OCEAN CITY HARBOR AND INLET & SINEPUXENT BAY PROJECT
WORCESTER COUNTY, MARYLAND

INLET NAVIGATION IMPROVEMENTS

DRAFT
ENVIRONMENTAL ASSESSMENT

APPENDICES

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APPENDIX A

CLEAN WATER ACT

SECTION 404(b)(1) EVALUATION

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May 2022

I. Project Descriptions

a. Locations

The Ocean City Inlet is located on the far eastern boundary of Maryland along the Atlantic Coast. The area is shown on National Ocean Service Chart No. 12211, and on the U.S. Geological Survey Ocean City, Berlin, Tingles Island, and Whittington Point 7.5' quadrangle topographic maps. The area is shown on National Ocean Service Chart No. 12211. The inlet is located at approximately 38° 20'N and 75° 05' W.

b. General Description

The USACE Ocean City Inlet channel would be realigned to generally deeper water, with a minor portion of the realigned channel needing to be newly dredged to produce authorized depths. Additional rock structures to train the channel would be constructed on northern Assateague Island. Note that this analysis includes rock structure work below mean high water within jurisdiction of the Clean Water Act, as well as work above MHW that is not regulated, because it is difficult to separate. Other construction work and effects of work occurring on uplands above MHW on northern Assateague Island is not evaluated in this analysis, but is considered in the environmental assessment prepared for the proposed project. Additionally, effects of USACE maintenance dredging of the existing Ocean City Inlet and Sinepuxent Channel have been evaluated in previous Clean Water Act documents. Accordingly, minimal information on those project components is provided in this analysis.

1) Ocean City Inlet Channel Realignment.

The inlet channel would be realigned along approximately 3,360 feet of its length, shifted southward parallel to its present position. The realigned channel would be mechanically dredged to provide authorized 10 ft depth (-10ft MLLW), with 2 ft overdepth. Because deep water is already present along much of the realigned inlet channel, dredging is anticipated only at the western end of the channel near the Ocean City Harbor entrance and at the confluence of the Inlet Channel with the USACE Sinepuxent Channel.

2) Rock Structure Construction.

Dredged material from inlet channel realignment would be beneficially placed in open water off the northwestern tip of Assateague Island in the footprint of the proposed rock structures and immediately on either side to improve foundation conditions and water depths. Additionally, dredged material from maintenance dredging of the Sinepuxent Channel by mechanical dredge would also likely be beneficially placed in the rock structure footprint for the same purpose.

Rock breakwaters would be constructed in the Ocean City Inlet within two separate approximately 300 ft long gaps in the existing breakwaters on the north shoreline of Assateague and connected to existing rock structures on either side. A new rock jetty would be constructed that would extend approximately 150 feet northwestward into Sinepuxent Bay off the westernmost end of the existing rock structures. Material excavated during construction from the rock structure footprint to establish design rock structure height and width would be beneficially used onsite in the Ocean City Inlet and in Sinepuxent Bay to improve foundation conditions and water depths for the rock structures, as well as for other construction needs. A rock-filled marine mattress would be placed to underlie the new rock structures. The footprint of the new rock structures would vary from 60 to 150 ft feet, and occupy approximately 1.3 acres of bottom.

c. Purpose

The purpose of the project is to improve navigability of the inlet channel to/from Ocean City Harbor in accordance with recommendations of the 1998 USACE Ocean City Water Resources Study. However, instead of increasing authorized channel depth to 16 ft as that report recommended, the channel would be maintained at 10 ft depth because vessels utilizing the channel do not require more than 10 foot draft. The proposed project rock structure work would train the channel to be optimally self-maintaining by increasing tidal current scour in the realigned channel, and reduce frequency of future maintenance dredging. The existing Inlet Channel shoals at its western end to shallower than authorized depths, impeding navigation and necessitating frequent dredging.

d. General Description of Discharge Material

(1) *Characteristics of Fill Material* -

a) Ocean City Inlet Channel Realignment

No fill material would be placed in the inlet channel. The former channel would be abandoned in place and not filled by USACE.

Dredged material from inlet channel realignment would consist of sands with gravel and shell. The dredged material could contain up to approximately 5% finer-grained silts and clays by weight.

b) Rock Structure Construction

Fill material to improve structure foundation conditions and or water depths for proposed new rock structures would consist of sands with gravel and shell dredged from the realigned Inlet Channel and likely from Sinepuxent Channel maintenance dredging. Additionally, excavated sand, gravel, and shell from rock structure foundation work would be used as fill material for other project construction needs in-water (such as to improve foundation conditions/modify water depths locally in the structure footprint and immediately adjacent areas).

The marine mattress would consist of geotextile filled with small rock. Fill material for the jetty/breakwater improvements at Assateague Island would consist of large stones of a variety of sizes and weights used in structure bedding, core, and cap rocks.

(2) *Fill materials*

a) Ocean City Inlet Channel Realignment

No fill material would be placed in the inlet channel.

b) Rock Structure Construction

Approximately 15,500 cubic yards of dredged material from inlet channel realignment would be placed in the proposed rock structures' footprint and immediately adjacent areas. Up to several thousand cubic yards of dredged material from the Sinepuxent Channel would also be place in the rock structure footprints prior to construction. Up to several hundred cubic yards of excavated sand from the rock structures' footprint would be utilized onsite in the footprint in Sinepuxent Bay and Ocean City Inlet.

A marine mattress less than 1 foot thick would be placed on approximately 1.3 acre of the bottom in the footprint of the rock structures. Approximately 8,970 cubic yards (26,350 tons) of rock (including bedding, core, and cap stone) would be placed to construct the jetty improvements in Sinepuxent Bay and on northern Assateague Island. (Note that the stone would placed at sites below MHW up to approximately +6 ft MLLW).

(3) *Source of Material* -

a) Ocean City Inlet Channel Realignment

No fill material would be placed in the inlet channel.

b) Rock Structure Construction

Fill material for foundation improvements would be obtained from Inlet Channel realignment and Sinepuxent Channel maintenance dredging. Excavation work on northern Assateague Island and Sinepuxent Bay within the rock structure footprints would produce material that would be used as needed for project construction.

The marine mattresses and rock would be obtained from a commercial source and barged to northern Assateague.

e. Description of the Proposed Discharge Sites

1) Ocean City Inlet Channel Realignment

No material would be discharged in the inlet channel, other than de minimis quantities incidentally as a consequence of dredging.

2) Rock Structure Construction

The shoreline of northern Assateague along the inlet consists of several rock structures with gaps between the structures. Shallow open water with protected beaches occupy the gaps. The proposed placement area for the jetty consists of open waters with sandy bottom ranging in depth from intertidal to greater than 10 feet in Sinepuxent Bay.

The Ocean City Inlet links Isle of Wight and Sinepuxent Bays to the Atlantic Ocean. The inlet is maintained by tidal current scour and dredging, with its location controlled by the position of jetties on its northern and southern shorelines. The inlet ranges in width from approximately 1,200 feet at its bay confluence to 580 feet at its mouth on the ocean. The distance within the inlet between the coastal bays and Atlantic Ocean is approximately 2,500 feet. The inlet ranges in depth from intertidal on the shorelines to greater than 50 feet deep. The inlet has strong tidal currents which transport substantial quantities of sediment.

f. Description of Dredging and Placement Method

1) Ocean City Inlet Channel Realignment

It is anticipated that a mechanical dredge would be used to realign the inlet channel. The dredge would be positioned in the channel and material dredged and then placed in a barge. The barge

would be moved to the proposed rock structure area and material would be removed from the barge and placed in the footprint of the structures as needed. The dredge may operate up to 24 hours per day, 7 days a week, to complete the dredging work.

2) Rock Structure Construction

Sand would be excavated as necessary from the footprint of the rock structures within Sinepuxent Bay and the Ocean City Inlet to establish appropriate foundation conditions. Foundation excavations would occur using a crane from a barge, or using land-based construction equipment, depending on water depth. The marine mattresses would be filled and sewn on a barge or on northern Assateague, then deployed into the rock structure footprint by crane. Rock would be imported to the site by barge and placed by cranes from the barge. Construction equipment would be deployed to northern Assateague Island by barge, and undertake additional rock structure work from the island.

II. Factual Determinations

a. Physical and Substrate Determinations

(1) *Substrate elevation and slope* -

a) Ocean City Inlet Channel Realignment

Water depths along the south side of the inlet channel where the authorized channel would be relocated range from approximately 8 ft to 50 ft, with most of the realigned location already meeting or exceeding the authorized 10 ft depth. Accordingly, water depths in the realigned channel would be increased by up to approximately 2 ft, but that increase would only occur along the western part of the channel near its confluence with Sinepuxent Channel. Following realignment, maintenance dredging would be conducted at an interval of approximately once per 5 years.

(b) Rock Structure Construction

Water depths along the Inlet where existing rock breakwaters would be connected range from intertidal to several feet deep. Water depths where the new jetty would extend NW into Sinepuxent Bay range in depths from intertidal to approximately 10 ft.

New rock structures would be comparable to the existing structures in width and height. Approximately 60 ft wide at 5 below MHW, sloped inward to the structure such that at maximum elevation structure width is approximately 12 feet. Maximum elevation would be approximately 6 ft above MHW. Accordingly, water depths at the new rock structures would be shallowed by up to approximately 10 ft.

(2) *Sediment Type* -

a) Ocean City Inlet Channel Realignment

Surface and subsurface sediments of the inlet channel are coarse and consist of sand and gravel with shell. The substrate of the realigned new dredged channel would consist of comparable materials. Strong tidal currents scour away fine-grained sediments and prevent their deposition.

b) Rock Structure Construction

Northern Assateague shallow waters in Sinepuxent Bay and the Inlet Channel have sand, gravel, and shell sediment. The existing structures consist of large rocks with fouling organisms, such as barnacles. Following project construction, bottom material at the footprint of the new rock structures would be converted to geotextile material overlaid by the rock structures. Substrate in the vicinity would otherwise remain sandy.

(3) *Dredged/Fill Material Movement* -

(a) Ocean City Inlet Channel Realignment

No material would be placed in the realigned inlet channel.

(b) Rock Structure Construction

Fill materials placed to improve foundation conditions and water depths for construction would be subject to natural processes in the initial period prior to rock placement, and likely move locally with currents on either side of the footprint.

Negligible movement of rock structures is anticipated as rocks would be selected and the structures built to withstand currents and waves.

(4) *Other Effects* -

Altered currents and waves in the structure vicinity would induce some erosion and shoaling of ambient sediments (i.e., not placed sediments). Minor localized increased shoaling and erosion in the inlet vicinity is anticipated during the first year following project construction, then conditions are anticipated to achieve a new dynamic equilibrium. However, sediment characteristics are anticipated to remain similar to pre-project conditions (other than for the rock structures themselves), and no deposition of fine-grained sediments is anticipated to be induced.

(5) *Actions Taken to Minimize Impacts* -

Channel realignment and rock structure design were optimized for self-scouring of the navigation channel and minimization of effects to substrates elsewhere through iterative design and modeling. No other actions would be taken to minimize impacts.

No additional measures would be taken to reduce impacts.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) *Water Quality*

(a) Salinity - Negligible increase expected in inlet vicinity bay waters because of already-strong marine influence.
(b) Chemistry - No change expected.
(c) Clarity - Minor and temporary reduction expected during dredging and placement of material. No long-term impacts are expected.
(d) Color - Minor and temporary change expected during dredging and construction due to minor increase in turbidity. No long-term impact expected.
(e) Odor - No change expected.
(f) Taste - Not applicable.
(g) Dissolved Gas Levels - No change expected because of already-strong ocean influence in inlet vicinity waters.
(h) Nutrients - No change expected.
(i) Eutrophication - Not expected to occur.
(j) Temperature - No change expected.

(2) *Current Patterns and Circulation*

(a) Current Patterns and Flow - Modeling studies of the proposed navigation improvements determined there would be permanent changes in current patterns with increased flows within the navigation channel as realigned. Overall circulation and exchange between Sinepuxent Bay and the Atlantic Ocean would increase by approximately 5%; overall circulation and exchange between Isle of Wight Bay and the Atlantic Ocean by approximately 3%. Circulation in bay waters in the inlet vicinity would remain strong, with no areas of notable impeded circulation created.

(b) Velocity - Results of modeling studies of the proposed navigation improvements determined there would be permanent increased velocities in the Inlet Channel. The maximum increase would occur in the area of the Inlet Channel problematic for navigation and in the vicinity of its confluence with the Sinepuxent Channel. A maximum increase in velocity of approximately 25 to 30 % would occur, with maximum current velocity increasing from approximately 2.6 to 4.1 ft/sec. Outside of the navigation channels, changed conditions would occur, but they would be minimally different from existing conditions.

(c) Stratification - No change expected because of already-strong ocean influence.

(d) Hydrologic Regime - No change expected because of already-strong ocean influence.

(3) *Normal Water Level Fluctuations* - No change expected because of already-strong ocean influence in inlet-vicinity bay waters.

(4) *Salinity Gradients* - Negligible increase expected in inlet vicinity bay waters because of strong ocean influence.

(5) *Actions That Would Be Taken to Minimize Impacts* -

Channel realignment and rock structure design were optimized for increased velocities in inlet navigation channel but minimization of effects elsewhere through iterative design and modeling. Accordingly, no further actions are required to manage hydrodynamics or water quality.

c. Suspended Particulate/Turbidity Determinations

(1) *Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Placement Site* -

Minor, localized, and short term impacts are expected to occur during both dredging and placement. Because of coarse grain-size of the dredged material and rock and strong water currents, suspended sediments are expected to be minimal and diffuse, with most suspended sediment rapidly settling out of the water column both at the dredging and placement sites. However, turbidity could be locally greater temporarily where muddy sands occurring deeper below the bottom surface are encountered and dredged or excavated. Turbidity levels are expected to rapidly return to background levels once dredging and placement is completed.

(2) *Effects (degree and duration) on Chemical and Physical Properties of the Water Column*

(a) Light Penetration - Minor, temporary, and localized reduction in light penetration due to turbidity would occur during dredging and placement. Any turbidity created by these actions would be generally within the range of natural turbidity levels.

(b) Dissolved Oxygen - Minor, temporary, and localized reduction in dissolved oxygen in conjunction with elevated turbidity levels may occur during dredging and construction. No change expected after construction.

(c) Toxic Metals and Organics - No toxic metals or organics are expected to be released into the water column. No change expected after construction.

(d) Pathogens - No pathogens are expected to be released into the water column.

(e) Aesthetics - A temporary and minor reduction in aesthetic value within the area of dredging and construction is expected to occur during dredging and construction activities. No change expected after construction.

(f) Temperature - No change expected.

(3) *Actions Taken to Minimize Impacts* -

a) Ocean City Inlet Channel Realignment

Dredging via mechanical dredge produces minimal water quality effects and it is anticipated that there would be no minimization measures (including no time of year restriction).

b) Rock Structure Construction

Because of the coarse grain-size of the dredged material and rock to be placed and its rapid settlement, no turbidity minimization measures are proposed. Additionally, strong currents in work area waters limit ability to use turbidity curtains and comparable measures. At this time, no TOY restriction is anticipated to be needed for rock construction work in water, including mechanical dredging in the footprint as well as rock placement in the water.

d. Contaminant Determinations

Environmental coordination letters and historical research indicate that no contaminant sources are located in the area which would be affected by the dredging or construction. Clean sediments would be dredged, excavated, and placed; therefore, no significant levels of contaminants are anticipated to be released into the water column. No dredging would occur within Ocean City harbor or any canals where contaminants do occur at higher levels.

e. Aquatic Ecosystem and Organism Determinations

(1) *Effects on Plankton* - Dredging and placement by mechanical means would have negligible impact to plankton.

(2) *Effects on Benthos* -

(a) Primary Production, Photosynthesis - No submerged aquatic vegetation (SAV) beds are mapped to occur within the inlet channel nor the proposed rock structure sites, nor in the vicinity. Accordingly, no impacts to SAV is expected. Photosynthetic microbenthos likely occur at both sites. Dredging and placement would destroy those organisms at the dredging and placement sites. Populations of these organisms would recover to pre-project levels within months to a couple of years. The rock structures would provide habitat for fouling photosynthetic organisms that would colonize the new surfaces. This habitat is not native to the coastal bays, however.

(b) Suspension/Filter Feeders -

(1) Ocean City Inlet Channel Realignment

Dredging would destroy relatively non-motile suspension/filter feeders that inhabit the channel realignment area. No populations of any species are expected to be significantly detrimentally impacted. It is expected that the area would be repopulated during spring and fall recruitment peaks and return to pre-project levels within several years of dredging.

However, the realigned channel would then be occasionally dredged in the future, destroying relatively non-motile suspension/filter feeders. This alternating period of disturbance then recovery has characterized the federal navigation channels for decades.
(2) Rock Structure Construction
Placement of dredged material and rock in Sinepuxent Bay and the inlet would destroy non-motile suspension and filter feeders in the placement area. Suspension and filter feeders are expected to recolonize the vicinity of the placement sites to pre-project levels within several months to a year. There would be a permanent loss of sand habitat for suspension/filter feeders dependent upon that substrate within the rock structure footprint. The rock structures would be colonized by suspension/filter feeders that utilize hard substrate. This substrate is not present naturally in the coastal bays, but is increasingly present as a consequence of shoreline stabilization.

(c) Sight Feeders -
(1) Ocean City Inlet Channel Realignment
Relatively non-motile benthic sight feeders would be destroyed during channel realignment dredging. It is expected that the area would be repopulated during spring and fall recruitment peaks and return to pre-project levels within several years of dredging. However, the realigned channel would then be occasionally dredged in the future, destroying relatively non-motile suspension/filter feeders. This alternating period of disturbance then recovery has characterized the federal navigation channels for decades.
(2) Rock Structure Construction
Relatively non-motile benthic sight feeders would be destroyed during dredged material and rock placement. It is expected that areas adjacent to the rock structures would be repopulated during spring and fall recruitment peaks and return to pre-project levels within several years of dredging. Construction of of rock structures would cause the permanent conversion of sandy benthic habitat to manmade rock structure. This would cause a permanent loss of habitat for benthic sight feeders dependent upon such habitats. The rock structures would be colonized by fouling organism sight feeders.

(3) *Effects on Nekton* - Motile nekton would be able to largely avoid direct physical impact from dredging and placement of fill material. Recovery of benthos at dredging and placement sites would take up to several months, and thus the value of these sites as foraging grounds for nekton would be substantially reduced for up to several months following dredging and construction.

(4) *Effects on Aquatic Food Web* -
a) Ocean City Inlet Channel Realignment
The navigation channel bottoms and waters are regularly affected by dredging activities. Realignment of the channel would lead to less dredging within the Inlet Channel, but the LTSM Project would continue dredging in inlet area waters to obtain sand for Assateague. The inlet and coastal bays appear to support a healthy aquatic food web, and that condition of health would be expected to continue.

b) Rock Structure Construction
Dredged material placement, excavation, and rock placement would cause only a minor temporary impact to the aquatic food web. The loss of sand-bottom open water and bottom habitat and its conversion to rock structure would favor structure-oriented organisms, but disfavor organisms dependent upon sand bottom and open water. Because a large area of the coastal bays would remain with dynamic open water sand bottom and the inlet vicinity already has substantial manmade rock structure habitat, impacts would be nonsignificant to the aquatic food web.

(5) *Effects on Special Aquatic Sites*

(a) Sanctuaries and Refuges - Bottom excavation, and sand and rock placement would take place in waters of Assateague Island National Seashore. The character of the northern end of the island would be more manmade/urban in character along the inlet through an increase in rock structure length by approximately 750 feet. The new breakwater in the eastern gap would cut off a pathway between the island and inlet waters that would be filled by rock structure.

(b) Wetlands - The project would have no effect on vegetated wetlands.

(c) Tidal flats - The project would cause the loss of approximately 140 yards of intertidal beach on the inlet shoreline in the easternmost gap where a new breakwater would be constructed. Tidal exchange on the southside of the breakwater with the inlet would be limited to completely stopped. The area would be affected by natural processes in the future, with its condition ranging from becoming filled by sand to remaining low and occasionally affected by overwash. Project effects on the western gap where a new breakwater would be constructed are uncertain. Intertidal area there is dynamic, and would remain so. It is anticipated that intertidal beach would remain.

(d) Vegetated Shallows - The project would have no effects on vegetated shallows.

(6) *Threatened and Endangered Species* - Direct impacts to Piping Plover and seabeach amaranth occurring on Assateague Island would be avoided by a time of year restriction to protect plover, and establishment of limit of disturbance from the rock structure that would avoid plover nests and amaranth. Mechanical dredging and placement, and rock placement activities, are viewed to pose minimal risk to sea turtles that frequent project area waters. The project would not be expected to adversely effect sea turtles.

(7) *Other Wildlife* - Detrimental impacts to other wildlife on northern Assateague Island are expected to be nonsignificant as the placement area is heavily used for recreation and has limited habitat value.

(8) *Actions to Minimize Impact* - Dredging via mechanical dredge produces minimal aquatic ecosystem effects and it is not anticipated minimization measures would be needed to protect the aquatic ecosystem

f. Proposed Disposal Site Determinations

(1) *Mixing Zone Determination* - Not applicable. Material to be dredged, excavated, and placed would be sand or rock and rapidly settle to the bottom and be consistent in character with existing substrate materials.

(2) *Determination of Compliance with Applicable Water Quality Standards* - Construction activities would be conducted in accordance with all applicable state water quality standards.

(3) *Potential Effects on Human Use Characteristic*

(a) Municipal and Private Water Supply - Not applicable.

(b) Recreational and Commercial Fisheries -
(1) Minor and short-term impacts to commercial and recreational fisheries are anticipated during dredging and channel realignment as a result of loss of access to fishing areas. It is anticipated that fishing activities would relocate elsewhere. Following completion of project construction, no impact to recreational or commercial fishing in the inlet or Sinepuxent Channels is anticipated. The channel and northern Assateague are high energy areas exposed to frequent disturbances. Organisms able to thrive in such conditions would be expected to rapidly recolonize these areas from adjacent areas.
(2) The new and extended rock structures would cause the permanent loss of a minor portion of the coastal bay's benthic and open habitat which supports hard clam, blue crab, and numerous species of finfish. No degradation of the coastal bays as habitat for commercial or recreational species is expected otherwise. Temporary and non-significant impacts are expected in the vicinity of Sinepuxent Channel as a result of turbidity during dredging and construction, as well as disturbance to benthic habitat.
(3) Beneficial use of material for foundation improvement would cause temporary and non-significant impacts as a result of turbidity and disturbance to benthic habitat in the inlet, as well as along the northern Assateague Island ocean shoreline.

(c) Water Related Recreation - Maintenance dredging for navigation projects in the inlet vicinity by USACE is typically done in cold weather to minimize impacts to recreational boating and other water-based activities. It is anticipated that such a TOY restriction would be determined by MD DNR during the permitting process. Once completed, the project would eliminate two recreational beach/boating areas along the south side of the inlet channel. It is anticipated that recreational boaters would relocate their activities elsewhere along the bayside of northern Assateague Island. The project would maintain navigability of the inlet which is heavily used by recreational boaters and fishermen.

(d) Aesthetics - A temporary and minor reduction in aesthetic value in the inlet vicinity water and northern Assateague Island is expected to occur during dredging and construction from the presence of dredging and construction equipment. Following completion of construction, permanent presence of 800 feet of additional rock structure would cause the urban/non-natural character of the inlet vicinity to increase incrementally.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves - The project would include construction on Assateague Island National Seashore lands and waters at the Ocean City Inlet. The project has been fully coordinated with the National Park Service. The project is designed in a manner consistent with the management objectives of the NPS for that area of the national seashore.

g. Determination of Cumulative Effects on the Aquatic Ecosystem - This project would increase the degree to which maintenance of sediment movement in the ocean and bay waters of the Ocean City vicinity is dependent upon manmade shoreline stabilization works. Cumulative detrimental impacts to the Atlantic Ocean and coastal bays ecosystems otherwise are expected to be non-significant as the inlet area is already highly altered from a natural condition.

The project would decrease maintenance dredging in the inlet from multiple times per year to approximately once every 5 years. Dredging conducted for the USACE LTSM Project would instead presumably dredge more sand from the ebb shoal, an area that is growing in volume/size that is largely anthropogenic and not highly valued as habitat. It is expected that additional LTSM dredging to obtain sand for Assateague Island would occur within the Sinepuxent and Isle of Wight Channels within the project authorization.

h. Determinations of Secondary Effects on the Aquatic Ecosystem - Indirect effects resulting from the projects have been discussed previously in this analysis under each category.

III. Finding of Compliance

a. Adaptation of the Section 404(b)(1) Guidelines to This Evaluation - No adaptations of the Guidelines were made relative to this Evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem. - The Federal project is water-dependent. Multiple alternatives which could have provided the navigation improvements were evaluated. The proposed action would best meet the purpose and need while posing the least risk of destabilizing the inlet vicinity of the alternatives evaluated.

c. Compliance With Applicable State Water Quality Standards. - The proposed placement of fill material would be in compliance with Maryland state water quality standards.

d. Compliance With Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act. - The proposed fill material is not anticipated to violate the Toxic Effluent Standard of Section 307 of the Clean Water Act.

e. Compliance With Endangered Species Act of 1973 - The projects would not significantly detrimentally impact any endangered species or its critical habitat. Potential impacts to federally listed species and their habitat (although not designated critical) on northern Assateague Island

and in inlet area waters were considered during the plan formulation process, but not determined to be of substantial concern. It is expected that the projects would be in compliance with the Endangered Species Act of 1973.

f. 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 study area.

g. Evaluation of Extent of Degradation of Waters of the United States - The proposed placement of fill material would not result in significant adverse impacts on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish and shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and wildlife would not be significantly adversely affected. Significant adverse impacts on aquatic ecosystem diversity, productivity and stability, and recreation, aesthetics and economic values would not occur as a result of the projects.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem - The project design was optimized utilizing modeling to minimize erosion outside of the navigation channels, and to minimize shoaling throughout inlet vicinity bay waters. These design measures would serve to focus waters-effects within the channels. Strong tidal currents, sandy substrate, and nearly-marine character of the area of effect would naturally serve to minimize in-water environmental impacts.

i. On the basis of the guidelines, the proposed discharge site for the material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

APPENDIX B

Ocean City Harbor & Inlet Navigation Improvements and Scour Hole Management

EFH Impacts Assessment

Ocean City Harbor & Inlet Navigation Improvements and Scour Hole Management EFH Impacts Assessment

0 Background

Administrative Record

USACE has previously prepared multiple EFH impacts assessment documents for the coastal bays and inlet area (see references, plus appendix of this EFH impacts assessment). USACE (2001) evaluated USACE navigation and restoration projects[1]. USACE (2016) evaluated aquaculture regulatory permitting. USACE (2001) specifically considered navigation improvements for the harbor and inlet, but did not consider rock placement for jetty/breakwater construction nor channel realignment. USACE also prepared EFH impacts assessments focused on adjacent ocean habitats for the USACE Atlantic Coast of MD (Ocean City) and Assateague Short-Term Restoration Projects. None of these previous USACE EFH impacts assessment documents considered scour hole management.

Need for Updated EFH Impacts Assessment Document

Based on consideration of what project work was assessed previously, plus changes in EFH designations, plus coordination undertaken with NMFS during NEPA efforts for proposed Ocean City Harbor & Inlet navigation improvements and potential scour hole management, it was necessary to prepare a new EFH impacts assessment. NMFS suggested that while previous EFH impacts assessment information could be re-used as applicable, this new document should provide consideration of effects to all species or life history stages, and update information beyond was included in previous EFH impact assessment documents. EFH designations by fishery management councils evolve over time as more details are learned about managed species, and in some cases because range shifts or other ecological changes occur. NMFS noted that the New England Fishery Management Council revised EFH designations for some of their managed species occurring in the Ocean City area in 2019.

Proposed Area of Effect and Summary of Some Pertinent Conditions

The proposed Ocean City Inlet navigation improvements and potential scour hole management work would occur in the Ocean City Inlet vicinity. In recent years, USACE has dredged from the federal navigation channels in the inlet vicinity (Ocean City Inlet, Sinepuxent, and Isle of Wight Channels) under the Assateague Island Long-Term Sand Management Project. This provides sand needed for the LTSM Project, as well as maintaining navigability of the federal channels. USACE also dredges from the ebb

[1] USACE (2014) evaluated maintenance dredging of the Sinepuxent Channel using the USACE (2001) species list and information.

shoal in the Atlantic Ocean for the LTSM Project. USACE also dredges sand from the federal navigation channels directly under the auspices of the Ocean City Harbor & Inlet Project.

USACE ERDC undertook studies of the study area geologic materials and hydrology, and modeled effects of select alternatives that is foundational to this EFH impacts assessment document.

The substrate of the Inlet and Isle of Wight navigation channels, northern Assateague Island, and scour hole consists of mobile sands and gravels. (The scour hole substrate is likely underlain by iron-cemented sediment in the subsurface.) The inlet area has substantial stabilized shorelines (rock, bulkhead) and some armored bottom already present.

Beyond what ERDC investigated, the Ocean City Inlet and Chincoteague Inlets are bottlenecks through which all in-water aquatic species transiting between the ocean and coastal bays have to pass. While the physically engineered Ocean City Inlet is substantially different from a natural inlet (deeper water, stronger currents, rocky versus sandy shoreline), it appears to adequately facilitate passage of aquatic life transiting between the bays and the ocean, as well as between the northern and southern bays.

I Identification of Species of Concern

USACE consulted NMFS EFH mapper in August 2020 and produced an initial list of 24 species for which the area of interest could potentially constitute EFH (Table 1). USACE reviewed the initial EFH mapper list and preliminarily screened out 10 species based on EFH description language (as linked to the EFH mapper) that stipulated water depths generally deeper than the inlet, as well as species' life history stages being primarily pelagic or oceanic (Table 1).

Table 1: Species (spp) list preparation interim and final tallies.

List	Mollusc spp	Cartilaginous fish spp	Bony fish spp	Total spp
2020 Initial EFH mapper	1	10	13	24
2020 USACE Preliminarily Screened	1	7	6	14
2020 NMFS Recommendation	1	7	7	15

USACE provided the preliminarily screened list to NMFS (Jonathan Watson) for review. NMFS concurred with the majority of the species/life history stages USACE proposed to screen out. However, NMFS recommended that the USACE list be adjusted by one species based on EFH descriptions plus consideration of information from Abel and Fahay (2010), resulting in the 15 species/life history stages list presented in Table 2.

Table 2: NMFS recommended spp and life history stages.

Tally	Organism	Lifestage(s)			
Molluscs		**Eggs**			
1	Longfin Inshore Squid	x			
Cartilaginous Fish		**Neonate**	**Juvenile**	**Adult**	**Other**
1	Clearnose Skate		x	x	
2	Little Skate		x	x	
3	Winter Skate		x	x	
4	Sand Tiger Shark	x	x	x	
5	Sandbar Shark	x	x	x	
6	Smoothhound Shark Complex (Smooth dogfish)				ALL
7	Spiny Dogfish			x (Male only)	Sub-adults F
Bony Fish		**Eggs**	**Larvae**	**Juvenile**	**Adult**
1	Atlantic Butterfish	x	x	X	x
2	Atlantic Herring			x	x
3	Black Sea Bass			x	x
4	Bluefish			x	x
5	Scup			x	x
6	Summer Flounder		x	x	x
7	Windowpane Flounder	x	x	x	x

II Description of the Proposed Action

This single document assesses impacts to EFH of both the proposed inlet navigation improvements and potential scour hole management projects (Table 3). The species managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) are the same for both projects, and indirect and cumulative impacts in the environment would interact if both projects are completed. USACE ERDC modeled effects of alternative plans of these two projects, including their interaction. USACE is preparing two separate EAs for the proposed navigation improvements and potential scour hole management. Those separate EAs provide detailed information about the area of effect, plan formulation, construction methods, and environmental compliance for the projects.

Table 3: Proposed and potential projects evaluated in this document

Project	Component and Location	Description

Proposed Navigation Improvements	Jetty/breakwater construction - Ocean City Inlet, North side Assateague Island	Construct 150 ft jetty extending northwest off Assateague Island into Sinepuxent Bay. Construct 600 ft of rock work closing two existing gaps in rock structures on northern Assateague Island. Add sand fill as needed to prepare structure foundation (see beneficial use below).
	Inlet channel realignment dredging	Shift 3,360 ft long channel into naturally deeper water southward of current position. Mechanically dredge realigned channel[2] to establish 10 ft depth*.
	Beneficial use of channel realignment dredged material	Mechanically place dredged material for jetty construction
Potential Scour Hole Management	Filling scour hole	Filling scour hole with sand (beneficial use of dredged material*), capping surface with erosion-resistant mesh fabric or rock
	Dredging of federal Inlet Channel or Isle of Wight Channel	Beneficial use of maintenance dredged material* to fill Scour Hole

* Small split-hull hopper dredge anticipated to be used; in that event dredging could occur any time of year. However hydraulic cutter suction dredge and pipeline possibly may be used; in that event anticipate no dredging or dredged material placement would occur from April 1 to December 14.

The projects would produce direct impacts at the dredging, placement, and construction sites (Table 4).

Table 4: Project approximate direct impacts evaluated in this document

Project	Component and Location	Bottom Area Impacted (acres)	Pre-Project Bottom Depth (MLLW)	With-Project Bottom Depth (MLLW)
Ocean City Inlet Navigation Improvements	Jetty construction	1.3 (marine mattress and rock placement)	Intertidal to approximately 10 ft depth	Structure and sand fill would range from 6 ft MLLW supratidal to ambient bottom depths
	Inlet channel realignment	2.7 (dredging)[3]	Approximately 5 to 10 ft	>10 ft (in those areas currently shallower than 10 ft)

[2] Primarily near Buoys 11 and 12, local elsewhere

[3] Primarily near Buoys 11 and 12, local possible elsewhere.

Project	Component and Location	Bottom Area Impacted (acres)	Pre-Project Bottom Depth (MLLW)	With-Project Bottom Depth (MLLW)
	Beneficial use of channel dredged material - Jetty construction and or Assateague Island ocean shoreline[4]	Not determined	Subtidal	Intertidal to Subtidal
Scour Hole Management	Filling scour hole	2.45	20 to 50 ft	20 ft
	Isle of Wight or Inlet Channel maintenance dredging (beneficial use to fill Scour Hole)	Not determined. Within federal channels.	Shoaled areas of federal channels	Authorized channel depths, plus allowable overdredge

The projects would also produce indirect impacts. The projects, individually or together, would induce changes in tidal current patterns that would in turn induce changes in patterns of deposition and erosion in the inlet vicinity. USACE ERDC modeling output for 1-year post-project provides the basis for interpreting where these changes would be expected. Generally, scour would increase in the Inlet Channel in proximity to its connection with the Sinepuxent Channel. As a consequence of this increased scour, it is anticipated that maintenance dredging frequency of the inlet channel would decrease. However, periodic dredging in the inlet vicinity under the auspices of the LTSM Project would continue as needed. Dredging frequency in the inlet vicinity generally may remain approximately the same, although some increased dredging of the ebb shoal could occur.

