2.75 CY bucket	9.2	1.3
Crane, hyd, rough terrain, 20T, 70' boom	9.2	1.3

Table 3. Emission Estimates (NOx)

$$\text{Emissions (g)} = \text{Power Demand (hp-hr)} * \text{Emission Factor (g/hp-hr)}$$

$$\text{Emissions (tons)} = \text{Emissions (g)} * (1 \text{ ton}/907200 \text{ g})$$

Equipment/Engine Category	hp-hr	EF (g/hp-hr)
24" dia. pipeline dredge, prime engine	195840	8.162
24" dia. pipeline dredge, electric generator	221184	8.839
24" dia. pipeline dredge, dredge pump	9120	7.923

Tugboat, prime engine	96000	8.162
Tugboat, 2nd engine	4800	8.839
24" dia. pipeline dredge, prime engine	1370880	8.162
24" dia. pipeline dredge, electric generator	193536	8.839
24" dia. pipeline dredge, dredge pump	1532160	7.923
Tugboat, prime engine	100800	8.162
Tugboat, 2nd engine	10080	8.839
Crew/survey boat, prime engine	40320	8.162
Crew/survey boat, 2nd engine	8064	8.839
Derrick barge, prime engine	80640	8.162
Derrick barge, 2nd engine	8064	8.839
Fuel/water barge	5040	8.839
Floating booster pump, prime engine	0	7.923
Floating booster pump, 2nd engine	0	8.162
Truck (Suburban), 4x4, 2-axle	94802	9.2
Dozer crawler, D-9H	528998	9.2
Loader, front end, wheeled, 1.75 CY bucket	54583	9.2
Loader, front end, wheeled, 2.75 CY bucket	0	9.2
Truck, highway, 6x4, 3-axle	100548	9.2
Truck, highway, 4x4, 2-axle, 3/4 ton pickup	47401	9.2
Loader, front end, wheeled, 2.75 CY bucket	41656	9.2
Crane, hyd, rough terrain, 20T, 70' boom	30164	9.2

Total NOx Project Emissions (tons) =

Table 4. Emission Estimates (VOCs)

$$\text{Emissions (g)} = \text{Power Demand (hp-hr)} * \text{Emission Factor (g/hp-hr)}$$

$$\text{Emissions (tons)} = \text{Emissions (g)} * (1 \text{ ton}/907200 \text{ g})$$

Equipment/Engine Category	hp-hr	EF (g/hp-hr)
24" dia. pipeline dredge, prime engine	195840	0.197
24" dia. pipeline dredge, electric generator	221184	0.556
24" dia. pipeline dredge, dredge pump	9120	0.7
Tugboat, prime engine	96000	0.197
Tugboat, 2nd engine	4800	0.556
24" dia. pipeline dredge, prime engine	1370880	0.197
24" dia. pipeline dredge, electric generator	193536	0.556
24" dia. pipeline dredge, dredge pump	1532160	0.7
Tugboat, prime engine	100800	0.197
Tugboat, 2nd engine	10080	0.556
Crew/survey boat, prime engine	40320	0.197
Crew/survey boat, 2nd engine	8064	0.556
Derrick barge, prime engine	80640	0.197
Derrick barge, 2nd engine	8064	0.556
Fuel/water barge	5040	0.556
Floating booster pump, prime engine	0	0.07
Floating booster pump, 2nd engine	0	0.197
Truck (Suburban), 4x4, 2-axle	94802	1.3
Dozer crawler, D-9H	528998	1.3
Loader, front end, wheeled, 1.75 CY bucket	54583	1.3
Loader, front end, wheeled, 2.75 CY bucket	0	1.3
Truck, highway, 6x4, 3-axle	100548	1.3
Truck, highway, 4x4, 2-axle, 3/4 ton pickup	47401	1.3

Loader, front end, wheeled, 2.75 CY bucket	41656	1.3
Crane, hyd, rough terrain, 20T, 70' boom	30164	1.3

Total VOCs Project Emissions (tons) =

Table 5. Pollutant Emissions from Employee Vehicles

Assumptions:

- Average trip distance (1 way) is 25 miles.
- Average NOx vehicle emission factor is 0.96 g/mile.
- Average VOC vehicle emission factor is 0.84 g/mile.
- Work crew comprised of 72 people
- Every member of the work crew drives their own vehicle.
- Project construction period is 2 months.
- Project construction occurs 7 days per week.

Actual work days during construction: $365 \text{ days / year} * 1 \text{ year} / 12 \text{ months} * 2 \text{ months of construction}$

Actual work days during construction = 63

NOx Calculation: $57 \text{ workers} * 2 \text{ trips/work day} * 64 \text{ work days} * 25 \text{ miles/trip} * 0.96 \text{ g of NOx/mile} * 1 \text{ Ton}/907200 \text{ g}$

Total NOx resulting from employee vehicles = 0.19 tons.

VOC Calculation: $57 \text{ workers} * 2 \text{ trips/work day} * 64 \text{ work days} * 25 \text{ miles/trip} * 0.84 \text{ g of VOCs/mile} * 1 \text{ Ton}/907200 \text{ g}$

Total VOCs resulting from employee vehicles = 0.17 tons.

Pollutant emissions associated with employee vehicles derived from data found in: Marine and Land-Based Mobile Source Emission Estimates for 50-Foot Deepening Project. January 2002. Prepared for The Port Authority of New York and New Jersey by Killam Associates and Starcrest Consulting Group, LLC.

Appendix B

Public / Agency Comments to the draft EA and Corps Responses



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

APR 10 2013

Charles P. MacIntosh, Acting Chief
Planning Division
U.S. Army Corps of Engineers
Philadelphia District
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

ATTN: Mr. Mark Eberle

Dear Mr. MacIntosh:

This responds to your March 25, 2013, letter regarding the draft environmental assessment (DEA) and Finding of No Significant Impact (FONSI) for the Flood Control and Emergency Repair of the Indian River North Shore in Sussex County, Delaware. Hurricane Sandy has caused significant erosion to the Indian River North Beach area of Delaware Seashore State Park. As stated in the EA, the preferred alternative is to dredge 520,000 cubic yards (cy) of material from the Indian River Inlet flood shoal to a depth of -24 feet NAVD using a hydraulic pipeline dredge. The duration of the dredging operation is expected to be approximately 2- 3 months in the summer of 2013. The sand will be used to construct approximately 5,200 linear feet of beach and dunes to the authorized 1984 beach template. This project is being funded under the Flood Control and Coastal Emergency Act (PL 84-99).