Modeling forecasts that some induced scour outside of the navigation channel would occur along the mainland shoreline south of the USACE harbor, to perhaps 1 m depth initially over approximately the first year post-construction. Some deposition to perhaps 1 m thickness would occur on the bayside of Fenwick Island adjacent to and within the Isle of Wight federal channel and off the northwestern tip of Assateague Island, again during approximately the first year.

Inlet navigation improvements would increase tidal exchange between the coastal bays and ocean by several percent over current typical cycle volume. This would induce somewhat increased marine water quality (salinity, temperature, DO levels, clarity) of the coastal bays in the inlet vicinity. The coastal bays have become increasingly marine in character since initial inlet formation and stabilization in the 1930s.

[4] If in LTSM Project placement area, shoreline southward of approximately 0.7 miles south of inlet (ebb shoal attachment point - southward of attachment point longshore transport net southerly)

III. Effects Upon Managed Species

Analysis of project effects upon species of concern requires a consideration of species' natural history, environmental conditions that impact population, project direct and indirect impacts, and the broad range of potential human activities that impact the population. Detailed information on inlet area environmental conditions is provided in Section 3 of the navigation improvements EA. Detailed information on each managed fish species life stage of interest is provided below. Because information needed to analyze impacts to these species is generally summarized in gray literature (which summarizes findings from primary literature), those gray literature summary documents are generally referenced in this assessment (rather than original primary literature references). To manage information more efficiently, Tables 5 - 8 provide brief habitat preference information. (Note: for some of the sharks, EFH description information from NOAA [2017] which incorporates habitat information is provided.)

A. Molluscs

1. Longfin Inshore Squid (Doryteuthis pealeii) (eggs)

Background Information

Longfin squid eggs occur on sandy and muddy bottoms, but usually attached to rocks, manmade structures, or algae (Cargnelli et al., 1999). In the area of interest, the rock-armored shoreline, bridges (extant and abandoned), as well as any rock, structure, or alga on the mobile substrate could potentially provide attachment sites for longfin squid egg. MD DNR (2012) reported finding one squid egg mass in 2012 in the MD coastal bays, but did not identify which squid species. No information was obtained in preparing this document whether or to what extent longfin squid lay eggs within the potential area of effect. Given this, it is also uncertain whether the inlet vicinity in the coastal bays should be considered EFH for longfin squid egg.

Proposed Action Effects

<u>Physical Impacts to Individuals</u>

Longfin squid egg would not likely be present on mobile substrates that predominate at the Inlet Channel, Isle of Wight Channel, and scour hole sites. It is possible longfin squid egg could occur on any structures present at the sites. However, these substrates are likely local in area if they exist at all, and would presumably be vulnerable to occasional burial by mobile sands and gravels. Thus, minimal to no impact to longfin squid egg is expected.

<u>Habitat Effects</u>

Mobile substrates that predominate at the Inlet Channel, Isle of Wight Channel, and scour hole sites do not appear to constitute longfin egg habitat. There would be no direct impact to the existing rock-armored shoreline or bridges in the inlet vicinity that could consistute longfin squid egg habitat. Thus, minimal to no impact to any longfin squid egg habitat would be expected.

The new rock jetty off NW Assateague and rock fill/mattress at the scour hole could provide substrate upon which longfin squid could lay eggs. However, based on unclear longfin squid egg presence, it appears that longfin squid utilization of these new exotic substrates would likely be minimal.

Inlet navigation improvements and scour hole management would alter flow patterns and currents in the inlet vicinity. However, the changed conditions would be within the range of existing currents, and not be expected to alter ability of longfin squid to access the area for possible egg-laying. Changes in scour and deposition patterns in the inlet vicinity would not expected to impact longfin squid egg as they are not associated with these mobile substrates. Increased tidal exchange between the coastal bays and ocean may somewhat increase area of bottom in the coastal bays within longfin squid preferred salinity range.

Prey/Foodweb Effects
Longfin egg presumably feed off stored egg materials. Thus, no impact to longfin squid egg food would occur. As longfin squid egg are presumably absent or minimally present, minimal to no foodweb affects would occur.

Conclusion
Overall, no to negligible impacts to longfin squid egg EFH are anticipated.

B. Cartilaginous Fish

1. Clearnose Skate (Juvenile and Adult)

Background Information

Clearnose skate has been the most abundant inshore skate in the mid-Atlantic in inshore waters from late spring to early fall (Robins et al., 1986). North of Cape Hatteras, it moves inshore and northward along the continental shelf during the spring and early summer, and offshore and southward during autumn and early winter. In estuaries, clearnose skate occur mostly in mainstem channels and near the mouth. MD DNR coastal bay investigations since 1989 conducted over the months of April through October with 140 trawls per year collected 81 clearnose skates. No preference towards sites or months was apparent, and clearnose skate could potentially be located at any coastal bays sampling site (S. Doctor, personal communication, May 2016).

Clearnose skate are a demersal species that occurs over soft bottom, but also over gravel and rock. Clearnose skate feed on polychaetes, amphipods, shrimp, crabs, bivalves, squids, and small fish such as soles, weakfish, butterfish, and scup. Sharks, such as the sand tiger, regularly prey on the clearnose skate. Boring snails may prey on the eggs of clearnose skate (Packer et al., 2003). Cownose rays forage on oyster and disrupt the bottom, impacting SAV (Blankenship, 1998). No information was located documenting whether clearnose skate also do this.

The clearnose skate feeds on prey including polychaetes, amphipods, shrimp, crabs, bivalves, squids, and small fish such as soles, weakfish, butterfish, and scup. It is regularly preyed upon by sharks, such as the sand tiger (Packer et al., 2003).

Proposed Actions Effects

Physical Impacts to Individuals

Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging activities when water temperatures are warm. When bottom water temperatures are cold, individuals may be sluggish and more vulnerable to direct impact (injury or mortality). Consequently, if dredging occurs during the late winter or early spring, direct impacts to adult clearnose skate could potentially occur, as they may be present and have somewhat reduced ability to evade the dredge. That said, the project area does not appear to support large concentrations of individuals. Being adapted for benthic life, clearnose skate are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or construction areas. The project is therefore not expected to significantly directly impact the species population.

Habitat Effects

The new rock structure would convert aquatic unconsolidated bottom to manmade rock structure. The jetty extension on northern Assateague Island would cause a loss of aquatic habitat for the portion of the rock structures that is supratidal. The rock or mattress fill in the scour hole would increase the area of exotic structured habitat in the inlet vicinity. It appears likely that clearnose skate could forage over the new scour hole rock or mattress substrate. This change between two suitable substrates is not expected to adversely affect clearnose skate EFH. Following dredging at the inlet and federal navigation channel, substrate there would remain sands and gravels. Bottom habitat in the dredged areas of the federal navigation channel would be at depths already produced by repeated maintenance dredging occurring in the inlet vicinity. The abandoned inlet navigation channel would likely shoal in to somewhat shallower depths over time. Thus, no loss of clearnose skate habitat would occur from dredging.

Among the three skates and life history stages considered, only winter skate adult is identified to be associated with rocks and boulders. Thus, winter skate could

presumably continue to use the scour hole area even with rock substrate. Conversely, it appears likely that clear and little skate would not make use of the rock fill, and exposed rock would constitute a loss of foraging habitat.

The jetty extension, inlet channel relocation, and scour hole filling would induce changed flow patterns and currents in the inlet vicinity. However, these would remain within the range of conditions already occurring. Areas with greater tidal flushing and somewhat increased salinity in the inlet vicinity would be within skate habitat preferences. Thus, no or minimal impact to clearnose skate from indirect water quality changes would be expected.

Prey/Foodweb Effects

The project would result in the temporary destruction of benthic and infaunal organisms within the immediate dredge and excavation footprints, including various potential prey items for skate species. However, the sandy bottoms of the proposed dredge and excavation or fill areas are not believed to be focused foraging areas for skates, and skates are expected to shift to other suitable foraging habitats during dredging activities and until the time that benthos recolonize. Accordingly, skate foraging should not be adversely impacted by the project. The jetty extension would constitute a permanent loss of forage organisms associated with unconsolidated bottom for clearnose skate. However, structure-oriented organisms that occupy or utilize the underwater sides of the jetty may possibly provide forage for clearnose skate.

Conclusion
Overall, only minor temporary adverse effects to clearnose skate EFH would be anticipated.

2. Little Skate (Juvenile and Adult)

Background Information

Little skate is one of the dominant members of the demersal fish community of the northwest Atlantic. Little skate make no extensive migrations, although where it occurs inshore the species moves onshore and offshore seasonally with temperature changes. In the Chesapeake Bight and Delaware Bay, juveniles and adults are most abundant during the winter; those that remain in the Chesapeake Bight during the summer move into deeper water. It also moves north and south with seasonal temperature changes along the southern fringe of its range (Packer et al., 2003). No information on little skate distribution and density in the Coastal Bays was obtained.

Little skate occur on sandy or gravelly bottoms, but also on mud. Little skate feeds largely on epifauna. Generally the most important prey for little skate are invertebrates such as decapod crustaceans (including crabs, shrimp), amphipods, and polychaetes.

Isopods, bivalves, hydroids, and fishes are also eaten. The fishes that were eaten included sand lance, alewives, herring, cunners, silversides, tomcod, and silver hake (Packer et al., 2003). Cownose rays forage on oyster and disrupt the bottom, impacting SAV (Blankenship, 1998). No information was located documenting whether clearnose skate also do this.

Juveniles and adults are preyed upon by sharks, other skates (including winter skates), bony fishes (including cod, goosefish, sea raven, longhorn sculpin, bluefish, summer flounder), gray seals, and rock crabs. (Packer et al., 2003)

Proposed Action Effects

Physical Impacts to Individuals

Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging and construction activities when water temperatures are warm. However, when bottom water temperatures are cold, individuals may be sluggish and more vulnerable to direct impact (mortality). If dredging occurs during the late winter or early spring, direct impacts to juvenile little skate may occur, as they are more likely to be present and may have somewhat reduced ability to evade the dredge.

Being adapted for benthic life, they are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or nourishment sites.

Habitat Effects

Among the three skates and life history stages considered, only winter skate adult is identified to be associated with rocks and boulders. Thus, winter skate could presumably continue to use the scour hole area even with rock substrate. Conversely, it appears likely that clear and little skate would not make use of the rock fill, and exposed rock would constitute a loss of foraging habitat.

Bottom habitat in the dredged area, although remaining sandy, would otherwise differ from pre-dredge conditions in having greater local bathymetric relief of up to several feet in dredge furrows versus the pre-project flat surface. The surface would become flat again in character over time as waves and currents rework the substrate and fill in furrows. This local bathymetric relief change would not be anticipated to impact skates. Areas with somewhat increased salinity in the inlet vicinity would be within skate habitat preferences. Negligible impacts to skate EFH are anticipated.

Prey/Foodweb Effects

The project would result in the temporary destruction of benthic and infaunal organisms within the immediate dredge footprint, including various potential prey items for skate

species. Skates are expected to shift to other suitable foraging habitats during dredging and until benthos recolonize the area, and should not be adversely impacted by the project.

Conclusion
Overall impacts to little skate EFH are anticipated to be minor to negligible.

3. Winter Skate (Juvenile and Adult)

Background Information

Winter skate is common inshore south of Cape Cod along the US Atlantic coast during the winter (Robins et al., 1986). Winter skate is an occasional visitor to lower Chesapeake Bay in winter and early spring (Murdy et al., 2013).

Winter skate are demersal and utilize sand, gravel, and mud bottoms. Winter skate predominately feeds on infaunal organisms. Generally for winter skate, polychaetes and amphipods are the most important prey items in terms of numbers or occurrence, followed by decapods (crabs, shrimp), isopods, bivalves, and fishes. Hydroids are also ingested. Fish are especially important in larger winter skate, other items include razor clams. The fishes eaten include smaller skates, eels, alewives, blueback herring, menhaden, smelt, sand lance, chub mackerel, butterfish, cunners, sculpins, silver hake, and tomcod (Packer et al., 2003). Cownose rays forage on oyster and disrupt the bottom, impacting SAV (Blankenship, 1998). No information was located documenting whether clearnose skate also do this.

Winter skate is preyed upon by sharks, other skates, gray seals, and gulls (Packer et al., 2003).

Winter skate prey includes polychaetes, amphipods, decapods (crabs, shrimp), isopods, bivalves, and fishes. Fish are especially important in larger winter skate, and other items include razor clams,smaller skates, eels, alewives, blueback herring, menhaden, smelt, sand lance, chub mackerel, butterfish, cunners, sculpins, silver hake, and tomcod. Winter skate is preyed upon by sharks, other skates, gray seals, and gulls (Packer et al., 2003).

Proposed Action Effects

Impacts to Individuals

During colder water months when winter skate would likely be present, direct physical impacts from construction and dredging activities to individuals are possible because the fish may be more sluggish.

Winter skate would likely be the only skate present in substantial numbers during work in cold water months.

Juvenile and adult skates are good swimmers and can easily avoid disturbance from dredging activities when water temperatures are warm. However, when bottom water temperatures are cold, individuals may be sluggish and more vulnerable to direct impact (mortality).

Being adapted for benthic life, they are tolerant of sedimentation and often partially bury themselves as a means of concealment from predators. As such, they are not expected to be vulnerable to indirect effects from incidental turbidity or sedimentation within the project vicinity, either at the dredge or placement sites.

Habitat Effects

Among the three skates and life history stages considered, only winter skate adult is identified to be associated with rocks and boulders. Thus, winter skate could presumably continue to use the scour hole area even with rock substrate. Conversely, it appears likely that clear and little skate would not make use of the rock fill, and exposed rock would constitute a loss of foraging habitat.

Areas with somewhat increased salinity in the inlet vicinity would be within skate habitat preferences.

Prey/Foodweb Effects

Conclusion
Overall negligible impacts to winter skate EFH are anticipated to be minor to negligible.

4. Sand Tiger Shark (Carcharias taurus) (Neonate, Juvenile, Adult)

Background Information

It was perhaps the most common shark found in coastal waters from Cape Cod to Chesapeake Bay (Robins et al., 1986). Sand tiger shark is a coastal species often found in shallow coastal waters less than 4 m (13 ft) deep. The neonates are born in March and April and migrate to summer nurseries in coastal estuaries. Mature sand tiger males and juveniles occur between Cape Cod and Cape Hatteras. Mature and pregnant females inhabit southern waters south of Cape Hatteras. Sand tiger shark is a generalized feeder, consuming a variety of bony and cartilaginous fish prey (NOAA, 2017).

Proposed Action Impacts

Physical Impacts to Individuals It is possible that sand tiger shark may be present during dredging and construction, however neonates, juveniles, and adults because of their ready mobility should easily be able to avoid any direct negative impacts. Because the species moves out of the area during colder water months, it is unlikely that any sand tiger shark would be present during the portion of project construction activities that would occur during colder months.

Habitat Effects
Indirect impacts to this species are expected to be negligible because habitat conditions would remain within the range of sand tiger shark EFH.

Prey/Foodweb Effects
Foodweb effects would likely have temporary and negligible impact on sand tiger shark prey.

Conclusion

5. Sandbar Shark (Carcharhinus plumbeus) (Neonate, Juvenile, Adult)

Background Information

It is a common bottom-dwelling shark found in many coastal habitats (NMFS, 1999). Sandbar shark prey on bottom fish, other sharks, rays, and invertebrates including blue crab (Murdy et al., 1997). NMFS (1999) and Castro (1993) note that it is most common in 20 to 55 m (65 to 180 ft) of water. Robins and others (1986), however, note that it is a common inhabitant of shallow coastal waters and estuaries, where it occurs in muddy coastal waters and bays that are shallower than 18 m (60 ft). Sandbar shark is a migratory species, and migrates south in schools to wintering grounds that range from North Carolina to Central America (Robins et al., 1986). In the U.S., the sandbar shark has its nurseries in shallow coastal waters from Florida to N.J. Occurrence of sandbar shark in Delaware Bay, some 25 miles to the north of the coastal bays, provides an indication of their likely seasonality in Maryland's coastal bays. Juveniles return to Delaware Bay after a winter absence around May 15th. Neonates have been caught in Delaware Bay in late June. Young-of-the-year were present in Delaware Bay until October when the temperature fell below 21ºC (70ºF). All life stages of sandbar shark are found along the Maryland coast; neonates are found from March through July in the mid-Atlantic (NMFS, 1999).

Proposed Project Impacts

Physical Impacts to Individuals
Sandbar shark may be present during dredging and construction, however neonates, juveniles, and adults because of their ready mobility should easily be able to avoid any direct negative impacts. Because the species moves out of Maryland coastal waters

during colder water months, it is unlikely that any sandbar shark would be present during dredging or construction activities taking place during colder months.

Habitat Effects

Prey/Foodweb Effects
Although it is a bottom-dwelling species, indirect impacts to the foodweb caused by alterations in bottom habitat conditions would be temporary and minor in nature. Indirect impacts to this species from water quality and circulation changes are expected to be negligible because habitat conditions would remain within the range of sand tiger shark EFH.

Conclusion
Accordingly, negligible impacts to sandbar shark EFH are anticipated.

6. Smoothhound Shark (ALL)

Background Information

Smooth dogfish are primarily demersal sharks that inhabit continental shelves and are typically found in inshore waters down to 200 m depth. Smooth dogfish migrate seasonally in response to changes in water temperature. They congregate offshore between southern North Carolina and the Chesapeake Bay in the winter (NOAA, 2010; NOAA, 2018). Smooth dogfish migrate inshore in the mid-Atlantic in the spring, where they inhabit waters less than about 60 feet deep over mud or sand bottoms. In fall, smooth dogfish migrate offshore onto the continental shelf. Juveniles use the lower Chesapeake Bay as a summer nursery (Murdy et al., 2013). No information was obtained for this report on distribution or density of smooth dogfish in the Coastal Bays. However, presumably if substantial pupping activity occurred there this was would have been documented. Accordingly, it is anticipated that neonate smooth dogfish are infrequent in the Coastal Bays.

Smooth dogfish are viviparous. In Great Bay and Little Egg Inlet, New Jersey, newborn young-of-year smooth dogfish predominantly occur from May through June, but may continue to occur throughout the summer. Subadults and adults were rare in inshore waters. Estuaries and tidal tributaries are believed to be critically important summer nursery habitats for young-of-year smooth dogfish within the Mid-Atlantic Bight (Rountree and Able 1996). In New Jersey, young-of-year smooth dogfish fed primarily on shrimp, polychaetes and small crabs (Rountree and Able 1996). Adult and subadult smooth dogfish primarily feed on large crustaceans, consisting mostly of crabs, but also rely heavily on American lobsters. In the New England waters during the spring, smooth dogfish feed on small bony fish, including menhaden, stickleback, wrasses, porgies, sculpins, and puffers. In Delaware Bay, young smooth dogfish fed on invertebrates with larger sharks shifting to large crabs and teleosts (NOAA, 2017, 2018).

In New Jersey, young-of-year smooth dogfish fed primarily on shrimp, polychaetes and small crabs (Rountree and Able 1996). Adult and subadult smooth dogfish feed predominantly on invertebrates, primarily large crustaceans, consisting mostly of crabs, but also rely heavily on American lobsters. Smooth dogfish also feed on small bony fish, including menhaden, stickleback, wrasses, porgies, sculpins, and puffers (NOAA, 2010). In Delaware Bay, young smooth dogfish fed on invertebrates with larger sharks shifting to large crabs and teleosts (NOAA, 2017, 2018).

Marsh creeks may be particularly important to newborn smooth dogfish during June and July. The abundance of YOY within estuaries strongly suggests that estuaries are critically important nursery habitats for smooth dogfish within the Mid-Atlantic Bight (NOAA, 2010).

Proposed Project Impacts

Physical Impacts to Individuals

Neonates are presumably minimally present and thus would not likely to be physically impacted. Juvenile and adult dogfish are good swimmers and should easily be able to avoid disturbance and turbidity from construction, harvest, and maintenance activities in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects

Jetty/breakwater construction and filling of the scour hole with rock would convert unconsolidated bottom to rock. Although is an unnatural substrate for the coastal bays, this conversion would cause an increase in bottom habitat with structure, likely to provide habitat for a variety of organisms that could be preyed upon by dogfish. Habitat in the proposed project areas (other than for the increase in artificial structure) would otherwise remain within the range of depth, velocity, and substrate conditions already present.

Prey/Foodweb Effects

The project would result in the temporary elimination of benthic and infaunal organisms within the immediate dredge and construction footprint, some of which would likely be prey items for adult and larger juvenile smooth dogfish. However, smooth dogfish individuals would be expected to shift to other suitable foraging habitats and should not be adversely impacted by the project.

Conclusion

No to minor impacts to smooth dogfish EFH are anticipated.

7. Spiny Dogfish (Squalus acanthias) (Sub-adult, Adult)

Background Information

In the winter and spring, Atlantic spiny dogfish are located primarily in mid-Atlantic waters, but also extend onto southern Georges Bank on the shelf break. In the summer, they are located further north in Canadian waters and move inshore into bays and estuaries. By autumn, dogfish have migrated with high concentrations in Southern New England, on Georges Bank and in the Gulf of Maine. With the exception of large mature females, spiny dogfish school by size, and are rarely seen alone, nearly always occurring in groups. Although they are a relatively large fish, spiny dogfish are considered relatively weak swimmers (NMFS, 2007).

In ocean surveys, juveniles have been captured between depths of 11-500 m, with the majority found below 50 m, while adults have been found from 1-500 m. During fall surveys, the depth range for juveniles was from 11-400 m, with most found below 40 m, and the range for adults was from 11-400 m (NOAA, 2018). Seasonal inshore-offshore movements and coastal migrations are thermally induced. Spiny dogfish prefer full salinity seawater and do not ascend estuaries. They are typically demersal, but can occur throughout the water column, from nearshore shallows to offshore shelf waters. Spiny dogfish are ovoviviparous. Most young are born on offshore wintering grounds from November to January, but newborn pups are sometimes taken in the Gulf of Maine or southern New England in early summer.

Spiny dogfish in the western Atlantic are voracious feeders, with a diet composed (by weight) of fish (54%) of their diet and mollusks (27%), albeit with a high degree of variability. Schooling pelagic fishes such as herring, sand lance, mackerel, and menhaden are heavily consumed, but benthic species are also eaten as are squid, jellyfish and ctenophores. Spiny dogfish migrate vertically in the water column, feeding on forage fish that move toward the surface at night and on prey organisms near or on the bottom during the day. Juveniles (<36 cm) feed more heavily on squids and euphausiids than sub-adult (36-79 cm) dogfish, which consume more fish. The largest (>80 cm) animals are primarily piscivorous. Their diet appears broadly related to abundance trends in some of their major prey items (e.g., herrings, Atlantic mackerel, codfishes, hakes, and squid). They show preference for soft substrates suitable for epifaunal and infaunal prey (MAFMC and NFMS 2014).

MD DNR (2012) reported spiny dogfish in offshore ocean trawls in 2012, but none caught in sampling within MD coastal bays in 2012.

Proposed Action Effects

<u>Physical Impacts to Individuals</u>
Because spiny dogfish is demersal and they are weak swimmers, it is possible that hydraulic dredging could result in direct impact (mortality) of some juvenile and/or adult spiny dogfish, particularly during cooler water months when spiny dogfish would most likely be present and the fish sluggish.

Habitat Effects
Overall, spiny dogfish are expected to make minimal use of the area of effect as habitat, and the changes in habitat quality would not be expected to have any notable effect on its quality as EFH. The project would cause a minor loss of aquatic habitat (that portion converted to supratidal rock structures).

Prey/Foodweb Effects
The project would result in the elimination of benthic and infaunal organisms within the immediate dredge and structure footprint, some of which may be potential prey items for spiny dogfish. However, given the very broad range of potential prey and availability of other suitable foraging habitats, it is anticipated that spiny dogfish would forage in adjacent non-impacted areas.

Conclusion
While the project has the potential to directly impact spiny dogfish individuals and indirectly impact their prey base, the project is not expected to significantly impact spiny dogfish population, habitat, or prey availability.

C. Boney Fish

1 Atlantic Butterfish (Peprilus triacanthus)

Background Information

Butterfish are fast-growing and short-lived. They winter near the outer edge of the continental shelf in the mid-Atlantic Bight and migrate inshore in the spring. During the summer, they occur over the entire mid-Atlantic shelf, including estuaries. In late fall, butterfish move southward and offshore in response to falling winter temperatures (Cross et al., 1999). In the Chesapeake Bay region, Butterfish spawn offshore in the Atlantic from May through July, and then move into coastal ocean waters and estuaries (Murdy et al., 2013). Butterfish juveniles and adults are strongly present in the coastal bays from July through September but nearly absent from November through May (Wirth, 2000). However, Stone and others (1994) consider butterfish to be essentially absent from the coastal bays. Butterfish are common to abundant in the lower Chesapeake Bay, but only occasional in the upper Bay, ranging as far north as the Patapsco River. Butterfish occur in the middle and upper Chesapeake Bay from about May through November. All butterfish migrate out of the Chesapeake Bay by December to overwinter in deeper water offshore (Murdy et al., 2013).

They are pelagic (live in open water), and form loose schools, often near the surface. Butterfish juveniles feed mainly on planktonic prey (Cross et al., 1999). Adults feed on jellyfish, small fish, crustaceans, and worms (Murdy et al., 2013).

Eggs, larvae, and adults of Atlantic butterfish are pelagic in inshore estuaries and embayments (NOAA, 2020 [EFH text link]). Atlantic butterfish occur in MD's coastal bays (MD DNR, 2012).

Proposed Action Effects

Physical Impacts to Individuals

Eggs and larval butterfish are widely dispersed, but could be somewhat concentrated passing through the Ocean City Inlet during any times of year of focused movements between the ocean and coastal bays. Juvenile and adult bluefish are good swimmers and should easily be able to avoid disturbance and turbidity from construction, harvest, and maintenance activities in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects

The proposed action would alter currents and circulation patterns locally in the area of effect. A broad range of water velocities (currents) from fast to slow over the range of depths present would remain. Salinities and temperature would become somewhat more marine in character, but remain within the range of butterfish habitat preferences.

Prey/Foodweb Effects

Conclusion

Accordingly, the proposed action would have negligible effect on EFH for Atlantic butterfish.

2. Atlantic Herring

Background Information

Atlantic herring juveniles and adults undergo complex north-south and inshore-offshore migrations for feeding, spawning, and overwintering. The Georges Bank/Nantucket Shoals stock overwinters south of Cape Cod and along the mid-Atlantic coast. The stock moves north onto Georges Bank and into the Gulf of Maine in the spring before congregating on spawning grounds southeast of Nantucket and on Georges Bank in the fall. Adults generally occur in large schools. Vertical migrations linked to changing light intensity are pronounced and are probably related to movements of prey and avoidance of predatory seabirds (Reid et al., 1999). Juveniles and adults eat primarily zooplankton (NMFS, 2000 and 2006). Adult herring are preyed on by many marine fish, bird, and mammal species (Reid et al., 1999). Atlantic herring is only infrequently observed in study area waters (MMS, 2000).

Love and May (2007) found Atlantic herring to be among the 11 most abundant species in the coastal bays, with its occurrence seeming to align with greater salinity and depth in the summer (June-September), and with greater salinity in the months of October through May.

Stevenson and Scott (2005) summarized that Atlantic herring are eaten by numerous predators, including several species evaluated in this impacts assessment: summer flounder, spiny dogfish, bluefish, black sea bass, and winter skate. Spiny dogfish was the major fish predator of Atlantic herring they identified. Atlantic herring are also eaten by a variety of seabirds and marine mammals.

Proposed Project Impacts

Physical Impacts to Individuals

Based on temperature preferences (Table 8), juvenile and adult Atlantic sea herring could be present in project area waters from December through May. Juvenile and adult sea herring would probably not be present during dredging or construction conducted during warmer weather months, accordingly direct impacts to individual juveniles or adults would be unlikely.

Habitat Effects

Prey/Foodweb Effects

Atlantic sea herring juveniles and adults may suffer minor indirect impacts from foodweb disturbance caused by destruction of benthos and altered habitat conditions. However, because of the temporary nature of the impacts, utilization of pelagic waters by Atlantic sea herring in addition to bottom habitats, and relatively small area of bottom to be disturbed compared to the total area of comparable bottom habitat available, no impacts to the Atlantic sea herring population are expected.

Conclusion

3. Black Sea Bass

Background Information

Black sea bass is a warm temperate, demersal (bottom) species that utilizes open water and structured benthic habitats for feeding and shelter. Their distribution changes seasonally as they migrate from coastal areas to the outer continental shelf while water temperatures decline in the fall, and migrate from the outer shelf to inshore areas as temperature warms in the spring (Steimle et al., 1999).

Black sea bass juveniles and adults are strongly present in the coastal bays from July through September, and nearly absent from November through May (Wirth, 2000).

Black sea bass occur commonly in Chesapeake Bay from spring through late fall, ranging as far north as the Chester River (Murdy et al., 2013). VIMS trawl surveys of the lower Chesapeake Bay and tributaries show juvenile black sea bass commonly occurring in higher salinity waters above 19 ppt, and most abundant in April through July. Juveniles were uncommon in beach seine surveys. VIMS trawl and beach seine surveys of Lower Chesapeake Bay and tributaries show that adults were more common during late summer and early fall on the eastern side of the Bay (Drohan et al., 2007).

Juvenile black sea bass are generally associated with structurally complex habitats and steep depth bottom slopes (Drohan et al., 2007). Estuarine habitat used as nurseries by juveniles is shallow, hard bottom with structure. Structures utilized include shells, sponge beds, sea grass beds, cobbles, and manmade objects. Juveniles are not as common on open unvegetated bottoms. Older juveniles may occur at the mouths of salt marsh creeks and along salt marsh edges. Adult black sea bass are also strongly associated with structurally complex habitats, and tend orient to structures during their summer residency in coastal waters. Unlike juveniles, adults tend to enter only larger estuaries and are most abundant along the coast. Oysters were once important juvenile black sea bass habitat in estuaries. Larger fish occur in deeper water than smaller fish. Adults remain near structures during the day, but can move away to feed on open bottom at dawn and dusk (Steimle et al., 1999; Drohan et al., 2007). MD DNR (April 2018) noted that black sea bass may utilize rocky substrate of Scour Hole area.

Juveniles in estuaries prey upon small epibenthic invertebrates, especially crustaceans and molluscs. Crustaceans eaten include shrimp, isopods, and amphipods. Adults in estuaries prey upon benthic and near-bottom invertebrates and small fish. Fish eaten include sand lance, scup, sheepshead minnow, and butterfish. Invertebrates eaten by adults include crustaceans (particularly crabs), squid, mussels, razor clams, sand dollars, and polychaetes (Drohan et al., 2997; Murdy et al., 2013; Steimle et al., 1999).

Proposed Project Impacts

Physical Impacts to Individuals

Juvenile and adult black sea bass are good swimmers and should easily be able to avoid disturbance and turbidity from construction, harvest, and maintenance activities in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects

The proposed rock structures and possibly matters would convert unconsolidated bottom and cause an increase in bottom habitat with structure, likely to provide resting and foraging habitat for juvenile and adult black sea bass. However, artificial structured bottom habitat is already in abundance in the proposed project areas in association with USACE navigation structures and shoreline stabilization works constructed by private and public entities. Because black sea bass preferentially utilize habitats with structure, this increase in artificial structure would be anticipated to benefit this species.

Prey/Foodweb Effects

Conclusion

4. Bluefish

Background Information

Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the mid-Atlantic Bight during spring, and south or farther offshore during fall. Juveniles have been recorded from all mid-Atlantic Bight estuaries surveyed (Fahay et al., 1999). Bluefish juveniles and adults are strongly present in the coastal bays from June through September and nearly absent from October through May (Wirth, 2000). Bluefish visit Chesapeake Bay waters from spring to fall and are typically abundant in the lower Bay and common in the middle Bay, ranging as far north as Baltimore. In early fall, bluefish migrate out of the Bay and move south along the Atlantic coast (Murdy et al., 2013). Large population fluctuations are common (Fahay et al., 1999).

During the day, juveniles occur along shorelines and tidal creeks, while at night they utilize open waters and channels. Juveniles occur over sand, mud, sea lettuce patches, eelgrass beds, and salt marshes (Fahay et al., 1999). In contrast to adults, the young have a wide range of salinity tolerance and penetrate much farther up the Bay and its tributaries, where they can be found in shallow waters of very low salinity (Murdy et al., 1997).

Smaller individual bluefish prey upon a wide variety of fish and invertebrates. Large bluefish feed exclusively on fish (Murdy et al., 2013). Fish preyed upon by bluefish include Atlantic silversides (Menidia menidia), herrings, striped bass (Morone saxatilis), bay anchovy, and other fish (Fahay et al., 1999).

Potential Project Impacts

Physical Impacts to Individuals
Juvenile and adult bluefish are good swimmers and should easily be able to avoid disturbance and turbidity from dredging and construction activities in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects
New rock structure and the mattress would convert unconsolidated bottom to structure habitat. This conversion could cause a loss of unconsolidated bottom foraging habitat for young bluefish. Bluefish prey of unconsolidated bottom habitat would also be lost. New structure would develop a limited fouling community and be expected to support a variety of forage species that bluefish could also consume. No impact to adults would

be expected as they forage in open water. Because of the great abundance of open water habitat in the vicinity, and likely provision of forage by additional structure, no detrimental impacts to bluefish populations are expected as ample foraging habitat for juveniles would remain.

Prey/Foodweb Effects

Conclusion

5. Scup

Background Information

Stone and others (1994) consider scup juveniles to be rare in the coastal bays from May through August, but otherwise essentially absent. Stone and others (1994) consider adults to be essentially absent from the coastal bays. Wirth (2000) collected scup in only about 4% of his randomly selected trawl sites within Maryland's coastal bays from 1996 to 1999.

Scup are a temperate, demersal species that use several benthic habitats from open water to structured areas for feeding and possibly shelter. Their distribution changes seasonally as fish migrate from estuaries to the edge of the continental shelf as water temperatures decline in the winter. They return from the edge of the continental shelf to inshore areas as water temperatures rise in the spring. During warmer months, juveniles live inshore in a variety of coastal habitats and can numerically dominate estuarine fish populations. Juveniles occur over sand, mud, mussel and eelgrass bed substrates, and utilize biogenic depressions, troughs, and possibly mollusc shells, particularly during colder months. Adult habitats in estuaries include soft sandy bottoms, on or near structures, such as rocky areas, mussel beds, and manmade structures (Steimle et al., 1999).