According to the DEA/FONSI, a sand bypass facility exists in the project area to mimic the natural net flow of sand from north to south across the inlet. However, this system will not be able to supply the sand needed to restore the north shore beach, to reconstruct the eroded dunes, and to protect Route 1 and the newly constructed Indian River Bridge from continued overwash and flooding. We have reviewed the DEA/FONSI and offer the following comments for your consideration.

Magnuson Stevens Act (MSA)

The Indian River Inlet and the adjacent waters have been designated as essential fish habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for a number of federally managed species including red hake (*Urophycis chuss*), winter flounder (*Pseudopleuronectes americanus*), windowpane (*Scophthalmus aquosus*), Atlantic herring (*Clupea harengus*), monkfish (*Lophis americanus*), bluefish (*Pomatomus saltatrix*), summer flounder (*Paralichthys dentatus*), scup (*Stenotomus chrysops*), black sea bass (*Centropristis striata*), Atlantic butterfish (*Peprilus triacanthus*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), little skate (*Raja*



Please refer to Corps response letter dated 4/23/2013
(following this letter).

erinacea), winter skate (*Leucoraja ocellata*), and clearnose skate (*Raja eglanteria*).

EFH for highly migratory species designated in the area includes bluefin tuna (*Thunnus thynnus*), skipjack tuna (*Katsuwonus pelamis*), dusky shark (*Carcharhinus obscurus*), sandbar shark (*Carcharhinus plumbeus*), sand tiger shark (*Odonaspis taurus*), scalloped hammerhead shark (*Sphyrna lewini*), Atlantic sharpnose shark (*Rhizoprionodon terraenovae*), common thresher shark (*Alopias vulpinus*), white shark (*Carcharodon carcharias*), smooth dogfish (*Mustelus canis*), and tiger shark (*Galeocerdo cuvieri*). Sand tiger and dusky sharks have been listed as Species of Concern by NOAA. Species of Concern are those species about which we have concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act.

The MSA requires federal agencies including the Corps to consult with us regarding any action or proposed action authorized, funded, or undertaken by the agency that may adversely affect EFH identified under the MSA. The EFH regulations, 50 CFR Section 600.920, outline that consultation procedure and, further, enable federal agencies to use existing consultation/environmental review procedures to satisfy the MSA consultation requirements when appropriate. Included in this consultation process is the preparation of a complete and appropriate EFH assessment to provide necessary information on which to consult.

We have reviewed the EFH assessment included in the DEA/FONSI, and note that some of the species identified above, including skate, were not included in your assessment. Also lacking is information on the benthic community of the flood shoal, the existing depths and the areal extent of the dredging. In addition, according to the DEA/FONSI, the Indian River Flood shoal may also be used as a borrow area for future beach renourishment on an "as needed" basis. The EFH assessment does not provide sufficient information to assess this future use. Should future use of the shoal as a borrow area be considered, a more robust evaluation of the effects on EFH is necessary. Such an assessment should consider the rate of sand deposition in the area, the rate of recovery of the benthic community and the frequency of disturbance.

The proposed dredging 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 the direct entrainment of eggs and larvae in the dredge plant, and through the creation of undesirable suspended sediment levels in the water column. 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 and summer flounder. Winter flounder are 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

Please refer to Corps response letter dated 4/23/2013

A wide variety of species under our stewardship transit the Indian River Inlet to access the Indian River, Rehoboth Bay and their tributaries for spawning, nursery and forage habitat or use the Delaware Inland Bay complex to complete all or part of their life cycle. These species include both state and federally managed species and their forage, notably bluefish, summer flounder, scup, black sea bass, butterfish, winter flounder, weakfish (*Cynoscion regalis*), striped bass (*Morone saxatilis*), tautog (*Tautoga onitis*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), blue crab (*Callinectes sapidus*), Atlantic menhaden (*Brevoortia tyrannus*), killifish (*Fundulus spp.*), Atlantic silversides (*Menidia menidia*), bay anchovies (*Anchoa mitchilli*) and other assorted baitfishes and shrimps (e.g., *Neomysis americana*, *Mysidopsis bigelowi*).

Diadromous species such as alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), striped bass and American eel (*Anguilla rostrata*) transit the inlet to reach freshwater tributaries for spawning or growth to maturity. Alewife and blueback herring spend most of their adult life at sea, but return to freshwater areas to spawn in the spring. Both species are believed to be repeat spawners, generally returning to their natal rivers (Collette and Klein-MacPhee 2002). In the Mid-Atlantic, landings have declined dramatically since the mid-1960s and have remained very low in recent years (ASMFC 2007).

Alewife and blueback herring were designated as candidate species for listing under the Endangered Species Act (ESA) in 2011. Candidate species are those petitioned species that are actively being considered for listing as endangered or threatened under the ESA, as well as those species for which we have initiated an ESA status review and have announced that review in the Federal Register. More information on these species and the Candidate Species program can be found at: <http://www.nmfs.noaa.gov/pr/species/esa/other.htm>.

As discussed above, increases in turbidity due to the resuspension of sediments into the water column during construction can degrade water quality, lower dissolved oxygen levels, and potentially release chemical contaminants bound to the fine-grained estuarine/marine sediments. Suspended sediment can also mask pheromones used by migratory fishes to reach their spawning grounds and impede their migration and can smother immobile benthic organisms and demersal newly-settle juvenile fish (Auld and Schubel 1978; Breitburg 1988; Newcombe and MacDonald 1991; Burton 1993; Nelson and Wheeler 1997).

Noise from the construction activities may also result in adverse effects. Our concerns about noise effects comes from an increased awareness that high-intensity sounds have the potential to harm both terrestrial and aquatic vertebrates (Fletcher and Busnel 1978; Kryter 1984; Richardson et al. 1995; Popper 2003; Popper et al. 2004). Effects may include (a) non-life threatening damage to body tissues, (b) physiological effects including changes in stress hormones or hearing capabilities, or (c) changes in behavior (Popper et al. 2004).

In order to minimize the adverse effects of suspended sediment and noise on migrating anadromous fish, we recommend in-water work be avoided from March 15 to June 30 during the upstream migration to their spawning grounds.

Please refer to Corps response letter dated 4/23/2013 following this letter.

Endangered Species Act

Section 7 of the Endangered Species Act (16 U.S.C. § 1536(a)(2)) requires Federal agencies to consult with the Secretary of Commerce, through NOAA, to insure 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 . . ." See also 50 C.F.R. part 402.