Juveniles feed on small benthic invertebrates, fish eggs, and larvae. Adults prey on benthic and near bottom invertebrates, and small fish (Steimle et al., 1999).

Potential Project Effects

Physical Impacts to Individuals

Juvenile and adult scup are good swimmers and should easily be able to avoid disturbance and turbidity from dredging and construction in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects

Rock structures and the mattress would convert unconsolidated bottom to structure, and cause an increase in bottom habitat with structure, likely to provide resting and foraging habitat for juvenile and adult scup. Structures would develop a fouling community and be expected to support a variety of forage species. Structure would likely also provide resting and foraging habitat for juvenile and adult scup. Because scup utilize habitats with structure, additional structure would be anticipated to benefit this species.

Prey/Foodweb Effects

Conclusion

6. Summer Flounder

Background Information

Summer flounder exhibit strong seasonal inshore-offshore movements. Adult and juvenile summer flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year, and remain offshore during the fall and winter (Packer et al., 1999). Summer flounder juveniles and adults are strongly present in the coastal bays from June through October, and nearly absent from November through March (Wirth, 2000). Greater density of summer flounder (juveniles and adults) occur in the northern than southern coastal bays because of the controlling effects of strong tidal currents to/from the inlet (Pincin and others [2014) and Murphy and Secor [2006]). Summer flounder occur in the Chesapeake Bay from spring through fall. They generally migrate offshore in the winter months, but some overwinter in Chesapeake Bay. Summer flounder occur most commonly in the lower Chesapeake Bay, but range as far north as the Elk and Sassafras Rivers at the head of the Bay. Larvae enter Chesapeake Bay from October through May (Murdy et al., 2013).

Love and May (2007) found summer flounder to be among the 11 most abundant species in the coastal bays. Summer flounder sampled generally aligned with warmer habitats with lower DO.

Summer flounder juvenile occur over lower mud and sand substrates in estuary flats, channels, salt marsh creeks, and eelgrass beds. Smaller juveniles feed upon infauna such as polychaetes; larger juveniles feed upon fish, shrimp, and crabs in relation to their environmental abundance. Adults feed opportunistically on fish, crustaceans, and squid (Murdy et al., 2013; NMFS, 2000 [Summary Tables]; Packer et al., 1999).

Potential Effects

Physical Impacts to Individuals
Some concentration of summer flounder larvae likely occurs in the northern Coastal Bays because of controlling tidal currents into and out of those waters through the

Ocean City Inlet. However, larvae are likely to still be widely dispersed and not be concentrated at sites of aquaculture projects. Juvenile and adult summer flounder are good swimmers and should easily be able to avoid disturbance and turbidity from dredging and construction in warm weather months. During cooler weather months no direct physical impacts to individuals are expected because they are unlikely to be present.

Habitat Effects

New rock structures and mattress would convert unconsolidated bottom to artificial structure, and cause a loss of unconsolidated bottom foraging and resting habitat for young and adult summer flounder. It is likely that structures would serve as an attractant and provide habitat for the small creatures that the summer flounder prey upon.

No impacts to HAPC would occur because none occur in close proximity to the proposed project area.

Prey/Foodweb Effects

Conclusion

7. Windowpane

Background Information

Windowpane inhabit estuaries, nearshore waters, and the continental shelf. Windowpane juveniles that settle in shallow inshore waters move to deeper waters as they grow. Juveniles and adults may migrate to nearshore or estuarine habitats in the southern mid-Atlantic Bight in the autumn (Chang et al., 1999). Windowpane juveniles and adults are present in strongest numbers in the coastal bays from March through May, and are nearly absent from October through December (Wirth, 2000).

Windowpane juvenile and adults occur over mud and sand substrates (Chang et al., 1999). Windowpane feed on small fish, shrimp, and other crustaceans (Murdy et al., 2013). Major predators of windowpane include spiny dogfish, thorny skate, goosefish, Atlantic cod, black sea bass, weakfish and summer flounder, although these fish prey primarily upon juvenile windowpane (Chang et al., 1999).

Love and May (2007) found windowpane sampling correlated with deeper and saltier water.

Potential Project Effects

Physical Impacts to Individuals
Juvenile and adult windowpane are good swimmers and should easily be able to avoid disturbance and turbidity from dredging and construction. However, during cooler weather months direct physical impacts to individuals are possible because the fish may be more sluggish.

Habitat Effects
New rock structure and mattress would convert unconsolidated bottom to structured habitat and cause a loss of unconsolidated bottom foraging and resting habitat for young and adult flounder.

Prey/Foodweb Effects
It is likely that structures would serve as an attractant and provide habitat for the small creatures that the flounder prey upon.

Conclusion
Overall, it appears that the proposed action would have minimal to negligible adverse effect upon windowpane flounder.

IV Proposed Mitigation Measures

It is anticipated that no TOY restriction would be applied for mechanical or split hull hopper dredging to protect mobile aquatic life because the equipment poses minimal physical risk. However, TOY restrictions on dredging would likely be applied to minimize impacts to commercial and recreational navigation and activities such that dredging would occur during cold weather months.

For any hydraulic dredging, routine time of year restrictions requested by MD DNR and NMFS to protect aquatic life would be applied. Inlet hydraulic dredging in 2018 and 2015 was conducted in accordance with TOY restriction as set up in MD DNR letter dated 23 October 2013. MD DNR requested in 2013 that dredging and dredged material placement activities in Isle of Wight Channel and Sinepuxent bay north of Verrazano Bridge be conducted during the period 15 Dec through 31 Mar, to protect spawning horseshoe crabs, summer flounder, SAV, and significant recreational boating and fishing. No dredging or dredged material placement should occur in this area from 1 Apr to 14 Dec.

V Federal Agency's Views Regarding the Proposed Action

The proposed action would adversely impact EFH for demersal fish species for which unconsolidated substrate in the impact area constitutes EFH. Overall, the proposed Inlet Channel navigation improvements and potential scour hole management would

have minor adverse impact to EFH physical habitat in the highly engineered inlet vicinity by converting open water with unconsolidated substrate to non-native structure (rock and mattress). Otherwise, the proposed project would not detrimenally impact populations of the 15 species evaluated, nor for their prey or predators. The proposed action would have no effect upon summer flounder HAPC. The proposed Inlet Channel Project would improve navigation for commercial and recreational fishery vessels. Accordingly, the proposed actions are in accordance with the the provisions of the Magnuson-Stevens Act, as amended.

The proposed Ocean City Inlet navigation improvements and potential scour hole management would change circulation patterns, tidal currents, and water depths in the inlet vicinity. However, the changed conditions would be within the range of existing and historic inlet vicinity conditions for these parameters, and thus wouldn't be anticipated to effect managed species. The combined actions would cause a several percent change in tidal volumes flowing into Isle of Wight and Sinepuxent Bays and would cause a concomitant increase in the marine character (salinity, temperature, dissolved oxygen) of waters in the inlet vicinity. Given the highly marine character of inlet vicinity waters, this increased marine character is not anticipated to have notable affect on the managed species. None of the identified changes appear likely to impair passage of aquatic life between the ocean and the bays. The proposed action would have minimal to negligible effects on water column habitat for managed fishery species.

The proposed rock structures along the northern Assateague Island shoreline would change the entry pattern for aquatic life into Sinepuxent Bay. Under existing conditions, organisms travelling between Sinepuxent Bay and the ocean encounter some natural sandy substrates on the western half of northern Assateague shoreline. The project would convert that sandy shoreline to rock, and with jetty/breakwater extending into Sinepuxent Bay, increase travel distance along rock shoreline required by organisms prior to being able to enter Sinepuxent Bay. Modeling conducted for the project indicates that shoaling would occur along the inlet shoreline exterior to the rock structures on the western portion of the northern shoreline. This would provide shallow sandy water for organisms to travel through, perhaps limiting habitat changes that could impact shallow water organism movements.

Substrate character (mobile sands) would be changed to marine mattress and rock at the proposed jetty structure locations, and potentially to mattress or rock in the scour hole. Otherwise, substrates in the inlet vicinity would remain mobile sands. The increased manmade structure (rock and mattress), although not natural to the area, would favor structure-oriented organisms. Area shorelines are already substantially stabilized with manmade structures. The further increase in stabilization works would not be anticipated to detrimentally impact aquatic life. The jetty construction effort would permanently convert aquatic habitat to supratidal for the portion of the structure that is not subtidal. However, the inlet vicinity is naturally dynamic anyway and prior to human stabilization of shorelines had dynamic shoreline boundaries and areas of water versus land.

The proposed project area is EFH for several benthic/demersal species (longfin squid egg, skates, spiny dogfish, black sea bass, summer flounder, and windowpane flounder). Increased structure (rock and mattress) would diminish habitat quality for summer flounder and windowpane flounder which prefer unconsolidated substrates. Increased structure would improve quality for black sea bass.

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Coordination

USACE and NPS coordinated with NMFS in conference calls on July 17, 2019 and on August 11, 2020 to discuss how to prepare EFH impacts assessment, screen out species for which area is not EFH, etc.

Table 5: Longfin Squid egg life history and habitat characteristics					
Salinity (ppt)	**Depth (m)**	**Depth (ft)**	**Water Temperature (C)**	**Water Temperature (F)**	**Reference**
30-32	<50	<165	10 to 23	50 to 73	Cargnelli et al., 1999

Table 6: Occurrence of skate juveniles and adults in Mid-Atlantic.							
Information presented pertinent to estuarine and coastal ocean waters.							
Common Name	**Depth (m)**	**Depth (ft)**	**Water Temper-ature C**	**Water Temper-ature F**	**Salinity**	**Substrate**	**References**
Clearnose	1-33 m, most 7-15 m	3-110 ft, most 20-50 ft	8-20C	46-68F	Range > 12 ppt, most at >22 ppt.	Sand	Packer et al., 2003
Little	Greatest abundance in Spring<9 m depth, Summer and Fall greatest abundance >9 m	Greatest abundance in Spring<30 ft depth, greatest abundance Spring-Fall> 30 ft	2-15C	36-59F	Range >15 ppt, mean 32 ppt	Sand or gravel, also mud	Packer et al., 2003
Winter	Most abundant 0-110 m, Winter 33-113 m	Most abundant 0-360 ft, Winter 110-370 ft	-1 to 19 C	30 to 66F	Range 15-35 ppt	Mud, sand shell, rocks, boulders	Packer et al., 2003

Table 7: Shark habitat preferences or EFH description										
(Blank cell = no data)		(NP = not provided in description)								
Species	**Life Stage**	**Salinity (ppt)**	**Depth (m)**	**Depth (ft)**	**Water Temperature (C)**	**Water Temperature (F)**	**Substrate**	**Time of Year Present in Estuaries**	**Reference**	**Notes**
Sandbar	Neonate	15 to 35	0.8 to 23	3 to 75	15 to 30	59 to 86	Sand, Mud, Shell, Rocky sediment		NOAA (2017)	EFH Description (Metric Depth & Temp)
"	Juvenile	15 to 35	0.8 to 23	3 to 75	15 to 30	59 to 86	Sand, Mud, Shell, Rocky		NOAA (2017)	EFH Description (Metric Depth & Temp)
"	Adult	NP	NP		NP	NP	NP		NOAA (2017)	EFH Description (Metric Depth & Temp)
Sand Tiger	Neonate, Juvenile	23 to 30	2.8 to 7.0	9 to 23	19 to 25	66 to 77	Mud and Sand		NOAA (2017)	EFH Description (Metric Depth & Temp)
"	Adult	NP	NP	NP	17 to 23	63 to 73	NP		NOAA (2017)	EFH Description (Metric Depth & Temp)
Smoothhound Complex	All	NP	NP	NP	NP	NP	NP		NOAA (2017)	EFH Description
Spiny dogfish	Subadult, Adult	31-32	12 to 18	40 to 60	7 to 11	45 to 52		Nov & Dec	McMillan and Morse (1999)	Raritan-Hudson habitat preferences
"	"		>27	90				May-Aug, Sept-Nov	"	Long Island Sound habitat preferences

Table 8: Occurrence and habitat preferences by life-stage in the mid-Atlantic, with focus on preferences applicable or potentially applicable to estuaries.

(Blank cell = no data)

Species Common Name	Regulated EFH Life Stages	Habitat, Geomorphic Features	Substrate	Salinity (ppt) a	Depth (m)	Depth (ft)	Water Temperature (C)	Water Temperature (F)	References (except a)
Atlantic Butterfish	eggs	Surface waters		25 to 33			Most 11-17	Most 52-63	Cross et al., 1999
	larvae	Surface waters		6 to 37			Most 9-19	Most 48-66	"
	juvenile	Surf zone, surface to deep waters	Mud and sand	3 to 37	<120	<400	3 to 28	37 to 82	NMFS 2000 (Summary Tables); Cross et al., 1999
	adult	Surface waters	Mud and sand	4 to 33	<120	<400	3 to 28	37 to 82	NMFS 2000 (Summary Tables); Cross et al., 1999
Atlantic Herring	juvenile	Pelagic		28 to 32	<100	<330	8 to 12	46 to 54	Stevenson and Scott (2005)
	adult	Pelagic		27 to 35 ppt	Diel vertical migrations, <80	Diel vertical migrations, <260	4 to 10	39 to 50	"
Black sea bass	juvenile	YOY: Estuarine - coastal; salt marsh edges & channels; high habitat fidelity. Winter: Continental Shelf	YOY: Rough bottom, shellfish, sponge, eelgrass beds, nearshore shell patches, manmade objects. Winter: nearshore shell patches, other shelter on sandy bottoms	YOY: prefer 18-20. Winter: prefer>18	1 to 38	3 to 125	>6, prefer 17 to 25	>43, prefer 63 to 77	Steimle et al., 1999
	adult	Summer: Larger fish stay in deeper water. Winter: Continental Shelf	Summer: Mussel beds, rock, artificial reefs, wrecks and other structures. Winter: poorly known.	Summer: >20. Winter: 30 to 35	2 to 38	6 to 125	>6, prefer 13 to 21	>43, prefer 55 to 70	"
Bluefish	juvenile	Day: shorelines, tidal creeks; night: open waters, channels	Sand, mud, sea lettuce patches, eelgrass beds, salt marshes	23 to 36			>20 immigrate into estuaries; 15 emigrate from estuaries	>68 immigrate into estuaries; 59 emigrate from estuaries	Fahay et al., 1999;
	adult	Oceanic, Not uncommon in bays		Oceanic			>14 to 16	>57 to 61	Shepherd and Packer, 2006
Scup	juvenile	YOY: Estuarine - coastal; Winter: most offshore	Sand, mud, mussel and eelgrass beds	YOY: >15; Winter: mostly >30, except in estuaries	0 to 38	0 to 125	9 to 27, prefer 16 to 22	48 to 81, prefer 61 to 72	Steimle et al., 1999
	adult		Sand, mud, mussel beds, rock, and manmade features	Summer: >15, Winter: >30	2 to 38	6 to 125	7 to 25	44 to 77	"
Summer flounder	larvae	Shallow estuarine	Sand				6 to 20	43 to 68	Packer et al., 1999
	juvenile	Lower estuary flats, channels, salt marsh creeks, eelgrass beds.	Mud and sand	10 to 30	0.5 to 5	1.5 to 15	>11	>52	NMFS 2000 (Summary Tables); Packer et al., 1999
	adult				0 to 25	0 to 80			"
Windowpane flounder	eggs	Planktonic			<70	<230	6 to 20	43 to 68	Chang et al., 1999
	larvae	Planktonic					3 to 19	37 to 66	"
	juvenile	Nearshore bays and estuaries	Fine sandy sediment	5.5 to 36	1 to 75	3 to 250	<25	<77	"
	adult		Mud and sand	5.5 to 36	1 to 75	3 to 250	<27	<80	"

a NMFS, 2002. Some taken from table: "Summary of essential fish habitat (EFH) and general habitat parameters for Federally managed species."

APPENDIX C

Coordination Summary

Table: Ocean City Section 107: Coordination Summary. (Note: also includes records from related 204 study when pertinent)

Date	Study	USACE Contact	External Agency Contact	Summary
Sept 8, 2021	107 & 204	USACE PDT	Ocean City Inlet Workgroup	Reviewed alternatives through entirety of plan formulation process. Changed recommended plan to alternative with no gaps in rock structure because of concerns over excess shoaling and erosion of alternative with gaps.
Aug 17, 2021	107 & 204	USACE PDT	Public Meeting	Hybrid in-person/virtual at Worcester County Berlin Public Library. MD DNR staff introduced meeting. USACE presented review of plan formulation process. USACE presented that alternative with breakwater gaps left would be recommended plan based on economic analysis and lower cost. Public expressed concern over need for additional explanation as to why other alternatives previously suggested by public were rejected. Concerns were expressed over potential excess shoaling and erosion of the alternative with gaps.
July 8, 2021	107 & 204	Chris Spaur	Angel Willey, DNR Coastal Fisheries Program Manager	Angel emailed summary information on commercial and recreational fishing in inlet vicinity.
June 22, 2021	107 & 204	Amber Metallo, Andrew Roach	MD Coastal Bays STAC	AM and AR gave presentations about status of ongoing 107 and 204 studies. Covered alternatives, modeling efforts & results, and dredged material availability and placement.
May 12, 2021	107 & 204	Chris Spaur	Jonathan Watson, NMFS	JW provided further responses to May 7 meeting. Regarding inlet, gaps/ports in jetty would provide some habitat for fish, but NMFS not concerned with jetty extension reducing fish movement through inlet. Only close easternmost gap if needed to meet project goals though. Only fill open water behind jetty if needed for structural/navigational purposes. Regarding scour hole, NMFS supports use of material from navigational channels to fill hole. Could consider alternative maintenance dredging cycle or operation. Support idea of some sort of reef construction as alternative, could be managed by DNR artificial reef program. If Skimmer's Island is to receive material, want to discuss approaches to ensure that it has ecological benefits.

Date	Study	USACE Contact	External Agency Contact	Summary
May 7, 2021	107 & 204	Chris Spaur	Representatives (12) from Federal and State Environmental Agencies	Virtual meeting. USACE staff reviewed project alternatives under consideration and proposed schedule. USACE ERDC modeler provided overview of 2D model results and implications. Dredged material that would be generated if various alternatives selected and potential uses of that material were discussed. Identified need for continued coordination to complete compliance efforts for multiple applicable federal and state laws.
April 30, 2021	107 & 204	Jacqui Seiple, Andrew Roach	Ocean City Working Group. Representatives from MD DNR, Worcester County, and Town of Ocean City, plus elected officials and their representatives	Virtual meeting. USACE staff reviewed project alternatives under consideration and proposed schedule. USACE ERDC modelers provided overview of 2D, 3D, and Coastal Storm model results and implications. Potential indirect scour and deposition outside of inlet channel and scour hole were discussed. Working Group members said that they would think further on these potential indirect effects and coordinate further with USACE.
Mar 5, 2021	107	Chris Spaur	Terry McGean, Ocean City	TM sent email. TM reviewed records and contacted power company regarding cables mapped in inlet and off NW Assateague Island. These do not show up on older charts and they have no records of cables or infrastructure in those areas.
Feb 19, 2021	107	Chris Spaur	Bill Hulslander, AINS	BH sent email. AINS not aware of cables or infrastructure present in or along inlet. No current utilities or known ROWs serving NPS.
Dec 14, 2020	107 & 204	Chris Spaur	Kaitlyn Duncan, SHA	KD emailed 1984 plans for scour repairs under Route 50 bridge. Old SHA worklist contains reference to 1985 scour repairs.
Dec 3, 2020	107 & 204	Chris Spaur	Dave Brinker, DNR	DB sent email with Skimmer Island annual reports from 2011-2014.

Date	Study	USACE Contact	External Agency Contact	Summary
Nov 19, 2020	107 & 204	Chris Spaur	Roman Jesien, MCBP	CS sent email regarding problem of horseshoe crabs getting trapped at end of north jetty near Oceanic Motel. USACE staff (Szimanski, McAllister, Roach, Seiple) reviewed matter and see no means to address this through current studies. MCBP seeking to proceed through USACE Section 408 authorization process probably best route forward. If USACE undertakes maintenance of north jetty, then matter could be addressed at that time. USACE is not currently funded for such work and when that might occur in future undetermined.
Nov 12, 2020	107 & 204	Chris Spaur	Roman Jesien, MCBP	RJ sent email summarizing dire situation facing colonial waterbird nesting opportunities in coastal bays and efforts to try to maintain even minimal nesting habitat.
Nov 9, 2020	107 & 204	Chris Spaur, Jacqui Seiple, Netsy Hailu	MD DNR (Matt Fleming, Dave Brinker, Nicole Carlozo) and NPS (Bill Hulslander)	Conference call with DNR and NPS representatives regarding potential beneficial use of extra sand from dredging or excavation at Skimmer Island. Meeting requested by MD DNR. DNR staff reviewed island importance for waterbird nesting. USACE staff provided projects overview, identifying possibility of extra sand. Discussed USACE commitments for excavated or dredged sand. Discussed potential cost-sharing of beneficial placement at Skimmer Island.
Oct 21, 2020	107	Jacqui Seiple	Ron Houck, Coast Guard	JS and RH exchanged emails discussing public notice as trigger for US Coast Guard review.
Oct 5, 2020	107 & 204	Dan Bierly	Newt Weaver, President; Worcester County Historical Society	DB sent letter providing information on alternatives under consideration for two studies. Based on review of cultural/historic resources databased, USACE does not believe projects would have an adverse effect on historic properties.
Oct 5, 2020	107 & 204	Dan Bierly	Susan Bachor, Tribal Historic Preservation Representative, Delaware Tribe of Indians	DB sent letter providing information on alternatives under consideration for two studies. Based on review of cultural/historic resources databased, USACE does not believe projects would have an adverse effect on historic properties.

Date	Study	USACE Contact	External Agency Contact	Summary
Oct 5, 2020	107 & 204	Dan Bierly	Deborah Dotson, President; Delaware Nation	DB sent letter providing information on alternatives under consideration for two studies. Based on review of cultural/historic resources databased, USACE does not believe projects would have an adverse effect on historic properties.
Sep 15, 2020	107 & 204	Jacqui Seiple, Andrew Roach, Danielle Szimanski, Graham McAllister, Chris Spaur	Coast Guard: Christopher Runt (Aides to Navigation Specialist), Ron Houck	Conference call. Discussed alternative projects under consideration and potential navigation and safety issues. Coast Guard would conduct risk assessment once public notice announcing recommended plan is released to public and agencies. USACE would utilize Coast Guard findings to verify safety of alternatives. USACE would investigate shorter alternatives for jetty/breakwater off NW Assateague to be prepared in event that's identified to be safety concern and shorter alternative would alleviate concern.
Aug 24, 2020	107 & 204	Chris Spaur	Jonathan Watson, NOAA	JW emailed providing review of spp and life history stages that should be included in EFH impacts assessment.
Aug 13, 2020	107	PDT and ERDC	Ocean City Inlet Workgroup (Representatives of federal, state, and local elected officials, MD DNR, Ocean City, NPS).	Virtual meeting. Discussed need for virtual public meeting to review narrowing of open water in Sinepuxent Bay, shoaling off the westernmost Assateague Island breakwater, and whether any safety concerns.
Aug 11, 2020	107 & 204	Andrew Roach, Jacqui Seiple, Chris Spaur, Danielle Szimanski	NMFS (Karen Greene and Jonathan Watson) and NPS (Bill Hulslander)	Conference call. Reviewed EFH impacts assessment documents prepared for projects in area to date, species to consider in new impacts assessment, and how to structure impacts assessment document.
Jul 29, 2020	107 & 204	Chris Spaur	Karen Greene, Jonathan Watson (NMFS)	CS sent email providing update on status of modeling efforts and EFH impacts assessment status.

Date	Study	USACE Contact	External Agency Contact	Summary
Jul 13, 2020	107		MD DNR, NPS, MCBP	Conference call to discuss whether alternatives under consideration for inlet navigation improvements could have impacts of concern on boat traffic and boatable waters off northwestern Assateague, as well as beach recreation there. If jetty/breakwater is constructed extending into Sinepuxent Bay, could narrow width of open water available for boats from 250 to 200 yards, and affect recreational use by boaters of northern Assateague bay shoreline. Group determined that meeting with community leaders was needed to figure out how to best reach boaters for input.
Mar 23, 2020	107 & 204	Chris Spaur	Kristy Beard & Brian Hopper (NMFS); Chris Guy & Amy ODonnell (USFWS); Bill Hulslander (NPS); Jonathan McKnight, Roland Limpert, Joe Kincaid, Jon Stewart, Tony Redman, Angel Willey, Dave Brinker (MD gov't)	CS sent email providing brief update on USACE ERDC investigations and when to expect to receive additional information from USACE on progress.
Mar 20, 2020	107 & 204	Chris Spaur	Amy ODonnell (USFWS)	CS sent email providing summary information on USACE alternatives to cover in USFWS PAR, as well as brief status report of ERDC modeling effort.
Nov 18, 2019	107 & 204	Chris Spaur	Multiple Federal, State, and Organization Representatives	CS sent email provided update on modeling schedule. Anticipate having model output in March for agency review/input.
Jul 26, 2019	107 & 204	Chris Spaur	Kristy Beard, NMFS	CS sent email providing copies of previous EFH impacts assessment documents.

Date	Study	USACE Contact	External Agency Contact	Summary
Jul 17, 2019	107 & 204		NMFS and USFWS	USACE and NPS held conference call to discuss FWCA, ESA, & MSFMCA compliance concerns. Species to potentially be considered under each law as a function of project formulation were discussed. Potential information sources that should be looked into were discussed. Reviewed previous documents related to these laws produced for USACE projects in area. USFWS recommended preparation of a PAR.
Jul 15, 2019	107	Ethan Bean, Chris Spaur	Troy Nowak, MHT	TN sent email stating MHT recommendations regarding effects to historic properties contingent on USACE completing its consultation with MHT under Section 106 of the NHPA.
Jul 10, 2019	107 & 204		Representatives of NPS, MDE, MD DNR, and NMFS	USACE and NPS held a conference call to identify major potential environmental concerns. MD staff emphasized that USACE should consider both not harming Skimmer Isle but also providing more sand to it because of its habitat importance for nesting waterbirds. Importance of northern Assateague Island as habitat for a variety of rare plant and animal species was identified. How to determine potential area of effect was discussed. Need for further coordination to ensure compliance with multiple environmental regulations was identified (ESA, FWCA, Magnuson-Stevens, CZMA, CWA, etc.).
Jul 10, 2019	107 & 204	Ethan Bean	Rita Pritchett, MD State Clearinghouse	EB sent email providing status update of ongoing coordination with MHT.
Jul 8, 2019	107 & 204	Chris Spaur	Dave Brinker	DB sent email providing information on important habitats for state-rare spp in inlet vicinity.
Jul 3, 2019	107 & 204	Chris Spaur	Kristy Beard and Brian Hopper, NMFS	CS sent email providing summary information on previous USACE documents pertinent to ESA and MSFMCA.
Jun 28, 2019	107 & 204	Chris Spaur	Brian Hopper, NMFS	CS sent email providing additional information on projects for consideration with respect to ET spp impacts.
Jun 20, 2019	107	Chris Spaur	Myra Barnes, Rita Pritchett (MD State Clearinghouse)	Letter to CS. Contact Troy Nowak regarding additional information requested by MHT.

Date	Study	USACE Contact	External Agency Contact	Summary
Jun 17, 2019	107	Chris Spaur	Erin Thompson, Director Historic Preservation, Delaware Nation	Response to USACE correspondence. Provided consultation procedures for Section 106 and standards for cultural resource survey reports.
Jun 6, 2019	107	Chris Spaur	Kristy Beard, NMFS	Response to USACE public notice. EFH is designated within project area. ET spp under NMFS jurisdiction may be present in project area. Contact Brian Hopper re ET spp.
Jun 6, 2019	107	Dan Bierly	Angie Alvino, Acting Superintendent, AINS, NPS	AA response letter to USACE study initiation letter to NPS. Provided information on AINS, including rare spp and human use. Identified continued involvement of NPS in long-term restoration of AINS with USACE. Bill Hulslander is POC for AINS. NPS would be cooperating agency with USACE.
Jun 6, 2019	107 & 204	Jacqui Seiple	Roman Jesien, MCBP	RJ emailed that islands that are important nesting areas for water birds occur in coastal bays that would be alternate placement sites for sand. Additionally, tidal marshes that are fragmenting along Sinepuxent Bay could use sand.
Jun 5, 2019	107 & 204	Jacqui Seiple	MCBP STAC	JS gave presentation about ongoing studies.
Jun 3, 2019	107	Dan Bierly	Denise Keehner, Manager, Wetlands and Waterways Program	Response letter to USACE study initiation letter to MDE. WWP supports study, managing shoaling in area, and possible beneficial use of dredged material. Some activities will require state authorization. Mr Joe Kincaid, Tidal Wetlands Division's Natural Resource Planner is point of contact for the study.
May 31, 2019	107	Dan Bierly	Ben Grumbles, Secretary, MDE	Response letter to USACE study initiation letter to governor. Note MD executive order on Waste Reduction and Resource Recovery Plan, plus MDE guidance on sustainable management of dredged material.
May 30, 2019	107 & 204	USACE PDT	Public meeting	Berlin Worcester County Library. MD DNR introduced meeting. USACE staff gave presentation on combined studies, answered questions from audience, and attended posters. USACE collected addresses of interested members of audience. Meeting attended by elected officials; federal, state, and county agencies; representatives of business organizations and citizens groups; and interested public.

Date	Study	USACE Contact	External Agency Contact	Summary
May 29, 2019	107 & 204	Chris Spaur	Woody Francis, USACE Regulatory	No aquaculture near inlet.
May 7, 2019	107	Dan Bierly	Elected Officials, Commercial and Citizens' Organizations	Public notice announcing start of project to design and implement a project to manage shoaling in Ocean City Harbor and Inlet (CAP 107) in partnership with MD DNR and Worcester County. USACE intends to prepare an environmental assessment.
May 3, 2019	107	Dan Bierly	Federal and State Agency Representatives	Letter announcing start of project to design and implement a project to manage shoaling in Ocean City Harbor and Inlet (CAP 107) in partnership with MD DNR and Worcester County. USACE intends to prepare an environmental assessment.

US Army Corps of Engineers
Baltimore District

Public Notice: Environmental Assessment Preparation Ocean City Harbor & Inlet Navigation Improvements, Worcester County, Maryland

May 7, 2019

All Interested Parties: The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

The inlet is dredged to the federally authorized dimensions of 10 feet deep and 200 feet wide and to 10 feet deep in the harbor; however, the channel continuously shoals at a rate that exceeds maintenance dredging. The USACE *Ocean City Water Resources Study*, completed in 1998, recommended navigation improvements to the harbor and inlet that would have consisted of deepening the harbor to a depth of 14 feet and deepening the inlet channel to a depth of 16 feet. The 1998 recommended project was not implemented due to federal and non-federal funding constraints. Because shoaling patterns have changed substantially since 1998, USACE will investigate a range of potential alternatives for the management of shoaling. Recommendations will consider navigation and economic benefits, as well as effects on environmental resources.

USACE is also undertaking a separate but related feasibility study in the vicinity, under Section 204 of CAP. This separate effort, *Ocean City, Maryland – Scour Hole: Beneficial Use of Dredged Material*, is investigating excess shoreline and bottom erosion in Isle of Wight Bay near Homer Gudelsky Park, West Ocean City. A public notice announcing the Section 204 study was sent out in May 2018.

USACE, MD DNR, and Worcester County are seeking input on inlet and harbor commercial navigation concerns, as well as area-specific considerations important in assessing environmental impacts. For federal and state agencies receiving a copy of this notice, we request that you provide information concerning interests within your area of responsibility or expertise within 30 days of the date of this notice to the address below. A timely review of the enclosed information and a written response will be greatly appreciated and will assist us with proper scoping.