The following sections of the draft EA need further information on species of the draft EA listed by us, as well as further analyses of the potential direct and indirect of the proposed project on these species:

- **Section 5.5: Existing Threatened and Endangered Species**

Within this section of the draft EA, there is no mention the following Endangered Species Act (ESA) listed species under our jurisdiction may occur within the waters of the Indian River Inlet and the nearshore waters of the Atlantic Ocean:

<u>Species</u>	<u>Status</u>
Gulf of Maine Distinct Population Segment (DPS) of Atlantic Sturgeon (<i>Acipenser oxyrinchus oxyrinchus</i>)	Threatened
New York Bight DPS of Atlantic sturgeon	Endangered
Chesapeake Bay DPS of Atlantic sturgeon	Endangered
Carolina DPS of Atlantic sturgeon	Endangered
South Atlantic DPS of Atlantic sturgeon	Endangered
Northwest Atlantic Ocean DPS of loggerhead sea turtle (<i>Caretta caretta</i>)	Threatened
Kemp's ridley sea turtle (<i>Lepidochelys kempi</i>)	Endangered
Green sea turtle (<i>Chelonia mydas</i>)	Endangered

- **Section 6.5: Environmental Impacts to Threatened and Endangered Species**

Within this section of the draft EA, further analyses is needed on the direct and indirect effects of the proposed action on ESA listed species under our jurisdiction. We understand that the proposed action will be undertaken with a hydraulic pipeline dredge. Although listed species of sea turtles are not known to be vulnerable to entrainment or impingement in hydraulic pipeline dredges, interactions with Atlantic sturgeon are possible and thus, the potential for an interaction needs to be considered in this section. In addition, dredging and beach nourishment operations will also result in the production of elevated levels of suspended sediment, as well as result in the modification of the benthic environment.

Please refer to Corps response letter dated 4/23/2013 following this letter.

Therefore, further assessment of these indirect effects on our ESA listed species is needed in this section as well.

• ***Finding of No Significant Impact Section***

This section of the draft EA states that the proposed action will cause "no effect" to listed species under our jurisdiction. As the proposed project has the potential to result in direct and/or indirect affects to listed species of sea turtles and/or Atlantic sturgeon, we do not concur with this conclusion.

While an adequate analysis of potential impacts to ESA listed species is not contained in the draft EA, the information that is available indicates that the proposed action has the potential to effect ESA listed species of sea turtles and Atlantic sturgeon. Therefore, we encourage you to consider further the effects of the proposed action on the ESA listed species noted above. As you may know, any discretionary federal action, such as the approval or funding of a project by a Federal agency, that may affect a listed species must undergo consultation pursuant to Section 7 of the ESA. You are responsible for determining whether the proposed action is likely to affect listed species. When project plans are complete, you should submit their determination of effects, along with justification for the determination, and a request for concurrence to the attention of the Section 7 Coordinator, NMFS, Northeast Regional Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930. After reviewing this information, we would then be able to conduct a consultation under section 7 of the ESA. Should you have any questions about these comments or about the section 7 consultation process in general, please contact Danielle Palmer at (978)282-8468 or by e-mail (Danielle.Palmer@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 (978) 317 5107 or (732) 872-3023.

Sincerely,



for
Louis A. Chiarella
Assistant Regional Administrator
for Habitat Conservation

cc: DBFWMC
E. Stetzer - DNREC
J. Crocker - PRD

Please refer to Corps response letter dated 4/23/2013 following this letter.



REPLY TO
ATTENTION OF

Environmental Resources Branch

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

APR 23 2013

Mr. Louis A. Chiarella
Assistant Regional Administrator for Habitat Conservation
National Marine Fisheries Service Northeast Regional Office
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

Dear Mr. Chiarella:

This letter responds to the review of the draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the Flood Control & Coastal Emergency Repair of the Indian River Inlet North Shore in Sussex County, Delaware completed by the National Marine Fisheries Service (NMFS) in a letter dated April 10, 2013. Comments were provided by NMFS in accordance with the Magnuson Stevens Act (MSA) and Section 7 of the Endangered Species Act. The Philadelphia District, U.S. Army Corps of Engineers (USACE) had prepared the draft EA to address potential environmental effects from this proposed emergency shoreline protection project. Based on comments from this letter, revisions will be made to the Essential Fish Habitat (EFH) and threatened and endangered species assessments in the Final EA/FONSI.

In the letter of April 10, 2013, concerns were documented by NMFS regarding the potential impacts to EFH as a result of this project. Specific concerns included the benthic community of the flood shoal and the impact on winter flounder. In addition, this letter disagreed with the Corps' Section 7 determination of "no effect" on federally listed species.

As a reminder, this proposed project is based on the need to repair the beach in accordance with PL 84-99 Flood Control and Coastal Emergencies (33 U.S.C. 701n) from damages associated with the Federal disaster declaration for Hurricane Sandy last October. The goals of the project are to repair the beach and the scour that resulted during Hurricane Sandy, which have left Delaware State Route 1 and the approach to Indian River Inlet Bridge vulnerable to catastrophic failure. This project will provide important protection to this infrastructure.

In regards to the EFH Conservation Recommendations, we have reviewed them but will be unable to implement them for the upcoming 2013 dredging for this project. As discussed in our March 6, 2013 conference call and subsequent April 15, 2013 meeting, this project is considered an emergency situation, and as such, we plan on starting the dredging approximately June 1, 2013. Unfortunately, this would occur in the middle of the January 1 to September 30 dredge avoidance window that was recommended. Based on our previous conference call and your letter, the Corps understands that the NMFS will not object to this emergency dredging if conducted this summer (2013). The Philadelphia District normally tries to incorporate the EFH Conservation Recommendations into our Water Resource Development projects; however, due to the emergency nature of this action, we regret that we will not be able to do that in this case. In addition, to obtain enough sand to complete the beach repair to the appropriate template, we will need to dredge to a depth of -24 feet NAVD, which will not allow the area to be used by early life stages of winter flounder in the immediate future. Hence, there could be a temporary impact to the winter flounder population in this area. We estimate that approximately 37.4 acres of egg habitat (< 5 meters mlw in depth) and approximately 44.8 acres of larval habitat (< 6 meters mlw in depth) to be impacted by the dredging. However, based on historical data, our estimated sediment deposition rate for the shoal is approximately 70,000 cubic yards/year (USACE - GDM Report, 1984), so we anticipate the early life stages for winter flounder habitat in that area should be restored in approximately 3-5 years. Furthermore we understand that any future use / dredging of the Indian River Inlet flood shoal by the Corps will require reinitiation of EFH consultation.

After review of the Section 7 comments and further review of our endangered species analysis in the Draft EA, we have changed our determination from "no effect" to "may affect, but not likely to adversely affect" listed species of sea turtles and/or Atlantic sturgeon. As a result of this change in determination, through this letter, we are initiating informal consultation with your office under Section 7 of the Endangered Species Act.