If you have any questions regarding this study, please contact Christopher Spaur by email at christopher.c.spaur@usace.army.mil, telephone at 410-962-6134, or mail at USACE, Planning Division, 2 Hopkins Plaza, Baltimore, MD 21201. Information on the project, a map of the study area, and the date and location of an upcoming public meeting, is posted on the world wide web at https://www.nab.usace.army.mil/OceanCity/

Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division

Title	First Name	Middle Name	Last Name	Suffix	Company	Job Title	Street	City	State	Postal Code
Ms.	Susan		Bachor		Delaware Tribe of Indians	Tribal Historic Preservation Representative	P.O. Box 64	Pocono Lake	PA	18347
	Myra		Barnes		Maryland Department of Planning	State Clearinghouse	301 West Preston Street, Suite 1101	Baltimore	MD	21201-2305
	Robert	T.	Brown	Sr	Maryland Watermen's Association	President	1805A Virginia Street	Annapolis	MD	21401
							U.S. Coast Guard Fifth District Commander (de) 431 Crawford St., Suite 603	Portsmouth	VA	23704
							U.S. Coast Guard 610 South Philadelphia Avenue	Ocean City	MD	21842
	David		Blazer		Maryland Department of Natural Resources	Director, Fishing and Boating Services	580 Taylor Avenue	Annapolis	MD	21401
Ms.	Lori		Byrne		Maryland Department of Natural Resources	Wildlife and Heritage Service	Tawes State Office Building, E-1 580 Taylor Ave	Annapolis	MD	21401
Honorable	Benjamin	L.	Cardin		United States Senate	Senator	Baltimore Office 100 South Charles Street Tower 1, Suite 1710	Baltimore	MD	21201
Delegate	Wayne	A.	Hartman		Maryland House of Delegates, 38C		House Office Building, Room 308 6 Bladen Street	Annapolis	MD	21401
	Kate		Charbonneau		Chesapeake Bay Critical Area Commission	Executive Director	Maryland Department of Natural Resources 1804 West Street	Annapolis	MD	21401
Ms.	Kimberly		Damon-Randall		Greater Atlantic Regional Fisheries Service	Assistant Regional Administrator for Protected Resources	National Marine Fisheries Service US Department of Commerce 55 Great Republic Drive	Gloucester	MA	1930
Ms.	Deborah		Darden		Assateague Island National Seashore	Superintendent	7206 National Seashore Lane	Berlin	MD	21811
	Deborah		Dotson		Delaware Nation	President	3 Miles North of Anadarko on Highway 281 Main Office Building 100	Anadarko	OK	73005
	Kaitlyn		Duncan		Office of Structures - Structural Remediation Engineering	Team Leader	MDOT - State Highway Administration 707 N. Calvert Street	Baltimore	MD	21202
	Mary	Kay	Foley		U.S. Geological Survey	Center Director	Maryland-Delaware-DC Water Science Center 5522 Research Park Drive	Baltimore	Maryland	21228
	John		Forren		U.S. Environmental Protection Agency, Region III	Associate Division Director Office of Monitoring & Assessment	1650 Arch Street	Philadelphia	Pennsylvania	19103-2029
	Shawn	M.	Garvin		U.S. Environmental Protection Agency, Region III	Administrator	1650 Arch Street	Philadelphia	Pennsylvania	19106
Honorable	Andy		Harrris		United States Congress	Congressman	Salisbury Office 212 West Maint Street, Suite 204B	Salisbury	MD	21801
Dr.	Terron		Hillsman		Natural Resource Conservation Service, USDA	State Conservationist	339 Busch's Frontage Road, Suite 301	Baltimore	MD	21401-5534
Governor	Larry		Hogan		State of Maryland		Office of the Governor 100 State Circle	Annapolis	MD	21401
	Elizabeh	A.	Hughes		Division of Historical and Cultural Programs	Director	MD Historic Trust 100 Community Place	Crownsville	MD	21303-2023
	Denise		Keehner		Compliance Program	Program Manager	Maryland Department of the Environment 1800 Washington Blvd	Baltimore	MD	21230
Ms.	Genevieve		LaRouche		Chesapeake Bay Field Office	Field Supervisor	US Fish and Wildlife Service 177 Admiral Cochrane Drive	Annapolis	MD	21401
	Mike		Luisi		Mid-Atlantic Fishery Management Council	Council Chairman	800 North State Street, Suite 201	Dover	DE	19901
Senator	Mary	Beth	Carozza		Maryland State Senate, 38th District		James Senate Office Building, Room 314 11 Bladen St.	Annapolis	MD	21401
	Robert		McCord		Maryland Department of Planning	Secretary of Planning	301 West Preston Street	Baltimore	MD	21201-2365
Mayor	Rick		Meehan		Town of Ocean City		301 N. Baltimore Avenue	Ocean City	MD	21842
	Heather		Nelson		Compliance Program	Acting Deputy Program Director	Maryland Department of the Environment 1800 Washington Blvd	Baltimore	MD	21230-1708
	Michaela		Noble		Office of Environmental Policy and Compliance	Director	Department of the Interior 1849 C Street, NW (Mail Stop 5538)	Washington	DC	20240
	Richard	A	Ortt		Maryland Geological Survey	Director	Maryland Department of Natural Resources 2300 St. Paul Street	Baltimore	MD	21218-5210
	Perry		Otwell		Maryland Department of Natural Resources	Director, Engineering and Construction	580 Taylor Avenue	Annapolis	MD	21401-2352
	Frank		Piorko		Maryland Coastal Bays Program	Executive Director	8219 Stephen Decatur Highway	Barlin	MD	21811
	Tony		Redman		Maryland Department of Natural Resources	Integrated Policy and Review Unit	Tawes State Office Bldg., B-3 580 Taylor Ave.	Annapolis	MD	21401
	Barbara		Rudnick		U.S. Environmental Protection Agency	NEPA Team Leader	1650 Arch Street	Philadelpia	PA	19103-2029
					Town of Ocean City	Ocean City Council	301 N. Baltimore Avenue	Ocean City	MD	21842
	Terry		McGean		Town of Ocean City	Engineering Department	301 Baltimore Avenue	Ocean City	MD	21842
					Town of Ocean City	Planning and Community Development	301 Baltimore Avenue	Ocean City	MD	21842
Honorable	Chris		Van Hollen		United States Senate	Senator	111 Rockville Pike	Rockville	MD	20850
	Gary		Vietzke		National Park Service	Regional Director	Northeast Regional Office 200 Chestnut Street, 5th Floor	Philadelphia	PA	19106
					Worcester County Government Center	County Commissioners	1 W. Market Street, Room 1103	Snow Hill	MD	21863
					Worcester County Government Center	Environmental Programs	1 W. Market Street, Room 1306	Snow Hill	MD	21863
					Worcester County Government Center	Developmental Review and Permitting	Environmental Programs 1 W. Market Street, Room 1306	Snow Hill	MD	21863
					Worcester County Government Center	Emergency Services	1 W. Market Street, Room 1002	Snow Hill	MD	21863
					Worcester County Library	Ocean Pines Branch	11107 Cathell Road	Ocean Pines	Maryland	21811
					Worcester County Library	Ocean City Branch	10003 Coastal Highway	Ocean City	Maryland	21842
					Worcester County Library	Berlin Branch	13 Harrison Avenue	Berlin	Maryland	21811

DEPARTMENT OF THE ARMY
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Maryland Department of the Environment
1800 Washington BLVD
Baltimore, MD 21230-1708

MAY 3 2019

Dear Ms. Keehner:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

The inlet is dredged to the federally authorized dimensions of 10 feet deep and 200 feet wide and to 10 feet deep in the harbor; however, the channel continuously shoals at a rate that exceeds maintenance dredging. The USACE *Ocean City Water Resources Study*, completed in 1998, recommended navigation improvements to the harbor and inlet that would have consisted of deepening the harbor to a depth of 14 feet and deepening the inlet channel to a depth of 16 feet. The 1998 recommended project was not implemented due to federal and non-federal funding constraints. Because shoaling patterns have changed substantially since 1998, USACE will investigate a range of potential alternatives for the management of shoaling. Recommendations will consider navigation and economic benefits, as well as effects on environmental resources.

USACE is also undertaking a separate but related feasibility study in the vicinity, under Section 204 of CAP. This separate effort, *Ocean City, Maryland – Scour Hole: Beneficial Use of Dredged Material*, is investigating excess shoreline and bottom erosion in Isle of Wight Bay near Homer Gudelsky Park, West Ocean City. A letter announcing initiation of this study was sent to your office in February 2018.

Please provide any information or concerns your agency may have that will assist us with proper scoping of this study within 30 days of the date of this letter, as well as a point of contact, and indicate the degree to which your agency will be involved.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

Mr. Lou Chiarella
Assistant Regional Administrator for Habitat Conservation
National Marine Fisheries Service
U.S. Department of Commerce
55 Great Republic Drive
Gloucester, Massachusetts 01930

MAY 3 2019

Dear Mr. Chiarella:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the project in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

Mr. Tony Redman
Integrated Policy and Review Unit
Maryland Department of Natural Resources
Tawes State Office Bldg., B-3
580 Taylor Ave.
Annapolis, MD 21401

MAY 3 2019

Dear Mr. Redman:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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Please provide any information or concerns your agency may have that will assist us with proper scoping of these investigations within 30 days of the date of this letter, as well as a point of contact, and indicate the degree to which your agency will be involved. A coordination letter is also being sent to the MD DNR Heritage Program.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

MAY 3 2019

Ms. Myra Barnes
State Clearinghouse
Maryland Department of Planning
301 West Preston Street. Suite 1101
Baltimore, Maryland 21201-2305

Dear Ms. Barnes:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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Please provide any information or concerns your agency may have that will assist us with proper scoping of this study within 30 days of the date of this letter, as well as a point of contact, and indicate the degree to which your agency will be involved in the study. Coordination letters are also being sent to MD DNR Heritage Program, MD DNR Environmental Review, and MD Department of the Environment.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

MAY 3 2019

Ms. Kimberly Damon-Randall
Assistant Regional Administrator for Protected Resources
Greater Atlantic Regional Fisheries Service
National Marine Fisheries Service
U.S. Department of Commerce
55 Great Republic Drive
Gloucester, Massachusetts 01930

Dear Ms. Damon-Randall:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

MAY 3 2019

Ms. Deborah Darden, Superintendent
U.S. National Park Service
Assateague Island National Seashore
7206 National Seashore Lane
Berlin, Maryland 21811

Dear Ms. Darden:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

MAY 3 2019

Ms. Genevieve LaRouche
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21014

Dear Ms. LaRouche:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended (NEPA). The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201

Planning Division

MAY 3 2019

Ms. Lori Byrne
Department of Natural Resources
Wildlife & Heritage Service
580 Taylor Ave.
Tawes Office Bldg E-1
Annapolis, MD 21401

Dear Ms. Byrne:

The Baltimore District, US Army Corps of Engineers (USACE), MD Department of Natural Resources (MD DNR), and Worcester County, MD, signed a Project Partnership Agreement in February 2019 to begin the design and implementation of a project to manage shoaling in the Ocean City Inlet and Harbor. The enclosed map depicts the study area. These activities are being conducted under Section 107 of the Continuing Authorities Program (CAP). USACE will be preparing an environmental assessment (EA) for the proposed project in accordance with the National Environmental Policy Act of 1969, as amended. The current schedule calls for the draft EA to be circulated to the public in mid-2020.

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Enclosure: Study area map

SPAUR/CENAB-PL-P CS
SEIPLE/CENAB-PL-P JAS
ROACH/CENAB-PL-P
CLARK/CENAB-PL-P TC
BIERLY/CENAB-PL-P DB

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1 Public Notice
8 Agency Letters

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Spaur, Christopher C CIV USARMY CENAB (US)

From: Christine Vaccaro - NOAA Federal <christine.vaccaro@noaa.gov>
Sent: Tuesday, May 7, 2019 11:22 AM
To: Spaur, Christopher C CIV USARMY CENAB (US); Brian D Hopper - NOAA Federal
Subject: [Non-DoD Source] Ocean City Shoaling

Hi Chris,
We got your letter regarding resources in the vicinity of Ocean City Inlet and Harbor and the EA you will be developing.

Please see our website for the most up to date species information/mapper tool:

Blockedhttps://www.greateratlantic.fisheries.noaa.gov/protected/section7/listing/index.html

Please note that Kim Damon-Randall is no longer the ARA for Protected Resources. Currently Mike Asaro is acting in her place.

Cheers,
Chris

Chris Vaccaro
Fisheries Biologist
Protected Resources Division
NOAA Fisheries, Greater Atlantic Region
Gloucester, MA
Phone: 978-281-9167
Email: christine.vaccaro@noaa.gov <mailto:christine.vaccaro@noaa.gov>

For additional ESA Section 7 information and Critical Habitat guidance, please see:
Blockedwww.greateratlantic.fisheries.noaa.gov/protected/section7
<Blockedhttp://www.greateratlantic.fisheries.noaa.gov/protected/section7>

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MARYLAND DEPARTMENT OF
PLANNING

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Robert S. McCord, Secretary
Sandy Schrader, Deputy Secretary

May 15, 2019

Mr. Christopher Spaur
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

STATE CLEARINGHOUSE REVIEW PROCESS

State Application Identifier: **MD20190509-0355**
Reply Due Date: 06/17/2019
Project Description: Scoping: Ocean City Harbor & Inlet Navigation Improvements located between Two (2) Barrier Islands Fenwick and Assateague and within Isle of Wight and Sinepuxent Bay, Worcester County, Maryland
Project Location: Worcester County
Clearinghouse Contact: Rita Pritchett

Dear Mr. Spaur:

Thank you for submitting your project for intergovernmental review. Your participation in the Maryland Intergovernmental Review and Coordination (MIRC) process helps to ensure that your project will be consistent with the plans, programs, and objectives of State agencies and local governments.

We have forwarded your project to the following agencies and/or jurisdictions for their review and comments: the Maryland Departments of Transportation, the Environment, and Natural Resources; Worcester County; and the Maryland Department of Planning including the Maryland Historical Trust. A composite review and recommendation letter will be sent to you by the reply due date. Your project has been assigned a unique State Application Identifier that you should use on all documents and correspondence.

Please be assured that we will expeditiously process your project. The issues resolved through the MIRC process enhance the opportunities for project funding and minimize delays during project implementation.

If you need assistance or have questions, contact the State Clearinghouse staff noted above at 410-767-4490 or through e-mail at rita.pritchett@maryland.gov. Thank you for your cooperation with the MIRC process.

Sincerely,

Myra Barnes, Lead Clearinghouse Coordinator

MB:RP
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Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

May 31, 2019

Mr. Daniel M. Bierly, P.E.
U. S. Army Corps of Engineers
2 Hopkins Plaza
Baltimore, Maryland 21201-2930

Dear Mr. Bierly:

Thank you for your correspondence to Governor Hogan regarding the environmental assessment preparation for Ocean City Harbor and Inlet navigation improvements. As secretary of the Maryland Department of the Environment (MDE), the governor asked that I respond on his behalf.

I have circulated your information request to pertinent staff who will be reaching out to you directly, as appropriate. As you may be aware Governor Hogan has issued an Executive Order on Maryland's Waste Reduction and Resource Recovery Plan that promotes a sustainable materials management approach that includes dredged material. To promote sustainable management of dredged materials MDE also issued guidance for the innovative and beneficial reuse at mde.maryland.gov/programs/Marylander/Documents/Dredging/FINAL_IBR_GUIDANCE_8.30.2017_MDE.pdf. As you move forward with your project to reduce shoaling in the Ocean City inlet and harbor and repurpose that material for any innovative or beneficial uses Maryland stands ready to assist you in that effort.

Thank you again for your correspondence. If I may be of further assistance, please contact me at 410-537-3084, or Mr. Lee Currey at 410-537-3567, or lee.currey@maryland.gov.

Sincerely,

Ben Grumbles
Secretary

cc: Lee Currey, Director, Water and Science Administration

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MARYLAND DEPARTMENT OF
PLANNING

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Robert S. McCord, Secretary
Sandy Schrader, Deputy Secretary

June 20, 2019

Mr. Christopher Spaur
U.S. Army Corps of Engineers, Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

STATE CLEARINGHOUSE REVIEW – ADDITIONAL INFORMATION REQUEST

State Application Identifier: MD20190509-0355
New Reply Due Date: 07/10/2019
Project Description: Scoping: Ocean City Harbor & Inlet Navigation Improvements located between Two (2) Barrier Islands Fenwick and Assateague and within Isle of Wight and Sinepuxent Bay, Worcester County, Maryland
Project Location: Worcester County
Clearinghouse Contact: Rita Pritchett

Dear Mr. Spaur:

The State Clearinghouse received the following request for additional information: "the Maryland Historical Trust requests additional information as project planning proceeds regarding anticipated changes to the channel footprint and related work spaces where bottom impacts are expected. We will provide detailed comments regarding historic properties when such information is available. Do not hesitate to contact us if you have any questions".

This request will require an extension of the initial review period. The new reply date is noted above.

The Clearinghouse will strive to expeditiously conclude this review and may do so before the new reply date. We request your assistance in providing the additional information requested as soon as possible directly to the requesting party, Troy Nowak at troy.nowak@maryland.gov, (410) 697-9577 with a copy to Rita Pritchett at rita.pritchett@maryland.gov.

If you need assistance or have questions, contact the State Clearinghouse staff person noted above at 410-767-4490 or through e-mail at rita.pritchett@maryland.gov. Your cooperation and attention to the review process is appreciated.

Sincerely,

Myra Barnes, Lead Clearinghouse Coordinator

MB:RP

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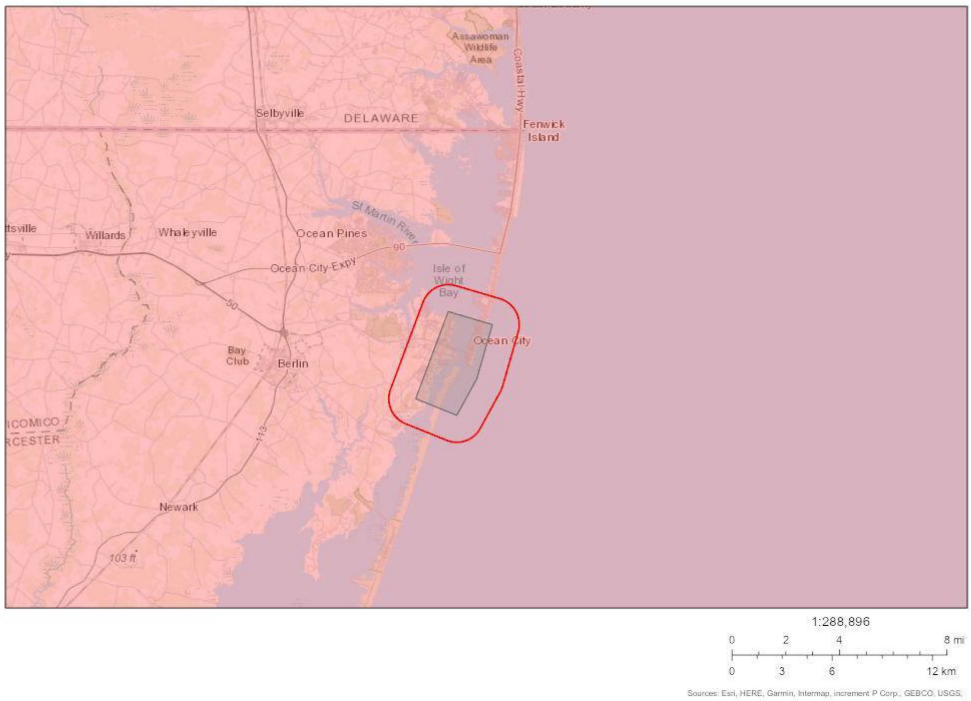
Drawn Action Area & overlapping S7 Consultation Areas

Area of Interest (AOI) Information

Area : 12,714.18 acres

Jul 5 2019 10:33:36 Eastern Daylight Time



Ocean City Inlet Area

Summary

Name	Count	Area(acres)	Length(mi)
Atlantic Sturgeon	2	15,044.51	N/A
Shortnose Sturgeon	1	7,522.25	N/A
Atlantic Salmon	0	0	N/A
Sea Turtles	4	31,216.42	N/A
Atlantic Large Whales	5	25,246.05	N/A
In or Near Critical Habitat	0	0	N/A

Atlantic Sturgeon

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	ANS_C50_SUB_MAF	Atlantic sturgeon	Subadult	Migrating & Foraging	N/A	01/01	12/31	N/A	N/A	7,522.25
2	ANS_C50_ADU_MAF	Atlantic sturgeon	Adult	Migrating & Foraging	N/A	01/01	12/31	N/A	N/A	7,522.25

Shortnose Sturgeon

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	SNS_C50_ADU_MAF	Shortnose sturgeon	Adult	Migrating & Foraging	N/A	04/01	11/30	N/A	N/A	7,522.25

Sea Turtles

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	LTR_STS_AJV_MAF	Leatherback sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia	5/1	11/30	*No Data*	*No Data*	7,804.11
2	LOG_STS_AJV_MAF	Loggerhead sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia	5/1	11/30	*No Data*	*No Data*	7,804.11
3	KMP_STS_AJV_MAF	Kemp's ridley sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia	5/1	11/30	*No Data*	*No Data*	7,804.11
4	GRN_STS_AJV_MAF	Green sea turtle	Adults and juveniles	Migrating & Foraging	Massachusetts (S of Cape Cod) through Virginia	5/1	11/30	*No Data*	*No Data*	7,804.11

Atlantic Large Whales

#	Feature ID	Species	Life Stage	Behavior	Zone	From	Until	From (2)	Until (2)	Area(acres)
1	RIT_WRS_AJV_MIG	North Atlantic right whale	Adults and juveniles	Migrating	Mid-Atlantic (Cape Cod, MA to VA)	1/1	12/31	*No Data*	*No Data*	5,049.21
2	FIN_WFS_AJV_MIG	Fin whale	Adults and juveniles	Migrating	Mid-Atlantic (Cape Cod, MA to VA)	1/1	12/31	*No Data*	*No Data*	5,049.21
3	FIN_WFS_AJV_WIN	Fin whale	Adults and juveniles	Overwintering	Mid-Atlantic (Cape Cod, MA to VA)	11/1	1/31	*No Data*	*No Data*	5,049.21
4	FIN_WFS_AJV_FOR	Fin whale	Adults and juveniles	Foraging	Mid-Atlantic (Cape Cod, MA to VA)	1/1	12/31	*No Data*	*No Data*	5,049.21
5	FIN_WFS_ADU_CLV	Fin whale	Adult	Calving	Mid-Atlantic (Cape Cod, MA to VA)	10/1	1/31			5,049.21

DISCLAIMER: Use of this App does NOT replace the Endangered Species Act (ESA) Section 7 consultation process; it is a first step in determining if a proposed Federal action overlaps with listed species or critical habitat presence. Because the data provided through this App are updated regularly, reporting results must include the date they were generated. The report outputs (map/tables) depend on the options picked by the user, including the shape and size of the action area drawn, the layers marked as visible or selectable, and the buffer distance specified when using the "Draw your Action Area" function. Area calculations represent the size of overlap between the user-drawn Area of Interest (with buffer) and the specified S7 Consultation Area. Summary table areas represent the sum of these overlapping areas for each species group.

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Ocean City Harbor & Inlet, Navigation Improvements & Scour Hole EAs: Resource Agency Conference Call: July 10th, 2019. 0915-1015 AM

Participant (Alphabetical by Agency then by Last Name)	Agency
Dave Brinker	MD DNR
Becky Golden	MD DNR
Roland Limpert	MD DNR
Jonathan McKnight	MD DNR
Angel Willey	MD DNR
Joe Kincaid	MDE
John Stewart	MDE
Kristy Beard	NMFS
Bill Hulslander	NPS
Andrew Roach	USACE
Jacqui Seiple	USACE
Chris Spaur	USACE
Heidi Wadman	USACE ERDC

Pre-Meeting:
Chris established an optimal date/time for participants via Doodle Poll.[1] Chris emailed out an agenda and information packet for participants. The packet contained information on USACE Navigation Improvements Project, USACE Scour Hole Project, ERDC modeling effort, other USACE projects in the vicinity, rare species and habitat information for northern Assateague from NPS, and rare species/important habitat information from MD DNR Heritage Program.

Minutes:
The meeting generally followed the pre-established agenda. Minutes below are presented in accordance with the agenda to best organize information. In some cases however, discussion about topics varied from the agenda order. For purposes of these minutes, discussion is reorganized and presented by the agenda rather than chronologically.

I Introduction

Chris opened the conference call and reviewed the agenda and information handout. The m ajor purpose of the meeting is to get major environmental concerns on the table so they can be considered during plan formulation. Attendees introduced themselves. Bill gave brief overview of NPS concerns for Assateague Island. Bill noted that NPS is a formal cooperating agency in the Navigation Improvements project for NEPA purposes.

II USACE Projects & Studies

[1] Chris Guy, USFWS and Brian Hopper, NMFS did not attend the 7/10 conference call. Both were able to attend a subsequent conference call on 7/17 (see separate minutes).

A Active projects. Chris provided overview of Atlantic Coast, Assateague LTSM, Harbor & Inlet and Sinepuxent Bay (includes Isle of Wight Channel).

B Studies underway: Jacqui provided an overview of the ongoing Harbor & Inlet Navigation Improvements Project. Andrew provided an overview of the Scour Hole Study. Heidi provided an overview of field studies and modeling being conducted for these studies by ERDC. ERDC modeling will provide means of evaluating impacts of alternatives.

III Other Projects & Studies

Dave said that Skimmer Isle Conservation Partnership had utilized sand dredged from Sunset Marina to maintain Skimmer Isle, which is of great regional value for colonial-nesting waterbirds that nest on bare sand. The need for dredging at Sunset Marina has diminished. The island initially accreted perhaps in response to Hurricane Gloria (1985) and was 7 acres in extent a decade plus ago. Changes in deposition/erosion patterns have caused the island to receive substantially less sand than it formerly did. However, dredging needs at Sunset Marina have also diminished, and Skimmer Isle has not received sand from this partnership for years.

Chris said that USACE is coordinating with SHA regarding the Route 50 bridge replacement project.

IV Environmental/Fishery Concerns

Chris asked agency representatives to provide an overview of their agency's concerns/interests and responsibilities.

Bill said that Assateague Island provides the only nesting habitat for federally threatened Piping Plover in MD. There were about 60 pairs in the past, but recently down to 30. There have been no nests at the inlet beach for several years. Federally threatened seabeach amaranth has been dwindling on Assateague for the last 10 years. There are now only 8 to 10 occurrences on entire MD end of island. Federally threatened loggerhead sea turtle has recently nested about one mile south of the inlet on Assateague. Federally threatened Red Knot forage on the bayside of Assateague Island. The north end also provides habitat for state-listed species. NPS is working with USGS on a modeling project looking into seabeach amaranth habitat requirements. Black skimmer have shown renewed interest in nesting with at least 2 nests this summer. There are 1 or 2 pairs of common terns nesting. NPS has coordinates of all nesting bird activity. State-listed tiger beetle have occurred on the north beach at the inlet sometimes. In addition to rare species, NPS is also concerned about visitor access at the north end of Assateague Island.

Jonathan emphasized that MD sees Skimmer Island as a really important resource. Need for investment in Skimmer Island is really high. Consider wildlife from a system perspective, and what role Skimmer Island plays. Dave said that Skimmer Island only has a few years left based on recent trends. Nesting habitat is now diminished to ¼ acre size. There is no other viable habitat in the Coastal Bays for colonial nesting waterbirds that utilize bare substrate. If we lose

Skimmer we will lose this habitat type. Angel said that horseshoe crabs use Skimmer Island for spawning, further increasing the island's importance.

Jacqui said that USACE could consider Skimmer Island sand needs in plan formulation. However, the non-federal sponsor may need to pay cost difference if it costs more to place material at Skimmer Island than elsewhere.

Kristy said that the inlet area constitutes EFH for a variety of fish species (e.g., flounder, shark, tuna, skates). This is covered on NMFS EFH mapper. Need to consider impacts of alternatives on existing habitat and habitat after completing projects. If placing at Skimmer Island - ensure that we look at resources other than birds (horseshoe crabs)

Angel said that the scour hole has historically been a heavily fished area (weakfish, striped bass, flounder). It may be an area where sharks come to in the coastal bays.

Becky said that there are some sparse SAV beds on the Assateague shoreline. Not much has been mapped north of the inlet in recent years. SAV in the inlet vicinity is not much of a concern generally. Bill said that some eelgrass restoration was undertaken by TNC recently south of Verrazano Bridge, but no such effort in inlet area.

Dave suggested that we probably need area of effect considered to extend from Route 90 at its northern end to south of Verrazano Bridge at the southern end. This idea was supported by several attendees. Chris said that ERDC's modeling work should provide information so that we can understand what area of effect is. Heidi said that the model provides consideration from Assawoman Bay in the north into the northern end of Chincoteague Bay in the south. Solid information should be available from Verrazano Bridge up to Route 90.

Chris noted that acceleration in the rate of sea-level rise is likely an important concern for all these environmental considerations. Jacqui said that USACE is required to consider sea-level rise in plan formulation, and has procedures to do this. Heidi said that ADH or other models in use would probably provide a means to consider sea-level rise from an engineering perspective.

V Need/Opportunity for Agency Involvement

Chris said that USACE would seek agency input as Navigation Improvements Project and Scour Hole Project go forward in plan formulation. Possible input could be figuring out impact avoidance or minimization measures to incorporate into design, construction method, and or future operations and maintenance. Jacqui said that USACE would consider in plan formulation whether there's opportunity to recover aerial extent of Skimmer Island.

Chris said that USACE would need to be in continued contact with select resource agencies regarding several applicable environmental laws (ESA, FWCA, Magnuson-Stevens, CZMA, CWA) to figure out necessary efforts and documentation.

V Near Future Next Steps

Chris said that agency representatives should expect continuing information from USACE as plan formulation proceeds. However, agency representatives should contact USACE if they're interested in status or haven't heard from USACE in a while.

Chris said that USACE/NPS/USFWS/NMFS would negotiate SOW for FWCA and ESA involvement in a future separate meeting.

Post Meeting

Preliminary draft minutes were compiled from notes taken by Andrew Roach and Chris Spaur, and then were shared with USACE attendees. Following revision to address USACE comments, draft minutes were circulated by email to other resource agency attendees. Bill Hulslander provided suggested revisions which were incorporated into the final minutes.

We received confirmation from USACE modeler Jared McKnight that sea level rise is handled in our AdH models by using the USACE guidance for low, medium, and high sea level rise scenarios.

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MARYLAND DEPARTMENT OF
PLANNING
MARYLAND HISTORICAL TRUST

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Robert S. McCord, Secretary
Sandy Schrader, Deputy Secretary

July 15, 2019

Mr. Christopher Spaur
U.S. Army Corps of Engineers – Baltimore District
P.O. Box 1715
Baltimore, Maryland 21203-1715

Re: **STATE CLEARINGHOUSE REVIEW**
State Application Identifier: MD20190509-0355
Ocean City Harbor & Inlet Navigation Improvements located between Two (2) Barrier Islands, Fenwick and Assateague, and within Isle of Wright and Sinepuxent Bay, Worcester County, Maryland

Dear. Mr. Spaur:

In response to a request from the State Clearinghouse, the Maryland Historical Trust (MHT) is reviewing the above-referenced project to assess potential effects on historic properties in accordance with Section 106 of the National Historic Preservation Act and the Maryland Historical Trust Act, §§ 5A-325 and 5A-326 of the State Finance and Procurement Article. We understand the U.S. Army Corps of Engineers (USACE) will conduct feasibility studies to identify alternatives to reduce shoaling in the Ocean City Inlet and Harbor and recognize that plans and specifications are expected to be available during fiscal year 2020.

MHT's recommendations regarding effects to historic properties are contingent on the USACE completing its consultation with MHT to fulfill its obligations under Section 106 of the National Historic Preservation Act.

We look forward to working with the USACE to successfully complete historic preservation review of this important project. If you have questions or require further assistance, please contact me at 410-697-9577 or troy.nowak@maryland.gov. Thank you for providing this opportunity to comment.

Sincerely,

Troy Nowak
Maryland Historical Trust

cc: Ethan Bean (USACE)
Rita Pritchett (MDP)

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Spaur, Christopher C CIV USARMY CENAB (USA)

From: Troy Nowak -MDP- <troy.nowak@maryland.gov>
Sent: Monday, July 15, 2019 1:09 PM
To: Spaur, Christopher C CIV USARMY CENAB (USA); Bean, Ethan A CIV USARMY CENAB (USA)
Cc: jason.dubow@maryland.gov; rita.pritchett@maryland.gov
Subject: [Non-DoD Source] Clearinghouse Project: MD20190509-0355 - Ocean City Harbor & Inlet Navigation Improvements
Attachments: MHT State Clearinghouse Review MD20190509-0355.pdf

I attached a letter dated 7/15/2019 containing MHT's response to Clearinghouse Project: MD20190509-0355 - Ocean City Harbor & Inlet Navigation Improvements.

MHT looks forward to additional coordination as project planning proceeds.

Please contact me if you have any questions.

Thank you,

Troy
<Blockedhttp://planning.maryland.gov/PublishingImages/planning-logo-plus-changemd-smaller.png> Troy J. Nowak
Asst. Underwater Archeologist
Maryland Department of Planning
Maryland Historical Trust
100 Community Place
Crownsville, MD 21032
(410) 697-9577
Troy.Nowak@maryland.gov <mailto:adam.gruzs@maryland.gov>

Please take our customer service survey.
<Blockedhttp://www.doit.state.md.us/selectsurvey/TakeSurvey.aspx?agencycode=MDP&SurveyID=86M2956#>

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Census.Maryland.gov <Blockedhttps://census.maryland.gov/>

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Ocean City Harbor & Inlet Navigation Improvements Project and Scour Hole Study: FWCA, ESA, & MSFMA) Compliance

July 17, 2019: Conference Call Minutes

Participant (Alphabetical by Last Name)	Agency
Kristy Beard	NMFS
Chris Guy	USFWS
Brian Hopper	NMFS
Bill Hulslander	NPS
Andrew Roach	USACE
Jacqui Seiple	USACE
Chris Spaur	USACE

Pre-Meeting:
Chris S established an optimal date/time for participants via Doodle Poll. Chris S emailed out an agenda and information packet for participants which contained environmental and project information, as well as information on previous correspondence (administrative record list attached) related to the compliance topics.

Minutes:
The order of meeting topics was revised when the meeting began based on participant schedules. Minutes below are presented organized in accordance with the re-ordered agenda. Although in some cases discussion about topics varied from the agenda order, minutes are presented by the revised agenda order rather than chronologically.

1 Introduction

Chris S introduced the conference call, which is focused follow up to environmental agency conference call held July 10th, 2019. USACE is undertaking two separate but inter-related efforts that have synchronized schedules. The Navigation Improvements project could include construction of a structure on northern Assateague Island at the inlet, and or dredging. The Scour Hole Project could involve placement of dredged material and rock at that site. Either or both efforts could indirectly alter patterns of erosion and deposition in the inlet vicinity, including on northern Assateague Island.

USACE will produce two separate NEPA documents. For environmental compliance purposes, USFWS and NMFS could potentially treat both efforts in the same document, or they could produce separate documents. Bill said that he has no concerns over other agencies combining their compliance documents. Kristy pointed out that there could be problems produced if the schedules of the two efforts become de-synchronized. Chris G suggested that if both USACE efforts are covered in the same document that the efforts be dealt with in separate sections to reduce risk of document problems if the timeline changes.

2 ESA

NMFS

Chris S reviewed a list of previous NMFS' BOs (1998 and 2006) and determinations in formal correspondence (2013 and 2018) prepared for USACE projects in the inlet vicinity (see addendum). Brian suggested that the Navigation Improvements and Scour Hole efforts may fit within the umbrella of these previous BOs and determinations for ESA purposes. In that event, NMFS could conclude that re-initiation of formal consultation under the ESA isn't warranted. USACE should review correspondence record in comparison to potential proposed actions, then send letter/email with that information inquiring whether re-initiation is warranted. Brian noted that Atlantic Sturgeon was listed (in 2012) after the previous BOs were prepared. However, if shortnose sturgeon was considered in the previous BOs, conclusions should readily apply to Atlantic sturgeon. NMFS has copies of the 2013 and 2018 letters on hand. USACE should send NMFS the 1998 BO. The 2013 letter addressed impacts to Atlantic sturgeon and distinct population segments of loggerhead sea turtles.

USFWS

Chris S reviewed previous USFWS BOs prepared for USACE Assateague projects (list in addendum). Would USACE need to do new BA for piping plover or seabeach amaranth? Chris G said that for now for both Amaranth and Plover, continued coordination appropriate. Probably not at the point that a BA or new BO is necessary. Need to do full evaluation to determine if that will be necessary. If USFWS prepares a PAR, it would cover amaranth and plover and could help do that. PAR could provide update for Red Knot, although just foraging here (rather than nesting). Scour Hole project would not likely have ESA implications with regard to USFWS.

Chris G suggested that the projects could present an opportunity for beneficial reuse - habitat enhancement for Plover on Assateague? Maybe an offset for other impacts? Need to be careful about grading if could impact plover or amaranth. Section 7 of ESA has subsection 1a applicable to beneficial use decisions.

3 FWCA

Chris S said that USACE coordinates with both USFWS and NMFS under FWCA.

NMFS

Chris S asked whether an SOW should be developed and funds provided to NMFS for NMFS FWCA efforts. Kristy said that NMFS FWCA comments would be included in MSFMA EFH coordination. The topic of NMFS developing SOWs with USACE for

NMFS efforts is being discussed by NMFS, but Kristy's office hasn't received direction to do so. Kristy said she would check with Karen Greene on how to proceed with FWCA.

USFWS

Chris S said that typically, USACE develops an SOW to outline USFWS FWCA input and provides funds to USFWS to cover USFWS efforts. For the Navigation Improvements efforts, USACE, USFWS, and NPS would together develop the SOW. Chris G said that USACE funds don't typically cover all USFWS costs for FWCA effort. The fish and wildlife resources in MD's coastal bays are one of USFWS's highest priorities, particularly colonial nesting waterbirds. For FWCA SOW to cover both Navigation Improvements and Scour Hole projects makes sense for USFWS. ESA concerns would be covered in FWCA PAR. For colonial nesting waterbirds, biggest concern is where material goes. Projects could present a situation where resource agencies need to weigh-in on what is more beneficial – such as placing material on Skimmer vs Assateague. PAR would identify what is the highest priority and help make the decision on where the material would go. Don't foresee need for FWCA efforts to include field work as there's lots of data out there both for Assateague and Skimmer. Bill said that NPS doesn't have any data on Red Knot. Chris G said PAR would probably use e-bird to obtain observational data. USFWS would also make use of Coastal Bays Program horseshoe crab monitoring information, NPS northern Assateague Island rare species data, and other data as appropriate. USFWS fisheries may also have some data. Kristy noted that horseshoe crab is of vital importance to shorebirds. Chris S said that from USACE perspective, greatest contribution of PAR would be its coverage of topics that USACE/NPS don't already have data readily available and compiled for. USACE hasn't utilized e-bird nor the horseshoe crab data for the area, so USFWS compilation and interpretation of that would be an important contribution. Conversely, USACE has VIMS SAV, and northern Assateague plover and amaranth data from NPS already.

Chris G said that USFWS would be concerned with construction methods, including barge impacts. Chris S said that those could be discussed as appropriate while proceeding through plan formulation.

4 Magnuson-Stevens FMA (EFH)

Chris S reviewed previous EFH impact assessments for the area that USACE has prepared (see addendum). Often for USACE, preparing documents to deal with MSFMA becomes a monster effort, but ultimately has little actual implication (so the effort isn't that useful). Kristy said that needn't be the case. Utilize EFH habitat mapper, and then narrow down which species to focus on based on habitat descriptions so you don't end up with the entire species list that EFH mapper generates. Regarding the previous impact assessment documents, Kristy said that they could discuss how much of the 2001 assessment could still be applicable, but doubted the aquaculture

impacts assessment could be useful for the Navigation Improvements or Scour Hole efforts. Comprehensive assessments that copy/paste older information are easier to use rather than partial assessments that reference and rely upon older documents but don't include that information.

Chris S inquired whether use of a "checklist" impacts assessment could be adequate, rather than preparing an individual report. Kristy said that there is a new checklist type document she is working on, and will send it out when done (hopefully in weeks). EFH impacts assessment for these two efforts could be a worksheet with additional information provided in the NEPA document, rather than an extensive EFH document.

Kristy thought that sediment transport modeling of impacts (gains and losses), particularly regarding material placement, could be where MSFMA assessment could have implications for decision making. Grain size of material is one of the most important aspects of beach habitat. Horseshoe crab is not covered under MSFMA. Turbidity plume and other movement of sediment impacts to SAV mapped in the last 5 years should be considered.

5 Action Items and Next Steps

Chris G said that he will be unavailable through much of August. He'll assign someone else to cover this during that time period, but it would speed things up if USACE could work out SOW details for the most part prior to August. It is taking USFWS at least a month to 6 weeks to get money in place for staff use once it is sent from USACE. So, USFWS may not be able to start until at least September. Chris S said that he'd work up a preliminary SOW with Jacqui and Andrew and provide that to Bill and Chris G.

Post Meeting

Preliminary draft minutes were compiled from notes taken by Andrew and Chris S., and then were shared with USACE and NPS attendees in early August. One minor comment was received and a revision made accordingly. Chris S then emailed out to Chris G, Kristy, and Brian for review on August 8, 2019, but no comments were received.

Addendum: Administrative Record – USACE Projects in Inlet Vicinity

NFMS ESA Documents

1998. Assateague Island Short Term Restoration Project, Assateague Island Long Term Sand Management Project, Atlantic Coast of Maryland Shoreline Protection Project, Maryland Coastal Bays Habitat Restoration Projects. Endangered Species Act Section 7 Consultation Biological Opinion.

2006. Dredging of four borrow areas in the Atlantic Ocean for the Atlantic Coast of MD Shoreline Protection Project. Endangered Species Act Section 7 Consultation Biological Opinion.

2013. Atlantic Coast of Maryland Shoreline Protection Project. Letter to Robert Blama, USACE. Aug 1 2013.

2018. No re-initiation of Formal Consultation for Atlantic Coast of Maryland Shoreline Protection Project. Letter to Daniel Bierly, USACE. Oct 24 2018.

USFWS ESA Documents

1997. Biological Opinion for the Proposed Short-Term Restoration of Assateague Island. May 23, 1997. *(Found reference to, but didn't locate document. Title may be inaccurate).*

1999. Biological Opinion for the Proposed Long-Term Restoration of Assateague Island. February 24, 1999. *(Found reference to, but didn't locate. Title may be inaccurate).*

2001 or 2002?. BO for seabeach amaranth possible prepared in response to USACE October 2001 BA Supplement for Short-term Restoration Project. (Located USACE BA, didn't locate USFWS BO).

USACE MSFMA EFH Documents

Reinstatement of the 2012 Nationwide Permit #48 with Modifications Authorizing New Commercial Shellfish Aquaculture (2016) *(Note: did not locate version of document submitted to NMFS)*

Sinepuxent Bay & Isle of Wight Bay Federal Navigation Channel Project, Maintenance Dredging, EA (2014)

Coastal Bays Projects Essential Fish Habitat (EFH) Impacts Analysis, Salt Marsh Creation at Isle of Wight, Maintenance Dredging of Isle of Wight Channel, Maintenance Dredging of Sinepuxent Channel, Deepening and Widening of Harbor and Inlet, Worcester County, Maryland (2001)

FWCA USFWS PARs

1997. Baseline Biological Resources and Potential Impacts Associated With the Use of the Inlet's Accretion Shoals for a Long-Term Bypass Operation. May 1997.

1997. Supplemental Planning Aid Report: Baseline Biological Resources and Potential Impacts Associated with Navigational Dredging of the Ocean City Inlet, Harbor, and Shantytown Channel. July 1997.

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Ocean City Harbor & Inlet Navigation Improvements Project and Scour Hole Study: Status Update and Boatable Waters Impacts

July 13, 2020: Conference Call Minutes

Attendee	Agency
Kevin Smith	MD Coastal Bays Program
Bill Anderson	MD DNR
Dave Brinker	MD DNR
Jonathan McKnight	MD DNR
Bhaskar Subramanian	MD DNR
Bill Hulslander	NPS
Chris Gardener	USACE
Andrew Roach	USACE
Jacqui Seiple	USACE
Chris Spaur	USACE

Pre-Meeting:
Jacqui determined an optimal date/time for participants, then emailed out an agenda and information about alternatives currently under consideration (attached); Chris S subsequently emailed out discussion item details. Invitees subsequently forwarded information about the meeting to additional potential participants.

1 Introduction

Jacqui introduced the conference call. Baltimore District (NAB) has formulated several preliminary alternatives for the inlet navigation improvements project and scour hole study. NAB provided USACE Engineer Research and Development Center (ERDC) with these alternatives to model in the 2-dimensional model that ERDC developed to aid plan formulation. We'll select the best designs, and then after August, ERDC will run these in a 3-D model (more intensive modeling). NAB anticipates having selected recommended plan tentatively by end of October, with the environmental assessment for public and agency review coming out after that. Jacqui said she'd cover the inlet while Andrew would provide an update on the scour hole. Chris would then discuss boatable waters impacts concerns.

2 Harbor & Inlet Navigation Improvements

Jacqui gave an overview of inlet alternatives under consideration.

Bill A inquired whether #1 is a complete alternative, and whether the breakwaters caused channel migration. Should/could USACE construct part of the project first to monitor response before going further? Or, is modelling good enough to figure out what

will happen? Jacqui said that USACE is looking into interactions between existing projects and natural processes. Chris S said that the models being developed by ERDC provide a strong basis to evaluate potential effects. Ocean City Inlet is very well studied, and ERDC are USACE's appropriate experts to put on the project.

Bhaskar asked about predominant littoral drift and whether the alternatives would be sustainable. Chris S provided a brief summary of longshore transport on the ocean coast, effect of the jetties, and consequences for the coastal bays. Chris S said that coastal engineering would be continuously required to maintain the engineered system, but that the modeling work should provide for a means to optimize for cost efficiency, minimizing environmental impacts, and other factors.

Bill H asked whether the breakwaters on northern Assateague could be connected in such that they no longer have a gap, and noted that the flow out from Sinepuxent Bay scours behind the existing breakwater and could cause future problems if the breakwaters are not fully connected. Bill H also asked whether there would be sand placed/pumped behind the newly proposed breakwaters to prevent additional scouring. Jacqui said that these issues could be addressed via modeling.

Kevin asked whether relocating the channel southward in the inlet could create navigational problems by requiring a sharp turn. Jacqui said that moving the channel could take advantage of the location of the naturally scoured channel, but acknowledged that we're thinking about whether that turn would be too tight.

3 Scour Hole

Andrew provided reviewed the status of alternatives and current ideas. While formerly we were looking into training structures along the mainland shoreline, those are now viewed as risky of doing harm, so none are now proposed. USACE now looking at filling the scour hole to -20 ft MLLW, and removing the shoal to the east. Whether additional rip rap should be placed on the mainland shoreline is being considered, because it seems likely something to stabilize that shoreline would be needed. These features would be considered in combination with the harbor & inlet improvements project effects.

Bhaskar asked whether removal of the shoal east of the scour hole could worsen other problems. Andrews said that impacts of removal would be modeled.

Kevin asked about the size and depth of the armor stone cap, and whether material removed from the shoal would be used to fill the scour hole. Andrew said though that USACE would likely prefer to use that to fill scour hole, but Jacqui said that volume of material hasn't been determined yet. Andrew looked up information on the stone fill and said that at this time, stone weight would be 50 to 100 lbs, stone thickness would be 1 ft, and it would have about 30% porosity.

Bill A asked how and whether we've evaluated impacts to marine life. Chris said that model outputs should provide a means to infer impacts based on changes in currents and magnitude of changed erosion and deposition. USACE needs to coordinate with NMFS, DNR, and MDE regarding proposed effects of the project on marine life. The inlet is already highly altered from a natural condition. Bill A noted that inlet area has continued to provide habitat and a passageway for marine life for decades in spite of its non-natural condition.

4 Discussion Items

Chris S reviewed information he had emailed out prior to the meeting addressing concerns over two potential jetty improvement/modification impacts. A: reducing/altering popular recreational boat access points to NW Assateague beaches (inlet and Sinepuxent Bay). B: making boating more dangerous in Sinepuxent Bay/inlet waters between Assateague Island and mainland by reducing width by as much as 50 yards (currently ~250 yards, down to ~200 yards) in area with substantial boat traffic.

NW Assateague Beach Use by Recreational Boaters

Bill H said that AINS has no designated management plan for the inlet beaches. A good approach would be to run the 2D model with the alternatives as proposed and look at the results to figure out how to proceed. Most recreational boat use occurs on the Sinepuxent Bay shoreline, so NPS is not that concerned with changes affecting inlet beaches. Sinepuxent Bay shoreline would continue to provide beaches suitable for recreational boaters.

Boatable Waters of the Inlet

Chris S said that the issue of boatable waters could be coordinated with the public and agencies just through public release of the EA. Or, we could deal with it in advance of release of the EA. Chris S thought that advance coordination was preferable, and pointed out that USACE and DNR had dealt with known concerns by fishermen over proposed dredging of offshore shoals for Ocean City by coordinating recently with those stakeholder groups in advance, and then building that feedback into the decision-making process. Because of the pandemic, we probably should continue to avoid public meetings to coordinate with stakeholder groups as we would have previously. Instead, we could have newsletter, emailing, web postings, and webinar type outreach. How do we ensure outreach is adequate?

Bill A said that on weekends the inlet waters are jam packed with boaters with the 250 yard space available. This is an important concern. While maintenance of the deep water channel is critical (such as would be produced by navigation improvements), reducing distance to 200 yards would further concentrate boats, and if any of the actions were to make tides run harder, that would be a safety concern. We should

reach out to boating groups sooner rather than later. Particularly appropriate/valuable would be reaching out to the inlet working group that Senator Cardin set up and reconvening. Then after that, it would be appropriate to have a second meeting that would be for a much broader group to get people representing sport-fishing groups and others. Start first though the working group.

Jacqui inquired about when this could/should be scheduled. Bill A suggested that if modeling work would wrap up by the end of July that mid-August would be appropriate. Jacqui thought that would be good timing, but wanted to make sure that would allow time for initial feedback to ERDC following initial 2D model runs.

Bill H said that any advance notice we could provide would be good to start rolling out the ideas. What would be the best way to reach people? We could post a physical public notice on the Assateague Island inlet beach to reach this particular user group, and/or send out a public notice through social media our public contact list.

Chris G thought that engaging the working group was a great idea. They are community leaders, and would share information and opinions with the community. Mid-August should allow time to improve/polish the presentation, which could then go on various marine websites. Chris G agrees with having the meeting with the public on these topics prior to public release of the EA. The working group can help us figure out how to best reach boaters. USACE needs to be clear in our expectations for this coordination. Also, USACE should demonstrate that we've considered stakeholder in the past.

Bill A said that the groups want to see that we've considered everyone's opinions. They want to see a plan and then joint agency/public effort.

5 Action Items and Next Steps

Bill A will poll the Ocean City mayor and Worcester County commissioners for prospective meeting dates, then make a formal announcement to the working group. That would include NPS, the two senators and representative, and state and local elected officials.

Notes on the Minutes:

Minutes are presented organized in accordance with the agenda. In some cases discussion about topics varied from the agenda order, minutes are presented by the revised agenda order rather than chronologically. Draft copies of the minutes were emailed out to attendees to review. Bill H provided comments on July 20th that were incorporated into this final version.

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Final
Planning Aid Report:
Ocean City Inlet Navigation Project and
Isle of Wight Bay Homer Gudelsky Park Scour Hole Study
Worcester County, Maryland

Prepared for:
U.S. Army Corps of Engineers
Baltimore District

Prepared by:
Amy O'Donnell

Under supervision of:

Chesapeake Bay Field Office
U.S. Fish and Wildlife Service

September 2020

Executive Summary

This constitutes the planning aid report (PAR) of the U.S. Fish and Wildlife Service (Service) to assist the U.S. Army Corps of Engineers (Corps) with the development of the Ocean City Inlet channel and the Homer Gudelsky Park ("Stinky Beach") scour hole projects. The first project would improve navigation within the Ocean City Harbor and Inlet. The second project would address the scour hole off the coast of Stinky Beach, which has been attributed to destabilization of the shoreline and riprap failure. Though these are two separate projects, they occur in close proximity and are on similar timelines. Many of the natural resources overlap between the potential areas of effect of these two projects. In an effort to be efficient, the Service and the Corps agreed to evaluate both projects through a single PAR. Where a resource only occurs in the vicinity of one project site it is noted in the report. Otherwise, the resources are assumed for both projects.

The scour hole project is authorized under Section 204 of the Water Resources Development Act, which provides authority for the Corps to carry out projects through the development of a regional sediment management (RSM) plan. The Ocean City Inlet project is being carried out under the authority of Section 107 of the River and Harbor Act of 1960, as amended, which provides authority for the Corps to develop and construct small navigation projects such as dredging channels, construction of breakwaters and jetties for harbor protection, and widening of turning basins. The PAR and subsequent Fish and Wildlife Coordination letter are submitted in accordance with Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat 401, as amended; 16 U.S.C. *et seq*.); Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1513 *et seq*.); and the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 *et seq*.). The PAR summarizes information on biological resources and project impacts that are both positive and negative to Service resources.

Contents

Introduction

The U.S Army Corps of Engineers (Corps) requested assistance from the U.S. Fish and Wildlife Service (Service) in identifying positive and/or negative effects from two projects located near the Ocean City Inlet between Sinepuxent Bay and Isle of Wight Bay in Worcester County, Maryland. The Service developed this Planning Aid Report (PAR) to help the Corps identify, with respect to fish and wildlife resources, the least harmful and most beneficial alternatives for these projects. The first project would improve navigation within the Ocean City Harbor and Inlet. The second project would address the scour hole off the coast of Stinky Beach, which has been attributed to destabilization of the shoreline and riprap failure. Though these are two separate projects, they occur in close proximity and are on similar time lines. Many of the natural resources overlap between the potential areas of effect of these two projects. In an effort to be efficient, the Service and the Corps agreed to evaluate effects to fish and wildlife resources for both projects through a single PAR. Where a resource only occurs in the vicinity of one project site it is noted in the report. Otherwise, the resources are assumed for both projects. The PAR only evaluates impacts to fish and wildlife resources and their habitats and is not meant to be the sole document in which decisions are made on the preferred alternatives for this project.

Project Description

Ocean City Harbor Inlet

The projects are located at the Ocean City Harbor Inlet, a separation of two barrier islands, Fenwick Island to the north and Assateague Island to the south. The inlet is located within the Isle of Wight Bay and Sinepuxent Bay in Worcester County, Maryland, and connects the Atlantic Ocean with these coastal bays. Historically these islands were joined. A hurricane in 1933 formed and opened the inlet. It was stabilized by the Corps with the construction of two jetties in the following years. Fenwick Island has since been developed, and is a tourist resort. Assateague Island is undeveloped and is preserved by the National Park Service and the State of Maryland. Part of the south end of Assateague Island in Virginia is managed by the Service as Chincoteague National Wildlife Refuge.

The inlet was structured to be 10 feet deep and 200 feet wide between the Atlantic Ocean and Sinepuxent Bay. The Ocean City Harbor channel was structured to be 10 feet deep and 100 to 150 feet wide, and then branch channels into the Sinepuxent Bay and Isle of Wight Bay were constructed to be 6 feet deep. The Ocean City, MD, and Vicinity Water Resources (OCWR) feasibility report recommended dredging the harbor channel to 14 feet in depth at mean lower low water (MLLW), and the inlet channel to 16 feet in depth (USACE, 1998).

Following Ocean City inlet stabilization after the 1933 hurricane, the hydraulic processes over time resulted in flood shoals in Sinepuxent and Isle of Wight Bays and restricted and diverted tidal flux into the northern side of the bay. On the ocean side, sand travelling southward from Ocean City that would ultimately reach Assateague Island, is unable to reach Assateague Island due to jetties and is transported into the back bays during flood tide, or to the ebb shoal during ebb tide. The ebb shoal volume has increased continuously since 1933. These shoals impact commercial and recreational vessels, extending time for vessels using the channel. The shoaling has increased damages, maintenance

costs, tidal delays, and fuel costs. Larger boats are forced to travel east out of the inlet, then must travel north to avoid the large ebb shoal to then travel south. The U.S. Coast Guard only offers assistance to boats that run aground if they are in immediate danger. Primarily, alternative funding for the inlet has been received via the restoration of Assateague Island, which includes dredging sand from the ebb and flood shoals adjacent to the inlet to nearshore environments around Assateague Island.

The OCWR study completed in 1998 investigated ways to improve navigation within the Inlet. It was recommended in the report to dredge the harbor channel to a depth of 14 feet MLLW and the inlet channel to a depth of 16 feet. This dredging was to be funded through the Continuing Authorities Program (as authorized by Section 107 of the Rivers and Harbors Act of 1960). This specific recommendation was not acted upon due to nationwide funding shortfalls in the Section 107 program as well as a lack of non-Federal sponsor funds. In May 2015 and November 2017, the Corps received joint letters of requests from Maryland Department of Natural Resources (MDDNR), Worcester County, and from the Town of Ocean City requesting reinitiating the study for deepening of the inlet.

Stinky Beach

Stinky Beach, formally called Homer Gudelsky Park, is located northeast of Ocean City harbor, on the east side of the Sinepuxent Bay and northwest of the Ocean City Inlet. The shoreline serves as a public access point to Homer Gudelsky Park. Adjacent to Homer Gudelsky Park is the Harbor Lights Condominium property. The 1933 hurricane that opened the inlet also destroyed a railroad bridge, washing it to the bottom of the inlet. An automobile bridge, built in 1916, was eventually replaced by the Route 50 Bridge in 1948. The original bridge's abutment was comprised of pilings and bulkheads extending into the bay. This may have acted as a groin, retaining material and stabilizing the shoreline. Shoaling was reported by the Corps in 1948. Overwash of sand restricted tidal flow into the Sinepuxent Bay, diverting more sediment to the northern end of the bay. In the mid-1980s, Maryland State Highway Administration (MDSHA) installed scour protection at the Route 50 Bridge, resulting in shoal development around the bridge, causing the shoals to migrate to the northeast and southwest. At around the same time, the Corps constructed a new jetty south of the existing stone structure. The outer section was left in place, and a scour hole that had formed along the inside of the remaining structure was repaired by the Corps by armoring the seabed in the area. Three headland breakwaters were also installed along the northern side of Assateague Island. Adjacent shorelines were armored with riprap. In 2002 this was extended 145 feet through the footprint of the old bridge and tied into the bulkhead at Homer Gudelsky Park. The following year the riprap was raised 1.5 feet to protect fill that had been placed on site at the shoreline property. A 2008 report by the Corps showed through modeling that hydraulics and sedimentation in this particular area of the bay are influenced by the Route 50 Bridge and the scour protection.

Harbor Lights is a neighborhood with riprap along the shoreline. A site visit conducted by the Corps found a loss of riprap, leaving the sloped shoreline in a state of potential failure, with wave action possibly jeopardizing the nearby residences (foundation failure, undermining or direct damage). Modeling completed by the Corps indicates that the dredging of the ebb shoal from 2004 to the present has had a negligible role in the formation and migration of the scour hole at Stinky Beach. The

bathymetry of the area is annually recorded as part of the long-term ecosystem restoration of Assateague Island. In January 2004, a scour hole measuring -35 feet was found adjacent to the shoreline of Stinky Beach. By November 2012, the scour hole measured -53 feet, growing southwest and deepening 14 feet. In October 2018, the scour hole remained at about-53 feet, and had continuing expanding to the southwest. The bathymetry of the area is annually recorded as part of the long-term ecosystem restoration of Assateague Island. The riprap that is offshore and adjacent to the community is failing. The shoreline reportedly has experienced erosion and riprap failure, potentially endangering adjacent properties. The Corps is evaluating ways to stop the hole from moving into the adjacent properties and to stabilize the beach.

Detailed Alternative Plan Description

Alternatives proposed by the Corps are addressed within this report. If another preferred alternative is proposed by the Corps in the future, an addendum will be needed.

Ocean City Inlet: Potential alternatives under consideration include no action, constructing training structures (such as a jetty or breakwater) on the north side of Assateague Island, deepening the channel, and realigning (relocating) the channel. If clean dredged material is generated, it could be beneficially used for a variety of purposes, including filling the scour hole, upland economic use, Ocean City beach nourishment, Assateague Island sediment restoration, Skimmer Island nourishment, or some other beneficial reuse purpose. Constructing training structures (such as a jetty or breakwater) on the north side of Assateague Island, deepening the channel, and realigning (relocating) the channel if chosen would need to be more closely evaluated by the Service once a design has been completed. It is recommended that hardened structures should be avoided, if possible, especially if composed of non-natural materials.

Scour Hole: Potential alternatives under consideration include no action, filling the hole with dredged material and capping it with stone, and constructing a training structure(s) (groin, jetty, or breakwater) on the west Ocean City shoreline.

Resources Without the Project

Baseline Environmental Conditions

Maryland's Coastal Bays are located on the Atlantic margin of the Delmarva Peninsula, within the Atlantic Coastal Plain Province. The peninsula is projected to have formed over the last 5 to 10 million years. It was during the late Miocene and early Pliocene Epochs that gravel sheets were deposited over an expansive area of the coastal plain forming what became the outline of New Jersey, the Delmarva Peninsula, and Maryland's western shore. Through repeated glaciations of the Pleistocene Epoch, the peninsula would take on its present-day shape. When there were low sea level stands, the ancestral Delaware and Susquehanna Rivers would deposit large amounts of sandy sediments onto the Atlantic shelf. These sediments would, in turn, be transported and deposited onto the coastal margins of the peninsula during sea level rise (transgression), and are evident to this day. Five distinct linear physiographic features along the Delmarva Atlantic shore were mapped, each attributed to a distinct sea level high stand ranging in age from over 1 million to 60,000 years (Wazniak and Hall 2005). The last (youngest) of the features corresponds to what is known as present-day shoreline along Sinepuxent and Chincoteague Bays. The coastal bays started to resemble their current configurations within the last 5,000 years, when sea level reached approximately 6 to 7 meters below present mean sea level, which started to flood the area. Deceleration in sea level rise may have been the catalyst to produce today's barrier islands, and thus the bays and marshes behind them. Analysis of Carbon 14 data for peat and sediment samples collected from Chincoteague and Assateague Islands provided evidence of the existence of these back bay/lagoon environments, suggesting that the barrier islands existed here for at least the last 4,500 years (Wazniak and Hall 2005). The northern bays, which include Assawoman and Isle of Wight Bays, were formed as the stream valleys of major drainage systems flooded, and they were separated from the ocean by the barrier islands that formed adjacent to the eroding headlands due to strong littoral transport of sediments (Wazniak and Hall 2005). Coastal Plain sediments increase in thickness from northwest to southeast in the project area. Sediment thickness ranges from a few feet at the fall line (near Interstate 95) to over 7000 feet at Ocean City (MGS Groundwater).

Summers vary from mild to hot, annual precipitation for this area is between 44 and 48 inches, with trends indicating that Maryland is getting increasingly warmer and wetter. Assateague Island National Seashore is composed of a 37 mile long barrier island along the coasts of Maryland and Virginia, extending from the Ocean City Inlet to Toms Cove. Assateague became a National Seashore in September 1965 via Public Law 89-195. The National Seashore encompasses more than 41,000 acres of land and water and includes the 850 acre Assateague State Park (owned and managed by the Maryland Department of Natural Resources) and the 10,000 acre Chincoteague National Wildlife Refuge (owned and managed by the U.S. Fish and Wildlife Service). The remainder of the Maryland portion of Assateague Island is owned and managed by the National Park Service (NPS), and includes the land and waters surrounding the barrier island. The purpose of Assateague Island National Seashore is to preserve the outstanding Mid-Atlantic coastal resources of Assateague Island and its adjacent waters and the natural processes upon which they depend, and to provide high quality resource-compatible recreational opportunities. The marine and estuarine waters surrounding Assateague define and sustain the coastal ecosystem and are considered fundamental resources of the National Seashore. The natural

resources of the seashore also provide visitors with a wide variety of recreational and educational opportunities, with over 2 million visitors annually coming to enjoy the wildlife viewing, birding, fishing, beach and swimming (NPS 2020).

Maryland is highly vulnerable to sea level rise; this has become apparent with shoreline erosion and deterioration of tidal wetlands. The State has warmed up by two degrees Fahrenheit in the last century, heavy storms have increased in frequency, and the sea is rising an inch every 7 to 8 years (Boesch et al. 2018, EPA Fact Sheet 2016). It is predicted that the relative rise of mean sea level between 2000 and 2050 will be 0.8 to 1.6 feet. If emissions continue to grow into the second half of the 21st century, sea level rise will likely be 2.0 to 4.2 feet. Response, in turn, of tidal amplitude will depend on the shoreline protection such as bulkheads, rip-rap, and other types of shoreline armoring (Boesch et al. 2018).

According to the EPA, sea level rise is occurring more rapidly in Maryland than in other coastal areas due to subsidence, projecting that in the next century the coast will recede from 16 inches to 4 feet. A higher ocean level increases the likelihood that storm waters will flood barrier islands. The U. S. Geological Survey (USGS) projects that Assateague Island is likely to be broken up by newly formed inlets or eroded completely if sea level rises 2 feet by the year 2100 (EPA Fact Sheet 2016). A wider, higher beach provides protection from storms, creates habitat, and enhances the beach for recreational purposes. The jetties that are along the inlet, placed in the 1930s to increase stabilization, alter the natural sediment transport to the south. The beaches south of the jetties, as a result, suffer from sand deficits and increased erosion rates. The Assateague Island coastline immediately adjacent to the jetty has shifted westward hundreds of meters resulting in a large scale geomorphic change (NPS Nourishment 2019).

Beach erosion is a well-documented problem in the coastal zone; East Coast barrier islands are experiencing significant levels of erosion, with stabilized tidal inlets perhaps the most spatially extensive and destructive (Galgano 2007). With respect to barrier islands, sand is transported across the islands by storm overwash or breaches forming inlets. Under natural conditions, barrier islands respond to sea level rise by progressively migrating landward. New inlets form, shift their position, close, and reform at different locations. With an increased rate of sea level rise, there should be increases in island migration and processes involving overwash and island breaches (USFWS 2014). Due to the stabilization of the Ocean City inlet, this is not the case for this area. While structural engineering measures can provide a degree of stabilization, they can increase the vulnerability to sea level rise over long term, interrupting littoral drift of sand transport, as is the case with Assateague Island. The U.S. Army Corps of Engineers, National Park Service, state of Maryland and other regional partners have developed a long-term sand management project to restore Assateage Island that was designed to maintain the geologic integrity of the northern end of the island and to mitigate for sediment starvation effects south of the stabilized inlet.

Since barrier islands are dynamic, low elevation environments, they are sensitive to a variety of driving forces and have the potential to be substantially affected by an increase in rate of sea level rise. USGS used assorted variables to conduct a national assessment of coastal vulnerability to sea level rise, with a

pattern showing the most vulnerable area between Virginia and New York. Vulnerable islands could undergo fundamental changes such as a decrease in barrier width and height, island migration and disintegration, erosion, and overwash. Predicting long-term effects of sea level rise on coastal environments involves a degree of uncertainty, especially when taking anthropogenic influences (e.g. beach nourishment) into account. It is likely that there will be increased erosion, shoreline retreat, increase occurrence of overwash and inlet breaches, and major changes in the geography of barrier islands (USFWS 2014). The current conditions are generally benign for fish and wildlife resources on Assateague Island, with some species benefitting and some species declining due to the ongoing natural processes described above. The presence of the scour hole is not providing or removing any food or nesting resources, neither is the deposition of sand within the inlet. If dredging is to occur, the deposition of dredge material has the potential to be beneficial to fish and wildlife resources as a source of habitat.

Skimmer Island, colloquially known as "Bird Island" or the "4th Street Flats" is one of the most dynamic pieces of land in Worcester County. It is a complex of small islands and sandflats, the main island is a nesting site for many species of ground nesting birds. It did not exist before the formation of the Ocean City Inlet, it is a flood tidal shoal. It formed slowly, the tidal shoal was substantial by the late 1980s, and by the mid-1990s had accreted enough sand to be considered the most important breeding site in Maryland for several species of birds. The island is constantly being reshaped by tidal currents and storms. In the 1990s it was measured to be over seven acres, and has been losing ground ever since. By 2009 it measured just over two acres. It was in 2009 that a joint effort was started by Ocean City Fishing Center, the Maryland Coastal Bays Program and the MDNR. These organizations work in partnership to use dredged material from the Fishing Center's approach channel to restore the island and improve nesting habitat. The management approach is intended to balance what is lost due to tidal current erosion. As sea level rise continues, managers plan to continue the beach nourishment here. The sand flats provide foraging habitat for a wide variety of shorebirds during migration, and the beaches are a critical spawning area for horseshoe crabs. It is accessible by boat, closed to the public from April 1 to September 15th to protect nesting colonies (MDNR Natural Areas 2020).

Effects on Fish and Wildlife Resources

Data Quality

The following is a description of priority Service resources for the project area. The information represents the best available current information that could be gathered from existing sources. Whenever possible, project specific information was used. Many of the resources described may be relevant to coastal bays, or the overall species range as described in the supporting literature for each section.

Wetlands

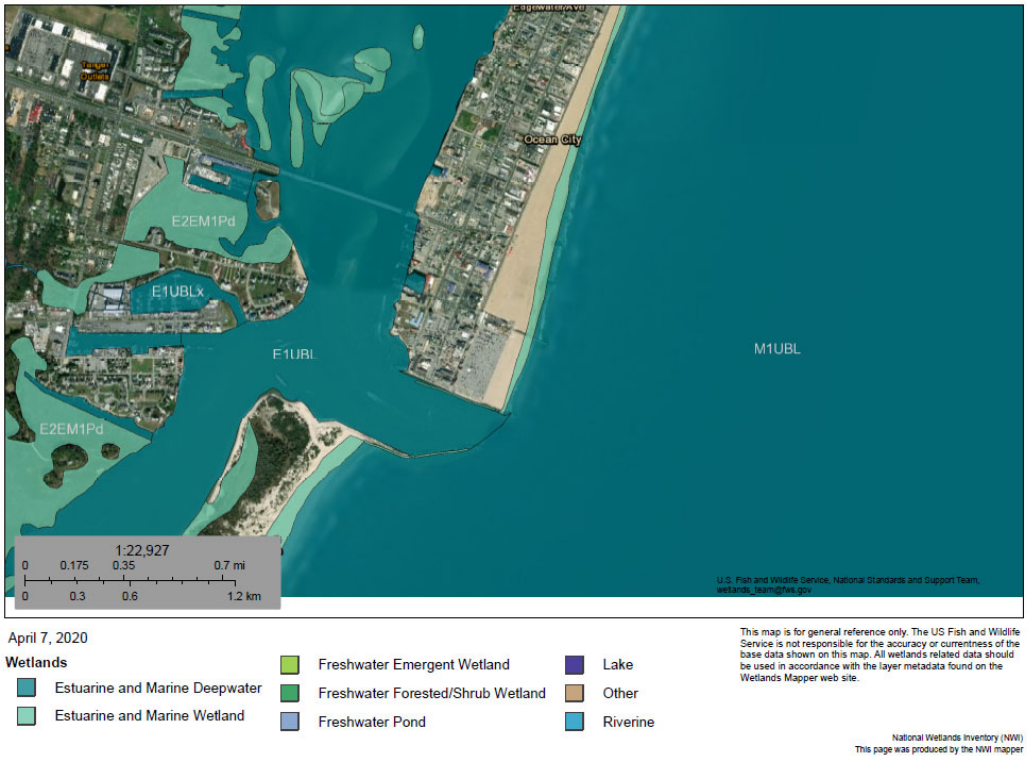
The Service has always recognized the importance of wetlands to waterfowl, other migratory birds, and fish and wildlife, and considers this habitat a trust resource. Trust resources are natural resources that the Service has been entrusted with protecting for the benefit of the American people. The Service's

responsibility for protecting wetland habitats comes largely from the Fish and Wildlife Coordination Act. Since the 1950s the Service has been particularly concerned about wetland losses and their impacts on fish and wildlife populations. According to the April 22, 2020 Information, Planning and Consultation (IPaC) report (Appendix A), there are two wetland types in the study area; estuarine/marine wetlands and estuarine/marine deep water. The estuarine/marine wetlands occur along the coastal areas in the Isle of Wight Bay; along Assateague's coast; around the north end of Homer Gudelsky Park; along the coast of Ocean City; and on Skimmer Island. The estuarine/marine deep water occurs in the channels and the inlet.