Formal Section 7 consultation was conducted for dredging projects within the Philadelphia District to address potential effects on sea turtles and marine mammals, which culminated in the preparation of a Biological Opinion (NMFS, 1996). The proposed project would adhere to the conservation recommendations established in the Biological Opinion. The proposed project will be using a hydraulic pipeline and listed species of sea turtles are not known to be vulnerable to entrainment or impingement in this type of dredge. There will temporarily be additional suspended sediment in the project area; as well as a modification to the benthic environment. The Indian River Inlet is a very dynamic system (average depth velocity of 4 ft. /sec during spring tides) with strong currents influencing the project area throughout the daily tidal cycle. So, it is likely the sediment plume associated with the dredging would be a small disturbance in such a dynamic system. The disruption of the benthic environment would possibly cause a displacement of some potential prey species (crustaceans) for the loggerhead sea turtle (*Caretta caretta*). This benthic environment will eventually be restored as the affected

areas are expected to be rapidly recolonized with benthic invertebrates within a few months after dredging.

The impact of hydraulic dredging on the endangered Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) is less certain. The New York Bight DPS of Atlantic Sturgeon would be the likely DPS affected by this proposed project. Possible impacts to sturgeon from dredging include: entrainment of all life stages; disruption of migration; disturbance of spawning, foraging or refuge areas; or destruction of benthic food resources. While it is possible for Atlantic sturgeon to become entrained in the dredge during dredging operations, this is unlikely due to the transient nature of the species in the marine environment, their tendency to avoid dredging operations and the fact that a hydraulic dredge is being used for this action. 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 for this project. Atlantic sturgeon could be found in the project area, but likely in low numbers. Overall, there may be an affect from the project, but it's unlikely to be an adverse effect on the species.

Due to the emergency nature of this action, we ask for an expedited consultation response from your agency. Thank you for your cooperation on this project. If you have any further questions regarding this letter, please contact Mr. Steve Allen at (215) 656-6559.

Sincerely,


Peter R. Blum
Chief, Planning Division



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
<http://www.fws.gov/chesapeakebay>

April 12, 2013

Charles P. MacIntosh
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Attn: Environmental Resources Branch

RE: *Indian River North Shore Emergency Beach Repair*

Dear Mr. MacIntosh:

This responds to your letter, dated March 25, 2013, requesting comments on the draft Environmental Assessment and Finding of No Significant Impact for the Flood Control and Coastal Emergency Repair of Indian River Inlet North Shore in Sussex County, Delaware. The proposed work involves repair of the beach and dune system extending approximately 1 mile northward from the Indian River Inlet. The severe erosion which occurred during Hurricane Sandy last October has left Route 1 and the approach to the Inlet Bridge in a vulnerable condition. The sand for the repair would be obtained by dredging approximately 520,000 cubic yards of material from the Inlet flood shoal. The work is scheduled to be conducted between June and September of this year.

Our main concern is the potential effect of the project on two federally listed species, piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*). While there is no recent history of either species occurring within the project area, the change in the beach conditions could make the area more attractive to them. We note that our previous recommendation to you to conduct a survey for these species prior to construction has been incorporated into the project plan. We have no further comments or objections, and appreciate your coordination on this emergency project. For any questions or further coordination, please contact George Ruddy at 410-573-4528.

Sincerely,

Genevieve LaRouche
Supervisor

TAKE PRIDE
IN AMERICA

1.

1. No response is required.

State of Delaware
Historical and Cultural Affairs

21 The Green
Dover, DE 19901-3611

Phone: (302) 736.7400

Fax: (302) 739.5660

FINDINGS OF NO HISTORIC PROPERTIES AFFECTED

April 18, 2013

Review Code: 2013.03.27.01

Nikki Minnichbach
Cultural Resource Specialist
Philadelphia District
U.S. Army Corps of Engineers
Regulatory Branch
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

**FLOOD CONTROL & COASTAL EMERGENCY REPAIR
INDIAN RIVER INLET NORTH SHORE, SUSSEX COUNTY, DELAWARE
FLOOD CONTROL AND COASTAL EMERGENCY ACT (PL 84-99)**

Dear Mr. Cianfrani:

The staff of the State Historic Preservation Office has reviewed the materials submitted regarding the above cited project. Based on this review, we have made the determination that no historic properties, eligible for or listed in the National Register of Historic Places, will be affected by this project.

1.

1. No response is required.

Craig Lukezic

Archaeologist E-Mail: craig.lukezic@state.de.us

cc: Gwen Davis, Deputy SHPO, Division of Historical and Cultural Affairs





STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
OFFICE OF THE SECRETARY

DELAWARE COASTAL
MANAGEMENT PROGRAM

5 E. REED STREET, SUITE 201
DOVER, DELAWARE 19901

Phone: (302) 739- 9283
Fax: (302) 739-2048

April 24, 2013

Charles P. MacIntosh
Department of the Army
Corps of Engineers, Philadelphia District
100 Penn Square East
Philadelphia, PA 19107-3390

Re: **Delaware Coastal Programs Federal Consistency Certification**
Indian River Inlet North Shore Flood Control & Coastal Emergency Repair (FC 2013.0051)

Dear Mr. MacIntosh:

The Delaware Coastal Management Program (DCMP) has reviewed your consistency determination request for the above mentioned project. Based upon our review and pursuant to National Oceanic & Atmospheric Administration regulations (15 CFR 930), the DCMP concurs with your consistency request to dredge approximately 520,000 cubic yards from the inlet flood shoal to be used for emergency shoreline protection on the Indian River Inlet North Shore in Sussex County, Delaware.

Dredging is slated to begin in June of this year. We understand that your agency has coordinated with Delaware's Division of Fish and Wildlife regarding resource impacts and that a onetime exception to protective dredging windows for certain fish species was granted, as documented from the March 6, 2013 Indian River Inlet resource agency conference call. Surveys for protected bird species must be coordinated with the State's Natural Heritage Program and completed prior to project construction.

This concurrence is conditioned upon the issuance of all required permits/authorizations and adherence to the restrictions and/or conditions placed on any and all permits issued to the applicant for this project.

If you have any questions, please contact me or Tricia Arndt of my staff at (302) 739-9283.

Sincerely,

for
Sarah W. Cooksey, Administrator
Delaware Coastal Management Program

SWC/ka
Cc: File 2013.0051



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES &
ENVIRONMENTAL CONTROL
DIVISION OF WATER
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

April 25, 2013

U.S. Army Corps of Engineers
Attn: Charles P. MacIntosh
Acting Chief, Planning Division
Environmental Resources Branch
Wannamaker Bldg., 100 Penn Square East
Philadelphia, PA 19107-3390

Waiver #: WA-101/13
Expiration Date: September 30, 2013

Re: Emergency Waiver for Flood Control and Coastal Emergency Repair of Indian River Inlet North Shore Beach in Sussex County, Delaware.