The no action alternative will not change the overall health of the wetlands or their ability to deal with sea level rise and subsidence. Likewise, alternative(s) that place dredge material on the Ocean City beach, in the scour hole, or in upland disposal will have the same impact as the no action alternative on wetland resources in the area.

The alternatives proposing the use of dredge material on Assateague Island, Skimmer Island, or a similar location could be beneficial if the material is placed in a relatively thin layer with a gentle slope that mimics the natural shoreline and wetlands of the coastal barrier islands. Site selection should be in areas that are suffering from the effects of climate change or in areas where human processes have hindered or stopped natural barrier island sediment transport such that the ecosystem is starving for sediment. Temporary and minor negative effects associated with construction and staging actions would be expected including burying benthic invertebrate communities and displacing fish and wildlife resources during the construction process. However, the overall net benefit to the marshes should outweigh these temporary impacts.

Figure 2. Wetland map from National Wetlands Inventory for Project Area



Submerged Aquatic Vegetation

The annual Chesapeake Bay aerial surveys routinely identify beds of submerged aquatic vegetation (SAV) in the Maryland Coastal bays north and south of the project site. Due to weather constraints, they have been unable to survey the area, with the last data set being from 2017. During that survey, there was no SAV found in the vicinity of the project area, and no SAV has been observed north of the Route 50 bridge for quite some time. The closest bed is about 1.5km away, near the North Beach area on the west coast of Assateague (Golden 2020, personal communication). Because no SAV has been found at the project area for the various dredge disposal alternatives, the Service does not expect any impacts to SAV from this project.

Migratory Birds

Data Metrics

Migratory birds are an important trust resource, and the Service works with partners to protect, restore, and conserve bird populations and their habitats for the benefit of future generations. The following data bases were used to gather information on migratory birds within the project area, including data from the Service's IPaC system (IPaC), eBird, Audubon Society, and Atlantic Coast Joint Venture (ACJV). This was done in order to provide a more complete analysis of the resources that are found within the described project area and represents the "best available science" for this project. IPaC is a project planning tool that is used to streamline the Service's environmental review process; it is used to identify migratory birds, endangered species, interjurisdictional fish, marine mammals, wetlands, and Refuge

lands. IPaC official species list are valid for 90 days, after 90 days project proponents should reconfirm their results by requesting an updated species list for their project area to ensure an accurate and up-to-date list. This area has a high level of bird diversity; Assateague Island and Maryland Coastal Bays are designated as an Important Bird Area by the National Audubon Society (Audubon Important Bird Areas 2020). Another resource used to examine bird presence in a geographic area is eBird, a website launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society, which provides rich data sources for bird abundance and distribution at a variety of spatial and temporal scales (Sullivan et al. 2009). This site primarily uses data collected through citizen science, so data should be interpreted cautiously, however, when unusual birds or unusual high counts are reported, the regional experts review the data and verify the potential for incorrect species identification.

Information was also obtained from the ACJV, specifically the Saltmarsh Sparrow (*Ammospiza caudacuta*) Prioritization Tool as well as the American Black Duck (*Anas rubribres*) Prioritization Tool, both of which show that the project area is a high priority area (Figure 2 and 3 ACJV 2020). The Saltmarsh Sparrow tool ranks habitat patches using a formula that assesses relative importance of a variety of factors known to influence saltmarsh sparrows, negatively and positively. It does not factor into account current density or abundance of this species in the results, it is only an indicator of habitat patches and their suitability to provide high quality habitat according to expert opinion. The American Black Duck tool shows non-breeding priority watersheds important for meeting population objectives for this species in the northeast. According to ACJV, the project area falls within a high priority restoration watershed. These areas currently do not contain enough food to support population objectives and work in these areas should focus on restoring habitat to support more ducks (ACJV 2020).

A polygon of the project area was mapped in IPaC (Appendix A). From this data a list of migratory birds as well as Birds of Conservation Concern (BCC) was created (Table 1). IPaC identified 55 migratory bird species for this site (accessed 4/22/2020). The relevant species of conservation concern are presented below and are the subset of birds identified in IPaC that relate to the 1988 Fish and Wildlife Coordination Act mandating the Service to, “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA) of 1973.”

There are also particular Time of Year (TOY) restrictions that need to be taken into account. TOY restrictions provide general guidance for the protection of wildlife; they focus on the time of year that species may be more sensitive to human activities. Appendix B is a summary of all relevant TOY restrictions. These should be considered as guidance for project planning, as well as the scheduling of construction activities that may impact the species identified (VDGIF 2020).

Table 1. Birds of Conservation Concern known to occur in the project area (data from USFWS IPaC Trust Resource Report).

Common Name	Scientific Name	Breeding Season
American Oystercatcher	*Haematopus pilliatus*	Apr 15 to Aug 31
Black Skimmer*	*Rynchops niger*	May 20 to Sep 15
Black-billed Cuckoo	*Coccyzus erythropthalmus*	May 15 to Oct 10
Bobolink	*Dolichonyx oryzivorous*	May 20 to Jul 31
Clapper Rail	*Rallus crepitans*	Apr 10 to Oct 31
Dunlin	*Calidris alpine arcticola*	Breeds elsewhere
Eastern Whip-poor-will	*Antrostomus vocierus*	May 1 to Aug 20
Gull-billed Tern*	*Gelochelidon nilotica*	May 1 to Jul 31
Hudsonian Godwit	*Limosa haemastica*	Breeds elsewhere
Least Tern*	*Sterna antillarum*	Apr 20 to Sep 10
Lesser Yellowlegs	*Tringa flavipes*	Breeds elsewhere
Nelson's Sparrow	*Ammadramus nelson*	May 15 to Sep 5
Prairie Warbler	*Dendroica discolor*	May 1 to Jul 31
Purple Sandpiper	*Calidris maritima*	Breeds elsewhere
Red-headed Woodpecker	*Melanerpes erythrocephalus*	May 10 to Sep 10
Red-throated Loon	*Gavia stellate*	Breeds elsewhere
Ruddy Turnstone	*Arenaria interpres morinella*	Breeds elsewhere
Rusty Blackbird	*Euphagus carolinus*	Breeds elsewhere
Seaside Sparrow	*Ammodramus maritimus*	May 10 to Aug 20
Semipalmated Sandpiper	*Calidris pusilla*	Breeds elsewhere
Short-biller Dowitcher	*Limnodromus griseus*	Breeds elsewhere
Snowy Owl	*Bubo scandiacus*	Breeds elsewhere
Whimbrel	*Numenius phaeopus*	Breeds elsewhere
Willet	*Tringa semipalmata*	Apr 20 to Aug 5
Wood Thrush	*Hylocichla mustelina*	May 10 to Aug 31

*Indicates state listed threatened/endangered

Species presence data in Table 2 was ascertained from the eBird website (http://ebird.org, accessed 4/22/2020). Species presence data was identified by combining bird species lists for Assateague Island 0-1 km (the first kilometer of the northern end of the island), Skimmer Island, Homer Gudelsky Park, and Ocean City Inlet and is listed in Table 2.

Table 2. eBird data for bird species listed in Assateague 0-1km, Ocean City Inlet, Skimmer Island, and Homer Gudelsky Park

American Avocet	Bonaparte's Gull	Eared Grebe	Horned Lark	Mute Swan
American Bittern	Brant	Eastern Kingbird	Hudsonian Godwit	Northern Flicker
American Black Duck	Bridled Tern	Eastern Phoebe	Iceland Gull	Northern Gannet
American Coot	Brown Creeper	Eastern Whip-poor-will	Killdeer	Northern Harrier
American Crow	Brown Pelican	Fish Crow	King Eider	Northern Pintail
American Golden-Plover	Brown-headed Nuthatch	Fork-tailed Flycatcher	King/Clapper Rail	Northern Rough-winged Swallow
American Kestrel	Bufflehead	Forster's Tern	King/Common Eider	Northern Saw-whet Owl
American Oystercatcher	Cackling Goose	Franklin's Gull	Laughing Gull	Northern Shoveler
American White Pelican	Canada Goose	Gadwall	Laughing x Ring-billed Gull (hybrid)	Osprey
American Wigeon	Canvasback	Glaucous Gull	Leach's Storm-Petrel	Pacific Loon
American Woodcock	Carolina Chickadee	Glossy Ibis	Least Bittern	Parasitic Jaeger
Arctic Tern	Caspian Tern	Golden-crowned Kinglet	Least Sandpiper	Pectoral Sandpiper
Bald Eagle	Cattle Egret	Great Black-backed Gull	Least Tern	Peregrine Falcon
Bank Swallow	Cave Swallow	Great Blue Heron	Lesser Black-backed Gull	Pied-billed Grebe
Barn Swallow	Chimney Swift	Great Cormorant	Lesser Scaup	Piping Plover
Belted Kingfisher	Clapper Rail	Great Egret	Lesser Yellowlegs	Pomarine Jaeger
Black Guillemot	Common Eider	Great Shearwater	Little Blue Heron	Purple Martin
Black Scoter	Common Goldeneye	Greater Scaup	Little Gull	Purple Sandpiper
Black Skimmer	Common Loon	Greater Yellowlegs	Long-billed Dowitcher	Razorbill
Black Tern	Common Merganser	Green Heron	Long-tailed Duck	Red Knot
Black Vulture	Common Murre	Green-winged Teal	Mallard	Red-bellied Woodpecker
Black-bellied Plover	Common Tern	Gull-billed Tern	Mallard (Domestic type)	Red-breasted Merganser
Black-crowned Night-Heron	Cooper's Hawk	Harlequin Duck	Mallard x American Black Duck (hybrid)	Red-breasted Nuthatch
Black-headed Gull	Cory's Shearwater	Herring Gull	Mallard/American Black Duck	Reddish Egret
Black-legged Kittiwake	Double-crested Cormorant	Herring x Glaucous Gull (hybrid)	Marbled Godwit	Redhead
Blue Jay	Dovekie	Herring x Lesser Black-backed Gull (hybrid)	Merlin	Red-necked Grebe
Blue-gray Gnatcatcher	Downy Woodpecker	Hooded Merganser	Mourning Dove	Red-necked Phalarope
Blue-winged Teal	Dunlin	Horned Grebe	Mute Swan	Red-shouldered Hawk

Table 2 (Continued). eBird data for bird species listed in Assateague km 0-1, Ocean City Inlet, Skimmer Isle, and Homer Gudelsky Park

Red-tailed Hawk	Ruddy Turnstone	Snowy Owl	Tufted Titmouse	Wild Turkey
Red-throated Loon	Sanderling	Solitary Sandpiper	Tundra Swan	Willet
Ring-billed Gull	Sandwich Tern	Sooty Shearwater	Turkey Vulture	Wilson's Phalarope
Ring-necked Duck	Semipalmated Plover	Sooty Tern	Western Sandpiper	Wilson's Snipe
Rock Pigeon	Semipalmated Sandpiper	Spotted Sandpiper	Whimbrel	Wilson's Storm-Petrel
Roseate Tern	Sharp-shinned Hawk	Stilt Sandpiper	White Ibis	Wood Duck
Royal Tern	Short-billed Dowitcher	Surf Scoter	White-eyed Vireo	Yellow-billed Cuckoo
Ruby-crowned Kinglet	Short-eared Owl	Thick-billed Murre	White-faced Ibis	Yellow-crowned Night-Heron
Ruby-throated Hummingbird	Snow Goose	Tree Swallow	White-rumped Sandpiper	
Ruddy Duck	Snowy Egret	Tricolored Heron	White-winged Scoter	

Several species that utilize the project area are state listed as threatened or endangered such as piping plover (also federally listed as threatened), black rail (proposed federally threatened), gull-billed tern, least tern, common tern, and black skimmer). The Wildlife and Heritage Services within MDDNR is responsible for the identification and protection of these species in Maryland. While most of the species listed as BCC may occur in the area, the proposed projects are not expected to have either a positive or negative effect on these species because they are not known to nest within the project area and habitat and forage is not a limiting factor in the project area. The following BCC species do occur in the project area and have the potential to be either positively or negatively impacted by the proposed alternative(s). Because they may be impacted, the Service is providing additional evaluation beyond presence and absence in the project area.

American Oystercatcher (*Haematopus palliates*)

The American oystercatcher is a common coastal salt marsh and sandy beach shorebird. Its bright red-orange bill is sturdy and laterally flattened, built for opening mussels and oysters. In young birds, the bill is pinkish brown and dusky black toward the tip. It has a yellow eye and an orange-red eye ring. Breeding and non-breeding plumage is almost identical in American oystercatchers. They have black heads and necks, dark blackish-brown underparts, and white wing and upper-tail patches. Their legs are a tan or sand color. Males and females look alike but females are larger and heavier (Prince William Network 2017). American oystercatchers are shy and intolerant of people. Since coastal property is always in demand for recreation and development, human disturbance is perhaps the greatest threat to breeding American oystercatchers. The American oystercatcher builds nests in open, sandy areas where they are vulnerable to predators like red fox, cats, dogs, or other birds (Prince William Network 2017). Pollution is another threat to the oystercatcher population if the levels are high enough to affect the shellfish these shorebirds feed on (Prince William Network 2017). Alternatives that place sand material on historic nesting sites that mimics natural coastal features could be beneficial to enhance oystercatcher nesting habitat. The remaining alternatives would not change the current condition for oystercatcher, and population trends in the project area would remain the same.

Black Skimmer (*Rynchops niger*)

The black skimmer is the only American representative of the skimmer family *Rynchopidae*. The bill of the black skimmer sets it apart from all other American birds. The large red and black bill is knife-thin and the lower mandible is longer than the upper. The bird drags the lower bill through the water as it flies along, hoping to catch small fish. Although the black skimmer is active throughout the day, it is largely crepuscular (active in the dawn and dusk). Its use of touch to catch fish allows it be successful in low light or darkness. This species prefers to nest in colonies, with 150 to 350 pairs concentrating in Maryland along the Atlantic Coast of Worcester County along coastal beaches and dredge spoil islands (MDDNR Black Skimmer, 2020). Skimmer Island was once known as the primary nesting site for this species, but because the Island has not received beach nourishment since 2014, it has eroded away to about 2 acres. According to the NPS North End Monitoring Report (2020), there were a few scant black skimmer nests on Assateague Island. The alternatives that place sand material at historic nesting sites that mimics natural coastal features could be beneficial to black skimmer nesting habitat. The remaining

alternatives would not change the current conditions for black skimmer, and population trends in the project area would remain the same.

Willet (*Tringa semipalmata*)

Willets are large shorebirds with grey-brown plumage and a long, thick, grey bill. They have a white rump, eyebrow, and wing stripe that is visible in flight. Willets also have long grey legs and slightly webbed toes. Plumage is similar for both sexes, but females are slightly larger. The eastern subspecies, which can be seen within the project area, are slightly smaller and darker than their western cousins (Ellison 2010). On the east coast, willets are commonly found on beaches, mudflats, and tidal salt marshes. Willets primarily breed in high marsh areas dominated by saltmeadow hay (*Spartina patens*) and in coastal dune areas dominated by beach grass (*Ammophila breviligulata*). Willets migrate south to winter on mudflats and beaches in northern South America. While willets are usually solitary, they may gather in flocks to migrate and roost (Ellison 2010). Willets feed by probing with their bills into mud and sand flats, searching for a wide variety of invertebrates. They eat insects, crustaceans, mollusks, worms, grasses, seeds, and occasionally fish. Aside from probing in the sand, willets also hunt by walking through shallow water and holding their bills open under the surface (Ellison 2010). Willets breed from May to July. They are monogamous each season, and males will even reunite with their previous mate if he can find her at their breeding grounds. To attract females, the males will fly with their wings high above their heads and use their "pill-will-Willet" call. Females fly beneath them and sing back, before the pair flies to the ground together. Once a pair has formed, the willets stop displaying, mate, and search for a nest site together. Nests are simple scrapes in the grass. Females lay three to four eggs over the course of 6 days. Both parents incubate the eggs for slightly less than a month. Within hours of hatching, Willet chicks are able to walk and feed themselves, and can fly within 4 weeks. Like many other shorebirds, the male, rather than the female, stays with the chicks longer (Ellison 2010). There is no current conservation status for willets within this region, as they have had no significant declines in population recently. However, habitat degradation in breeding, wintering, and migration areas may put this species at risk (Ellison 2010). None of the proposed alternatives are expected to impact willet habitat and the population trends would be expected to remain unchanged in the project area. If dredge material is used to restore marsh habitat such that it mimics the natural conditions of the coastal barrier island marshes, the Service would expect increased use of the marshes by willet for foraging, nesting and breeding.

Colonial Nesting Waterbirds

Colonial nesting waterbirds refer to species such as terns, cormorants, gulls, and wading birds which nest in dense colonies ranging from small numbers of single-species pairs to many thousands in mixed species colonies.

Brown pelicans (*Pelecanus occidentalis*) are huge, stocky seabirds. They have thin necks and very long bills with a throat pouch used for capturing fish. Their wings are very long and broad and are often noticeably bowed when the birds are gliding. Brown pelicans feed by plunging into the water, stunning small fish with the impact of their large bodies, and scooping them up in their expandable throat pouches. When not foraging, pelicans stand around fishing docks, jetties, and beaches or cruise the

shoreline. Pelicans nest in colonies, often on isolated islands free of land predators. Breeding populations of brown pelicans in the project area are fairly low. Surveys from 2003 to 2013 found only 29 pairs of brown pelican nesting within the Maryland Coastal Bays (Audubon Maryland-DC 2018). The dredge disposal sites recommended for this project are not highly used nesting areas for this species. The Service does not expect any effects on brown pelican from any of the proposed alternatives. However, brown pelicans have been expanding their nesting range northward with climate change (Audubon 2020). It is possible that restoring marsh and beach front could create new nesting habitat for brown pelicans in the project areas as their nesting range expands.

A large number of wading birds use islands in the Coastal Bays to breed. Within the project area these species include snowy egrets (*Egretta thula*), cattle egrets (*Bubulcus ibis*), little blue herons (*Egretta caerulea*), tricolored herons (*Egretta tricolor*), great egrets (*Ardea alba*), black-crowned night-herons (*Nycticorax nycticorax)*, and glossy ibis (*Plegadis falcinellus*). They are all primarily fish eaters, but will also eat invertebrates, benthic organisms, reptiles, and amphibians. Due to island disturbance, sea level rise, and erosion, 95 percent of the wading bird species (about 2,300 pairs) found in the Coastal Bays now breed on South Point Spoils (Audubon Maryland-DC 2018). The current alternative will not create suitable breeding habitat for these species. The dredge placement on Skimmers and Assateague Islands may increase opportunistic foraging by providing more land area to hunt prey, but, overall the Service does not expect any effect on wading birds from any of the proposed alternatives. However, if the dredge disposal includes marsh restoration with shrubs or trees in hummock areas, it is possible to create additional nesting habitat for these birds.

Gulls (Family *Laridae)* and double-crested cormorant (*Phalacrocorax auritus*) are common colonial nesting waterbirds found throughout Maryland, and are often thought of as nuisance species because of their abundance and ability to adapt to the human environment. Nesting cormorants compete with other priority colonial nesting birds and displace them. In addition, concentrated guano kills vegetation and exacerbates island erosion. Although cormorants and several species of gulls (ring-billed (*Larus delawarensis*), herring (*Larus argentatus*), great black-backed (*Larus marinus*), Bonaparte's (*Croicocephalus philadelphia*), Franklin's (*Leucophaeus pipixcan*), glaucous (*Larus hyperboreus*), Iceland (*Larus glaucoides*), little (*Hydrocoloeus minutus*) and laughing (*Leucophaeus atricilla*)) were identified in the preliminary screening, they are not known to nest within the project area. The alternatives that create additional nesting habitat on beaches may create nesting habitat for gulls and cormorants. The upland disposal and scour hole fill alternatives are not expected to have either a positive or negative effect on gulls or cormorants in the project area.

Terns are seabirds in the family *Sternidae* that have a worldwide distribution and are normally found near the sea, rivers, or wetlands. They are slender, lightly built birds with long, forked tails, narrow wings, long bills, and relatively short legs. Most species are pale grey above and white below, with a contrasting black cap to the head. From late April to August, terns use barren to sparsely vegetated sandbars along shorelines for nesting. Terns feed in a variety of ways, including capture of prey while in-flight or by diving to the water's surface. Prey items include small fish, shrimp, and insects. Pairs generally occupy and defend a feeding territory, which may be more than 20 km away from the

breeding colony. Terns are colonial breeders that often associate with gulls or other tern species. Nests are simple depressions in the sand or shallow cups of dead grass formed on beaches or open rocky areas. Typical clutch size is two to three eggs. One study found that 90 percent of terns observed had returned to the territory occupied the previous year. Least terns (*Sterna antillarum*) nest annually on Assateague Island, and data from IPaC and eBird has shown presence of roseate (*Sterna dougallii*), bridled (*Onychoprion anaethetus*), royal (*Thalasseus maximum*), common (*Sterna hirundo*), Arctic (*Sterna paradisaea*), black (*Chlidonias niger*), gull-billed (*Gelochelidon nilotica*), Forster's (*Sterna forsteri*), sandwich (*Thalasseus sandvicensis*), and sooty (*Onychoprion fuscatus*) terns. Least terns are state listed as threatened, gull-bill tern is state listed as endangered, common tern is state listed as endangered, and royal terns is state listed as endangered. Much of the historic tern nesting habitat in the Coastal Bays of Maryland has disappeared because of climate change or altered for human development. Placement of the dredge material on historic nesting areas (Skimmer Island and Assateague) could provide additional suitable nesting substrate for the terns within the project area. The upland disposal and scour hole fill alternatives are not expected to have either a positive or negative effect on terns in the project area.

Summary of the Alternatives on Oystercatcher, Black Skimmer, Willet, and colonial Nesting Waterbirds

Placement of the dredge material on historic nesting areas (Skimmer Island and Assateague Island) prior to the nesting season could provide additional suitable nesting substrate for oystercatchers, black skimmers, and some gull and tern species. Because least and common terns are state listed, restoration of breeding and nesting habitat for these species is particularly important. The Service would not expect any change in the populations of brown pelicans, cormorants, or non-nesting gulls and terns from beneficial reuse of dredge material.

The no action alternative will not change the overall health of habitat needed by oystercatcher, black skimmer, willet, or colonial nesting water birds and will have a negligible impact on their populations. Trends for these species would likely continue to decrease in the project area. Likewise, alternative(s) that place dredge material on Ocean City beach, in the scour hole, or in an upland disposal site will have the same impact on oystercatcher, black skimmer, willet, and colonial nesting waterbirds as the no action alternative.

Other non-BCC Species

Other migratory bird species of concern that may be observed commonly migrating through the project area in spring and fall but do not breed near the project area include Arctic tern (*Sterna paradisaea*), bald eagle (*Haliaeetus luecocephalus*), black scoter (*Melanitta nigra*), black-legged kittiwake (*Rissa tridactyla*), Cory's shearwater (*Valonectris diomedea*), dovekie (*Alle alle*), dunlin (*Calidris alpine arcticola*), great shearwater (*Puffinus gravis*), Hudsonian godwit (*Limosa haemastica*), lesser yellowlegs (*Tringa flavipes*), long-tailed duck (*Clangula hyernalis*), northern gannet (*Morus bassanus*), parasitic jaeger (*Stercorarius parasiticus*), pomarine jaeger (*Stercorarius pomarinus*), purple sandpiper (*Calidris maritima*), red-breasted merganser (*Mergus serrator*), red-necked phalarope (*Phalaropus lobatus*), red-

throated Loon (*Gavia stellate*), ruddy ternstone (*Arenaria interpres morinella*), rusty blackbird (*Euphagus carolinus*), semipalmated sandpiper (*Calidris pusilla*), short-billed dowitcher (*Limnodromus griseus*), snowy owl (*Bubo scandiacus*), surf scoter (*Melanitta perspicillata*), whimbrel (*Numenius phaeopus*), white-winged scoter (*Melanitta fusca*), and Wilson's storm-petrel (*Oceanites oceanicus*). Species that have been identified as present and breeding in the project area but are terrestrial and/or not likely to be found breeding in the project area include Artic tern (*Sterna paradisaea*), black-billed cuckoo (*Coccyzus erythropthalmus*), bobolink (*Dolichonyx oryzivorus*), bridled tern (*Onychoprion anaethetus*), clapper rail (*Rallus crepitans*), common eider (*Somateria moliissima*), common Loon (*Gavia immer*), eastern whip-poor-will (*Antrostomus vociferous*), Nelson's sparrow (*Ammodramus nelsoni*), prairie warbler (*Dendroica discolor*), razorbill (*Alca torda*), red-headed woodpecker (*Melanerpes erythrocephalus*), seaside sparrow (*Ammodramus maritimus*), and wood thrush (*Hylocichlia mustelina*). These species are identified as species of conservation concern for the Service, and it is possible that some of these species could experience temporary disturbance during construction, but the project area is not within their breeding habitat. Because it is not in their breeding habitat and forage areas are not limited, none of the proposed alternative are expected to have any impacts on these species.

Atlantic Coast Joint Venture

The ACJV has identified the project area, the Atlantic Coastal Bays, as a landbird, shorebird, waterbird, and waterfowl focus area (ACJV 2007). The ACJV is another resource used to identify potential fish and wildlife resources that could be found within the project area. The area identified as a waterfowl focus area includes Assawoman Bay, Isle of Wight Bay, and Sinepuxent Bay, which are in the project area. These bays are important to many species of migratory birds during spring and fall migration. Several high priority species depend on the area as a breeding and wintering ground. The bays and associated wetlands surrounding the project area support American black duck (*Anas rubripes*), American wigeon (*Anas americana*), Atlantic brant (*Branta bernicla*), black rail (*Rallus jamaicensis*), black scoter (*Melanitta nigra*), bufflehead (*Bucephala albeola*), Canada goose (*Branta Canadensis*), canvasback (*Aythya valisineria*), clapper rail (*Rallus crepitans*), common eider (*Somateria mollissima*), common loon (*Gavia immer*), dunlin (*Calidris alpine arcticola*), eastern whip-poor-will (*Androstomus vociferus*), gadwall (*Mareca strepera*), gull-billed tern (*Gelochelidon nilotica*), long-tailed duck (*Clangula hyemalis),* scaup spp, snow goose (*Chen caerulescens*), mallard (*Anas platyrhynchos*), northern gannet (*Morus bassanus*), northern pintail (*Anas acuta*), piping plover (*Charadrius melodus*), prairie warbler (*Dendroica discolor*), purple sandpiper (*Calidris maritima*), red-breasted merganser (*Mergus serrator*), red-throated Loon (*Gavia stellata*), roseate tern (*Sterna dougallii*), ruddy turnstone (*Arenaria interpres*), rusty blackbird (*Euphagus carolinus*), saltmarsh sparrow (*Ammodramus caudacutus*), seaside sparrow (*Ammodramus maritimus*), surf scoter (*Melanitta perspicillata*), whimbrel (*Numenius phaeopus*), willet (*Tringa semipalmata*), and white-winged scoter (*Melanitta fusca*), (ACJV 2008, IPaC list Appendix A). With the exception of piping plover, American black duck, saltmarsh sparrow, and seaside sparrow, which are discussed further below, these species are not known to nest in the project area and other than the possibility of temporary disturbance during construction these species are not expected to see any impact from these projects.

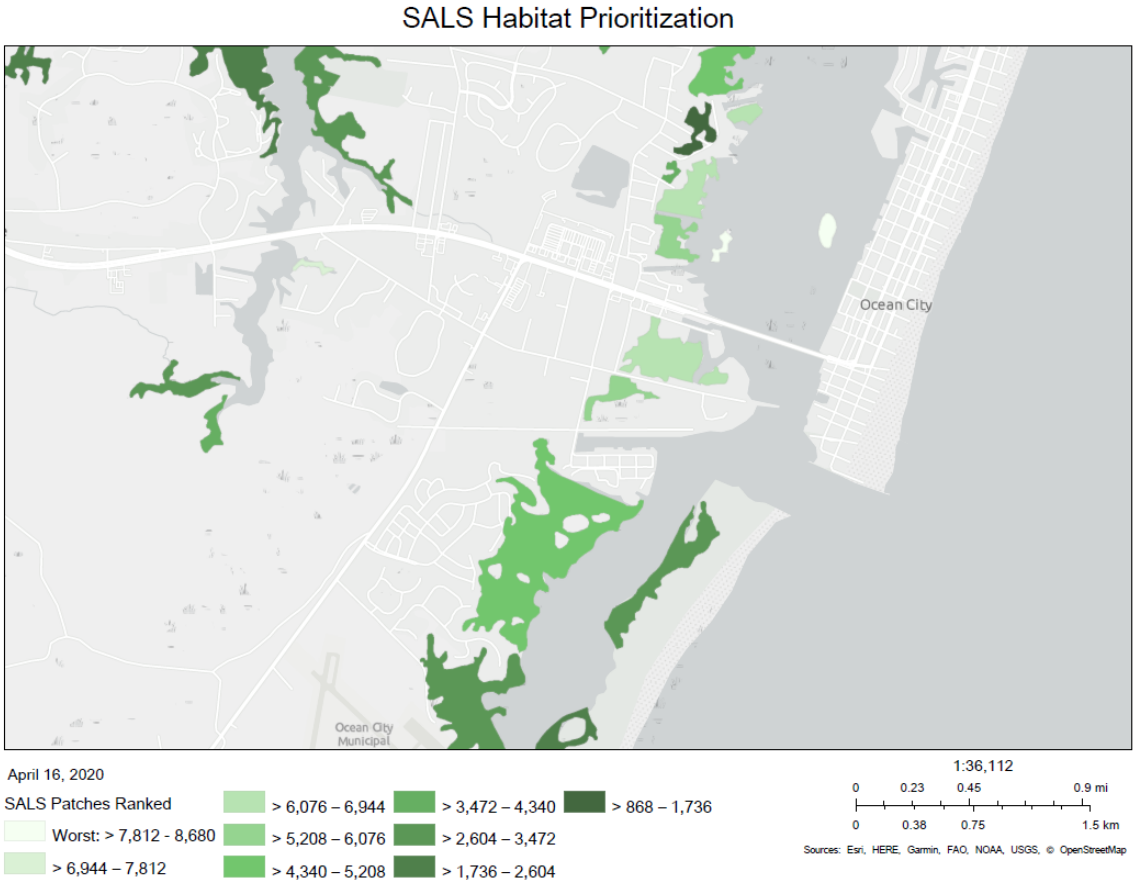
At-Risk Species

At-risk species are species that are declining but are not yet determined to be threatened or endangered. This includes species that are proposed for listing, candidates for listing, and/or petitioned for listing under the Endangered Species Act. The Service may also consider species of greatest conservation need as identified by the states.

Saltmarsh Sparrow (*Ammodramus caudacutus*)

Saltmarsh sparrow is a species that is endemic to East Coast salt marshes, and has experienced an 80 percent decline in its population size during the last 15 years. They nest in high marsh grasses, just above mean high tide. Due to this precarious location of nesting habitat, they have adapted to occasional flooding events, eggs can survive short periods of being underwater, and young birds are able to climb grass into high areas above the nest. However, due to the increase in sea levels, their adaptive traits are not able to keep up with the higher frequency of flooding as well as the higher water levels. Nest flooding is their greatest threat, followed by depredation of eggs and young (ACJV Saltmarsh Sparrow 2020). Figure 3 shows the project area using the Saltmarsh Sparrow Habitat Prioritization Tool. This tool is intended to help identify areas of salt marsh that are likely to be valuable in terms of resiliency to sea level rise, tidal restriction, development potential, presence of *Phragmites*, potential for marsh migration, and other factors important for this sparrow's habitat. By identifying these areas, this tool can provide a way to point work to high priority marshes (ACJV Saltmarsh Sparrow 2020). None of the proposed alternatives are expected to impact saltmarsh sparrow habitat and the population trends would be expected to remain unchanged in the project area. If dredge material is used to restore marsh habitat such that it mimics the natural conditions of the coastal barrier island marshes, with elevation high enough to reduce the potential for flooding nesting habitat, the Service would expect increased use of the marshes by saltmarsh sparrow for foraging, nesting, and breeding.

Figure 3. Saltmarsh Sparrow Prioritization Tool from Atlantic Coast Joint Venture, https://acjv.org/saltmarsh-sparrow-2/, accessed 4/16/2020. Dark green indicates higher ranked patches, ranking is based on many factors including resilience to sea level rise, degree of tidal restriction, development potential, *Phragmites*, and potential marsh migration.

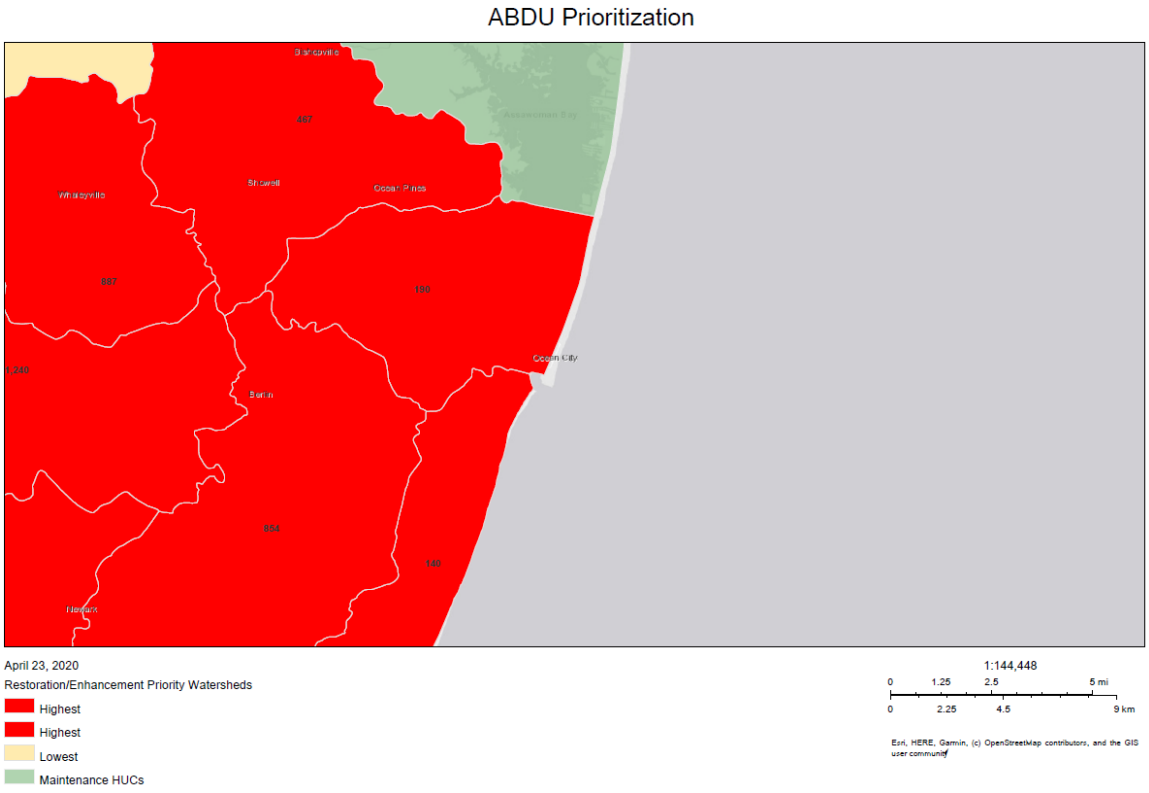


American Black Duck (*Anas rubripes*)

The American black duck was at one time one of the most abundant dabbling ducks in North American. Populations began to decline in the 1950s and by the 1980s this species had lost more than half of their population. While populations have stabilized since then, they are still below objectives set by the 2018 North American Waterfowl Management Plan (NAWMP 2018). The Atlantic Coast supports the majority of wintering populations, which are commonly found in coastal salt marshes. Threats to this species includes urbanization of coastal winter areas and sea level rise due to climate change. The Prioritization Tool mentioned previously helps identify the number of acres to protect, restore, or maintain at the watershed scale (ACJV American Black Duck 2020). In Figure 4, the project area shows prioritized habitat for American black duck, highlighting the Coastal Bays and essentially all marsh habitat west of Ocean City. None of the proposed alternatives are expected to impact American black duck habitat other than possible temporary displacement during construction. The population trends for American black duck would be expected to remain unchanged in the project area. If dredge material is used to restore marsh

habitat such that it mimics the natural conditions of the coastal barrier island marshes the Service would expect increased use of the marshes by American black duck for foraging, nesting and breeding.

Figure 4. American Black Duck Habitat Prioritization Tool, https://acjv.org/american-black-duck/, accessed 4/23/2020.



Black Rail (*Laterallus jamaicensis*)

The eastern black rail (*Laterallus jamaicensis jamaicensis)* is one of the most secretive marsh birds, and is now considered to be one of the rarest wetland birds in North America. A proposed rule to list the species as threatened was published in the Federal Register on October 9, 2018. A final ruling on the listing should be published in sometime in 2020. Since the 1990s, rail populations have declined by more than 90 percent. They hide in dense grass, are often nocturnal, and are found in salt, brackish and freshwater marshes. They tolerate water that is only deep enough to wet the bottom of a boot. Black rail have suffered from conversion/alteration of wetland habitat, and declines are also believed to be driven by sea level rise and nest inundation. This species nests close to the ground so is very vulnerable to water levels (ACJV Saving the Eastern Black Rail 2020). Current research is underway to identify locations in Maryland being used by black rail. One area that had a black rail detection in 2019 was Assateague Island (Dave Brinker, pers. comm. 2019). None of the proposed alternatives are expected to impact black rail habitat, and the population trends for black rail would be expected to remain unchanged in the project area. If dredge material is used to restore marsh habitat such that it mimics

the natural conditions of the coastal barrier island marshes the Service would expect increased use of the marshes by black rail for foraging, nesting and breeding.

Seaside Sparrow (*Ammodramus maritimus*)

The seaside sparrow (*Ammodramus maritimus)* is a relatively common species found within its limited range on the east coast, and has been identified to be within the project area according to the IPaC report (Table 1). Similar to its close relative, the saltmarsh sparrow, the seaside sparrow is a tidal-marsh specialist found only in small localized populations (Post and Greenlaw 2009). The extensive tidal saltmarshes of the lower Delmarva Peninsula counties (Dorchester, Wicomico, and Somerset in MD; Accomack and Northampton in VA) provide high quality nesting habitat for the species. Contraction of the species range has been associated with habitat degradation and loss (Ellison 2010). The primary nesting habitat is at the summer high tide mark within saltmarshes, close to the ground, typically in a clump of smooth cordgrass (*Spartina alterniflora)* or black needle rush (*Juncus roemerianus*). Periodic tidal flooding in many, perhaps most, salt marshes is the chief source of nest mortality in this species in our region. This species is a ground feeder that prefers to feed in open areas of vegetation and mud where it forages mostly for insects and other small invertebrates (Ellison 2010, Post and Greenlaw 2009). During the winter, when invertebrates are less available, seeds make up a good portion of their diet. Most seaside sparrows within this range typically migrate to saltmarsh systems located south of Chesapeake Bay, returning in April to breed; however, a few individuals do overwinter in the Delmarva peninsula, mixing in with migrants from the north (Ellison 2010). None of the proposed alternatives are expected to impact seaside sparrow habitat, other than possible temporary displacement during construction. The population trends for seaside sparrow would be expected to remain unchanged in the project area. If dredge material is used to restore marsh habitat such that it mimics the natural conditions of the coastal barrier island marshes the Service would expect increased use of the marshes by seaside sparrow for foraging, nesting and breeding.

Summary of the Alternatives on At-Risk Species

None of the current proposed disposal alternatives are expected to impact at-risk species in the project area. However, if the Corps considers using dredge material to restore high marsh habitat, it could have a positive benefit for all the at-risk species.

Fish and Shellfish Resources

Anadromous and Catadromous Fish

The Anadromous Fish Conservation Act (Act) is a Federal law enacted in 1965 to conserve, develop, and enhance the anadromous fish resources of the U.S. that are subject to depletion from water resources development and other causes, or with respect to which the U.S. has made conservation commitments by international agreements, and the fish in the Great Lakes and Lake Champlain that ascend streams to spawn. The provisions of the Act are found under 16 USCS §§ 757a-757f. Inter-jurisdictional, catadromous and anadromous fish are a Service trust resource. Anadromous fish spend most of their adult lives in saltier water but return each year to spawn in freshwater. Catadromous fish spend most of their adult lives in fresh water and return to salt water to spawn. The Service and our partners are working to protect the health of aquatic habitats, recover and restore populations of native fish, and

provide opportunities to enjoy the many benefits of healthy aquatic resources. Maryland's coastal bays are nursery areas for summer flounder, black sea bass, weakfish, American eel and bluefish. Many other species are often encountered (Table 3, MDNR Coastal Fisheries 2020). The action of dredging disrupts sediments and buries benthic macroinvertebrates, which could temporarily negatively impact anadromous and catadromous fish. The placement of the dredge material is not expected to affect these species, and has potential to benefit some species that use sandy substrate for spawning. Best management practices should be implemented to avoid detrimental impacts to aquatic resources.

Table 3. Species of fish captured from 2015 through 2019 in beach seines and trawls for Assawoman Bay, Isle of Wight Bay and Sinepuxent Bay (Willey 2020 personal communication)

*Alewife (*Alosa pseudoharengus*)	Clearnose skate (*Raja eglanteria*)	Northern pipefish (*Syngnathus fuscus*)	Spanish mackerel (*Scomberomorus maculatus*)
**American eel (*Anguilla rostrata*)	Conger eel (*Conger oceanicus*)	Northern puffer (*Sphoeroides maculatus*)	Spot (*Leiostomus xanthurus*)
American sand lance (*Ammodytes americanus*)	Cownose ray (*Rhinoptera bonasus*)	Northern searobin (*Prionotus carolinus*)	Spotfin butterflyfish (*Chaetodon ocellatus*)
Atlantic croaker (*Micropogonias undulatus*)	Crevalle jack (*Caranx hippos*)	Northern sennet (*Sphyraena borealis*)	Spotfin mojarra (*Eucinostomus argenteus*)
*Atlantic herring (*Clupea harengus harengus*)	Dusky pipefish (*Syngnathus floridae*)	Oyster toadfish (*Opsanus tau*)	Spotted hake (*Urophycis regia*)
*Atlantic menhaden (*Brevoortia tyrannus*)	Feather blenny (*Hypsoblennius hentz*)	Pigfish (*Orthopristis chrysoptera*)	Spotted seatrout (*Cynoscion nebulosus*)
Atlantic moonfish (*Selene setapinnis*)	Gag (*Mycteroperca microlepis*)	Pinfish (*Lagodon rhomboides*)	Striped anchovy (*Anchoa hepsetus*)
Atlantic needlefish (*Strongylura marina*)	*Gizzard shad (*Dorosoma cepedianum*)	Rainwater killifish (*Lucania parva*)	*Striped bass (*Morone saxatilis*)
Atlantic silverside (*Menidia menidia*)	Gray snapper (*Lutjanus griseus*)	Red drum (*Sciaenops ocellatus*)	Striped blenny (*Chasmodes bosquianus*)
Atlantic spadefish (*Chaetodipterus faber*)	Green goby (*Microgobius thalassinus*)	Rough silverside (*Membras martinica*)	Striped burrfish (*Chilomycterus schoepfii*)
Atlantic stingray (*Dasyatis sabina*)	Halfbeak (*Hyporhamphus unifasciatus*)	Sand eel (*Ammodytes america*)	Striped cusk-eel (*Ophidion marginatum*)
Bay anchovy (*Anchoa mitchilli*)	Harvestfish (*Peprilus paru*)	Scup (*Stenotomus chrysops*)	Striped killifish (*Fundulus majalis*)
Black drum (*Pogonias cromis*)	Hogchoker (*Trinectes maculatus*)	Seaweed pipefishes (*Syngnathus* sp.)	Striped mullet (*Mugil cephalus*)
Black sea bass (*Centropristis striata*)	Inland silverside (*Menidia beryllina*)	Sheepshead (*Archosargus probatocephalus*)	Striped searobin (*Prionotus evolans*)
Blackcheek tonguefish (*Symphurus plagiusa*)	Inshore lizardfish (*Synodus foetens*)	Sheepshead minnow (*Cyprinodon variegatus*)	Summer flounder (*Paralichthys dentatus*)
Blue runner (*Caranx crysos*)	Lined seahorse (*Hippocampus erectus*)	*Silver perch (*Bairdiella chrysoura*)	Tautog (*Tautoga onitis*)
*Blueback herring (*Alosa aestivalis*)	Lookdown (*Selene vomer*)	Skilletfish (*Gobiesox strumosus*)	Weakfish (*Cynoscion regalis*)
Bluefish (*Pomatomus saltatrix*)	Mummichog (*Fundulus heteroclitus*)	Smallmouth flounder (*Etropus microstomus*)	White mullet (*Mugil curema*)
Bluespotted cornetfish (*Fistularia tabacaria*)	Naked goby (*Gobiosoma bosc*)	Southern kingfish (*Menticirrhus americanus*)	Windowpane (*Scophthalmus aquosus*)
Butterfish (*Peprilus triacanthus*)	Northern kingfish (*Menticirrhus saxatilis*)	Southern stingray (*Dasyatis americana*)	Winter flounder (*Pseudopleuronectes americanus*)
			* Anadromous fish ** Catadromous fish

Essential Fish Habitat

One of the priorities of National Oceanic and Atmospheric Administration (NOAA) is Essential Fish Habitat (EFH). Using the best available science, NOAA Fisheries along with regional fishery management councils identify and map EFH for each life stage of over 1,000 federally managed species (see species present within the project area in Table 4). EFH includes a variety of habitat in which fish are able to spawn, breed, feed, and grow to maturity; these habitats include wetlands, reefs, seagrass, rivers, and coastal estuaries. High priorities for EFH are referred to as Habitat Areas of Particular Concern (HAPC) due to major ecological functions, sensitivity to decline, stress from development, and/or rare habitat. Using NOAA's EFH Mapper, several species were identified to use the habitat around the project area (NOAA EFH 2020). The Service recommends that the Corps pursue appropriate coordination and consultation with National Marine Fisheries Service (NMFS) who has Federal jurisdiction over EFH.

Table 4. Species and Lifestage Associated with EFH

Species	**Lifestage(s) Found at Location**
Little Skate (*Leucoraja erinacea*)	Juvenile, Adult
Atlantic Herring (*Clupea harenus)*	Juvenile, Adult
Red Hake (*Urophycis chuss*)	Adult
Monkfish (*Lophius* spp)	Eggs/Larvae
Windowpane Flounder (*Scophthalmus aquosus*)	Adult, Larvae, Eggs, Juvenile
Winter Skate (*Leucoraja ocellata*)	Juvenile, Adult
Clearnose Skate (*Raja eglanteria*)	Juvenile, Adult
Albacore Tuna (*Thunnus alalunga*)	Juvenile
Atlantic Angel Shark (*Squatina dumeril*)	ALL
Bluefin Tuna (*Thunnus thynnus*)	Juvenile
Common Thresher Shark (*Alopias vulpinus*)	ALL
Dusky Shark (*Carcharhinus obscurus*)	Neonate
Sandbar Shark (*Carcharhinus plumbeus*)	Neonate, Juvenile, Adult
Skipjack Tuna (*Katsuwonus pelamis*)	Adult
Yellowfin Tuna (*Thunnus albacares*)	Juvenile
Smoothhouse Shark Complex (Atlantic Stock) (Various species)	ALL
Sand Tiger Shark (*Carcharias taurus*)	Neonate/Juvenile, Adult
Longfin Inshore Squid (*Doryteuthis pealeii*)	Eggs
Atlantic Mackerel (*Scomber scombrus*)	Eggs
Bluefish (*Pomatomus saltatrix*)	Juvenile, Adult
Atlantic Butterfish (*Peprilus triacanthus*)	Eggs, Larvae, Juvenile, Adult
Spiny Dogfish (*Squalus acanthias*)	Juvenile, Sub-Adult Male, Sub-Adult Female, Adult Male
Scup (*Stenotomus chrysops*)	Juvenile, Adult
Summer Flounder (*Paralichthys dentatus*)	Larvae, Juvenile, Adult
Black Sea Bass (*Centropristis striata*)	Juvenile, Adult

Horseshoe Crab (*Limulus polyphemus*)

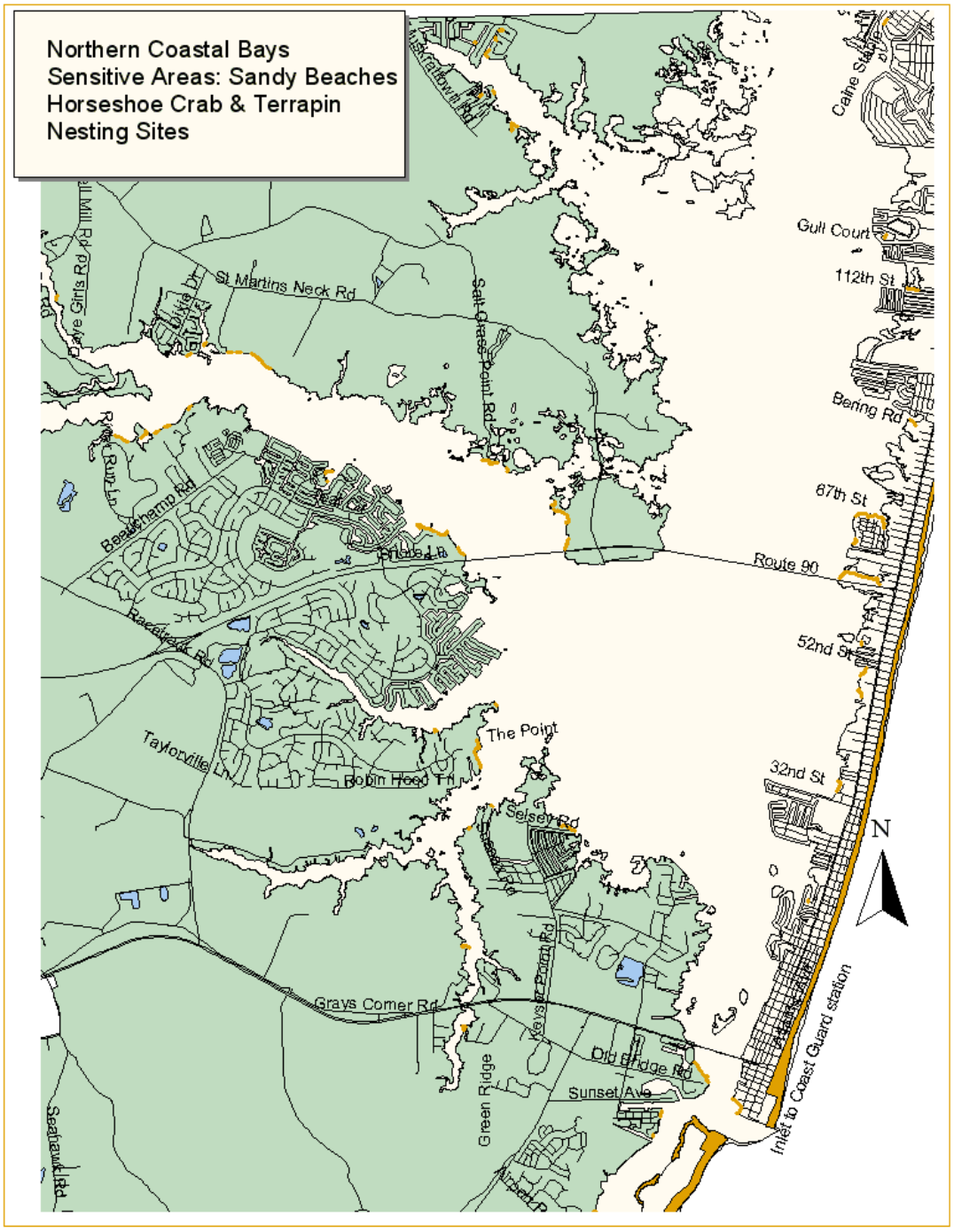
The horseshoe crab is another shellfish resource to consider. This species is estimated to be about 300 million years old and is considered the oldest living fossil in Maryland. The average adult is 7 to 12 inches across, males average 2 pounds and females average 5 pounds. They inhabit all areas of Maryland's Coastal Bays where the salinity is greater than 6 parts per thousand, keeping in shallow waters from spring to fall and moving deeper during winter. They prefer shoals and slews in offshore

waters, and can also be found on sandy beaches and mud flats. For spawning, they prefer sandy beach areas protected from wave energy within bays and coves (Smith et al. 2017). They spawn each spring during high tides of full and new moons, once the water temperature reaches 60 degrees Fahrenheit. They feed mainly on marine worms and shellfish. They play an important ecological role in the food web, particularly for migrating shorebirds as well as Atlantic loggerhead turtles (*Caretta caretta*). Migratory birds rely on horseshoe crab eggs as a dietary supplement to replenish their fat supply, a decrease in the population of horseshoe crabs could be detrimental to shorebirds. Because there were nearly 30,000 horseshoe crabs spawning around the project area in 2014, this could cause an influx of migratory birds stopping over for enhanced nourishment, and certainly provides a nutritional benefit for the shorebirds that breed in the project area. These eggs are also a significant part of the diet of juvenile Atlantic loggerhead turtles, and the eggs and larvae are a preferred food item for many species including finfish, other crab species, striped bass (*Morone saxitilis*), white perch (*Morone americana*), American eels (*Anguilla rostrata*), killifish species, silver perch (*Bairdiella chrysoura*), weakfish (family *Sciaenidae*), kingfish (*Scomberomorus cavalla*), silversides (Atheriniformes), and summer flounder (*Paralichthys dentatus*) (MDDNR Horseshoe Crab Life History 2020). Sediment grain size can influence spawning selection. On the Atlantic Coast, studies suggest females spawn on beaches with coarse-grained and well drained sandy substrate (Smith et al. 2017). While the horseshoe crab is not a trust resource it plays an incredibly important role as a food source in shorebird migration. Enhancing horseshoe crab nesting beaches would enhance the foraging base for shorebirds during spring migration to their breeding grounds. While the project may disturb the beach area, depending on location of material placement as well as grain size of material, if construction is completed before the horseshoe crab breading season, the project could benefit spawning area for horseshoe crabs as well as migratory bird species that forage on them.

Table 5. Horseshoe Crab population counts for locations around project area from 2002-2014 (S. Doctor, pers. comm. 2020). (Blank cell indicates zero).

SITE	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Grand Total
Site 1					31	36	62							129
Site 2					57	161	243	546	49	1007	413	489	477	3442
Site 3					70	456	223							749
Assateague totals	**0**	**0**	**0**	**0**	**158**	**653**	**528**	**546**	**49**	**1007**	**413**	**489**	**477**	**4320**
4-N						998	55							1053
4-S						4916	7890	10050	4943	12256	12431	14967	19877	87330
4-SE					764		1990	10417	18092	9009	7707	10371	9490	67840
Skimmer Island totals	**0**	**0**	**0**	**0**	**764**	**5914**	**9935**	**20467**	**23035**	**21265**	**20138**	**25338**	**29367**	**126856**
Site 5 Oceanic Motel @ Inlet	**67**	**307**	**297**		**822**	**389**	**32**	**723**	**344**	**824**	**563**	**2652**	**4216**	**11236**
Site 6 Gudelsky Park			**234**	**60**	**1898**	**466**	**123**	**110**	**10**	**9**	**13**	**2432**	**865**	**6220**

Figure 4. Maryland Coastal Bays Horseshoe Crab Spawning Survey Sites, (S. Doctor, pers. comm. 2020).



Marine Mammals

According to MDDNR (MDDNR Marine Mammals 2020), over 20 species are known to migrate through Maryland waters; the most common marine mammal species found in Maryland waters are the bottlenose dolphin (*Tursiops truncates*), harbor porpoise (*Phocoena phocoena*), harbor seal (*Phoca*

vitulina), and humpback whale (*Megaptera novaeangliae*). In the warmer months, bottlenose dolphins and whales are common sightings, occasionally manatees are spotted as well. Whales remain in the area through the fall, with a shift to other species of dolphins. Cooler species like harbor porpoises and seals arrive for winter months and will remain in the area until spring (MDDNR Marine Mammals). There are annual reports of seals hauling out (loafing) in Ocean City and Assateague, more than anywhere else in the state. Months where water temperatures are at their warmest (May to October) is when Maryland experiences their highest numbers of sightings. The Service recommends that the Corps pursue appropriate coordination (confirming time of year restrictions) and consultation with NMFS who has Federal jurisdiction under the Marine Mammal Protection Act for species that may be using this area.

Threatened and Endangered Species

The following species were shown to be present in the project area as of an April IPaC report. This was done in order to provide a more complete analysis of the resources that are found within the described project area and represents the "best available science" for this project. The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over the marine species detailed below.

Piping Plover (*Charadirus melodus*)

The piping plover, federally listed as threatened, is a small shorebird, approximately 17 centimeters (cm) long with a wingspread of about 38 cm. Piping plovers breed in three distinct ranges: coastal beaches along the Atlantic seaboard; sand and gravel shorelines of the Great Lakes; and sand, gravel, and alkaline shores and rivers of the Great Plains (Gaines and Ryan, 1988). Along the Atlantic Coast, the species prefers sandflats adjacent to inlets or passes, sandy mudflats, and overwash areas as nesting and foraging habitats. Assateague hosts a breeding area for this species (about 60 pairs), and is the only breeding population of piping plover in the state of Maryland with sufficient tidal influence for cross-island overwash in a 6-mile section just south of the Ocean City Inlet (Wazniak and Hall 2005). Plovers arrive at breeding grounds by early April, and males begin to establish territories. Nests are typically situated above the high tide line on coastal beaches, and eggs are typically present from mid-April to late July. Southward migration to wintering grounds then occurs in late July, August, and September (USFWS 2020). As sea level rise accelerates, extreme storms will likely cause barrier islands to experience more beach and dune erosion, more overwash, more frequent island breaching, and more rapid landward migration. These types of changes could be beneficial to piping plover, which prefer sparsely vegetated areas, unless nest flooding becomes too frequent. With some beach restoration projects, building up the sand areas can promote vegetation on the beaches, construction of artificial dunes can prevent overwash from storms which promotes vegetation growth. Dense vegetation can be a problem since it impedes movement of the flightless chicks to suitable feeding areas. The No action alternative is "not likely to adversely affect" the species. Likewise, placement of dredge material on Skimmer Island, Ocean City, an upland disposal site, in the scour hole, or in the marsh will "not likely to adversely affect" the species, as they are not typically found in these areas and if so would be considered transient. If the material is placed on the eastern portion of Assateague in a way that mimics natural sediment transport processes, the project has the potential to enhance foraging and nesting habitat for piping plover. Any material placed on the Assateague would require consultation with the

Service. However, implementing a time of year restriction would minimize impacts to nesting piping plover.

Red Knot (*Calidris canutus rufa*)

The red knot, federally listed as threatened, is a medium-sized migratory shorebird. The red knot undergoes a long distance migration from their breeding grounds in the central Canadian Arctic to wintering grounds in the southern tip of South America (Morrison et al. 2004). The primary stopover sites along the North Atlantic Coast used by the red knot are the shores of the Delaware Bay, but they can also be found on the Coastal Bays of the Delmarva Peninsula. Red knots feed almost exclusively on horseshoe crab eggs, and this area serves as a major fueling site for migration (Baker et al. 2004). Habitat use by red knots varies among breeding, wintering, and migration periods, but habitat requirements during all periods include suitable sites near foraging areas that are free from predators and human disturbance. During migration and wintering periods, red knots tend to frequent coastal mudflats, sandflats, brackish areas, salt marshes, and mussel beds (Garland and Thomas 2009). The greatest threats to the red knot are habitat degradation and disturbance through anthropogenic activities in key stopover areas, such as the Delaware Bay, and decreases in horseshoe crab populations. Although not identified in the project area by IPaC, red knot was identified in the eBird data; it is possible that the project area may have occasional individuals migrate through and forage, however, birds could move to other suitable habitat if construction activities resulted in disturbance to these birds. Therefore, the activities associated with the different alternatives are "not likely to adversely affect" this species.

Seabeach Amaranth (*Amaranthus pumilus*)

Seabeach amaranth, federally listed as endangered, is an annual plant with low growth and fleshy, rounded, dark green leaves (1-2 cm long) clustered near the tips of fleshy, reddish stems. Plants germinate from April to July, developing small sprigs that branch out and form a clump, binding sand that accumulates at its base. The species is restricted to sandy ocean beaches, and its habitat consists of the sparsely vegetated zone between the high tide line and the toe of the primary dune. Individuals are occasionally found on the back dunes, exposed shoals, dune blowouts, and bayside strands. Threats to the species include habitat destruction and alteration, including practices used to groom beaches like beach raking and scraping, recreational development, and public use of ocean beaches, including compaction by vehicles and trampling. Additionally, hard stabilization structures like jetties, groins, seawalls, and bulkheads eliminate or drastically alter the habitat required by the species (USFWS 1996). Sand placement activities may bury or destroy existing plants, resulting in mortality, or bury seeds to a depth that would prevent future germination, resulting in reduced plant populations. However, the placement of beach-compatible sand may also benefit this species by providing additional suitable habitat or by redistributing seed sources buried during past storm events, beach disposal activities, or natural barrier island migration. Disposal of sand may be compatible with seabeach amaranth provided the timing of beach disposal is appropriate and the material placed on the beach is compatible with the natural sand. Any beach nourishment activities using dredge material would require a time of year restriction to get to a "not likely to adversely affect" determination for this species. Placement of dredge

material at Skimmer Island, any other coastal bay island, Ocean City, at an upland disposal site, or in the scour hole will have “no effect” on the species.

Green Sea Turtle (*Chelonia mydas*)

The green sea turtle, federally listed as threatened, grows to a maximum size of approximately 1 meter in shell length, and can weight nearly 200 kg. They have a small head, single-clawed flippers and a heart-shaped shell. The carapace of the shell has 5 vertebral scutes, 4 pairs of coastal scutes, and 12 pairs of marginal scutes. The head has a single pair of prefrontal scales and four postorbital scales behind each eye, with are distinguishing characteristics that differentiate this species from other hard-shell sea turtles. The term “green” refers to the subdermal fat, the carapace is generally light to dark brown and changes as the turtle grows from hatchling to adult. This species is globally distributed, and is believed to inhabit coastal waters of over 140 countries and nest in over than 80 countries worldwide (Seminoff et al. 2015). They spend a majority of their lives in coastal foraging grounds, including shallow waters on open coastline and in protected bays and lagoons. They rely primarily on marine algae and SAV for their diet, with some populations feeding extensively on invertebrates. Green turtles nest on sandy, ocean-facing beaches; characteristics vary but typically nesting beaches have intact dune structures and native vegetation. The clutches are laid at night at the base of a primary dune. Mean clutch size varies, an average is about 100 eggs per clutch (Seminoff et al. 2015). This species is regarded as a species of conservation concern; they are impacted by a variety of sources such as coastal development, beachfront lighting, erosion from sand mining, non-native vegetation, and sea level rise which affects hatchlings and nesting turtles. Fishing and marine pollution are shown to affect foraging and migrating green turtles, and fishery bycatch (trawling, gill net, and dredging) are also continued threats (Seminoff et al. 2015). Disease and predation are continuing threats to the North American population. The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over the green sea turtle.

Atlantic Sturgeon (*Acipenser oxyriynchus oxyriynchus*)

Atlantic sturgeon, federally listed as endangered, is an anadromous species occurring on the Atlantic Coast of North America. Atlantic sturgeon are long-lived, anadromous fish reported to reach lengths of 459 cm and body weights of 364.9 kg. The Atlantic sturgeon is a bottom-feeder without teeth and has four whiskers halfway between its snout and mouth. The species has five rows of armor-like scales – called scutes – and the tail is longer on the top than on the bottom (ASSRT 2007). The species tends to reach maturity at 16 and 17 years for males and females, respectively. The number of eggs that can be produced is about 25,000 eggs per kg of body weight and females are thought to spawn once every 2 to 6 years, whereas males are thought to spawn every 1 to 5 years. Juveniles tend to spend 1 to 3 years in freshwater before spending their adult life in the marine environment. Spawning typically occurs in the spring over large gravel and other substrates when flow, pH, and other cues are optimal (ASSRT 2007). Populations of Atlantic sturgeon can be found from Quebec, Canada down along the Atlantic Coast and Gulf Coast to Louisiana with possible extirpation in Rhode Island and presumed extirpation in Washington, D.C. (NatureServe 2017). The primary threats for this species include habitat degradation including alteration and obstruction, vessel strikes, urbanization, pollution, and fishery by-catch (ASSRT

2007). The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over Atlantic Sturgeon.

Kemp's Ridley Sea Turtle (*Lepidochelys kempii*)

The Kemp's Ridley sea turtle, federally listed as endangered, is one of the smallest of the sea turtles with adults reaching about 2 feet in length. The core habitat for Kemp's Ridley occurs in the nearshore and inshore waters of the northern Gulf of Mexico, 95 percent of worldwide nesting occurs in Tamaulipas, Mexico with occasional nesting in North Carolina, South Carolina, and Florida. Adult and sub-adult Kemp's Ridley primarily occupy nearshore habitat that contain muddy or sandy bottoms where prey can be found. Hatchlings typically associate with floating Sargassum seaweed and juveniles remain within Gulf of Mexico currents while others are swept into the Atlantic Ocean by the Gulf Stream. Nesting occurs from April into July along the coast of Mexico, with an average of 2.5 times per season. Clutch size is around 100 eggs. The decline of Kemp's Ridley is due primarily to human activities, including the direct harvest of adults and eggs and incidental capture in commercial fishing operations. Other threats include marine debris, disease, chemical pollution, noise, and habitat degradation (NMFS et al. 2011). The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over Kemp's Ridley sea turtle.

Leatherback Sea Turtle (*Dermochelys coriacea*)

The leatherback, federally listed as endangered, is the largest, deepest diving, and most migratory and wide ranging of all the sea turtles. They inhabit open ocean and nest on sandy beaches backed with vegetation and sloped sufficiently so that distance to dry sand is limited. The leatherback sea turtle is distributed worldwide in tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans. Nesting occurs from March to July at an average of five to seven times within the nesting season. Clutch size averages 80 to 85 eggs. The decline of leatherback sea turtles is attributed to exploitation by humans for their eggs and meat, as well as incidental take in numerous commercial fisheries in the Pacific. Other factors include degradation of nesting habitat from coastal development, disorientation of hatchlings by beachfront lighting, nest predation by native and non-native predators, degradation of foraging habitat, marine pollution and debris, and watercraft strikes (NMFS and USFWS 2013). The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over leatherback sea turtle.

Loggerhead Sea Turtle (*Caretta caretta*)

The loggerhead sea turtle, federally listed as endangered, is characterized by a large head with blunt jaws. It is found worldwide in tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans, and is widely distributed throughout its range. The loggerhead sea turtle may be found hundreds of miles out to sea as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. Foraging occurs in coral reefs, rocky places, and ship wrecks. Nesting occurs mainly on open beaches or along narrow bays having suitable sand and it is often found in association with other species of sea turtles. Nesting season is from April through September with a peak in June and July, and this species has been documented nesting on Assateague Island (A. Weschler, pers. comm. 2020). Loggerheads are known to nest from one to seven times within a nesting season with an average of 4.1 nests. Average clutch size varies from 100 to 126 eggs. Threats include loss or

degradation of nesting habitat from coastal development and beach armoring, disorientation of hatchlings by beachfront lighting, nest predation by native and nonnative predators, degradation of foraging habitat, marine pollution and debris, watercraft strikes, disease, and incidental take from channel dredging and commercial trawling, longline, and gill net fisheries (NMFS and USFWS 2008). The Service recommends that the Corps pursue appropriate coordination and consultation with NMFS who has Federal jurisdiction over loggerhead sea turtle.

Coastal Barrier Resources Act

The Coastal Barrier Resources Act (CBRA) and its amendments prohibit most new Federal expenditures that tend to encourage development or modification of coastal barriers. The laws do not restrict activities carried out with private or other non-Federal funds and only apply to the areas that are within the defined John H. Chafee Coastal Barrier Resource System (CBRS). Section 6 of CBRA (16 U.S.C. § 3505) permits certain Federal expenditures and financial assistance within the CBRS after consultation with the Service. These exceptions are divided into two groups. The first group only requires that the proposed funding is in fact a listed exception. The second group requires that the exception also meet the three purposes of the CBRA. Those purposes are to minimize: the loss of human life; wasteful expenditure of Federal revenues; and the damage to fish, wildlife, and other natural resources associated with coastal barriers.