Dear Mr. MacIntosh:

The Wetlands and Subaqueous Lands Section (WSLS) has received your request, dated 29 March 2013, for a Section 401 Water Quality Certification for the purpose of flood control and coastal emergency repair of Indian River Inlet North Shore Beach in Sussex County, Delaware. This request is based on the need to repair the beach project in accordance with PL 84-99 Flood Control and Coastal Emergencies (33 U.S.C. 701n) from damages associated with the Federal disaster declaration for Hurricane Sandy which significantly impacted the Indian River Inlet North Shore Beach in October 2012.

The WSLS has reviewed the project application and plans provided and the Draft Environmental Assessment for this project which included consultation with State and Federal resource agencies.

The WSLS has determined that the emergency repair of Indian River Inlet North Shore Beach is necessary for public safety and to prevent the damage or loss of major infrastructure and that there is insufficient time available to process a Section 401 Water Quality Certification. This determination is based in part on road closures resulting from recent storm events and the concern that future storms could compromise the critical infrastructure of Delaware Route 1, the approach to the Indian River Inlet Bridge, and the Indian River Inlet Bridge.

By this letter, the WSLS issues an Emergency Waiver in accordance with Section 401 of the Clean Water Act, 33 U.S.C. Section 1341 and the Subaqueous Lands Act, 7 Del. C., §7205(c). This Emergency Waiver allows work to proceed without public notice or opportunity for public comment.

This Waiver is subject to the following conditions:

1. This Waiver is granted for the purpose of replacing on the Indian River North Shore Beach approximately 520,000 cubic yards of sand that was lost during Hurricane Sandy and to restoring the beach to the 1984 (Indian River Inlet) beach template by dredging the Indian River Inlet flood shoal to an approximate depth of -24 ft NAVD.
2. This Waiver authorizes only the activities described in the project description and plans. Modifications to the project may require a supplemental approval from this office. A determination of the need for a supplemental approval will be made by this office pursuant to the applicant submitting written notification and revised plans indicating any project changes.

Delaware's good nature depends on you!

3. All dredging and filling is to be conducted in a manner consistent with sound conservation and water pollution control practices.
4. The construction shall be conducted so as not to violate the State of Delaware Department of Natural Resources and Environmental Control's Surface Water Quality Standards, as amended June 11, 2011.
5. The applicant and contractor shall at all times comply with all applicable laws and regulations of the Department of Natural Resources and Environmental Control, except as otherwise waived or modified herein.
6. A copy of this Waiver and the stamped approved plans shall be available on-site during all phases of construction activity.
7. The applicant and contractor shall maintain all authorized equipment and activities in a good and safe condition.
8. The applicant and contractor shall employ measures during construction to prevent spills of fuels, lubricants or other hazardous substances. In the event of a spill, the applicants and contractors shall make every effort to stop the leak and contain the spill, and shall immediately contact the Hazardous Spill Response Team (HAZMAT) at 1-800-662-8802 and this office at (302) 739-9943. The applicant and contractor are responsible to comply with all directives to contain and clean up the spilled material(s) as stipulated by the HAZMAT team, and to restore the site as may be required by this office.
9. Any actions, operations or installations which are found by the Department to be contrary to the public interest may constitute reason for the discontinuance and/or removal of said action, operation or installation. Removal and restoration shall be at the expense of the applicant within thirty (30) days of receipt of written notice of revocation and demand for removal.
10. The issuance of this Waiver does not constitute approval for any of the activities as may be required by any other local, State or federal governmental agency.

If you have any questions, please feel free to contact this office at (302) 739-9943.

Sincerely,



Virgil R. Holmes
Section Manager
Wetlands & Subaqueous Lands Section

Cc: Tony Pratt, DNREC Division of Watershed Stewardship



Marine Education, Research & Rehabilitation Institute, Inc.
MERR P.O. Box 411 Nassau, DE 19969

(302) 238-3029
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www.merrrinstitute.org

... dedicated to the conservation of marine mammals and sea turtles and their
habitats

April 9th, 2013

Charles P. MacIntosh
Environmental Resources Branch
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Dear Mr. MacIntosh,

Re: Indian River Inlet Flood Control & Coastal Emergency Repair

On behalf of the Marine Education, Research & Rehabilitation Institute, Inc. (MERR), I am writing in regard to the proposed dredging of the Indian River Inlet and Indian River Bay. As Delaware's marine mammal and sea turtle stranding response organization, we have concerns about the timing of this project, which coincides with the peak season for dolphins, sea turtles and other threatened and endangered marine species to be present in the proposed dredge area.

MERR has collected 13 years (2000-present) of data on the occurrence of marine mammals and sea turtles in Delaware waters. The Indian River Inlet and inland bays have served as foraging areas for Atlantic bottlenose dolphins (*Tursiops truncatus*), harbor (*Phoca vitulina*), harp (*Phoca groenlandica*) and gray (*Halichoerus grypus*) seals, green sea turtles (*Chelonia mydas*), loggerhead sea turtles (*Caretta caretta*), and manatees (*Trichechus manatus*) who make an annual foray into the inlet and up through the Indian River Bay. Severely endangered North Atlantic rights whales (*Eubalaena glacialis*) utilize the area as feeding and foraging grounds, with annual sightings of mother calf pairs occurring directly inside the IR Inlet.

These species show fidelity to feeding areas, returning year after year to forage, and to teach their young how to feed. Large groups of bottlenose dolphins are sighted within both the Indian River and Rehoboth Bays throughout the summer months, where they remain for weeks at a time. Individual West Indian manatees utilize the IR inlet as an access point to Indian River Bay, where they are often sighted around the IR marina. Marine turtles documented in this area include loggerhead and green sea turtles. Most marine turtles, including the loggerhead, are benthic feeders and therefore at greatest risk for mutilation and death resulting from dredge impact.

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1. A cutterhead-suction (hydraulic) dredge will be used for this project. Cutterhead-suction dredges are either stationary or extremely slow moving, and impacts (to sea turtles) have not been documented in the northeast with these types of dredges (NMFS, 1996). In addition, the Corps completed Section 7 Consultation- Endangered Species Act with the NMFS to address dredging impacts on sea turtles and marine mammals. This project will be in compliance with the Biological Opinion (NMFS, 1996).

The breadth of impact from this project includes many factors that are deemed detrimental and/or fatal to marine mammals and sea turtles, and include anthropogenic noise pollution, displacement, disruption of feeding and foraging behavior, impact on prey located in the benthic and micro layers, and injury and death. We therefore object to the timing of this project, which if conducted, would have maximum impact on threatened and endangered marine species. The aforementioned species of concern occur at their lowest frequency from November through February. We therefore urge the corps to reconsider the time frame for this project, and to implement alternative remedial measures in the interim.

Sincerely,



Suzanne Thurman
Executive Director

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2. Dredging within Indian River Inlet area is not expected to produce noise levels significantly above existing boat traffic, wave runners and other activities in the inlet area. Impacts to benthic prey resources would be immediate, but temporary in nature. We fully expect the impacted areas to be recolonized rapidly after dredging ceases. The dredging activities and the time-frame of these activities would be conducted in accordance with the Biological Opinion (NMFS, 1996), and is not expected to have significant impacts on sea turtles and marine mammals.

3. Due to the vulnerability of the north shore of Indian River Inlet to the next storm or upcoming hurricane season, a delay in project construction could expose the Indian River Bridge approach and Route 1 to serious damages. On balance, the Philadelphia District has determined that the proposed action is not likely to adversely affect sea turtles and marine mammals in accordance with the Endangered Species Act, and that the public interest would be served by implementing this plan as soon as possible.



April 10, 2013

Gayle R. Wills

DNREC Division of Water
89 Kings Highway
Dover, DE 19901

Charles P. Macintosh
ATTN: Environmental Resources Branch
US ACOE Wannamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Stephen.Rochette@usace.army.mil

The Surfrider Foundation Delaware Chapter offers comments on the current proposal for construction of a Delaware Coast Protection Project Flood Control and Coastal Emergency Repair Indian River Inlet North Shore Sussex County, Delaware. We recognize the critical need for increased storm protection in this area. In this instance we support the use of "soft" shoreline stabilization approaches, including the addition of sand to the system, provided that all forms of recreation are considered as well as wildlife and other natural resources.

However, we are concerned with the fact that the public comment period for this project, (March 25 to April 10, 2013) runs concurrently with the request for bids. Such actions signal that the Army Corps will not consider anything said during the public comment period and that no information received during the comment period will change the project since it is going out to bid. We find this incredibly disheartening given our good faith efforts to the contrary.

After years of acrimonious relations with the USACOE and the American Shore and Beach Preservation Association, (ASBPA) the Surfrider Foundation attempted dialogue exploring how to make our relationships less adversarial. Two years were spent attempting to find ways to partner instead of fighting projects and filing lawsuits. Very little came of the effort. Actions like this, accepting comments and bids at the same time, are exactly the type of thing that makes environmentalists, user groups, and the public in general so distrustful of the Corps. Clearly no meaningful public input is desired and none will be considered when bids are solicited before public comments are taken.

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1. Due to the vulnerability of the area to storm damages and the urgency to provide adequate storm protection to State Route 1 and Indian River Inlet and the tight funding constraints imposed on implementing the proposed measures under the Flood Control and Coastal Emergencies (FCCE) associated with Hurricane Sandy, the public review period was shortened to 15 days where typically, a minimum 30-day public review is provided for most Civil Works projects (unless circumstances require extensions) that require EAs. ER 200-2-2 (The Corps of Engineers' Procedures for Implementing NEPA) requires that a notice of availability (by public notice) for operations and maintenance activities involving the discharge of dredged or fill material, but it does not require a public review period. By providing a 15-day public review/comment period on the draft EA/FONSI, the Philadelphia District, -in an effort to engage the public on this project, has exceeded this requirement. Additionally, on March 14, 2013, Philadelphia District and DNREC personnel met with Surfrider members to discuss the project and answer any questions. The statement that the District would not consider any comments from the public review is incorrect. In fact, we have considered comments received and made appropriate changes to the project, as needed. Unfortunately, it became necessary to advertise the project to potential bidders during the public review period to meet the tight schedule. This "advertisement" did not commit any irretrievable resources, and does not preclude making any necessary changes prior to actual construction. It should be noted that due to the extraordinary circumstances created by storm damages from Hurricane Sandy and the vulnerability of the area to further catastrophic damages, the Philadelphia District determined that it was necessary to modify the typical public review process to accommodate a tighter schedule for repairs. However, this modification is still compliant with our regulations, but is not representative of all past and future Philadelphia District actions.

In addition to the "process" issue raised above we have specific concerns with the Environmental Assessment as listed below.

Concerns with the Environmental Assessment -

Page one of the EA overview states that Hurricane Sandy arrived on the East Coast in September 2012. The actual date was of course October 29, 2012. We find it amazing that such an incredibly important detail that has precipitated such a tremendous amount of work by the Army Corps could be wrong on a document such as this. We find similar attention to detail throughout the document.

Staging area - The EA state the staging area on the beach will be 40 feet wide by 100 feet long, page 9. We feel there is no chance that a staging area of this size will be sufficient for such a project and we suspect it will be much larger. We would like the correct dimensions of the staging area before this project begins.

Fisheries resource - On page 19 section 5.1 the EA references fish studies from the 01960's indicating 38 species in the Bay. We do not accept the reliance on 50-year old studies.

Osprey - The EA does not mention Osprey. There are two Osprey nests in the immediate area and 10 nesting sites bayside in close proximity – Savage's Ditch Area - and while no longer a listed species, the fact that they are not mentioned is a glaring omission from the EA.

Marine Mammals - Marine mammals only received one sentence in the EA, yet species of marine mammal like dolphin will likely enter and exit the Inlet daily during the proposed project period.

Turtles - There is little mention of sea turtles. Loggerhead sea turtles are an endangered species that use the area. The impacts of dredge and fill activities on turtles are well known and there is no mention of what types of precautions will be taken to minimize impacts on endangered sea turtles.

Terrapins nesting - Diamondback terrapins are not mentioned in this EA either. While they are not endangered or listed, they are a species that uses this area in high numbers at this time of year. It is widely known that these turtles emerge from the bay and walk east in search of dunes to lay their eggs. Road mortality is a problem and the state has used fencing to keep the turtles on the west side of the road. At a minimum, we would expect assurances that this fencing to be in place before this project proceeds due to increased traffic and vehicles in the area.

Surfing Resources - We appreciate the mentions of impacts on recreation. But this is much more than an area where surfing is a "popular activity" as mentioned in the EA. Both sides of Indian River Inlet have historically been valuable surfing and recreational beaches for many decades. The north side of Indian River Inlet has been designated by the DNREC Division of Parks and Recreation as a surfing area, and is managed so as to preserve this historic use. We support continued management of this area for surfing, and request that this beachfill project be designed and built consistent with that designated use.

Surfing is an increasingly popular activity, and Indian River Inlet is one of only two areas in Delaware that are consistently surfable. Previous experience at Herring Point illustrates the

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2. The date has been corrected in the EA.

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3. The staging area discussed on page 9 was a typographical error. The correct dimensions are 400 feet (not 40 feet) by 100 feet as depicted in Figure 5. This error was corrected in the EA.

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4. Comment noted.

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5. The osprey was listed in paragraph 5.2 as avifauna inhabiting the Indian River Bay Area..

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6. The project will abide by the recommendations made by the National Marine Fisheries Service in the Biological Opinion (NMFS, 1996) to protect marine mammals and sea turtles.

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7. Diamondback terrapins were listed in Section 5.2. We are aware of the State-constructed terrapin barrier fence along the bay side of Route 1. However, maintenance of this fence is outside of the scope of this project. If functioning correctly, this fence would preclude terrapins from accessing Route 1 and reaching the dune area. If the fence is not functioning, there is a possibility that some turtles may reach the dune area after crossing 4 lanes of Route 1, but this is expected to be minimal due to the barriers and hazards to the terrapins presented by Route 1.

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8. As discussed in the EA, the proposed project will temporarily impede beach access, and may result initially in a steeper beach profile prior to readjustment to a more natural slope. The project design is not expected to adversely affect the designated uses as a surfing area.

value in designing shoreline management projects that are consistent with the various uses. Indian River Inlet should similarly be managed in a way that accomplishes the mutual goals of protecting the roadway, while preserving or enhancing the beaches and surfing amenities, and protecting fish and wildlife and the human uses associated with them.

Appropriate Sand Material

Indian River Inlet has been a valuable surfing area due to the breaking of waves offshore. We believe there is a connection between the material selected for beachfill projects and the slope equilibrium that creates good surfing. Coarser grained material reaches a steeper slope and causes waves to break close to the beach, while finer grained sand creates a flatter slope, breaking waves further offshore, and improving surfing. We understand that historical beachfill projects at the North Side of Indian River Inlet (prior to 1984) have used finer grained material from the flood tidal shoals of Indian River Inlet, and have been compatible with surfing. We support the continued use of these finer grained sand sources, which we understand to be the case with the proposed project, and do not support the use of coarser grained materials which have reduced the quality of surfing elsewhere.

Monitoring

Short Term – We request that access be given to volunteers to monitor the conditions on the beach and in the area during the entire project period. For example if coarse material were found on the beach the dredge could be moved to another area. If dead loggerheads were found on nearby beaches, they could be properly noted by volunteers. And if terrapins were being killed on the road, more steps could be taken to minimize impacts.

Long Term - We support the monitoring of shoreline conditions at the North Side of Indian River Inlet to assess the effects of the beach fill on surfing conditions, and other recreational uses. While some short-term disruption of surfing quality is to be expected, periodic monitoring of shoreline profiles should be undertaken to verify that the placed material, including by-passed material, is performing in a manner that is consistent with continued use of the area for surfing.

In the longer term, we request that alternative sand placement strategies be considered if monitoring indicates shoreline conditions are not consistent with continued preservation of the surfing area. The material bypassed to the North Side of Indian River Inlet can play a role in these preservation efforts. Making sure that bypassed material is fed directly into the intertidal zone where it can be reworked by wave action is important.

The Army Corp has well documented deterioration that the north end of the inlet jetty is a serious concern. Placement of sand and continued sand-bypassing while the jetty continues to deteriorate and allow sand to leak both through, and ground the end, is at best a short term solution. The north side jetty has lost 400 feet over the past 40 years and this has been well documented through the Army Corps own studies.

Conclusion

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9. Concur.

10. The sand source for this project is the Indian River Inlet flood shoal, and is the same source used in the past, which have produced a finer sand. Recent cores and grab samples from the shoal indicate a similar type of sand.

11. Due to safety reasons, the public is prohibited from accessing active construction areas. As discussed in the EA, beachfill operations are typically conducted in segments of about 1,000 feet at a time, which are closed off to the public for about a week. Once a segment is completed, it is opened up for public use. The quality of the sand being placed on the beach will be monitored and verified by the onsite Corps quality control inspector. Inquiries can be directed to the Philadelphia District Office at (215) 656-6500. While there is a low probability of direct impacts to loggerhead turtles from a hydraulic dredge, any takes of this species attributable to this project would require reporting to the National Marine Fisheries Service in accordance with the Endangered Species Act. The Corps quality control inspectors will be monitoring for such occurrences.

12. Monitoring surveys are obtained by the Corps annually to determine the effectiveness of the sand bypass system to place sand on the north shore for protection of Route 1. It is recognized that significant changes in beach width and sand volume can occur in the intervals between the annual monitoring surveys as a result of natural phenomena, such as storms and seasonal changes in dominant longshore transport direction, however the annual surveys are the only consistent, quantitative source of data for this monitoring. This monitoring will continue through the authorized life of this project.

13. The Indian River Inlet Sand Bypass facility is operated and maintained by the Delaware Department of Natural Resources and Environmental Control (DNREC). Sand placement activities from the bypass facility is conducted under DNREC's discretion.

14. The Philadelphia District is currently considering measures to repair a portion of the jetty that is believed to be leaking sand into the inlet from the north shore. This repair of the jetty also described as "sand tightening" will benefit the retention of sand on the north shore beach, and is expected to be implemented within a year.

We would like to have seen an Environmental Assessment that is more inclusive and considerate of the natural and wildlife resources in the project area. We would also like the ability to monitor the project, on site, as it progresses. As stated before, surfing is an increasingly popular activity, and Indian River Inlet is one of only two areas in Delaware that consistently provide a high quality surfing resource. Indian River Inlet is Delaware designated surfing area, and is heavily used for this activity, providing significant revenue to Delaware's State Parks, and offering a unique recreational opportunity. We recognize the need for increased protection in this area, applaud the selection of an alternative that does not rely on sea walls or other hard structures, and urge the Army Corps of Engineers to undertake and maintain this project in a manner that preserves and enhances Delaware designated surfing area.

Sincerely-

Ed Connor
Chair, Delaware Surfrider Chapter, chair@surfrider.delaware.org

John Doerfler
Vice Chair, Delaware Surfrider Chapter, vicechair@surfrider.delaware.org

John Weber
Regional Director, Surfrider Foundation, jweber@surfrider.org

15.

15. Comment noted.



Delaware Mobile Surf-fishermen, Inc.
Post Office Box 455
Dagsboro, DE 19966

April 4, 2013

Mr. Charles MacIntosh
Attn: Environmental Resources Branch
U.S. Army Corps of Engineers
100 Penn Square East
Philadelphia, PA 19107

RE: Delaware Coast Protection Project, Public Notice No.: CENAP-PL-E-13-01

Dear Mr. MacIntosh,

The Delaware Mobile Surf-fishermen, Inc. (DMS) is an organization of 700 like-minded persons that have a deep interest in beach preservation, continuing beach access, the health of the marine sport fisheries and surf-fishing. For numerous reasons, the Board of Directors of DMS has voted unanimously to support the Delaware Coast Protection Project for flood control for the Indian River Inlet north shore in Sussex County, Delaware, as summarized in the U.S. Army Corps of Engineers Public Notice number CENAP-PL-E-13-01.

Over the years, this area of the Delaware beaches has lost much of its breadth. Storm action recently experienced during Hurricane Irene in August, 2011, Hurricane Sandy in October, 2012 and the nor'easter of 6 March 2013 are just three of many events that have resulted in the loss of beach in the project area. DMS is well aware that the wash from wave action at higher high tide levels reaches the Oceanside toe of the current dune system. The collective memory of the more mature members of our club can be summarized as follows: "I remember when the beach there was much further out."

DMS is aware that the proposed project would negatively impact the ability to access the beach for recreational activities and when fishing from a boat or from the shoreline of the Indian River Inlet in the project boundaries. We note that potential staging areas for contractors would negatively impact the timeliness of the restoration of the camping area west of the approaches to the Indian River Inlet Bridge in Delaware Seashore State Park.

Any negative impact is temporary and is offset by the enormous benefit provided by a broader beach and the potential for total loss of the beach in the project area if no action is taken.

DMS detects a sense of urgency in the project. The Project's Environmental Assessment (EA) mentions a waiver from National Marine Fisheries Service (NMFS) and the Delaware Department of Natural Resources and Environmental Control's (DNREC) Division of Wildlife for dredging operations that would impact larval and young of the year of certain fish

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1. No response is required.

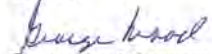
species. We note EA maintains that the project has a "limited cumulative effects" on essential fish habitat and managed species.

The additional benefit of protecting the Indian River Inlet Bridge and the approach roadway cannot be overstated. Coastal Highway (Delaware Route 1) and the IRI Bridge are enormously essential to the economic viability of the coastal areas of Sussex County. The potential that storm over wash in the project area would undermine the roadway cannot be dismissed. The money Delaware currently spends removing sand deposited on the roadways by storm over wash is considerable and could be used in other areas.

DMS would be remiss if we did not urge the U.S. Army Corps of Engineers to refurbish the North Jetty of the Indian River Inlet. Such action should include extending the jetty to its former length, re-establish the navigation marker and repairing the "hole" in the jetty that allows sand to re-enter the Inlet and form the shoal southwest of the navigable channel.

DMS extends complete support of the Project referenced in CENAP-PL-E-13-01 and anticipates the timely implementation of same.

Sincerely,



George Mood, Secretary
Delaware Mobile Surf-fishermen, Inc. (DMS)

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2. The Philadelphia District is currently considering measures to repair a portion of the jetty that is believed to be leaking sand into the inlet from the north shore. This repair of the jetty also described as "sand tightening" will benefit the retention of sand on the north shore beach, and is expected to be implemented within a year.

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer

W13447 Camp 14 Road

P.O. Box 70

Bowler, WI 54416

Date 4/9/13
Project Number Indian River Inlet
TCNS Number _____
Company Name Department of Army

We have received your letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

- Site visit by Tribal Historic Preservation Officer
- Archeological survey, Phase 1
- Colored maps
- Pictures of the site
- Any reports the State Historic Preservation Office may have
- Review fee of \$300.00 must be included with letter
- Has site been previously disturbed, please explain what the use was and when it was disturbed

After reviewing your letter:

- We are in the process of gathering more information on this site and will respond to your project request once all information has been gathered.
- This project has the potential to affect a Mohican cultural site, please contact us
- This project is not within Mohican area of interest
- This project is within Mohican territory, but we are not aware of any cultural site within the project area.

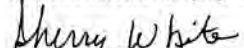
1.

1. No response is required.

Additional comments _____

Should this project inadvertently uncover a Native American site, we require you to halt all construction and notify the Stockbridge-Munsee Tribe immediately.

Please do not resubmit projects for changes that are not ground disturbance


Sherry White, Tribal Historic Preservation Officer

(715) 793-3970

Email: sherry.white@mohican-nsn.gov

From: Faoro, Dan [<mailto:dan.faoro@aopa.org>]
Sent: Friday, April 05, 2013 11:59 AM
To: Rochette, Stephen NAP
Subject: Indian River Inlet

Mr. Rochette,

I just read the briefing on the Indian River Inlet coastal repair with great interest.
<http://www.nap.usace.army.mil/Portals/39/docs/Civil/Public%20Notice/CENAP-PL-E-13-01mdeversion.pdf>

My family owns one of the homes in South Shore Marina, on the southern side on the inlet, and we have enjoyed this area tremendously over the years and hope to for many years to come.

I see your plan to dredge the inlet in the area directly behind our home and understand that the dredged material will be used to help shore up the beach on the north side of the inlet. This is of some concern to us because the rip rap all along the south side of the inlet has begun to sink in some areas, including directly behind our home. I worry that the dredging will further undermine the base support for the rip rap and cause it to sink further into the inlet. Have you taken this into account and is there any plan to help shore up the existing rip rap?

Kind regards,

Dan Faoro

Dan Faoro

Aircraft Owners and Pilots Association <<http://www.aopa.org/>>

421 Aviation Way

Frederick, Maryland 21701

P: 301-695-2027 | C: 202-379-8125

1.

1. The dredging plan for the Indian River Inlet flood shoal is of sufficient distance (approximately 200 feet) from the riprap wall along the South Shore Marina, and is not expected to have any adverse impacts on this structure. The south riprap wall along the South Shore Marina is not part of a Federal project. Therefore, there are no current plans to address the current situation under any Corps of Engineers authorities.

From: patsyfaoro@cox.net [mailto:patsyfaoro@cox.net]
Sent: Friday, April 05, 2013 10:42 AM
To: Rochette, Stephen NAP
Subject: Dredging at Indian River Inlet

Dear Mr. Rochette:

I just read the Public Notice regarding plans to dredge at the Indian River Inlet. We have a house at the South Shore Marina on the inlet side. My question is whether dredging will undermine rip rap along the shore. As you may know, the road leading to the Marina development is often under water and during Sandy the entire area was under water. Are there any plans that will address this problem? Are there any plans to add rip rap?

Thank you.

Regards,
Mrs. Louis Faoro
39 Inlet View Court
South Shore Marina

Classification: UNCLASSIFIED
Caveats: NONE

1.

1. The dredging plan for the Indian River Inlet flood shoal is of sufficient distance (approximately 200 feet) from the riprap wall along the South Shore Marina, and is not expected to have any adverse impacts on this structure. The road leading to the marina development and the south riprap wall along the South Shore Marina are not part of a Federal project. Therefore, there are no current plans to address the current situation under any Corps of Engineers authorities.