Group 1. A Federal expenditure is allowable within the CBRS, if it meets any of the following exceptions (16 U.S.C. § 3505(a)(1)-(5)):

- Any use or facility necessary for the exploration, extraction, or transportation of energy resources which can be carried out only on, in, or adjacent to a coastal water area because the use or facility requires access to the coastal water body;
- The maintenance or construction of improvements of existing Federal navigation channels (including the Intracoastal Waterway) and related structures (such as jetties), including the disposal of dredge materials related to such maintenance or construction;
- A Federal navigation channel or a related structure is an existing channel or structure, respectively, if it was authorized before the date on which the relevant System unit or portion of the System unit was included within the CBRS;
- The maintenance, replacement, reconstruction, or repair, but not the expansion, of publicly owned or publicly operated roads, structures, or facilities that are essential links in a larger network or system;
- Military activities essential to national security; or
- The construction, operation, maintenance, and rehabilitation of Coast Guard facilities and access thereto.

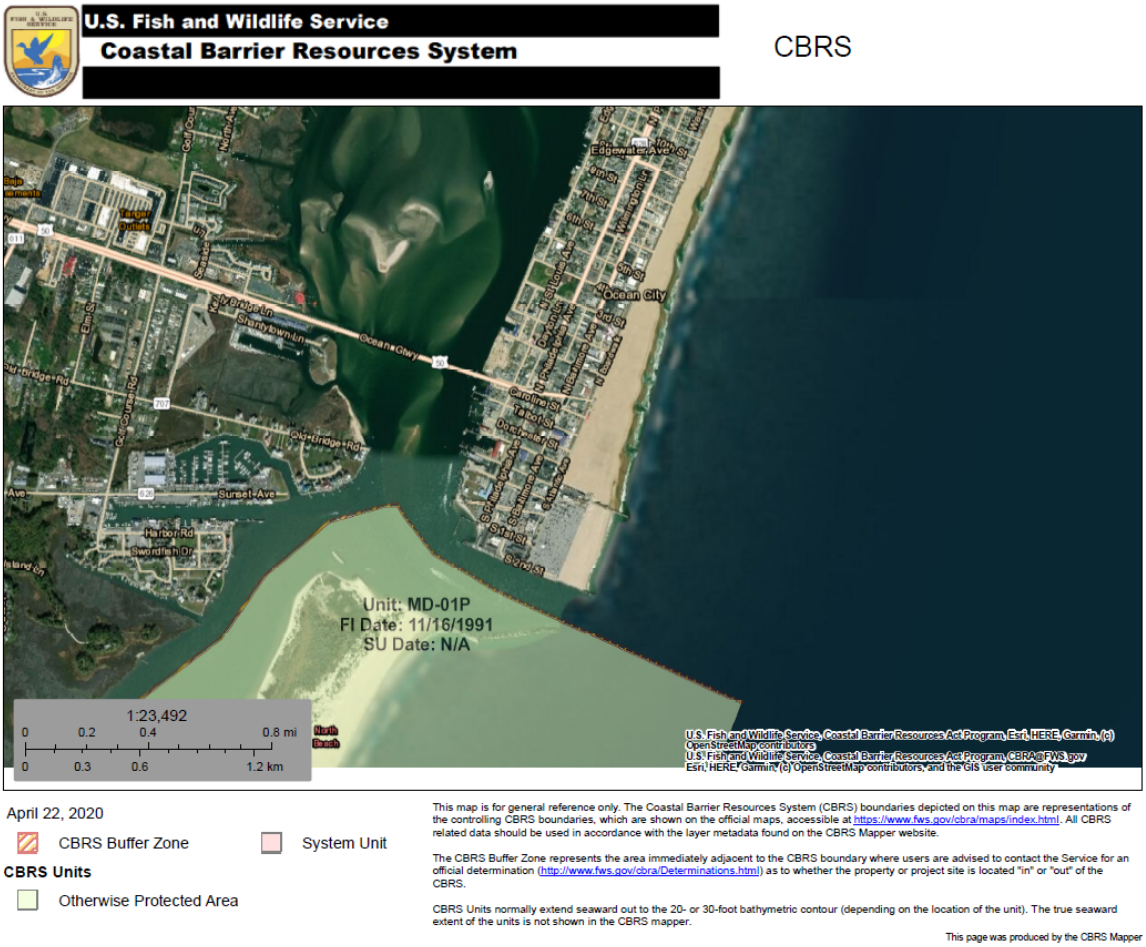
A Federal expenditure is allowable within the CBRS, if it meets any of the following Group 2 exceptions (16 U.S.C. § 3505(a)(6)) while remaining consistent with the three purposes of the CBRA:

- Projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats, including acquisition of fish and wildlife habitats, and related lands, stabilization projects for fish and wildlife habitats, and recreational projects;
- Establishment, operation, and maintenance of air and water navigation aids and devices, and for access thereto;
- Projects under the Land and Water Conservation Fund Act of 1965 (16 U.S.C. § 460l-4 through 11) and the Coastal Zone Management Act of 1972 (16 U.S.C. § 1451 *et seq*.);
- Scientific research, including aeronautical, atmospheric, space, geologic, marine, fish and wildlife, and other research, development, and applications;
- Assistance for emergency actions essential to the saving of lives and the protection of property and the public health and safety, if such actions are performed pursuant to sections 5170a, 5170b, and 5192 of title 42 and section 1362 of the National Flood Insurance Act of 1968 (42 U.S.C. § 4103) and are limited to actions that are necessary to alleviate the emergency;
- Maintenance, replacement, reconstruction, or repair, but not the expansion (except with respect to U.S. Route 1 in the Florida Keys), of publicly owned or publicly operated roads, structures, and facilities; or
- Nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system.

Figure 4 shows the extent of the mapped CBRA zone relative to the proposed inlet dredging project. Much of the Federal navigation channel proposed for dredging is in the Assateague Island Unit CBRA zone (MD-01P).

The Service has determined that the proposed dredging is exempt from CBRA because it meets the Group 1 exemption, "The maintenance or construction of improvements of existing federal navigation channels (including the Intracoastal Waterway) and related structures (such as jetties), including the disposal of dredge materials related to such maintenance or construction. A federal navigation channel or a related structure is an existing channel or structure, respectively, if it was authorized before the date on which the relevant System unit or portion of the System unit was included within the CBRS."

Figure 4. CBRA Map of North end of Assateague



Invasive Species

The disturbance associated with the placement of fill material could encourage recruitment and/or spread of infestations of common reed (*Phragmites australis*), Asiatic sand sedge (*Carex kobomugi*), Chinese silver grass (*Miscanthus sinensis*), and beach vitex (*Vitex rotundifolia*) within or adjacent to the project area. NPS actively monitors and manages existing infestations of common reed, beach vitex and Asiatic sand sedge along Assateague beaches, and plans to treat Chinese silver grass at the inlet this fall (B. Hulslander, pers comm. 2020) Factors like construction, exposed soil, and the availability of nearby seed all contribute to the invasion of these discussed species. The Service recommends that the project include monitoring for the presence of common reed, Asiatic sand sedge, Chinese silvergrass and beach vitex, and provide for implementing control measures if the need arises. The risk of common reed invasion will be greatest during the first years after construction, and should decrease when the native vegetative cover becomes well established.

Conclusion

Construction occurring on beach habitat areas where piping plover and seabeach amaranth are present

will require a biological assessment or further Section 7 consultation. Consultation pursuant to the Endangered Species Act of 1973 will also be required with the Service if the presence of any other threatened and endangered species occurs within the project area of impact. Additionally, there are several species that utilize the project area that are state listed as threatened or endangered (piping plover, black rail, gull-billed tern, least tern, common tern, and black skimmer). The Wildlife and Heritage Services within MDDNR is responsible for the identification and protection of these species in Maryland. Invasive species detection and monitoring (principal concern is common reed) should be a component of project implementation. Best management practices should be implemented to avoid detrimental impacts to aquatic resources. Coordination with NMFS is recommended regarding potential impacts to EFH and NMFS trust resources.

An expansion to the jetty or breakwater on the north end of Assateague has the potential to provide reef structure, although during construction it will disrupt sediments and bury benthic macroinvertebrates, which could temporarily negatively impact anadromous and catadromous fish. Generally a hardened shoreline is not preferred over a naturalized shoreline design that mimics natural features. The preferred alternative should minimize any adverse effects to Service trust resources by optimizing for environmentally compatible options such as maintaining and enhancing important habitats through beneficial use of dredge material. Many species could potentially benefit from deposition of dredge onto beaches. If beneficial use of dredge material will be undertaken, all areas should be fully evaluated in consultation with the Service. Dredge placement at either Assateague Island or Skimmer Island would provide the most benefit for fish and wildlife resources. These areas are also state and federally owned, which affords the wildlife species using these areas more legal protection. Skimmer Island has been reduced to 2 acres, and has not received beach nourishment since 2014, so if the dredge placement is done in the appropriate way (nourishment versus sediment bypass), this could provide a huge benefit to species that have historically used this area. It would provide nesting substrate for many colonial waterbirds on a predator free island. If used on Assateague Island, it could also provide a substantial benefit. Sediment placement on the western side of the island would provide more substrate for the coastal marsh and would benefit many species that use marshlands (saltmarsh sparrow, rail species, waterfowl species). Wildlife would benefit the most by beach nourishment or thin spread placement in marsh areas. This would require a separate Section 7 consultation with NPS, as well as a detailed analysis of placement areas and placement technique. Placement on the beach side that mimics natural sediment transport could provide nesting substrate for piping plover and other colonial nesting waterbirds, and could also provide substrate for seabeach amaranth. This method allows the placed material to wash up to the shore with tidal cycles and other natural processes, benefitting both Federally listed species that inhabit the island. The material that remains offshore is beneficial for restoring the geologic integrity of the island. Special consideration should be given to time of year restrictions (Appendix B); these are times that piping plover and birds of conservation concern could potentially be nesting in the area. Nesting birds are generally more susceptible to disturbance, so it is recommended that construction occur during the months that nesting birds will not be in the area.

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Worcester County, Maryland

Local office

Chesapeake Bay Ecological Services Field Office

(410) 573-4599
(410) 266-9127

177 Admiral Cochrane Drive
Annapolis, MD 21401-7307

http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

Appendix B. Time of Year Restrictions

Appendix B. Time of Year Restrictions		
Species	**Scientific Name**	**Recommended Time of Year Restriction***
American Oystercatcher	*Haematopus palliates*	April 15 - August 31
Black Skimmer	*Rynchops niger*	April 1 - August 31; TOY ends when last brood fledges - determined during most recent monitoring activity
Black Rail	*Laterallus jamaicensis*	April 01 - August 31
Black-billed Cuckoo	*Coccyzu erythropthalmus*	May 15 to October 10
Clapper Rail	*Rallus crepitans*	April 10 - October 31
Colonial nesting waterbirds	various species	General colonial nesting waterbirds TOY is April 01 - August 15. For Great Blue Heron February 15 - July 31. For brown Pellican TOY is March 15- August 31 Least Tern TOY is April 15 - July 31, TOY for Common Tern is April 15- August 31, Gull-billed Tern TOY May 1 to July 31
Dunlin	*Calidris alpine arcticola*	NA
Eastern Whip-poor-will	*Anstrostomus vocierus*	May 1 to August 20
General migratory and resident songbirds	various species	Bobolink TOY May 20 to July 31, Nelson's Sparrow TOY May 15 to September 10, Prairie Warbler TOY May 1 to July 31, Red-headed Woodpecker TOY May 10 - September 10, Wood Thrush TOY May 10 to August 31
Hudsonian Godwit	*Limosa haemastica*	NA
Lesser Yellowlegs	*Tringa flavipes*	NA
Nesting Shorebirds	various species	March 15 - August 31, ends when last brood fledges - determined through most recent monitoring activity
Piping Plover		March 15 - August 31, ends when last brood fledges - determined through most recent monitoring activity
Purple Sandpiper	*Calidris maritima*	NA
Red-throated Loon	*Gavia stellate*	NA
Rusty Blackbird	*Euphagus carolinus*	NA
Saltmarsh sparrow	*Ammodramus caudacutus*	April 01 - August 31
Seaside Sparrow	*Ammodramus maritimus*	May 10- August 20
Semipalmated Sandpiper	*Calidris pusilla*	NA
Short-billed Dowitcher	*Limnodromus griseus*	NA
Snowy Owl	*Bubo scandiacus*	NA
Whimbrel	*Numenius phaeopus*	NA
Willet	*Tringa semipalmata*	April 20 - August 5
*VDGIF, 2020.		
NA- the species does not typically breed in coastal salt marshes.		

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Ocean City Harbor & Inlet Navigation Improvements and Scour Hole Management
Webinar Sept 15, 2020 Minutes
(CS prepared 9/18/2020 from hand-written notes. Chronological order)

Person	**Agency**	
Jacqui Seiple	USACE	
Andrew Roach	USACE	
Danielle Szimanski	USACE	
Graham McAllister	USACE	
Chris Spaur	USACE	
Christopher Runt	US Coast Guard	Aides to Navigation Specialist
Ron Houck	US Coast Guard	

JS and AR pre-prepared slides which were used in Webinar.

JS introduced meeting. Attendees introduced themselves and their roles.

JS gave initial refresher introduction of Section 107 project. AR gave initial refresher introduction of Section 204 project. Reviewed work completed to date: ERDC data collection and modeling, economics analysis, environmental coordination/documentation

JS: Provided detailed overview of Section 107 project. Presented schedule, development of alternatives, and alternatives now under consideration. Reviewed details on potential relocation of Federal navigation channel southward, northern Assateague breakwaters connection/extension.

AR: Provided detailed overview of Section 204 project. Alternatives now under consideration include scour hole capping, shoal removal, mainland shoreline stabilization.

RH: Asked what it would take for USACE to shift channel to the south. GM said that USACE has some flexibility on channel locations. Congress provides depth and width, can shift channel subject to costs and subject to it not constituting new dredging (not maintenance). DS said that only concern was not having abrupt change in depth between 10 ft inlet channel and 6 ft Sinepuxent Channel that boats might bump on. Would like to have less risk of bumping going into Sinepuxent. JS suggested buoy GB11 could require relocating.

JS said that USACE will have a public meeting once modeling is completed, probably in November/December. Meeting will probably be virtual. Want to target recreational users for meeting. Want to make sure spur is not a safety hazard. Vessel survey identified jet ski dangers. Safety concerns with regard to jet skis is a concern, so have contacted jet ski shops/rental companies. None so far have expressed concerns. On risk-reduction side, the rental companies have guides accompany their groups.

CR said the spur off breakwater aide-to-navigation changes would be reviewed by Portsmouth. Should probably ask for lighted aid-to-navigation off north end of structure. Fixed aids into Sinepuxent might need to be moved if channel is relocated. This would be done by Coast Guard barge. Probably not a big deal, but Portsmouth would have to approve.

CR said that the recent survey of the scour hole area (~1.5 months ago?) didn't show much change from the previous survey. Why not? JS said that the geophysical survey identified an indurated layer that is resistant to erosion that is preventing downcutting.

CR asked whether more material could move into the area of buoys 10 & 11 from the north. DS said that recent dredging of the inlet removed much of the material between buoys 11 & 12.

CR said that he expects Portsmouth will agree to proposed channel changes. Would USACE build a structure to hold the navigation aid? DS said that we're not sure. JS asked whether USACE should coordinate directly with Portsmouth. CR said that he would send email to Portsmouth with everyone's email addresses to facilitate communication and tie this all together. RH said that when the Coast Guard does a structure MOA with USACE they would do a risk assessment using established process. That assessment would include other types of users. When we get to that point, Coast Guard would evaluate. He's never seen Coast Guard attempt to do the assessment before a project's public notice. The survey results USACE received from boaters would be included in their assessment. JS inquired whether the Coast Guard risk assessment could be incorporated into the USACE project schedule. Anticipate modeling different spur lengths to help figure out what would be acceptable minimum length to improve navigation channel (through increased scour). RH noted that buoys 1, 11, and the structure are all in the same general area.

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From:	Houck, Ronald L CIV
To:	Seiple, Jacqueline A CIV USARMY CENAB (USA)
Cc:	Runt, Christopher B BOSN4; Landante, Shaun C MST2; Szimanski, Danielle M CIV USARMY CENAB (USA); Spaur, Christopher C CIV USARMY CENAB (USA); Roach, Andrew A CIV USARMY CENAB (USA)
Subject:	RE: Ocean City - MOU?
Date:	Tuesday, September 22, 2020 7:03:03 AM
Attachments:	USCG USACE MOA.pdf Section 10 Permit Review.pdf

Hi Jacqui,

Attached are both the MOA and the guidance that pertains to carrying out the MOA. I think the Regulatory Branch staff would be familiar with that MOA and guidance.

The last Coast Guard Captain of the Port (COTP) risk assessment conducted under the MOA for the Ocean City area was in early 2018, when I worked with Connie Ramsey, in response to the CENAB 2017-61606 "Tidewater Rentals" JE Form.

Typically the COTP risk assessment is conducted through the permitting agency's public notice (PN) process. The assessment helps the COTP identify potential navigation risks and determine if a more extensive analysis is necessary, or what recommendations to provide to the permitting agency. The COTP determines, through an initial screening of the PN, if a more qualitative risk assessment is warranted, up to but not including a formal navigation safety risk assessment.

As for considering the COTP's risk assessment (conducted under the MOA) in your plan formulation, and choosing an alternative to implement by the end of this calendar year, it would be difficult to determine which COTP risk assessment model to use without first receiving a PN or JE Form to screen. Additionally, Coast Guard internal guidance on navigation safety risk assessments states that any effort devoted to this process is commensurate with the likelihood of (an application being submitted and) a permit actually being approved.

V/r,
Ron Houck
U.S. Coast Guard Sector Maryland-NCR
Waterways Management Division
410.576.2674 (o)
410.365.8125 (m)
410.576.2553 (f)
D05-DG-SectorMD-NCR-Prevention-WWM@uscg.mil

-----Original Message-----
From: Seiple, Jacqueline A CIV USARMY CENAB (USA) <Jacqueline.A.Seiple@usace.army.mil>
Sent: Monday, September 21, 2020 1:55 PM
To: Houck, Ronald L CIV <Ronald.L.Houck@uscg.mil>
Cc: Runt, Christopher B BOSN4 <Christopher.B.Runt@uscg.mil>; Szimanski, Danielle M CIV USARMY CENAB (USA) <Danielle.M.Szimanski@usace.army.mil>; Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>; Roach, Andrew A CIV USARMY CENAB (USA) <Andrew.A.Roach@usace.army.mil>
Subject: Ocean City - MOU?

Hi Ron,

At our meeting last week, you mentioned an MOU where the Coast Guard would perform some sort of risk assessment once a public notice for a project is received. I've checked around here and we are not familiar with that MOU or process.

Is it possible to get more information about this? We are particularly interested in trying to get your assessment

earlier than once a public notice has been issued, as we would like to be able to consider your evaluation in our plan formulation. For our schedule, we are trying to pick an alternative to implement by the end of this calendar year.

Thanks,
Jacqui

USACE Baltimore District
Planning Division
(410) 962-4398

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Spaur, Christopher C CIV USARMY CENAB (USA)

From: Houck, Ronald L CIV <Ronald.L.Houck@uscg.mil>
Sent: Wednesday, October 21, 2020 8:24 AM
To: Seiple, Jacqueline A CIV USARMY CENAB (USA)
Cc: Runt, Christopher B BOSN4; Landante, Shaun C MST2; Szimanski, Danielle M CIV USARMY CENAB (USA); Spaur, Christopher C CIV USARMY CENAB (USA); Roach, Andrew A CIV USARMY CENAB (USA)
Subject: RE: Ocean City - MOU?

Thanks Jacqui. That would be greatly appreciated.
Please notify via our office email address, at D05-DG-SectorMD-NCR-Prevention-WWM@uscg.mil.

V/r,
Ron

-----Original Message-----
From: Seiple, Jacqueline A CIV USARMY CENAB (USA) <Jacqueline.A.Seiple@usace.army.mil>
Sent: Wednesday, October 21, 2020 8:05 AM
To: Houck, Ronald L CIV <Ronald.L.Houck@uscg.mil>
Cc: Runt, Christopher B BOSN4 <Christopher.B.Runt@uscg.mil>; Landante, Shaun C MST2 <Shaun.C.Landante@uscg.mil>; Szimanski, Danielle M CIV USARMY CENAB (USA) <Danielle.M.Szimanski@usace.army.mil>; Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>; Roach, Andrew A CIV USARMY CENAB (USA) <Andrew.A.Roach@usace.army.mil>
Subject: RE: Ocean City - MOU?

Thanks Ron. Yes, it will be similar to other public notices releasing an Environmental Assessment and will be placed on the website. We can let you know when it is coming and then when it goes up.

-----Original Message-----
From: Houck, Ronald L CIV [mailto:Ronald.L.Houck@uscg.mil]
Sent: Tuesday, October 20, 2020 10:57 AM
To: Seiple, Jacqueline A CIV USARMY CENAB (USA) <Jacqueline.A.Seiple@usace.army.mil>
Cc: Runt, Christopher B BOSN4 <Christopher.B.Runt@uscg.mil>; Landante, Shaun C MST2 <Shaun.C.Landante@uscg.mil>; Szimanski, Danielle M CIV USARMY CENAB (USA) <Danielle.M.Szimanski@usace.army.mil>; Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>; Roach, Andrew A CIV USARMY CENAB (USA) <Andrew.A.Roach@usace.army.mil>
Subject: RE: Ocean City - MOU?

Jacqui,

If the "Public Notice for the Environmental Assessment" is the same as, or similar to, a normally-published USACE Public Notice, then yes, the Public Notice for the Environmental Assessment could serve as the trigger for a COTP risk assessment. Will it be placed on the Baltimore District's website?

V/r,
Ron Houck

U.S. Coast Guard Sector Maryland-NCR
Waterways Management Division
410.576.2674 (o)
410.365.8125 (m)

-----Original Message-----
From: Seiple, Jacqueline A CIV USARMY CENAB (USA) <Jacqueline.A.Seiple@usace.army.mil>
Sent: Tuesday, October 20, 2020 10:27 AM
To: Houck, Ronald L CIV <Ronald.L.Houck@uscg.mil>
Cc: Runt, Christopher B BOSN4 <Christopher.B.Runt@uscg.mil>; Landante, Shaun C MST2 <Shaun.C.Landante@uscg.mil>; Szimanski, Danielle M CIV USARMY CENAB (USA) <Danielle.M.Szimanski@usace.army.mil>; Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>; Roach, Andrew A CIV USARMY CENAB (USA) <Andrew.A.Roach@usace.army.mil>
Subject: RE: Ocean City - MOU?

Hi Ron,

We coordinated with Connie Ramsey and understand your risk assessment process better now. We will be releasing an Environmental Assessment for the Ocean City Inlet alternative selection, and a public notice will go out ahead of that. Our generation of plans and specifications for the design, and obtaining permits would follow that.

We were wondering if the Public Notice for the Environmental Assessment could serve as the trigger for your risk assessment. That would be very helpful to us as it would highlight any problems ahead of completion of our design process. If we don't get your assessment until later, I'm concerned that problems that you might see could send us back to the drawing board.

Let me know if you think this could work.

Thanks,
Jacqui

-----Original Message-----
From: Houck, Ronald L CIV [mailto:Ronald.L.Houck@uscg.mil]
Sent: Tuesday, September 22, 2020 7:01 AM
To: Seiple, Jacqueline A CIV USARMY CENAB (USA) <Jacqueline.A.Seiple@usace.army.mil>
Cc: Runt, Christopher B BOSN4 <Christopher.B.Runt@uscg.mil>; Landante, Shaun C MST2 <Shaun.C.Landante@uscg.mil>; Szimanski, Danielle M CIV USARMY CENAB (USA) <Danielle.M.Szimanski@usace.army.mil>; Spaur, Christopher C CIV USARMY CENAB (USA) <Christopher.C.Spaur@usace.army.mil>; Roach, Andrew A CIV USARMY CENAB (USA) <Andrew.A.Roach@usace.army.mil>
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Ron Houck
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410.576.2674 (o)
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D05-DG-SectorMD-NCR-Prevention-WWM@uscg.mil

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Sent: Monday, September 21, 2020 1:55 PM
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Subject: Ocean City - MOU?

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Thanks,
Jacqui

USACE Baltimore District
Planning Division
(410) 962-4398

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USACE Ocean City Inlet Vicinity – Proposed Projects
Navigation Improvements and Scour Hole Management Alternatives: Modeling & Results
Minutes of Virtual Meeting: May 7, 2021

1 Chris (USACE) opened the meeting, and stated the meeting purpose is to give environmental agency staff an update on study/project plan formulation, an opportunity to see modeling efforts & results, and provide an updated schedule. Meeting attendees included 12 representatives of federal and state agencies, and 9 USACE staff (attached list).

2 The meeting was conducted as per the agenda below, with presenters following pre-prepared slides.

AGENDA

9:30-9:40	Introduction	Chris Spaur (USACE-NAB)
9:40-10:00	Project Status & Schedule	Andrew Roach (USACE-NAB)
	Review of Inlet & Scour Hole Alternatives	Amber Metallo (USACE-NAB)
10:00-10:05	Modeling Efforts Overview (2D, 3D, Storm Modeling)	Andrew Roach/ Jared McKnight (USACE-ERDC)
10:05-10:40	2D Sediment & Hydrodynamic Model and Discussion	Jared McKnight
10:40-10:55	Dredged Material Availability/Placement and Discussion	Andrew Roach/Chris Spaur
10:55-11:00	Next Steps	Andrew Roach/Chris Spaur

During the presentations, attendees asked questions on multiple topics, as summarized below.

a Andrew (USACE) stated that a marine mattress or engineered cage with rock and concrete that might be utilized to protect the Scour Hole bottom from further scour. Bill (NPS) and Roman (MCBP) asked for additional characterization of those structures. Netsy and Dan of USACE provided information from online that was shared with the group.

b Baskar (MD DNR) asked whether any habitat-friendly alternatives have been explored for scour hole management, such as sinking a barge there. Chris (USACE) stated that that hasn't been looked into. Chris and Dan (USACE) noted that the scour hole has extremely strong currents and tremendous volumes of water passing through. USACE is in the position of attempting to deal with a complex, high risk situation (bottom scour and consequent shoreline erosion threatening structures in vulnerable location).

c Baskar and Jonathan (NMFS) asked whether induced shoaling that would accompany the spur on northwestern Assateague would be allowed to happen. Amber (USACE) and Chris said that it's expected that shoaling would be allowed to happen. However, more thought needs to go into consequences where it could be unacceptable, particularly for navigation.

d Roman (MCBP) asked whether the sediment polygons depicted in the 2D modelling agree with patterns observed of coarse sediment on east side of coastal bays, fine sediment on west side of coastal bays. Also, how was where sediment from dredging the shoals in southern Isle of Wight Bay dealt with

in the model. Jared stated that ERDC geological studies were utilized to establish bottom sediments for model. The modelling didn't consider where the material went - just that it was removed.

e Dave (MD DNR) asked whether cumulative change has been modeled for 10 years? Jared said no. Probably could model out another year (to 2 years). Modeling out 10 years though would be computationally intensive, and he doesn't have appropriate data set to go out 10 years.

f Roland (MD DNR) asked whether modeling shows any effect of shoal removal under the Route 50 bridge. Jared (USACE) stated that modeling results do show some affects there, but effects would be generally minimal.

g Jonathan (NMFS) asked whether model error increases as distance from the action location increases. Jared said no. Model is not localized to model location.

h Bill (NPS) asked for further clarification as to why filling behind the breakwaters on the Assateague side is not a viable alternative. Netsy stated that this was a preliminary determination based on the volume not being adequate to fill the open water area, and that the material didn't appear to be needed for structural stability of the breakwater.

i Mary (MDE) noted that filling open water is against MDE policies, although beneficial uses could be considered. That would apply to placement of material at northern Assateague or elsewhere. USACE should coordinate with MDE regarding needed authorizations (water quality certification and tidal wetlands). Chris noted that this meeting is part of that coordination.

j Chris stated that the inlet seems to "work" as a passageway between the ocean and bays for in-water aquatic life. The coastal bays support healthy populations of numerous in-water organisms that transit between the ocean and coastal bays. Under existing conditions, in-water organisms have to travel approximately 800 yards along the inlet rock south shoreline from the ocean to reach "natural shoreline," and then travel another 100 yards to reach Sinepuxent Bay. With proposed spur and linked continuous rock structures, travel length along the rock shoreline between ocean and bay would increase to approximately 1,200 yards. Chris stated that he's unsure whether this makes any difference for in-water aquatic life, but asked attendees to give that some thought. If it is thought to matter, then perhaps some sorts of gaps or flushing ports could be incorporated to reduce that distance. Angel (MD DNR) asked for examples/diagrams of what these might be.

k Dave (MD DNR) pointed out that although the inlet may work for in-water aquatic life, beach-nesting shorebirds have had severe loss in nesting habitat from inlet stabilization and engineering. Dave and Roman pointed out that Skimmer Island was formerly regionally important nesting habitat for beach-nesting shorebirds, and that substantial horseshoe crab nesting also occurred there.

3 Chris noted that there are multiple remaining environmental compliance tasks to be completed, and that USACE would be contacting agency representatives regarding this in the near future. These include ensuring compliance with multiple federal acts and associated state requirements: Clean Water, Endangered Species, Magnuson Stevens Fishery Conservation and Management, Fish and Wildlife Coordination, and Coastal Zone Management.

May 7, 2021 Virtual Meeting - Attendees		
Name	**Agency**	
Netsy Hailu	USACE	NAB
Charles Leasure	USACE	NAB
Jared McKnight	USACE	ERDC
Amber Metallo	USACE	NAB
Jason Peters	USACE	NAB-Reg
Dan Risley	USACE	NAB
Andrew Roach	USACE	NAB
Chris Spaur	USACE	NAB
Danielle Szimanski	USACE	NAB
Brian Hopper	NMFS	
Jonathan Watson	NMFS	
Bill Hulslander	NPS	
Chris Guy	USFWS	
Amy O'Donnell	USFWS	
Dave Brinker	MD DNR	
Roland Limpert	MD DNR	
Bhaskaran Subramanian	MD DNR	
Angel Willey	MD DNR	
Mary Phipps-Dickerson	MDE	
Tay Harris	MD Critical Areas Commission	
Roman Jesien	MD Coastal Bays Program	

APPENDIX D

SUPPLEMENTAL INFORMATION

USACE Projects

Assateague Island National Seashore

USACE Projects

Assateague Island LTSM Project: Project implemented in 2004. USACE twice-yearly dredges sand from natural accretion sites in the Ocean City Inlet vicinity for by-pass placement off northern Assateague Island, MD. Bypassing compensates for disruption to longshore sand transport caused by the USACE Ocean City Inlet jetties, maintains Assateague Island's geologic integrity, and contributes to maintaining navigable conditions in the inlet vicinity. The 1998 Ocean City Water Resources Study Environmental Impact Statement (EIS) identified multiple source areas from which to obtain sand. These areas include accreting sand in the southernmost Isle of Wight Bay from the Route 50 Bridge south to the inlet, the navigation channels (excluding the harbor), the ebb shoal, and the Ocean City fillet. An annual volume of 189,000 cubic yards placed is the target for this purpose, but lesser amounts are often placed, depending on funding availability. The LTSM Project is authorized for a 25-year period, with the last anticipated dredging/placement being in 2027. Sand was most recently placed on Assateague Island under the LTSM project in November 2020, and placement is anticipated again in May 2021. USACE conducts dredging utilizing adaptive management principles based upon regular monitoring of bathymetry and grain size parameters in the four borrow areas described below. USACE places sand sub-tidally within the surf zone utilizing specialized small hopper dredges[1], which are considered to have minimal environmental impacts and therefore,do not have any time-of-year restrictions such as is required with hydraulic dredging. Also, under the LTSM Project, approximately 20,000 cubic yards per year are authorized for back-pass placement[2] on Ocean City to contribute to beach replenishment needs. USACE placed sand sub-tidally at Ocean City under the LTSM project from 2004 through 2009, but placement has not occurred since that time. Based on recent coordination with the town/municipality of Ocean City, it is anticipated that Ocean City would only request sand from the ebb shoal under the LTSM project if and when extreme erosion occurs following severe storm events (USACE, 2020).

[1] Dredge vessels operated by USACE Wilmington District: the Murden or the Currituck. Typical loads for the Murden are 512 cubic yards; a typical load for the Currituck is 315 cubic yards.

[2] Sand naturally moves generally to the south along Ocean City. Back-pass placement puts sand back "upstream."

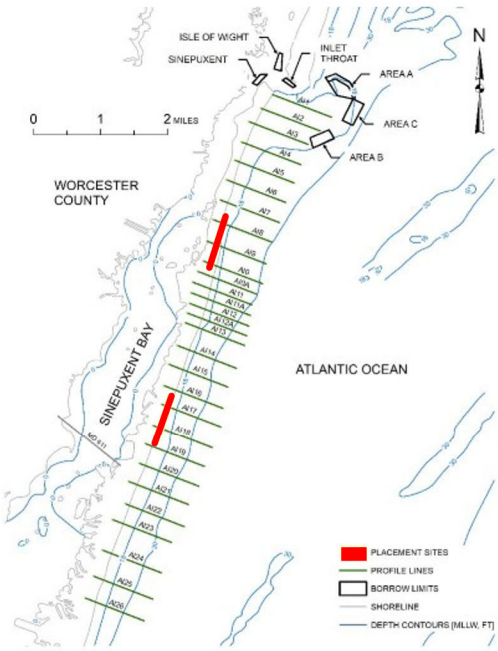

Figure: Ocean City Inlet and Assateague LTSM Projects borrow and placement sites in recent use as of 2021.

Delaware Coast from Cape Henlopen to Fenwick Island, Fenwick Island DE Coastal Storm Damage Reduction (CSDR) Project[3]: Total project length 6,500 feet, including beachfill and dunes, extending north from about the Maryland/Delaware state line. Initial construction was completed in 2005 with placement of 864,000 cubic yards of sand dredged from seafloor borrow areas off DE. Subsequent work was undertaken in 2011 and 2013 with placement of 332,000 and 368,000 cubic yards, respectively. In 2018, an additional 270,000 cubic yards was placed.

Ocean City Harbor and Inlet and Sinepuxent Bay, Worcester County, MD Navigation Project: USACE constructed jetties in 1934 –1935 to stabilize a natural inlet that had recently formed (today's Ocean City Inlet), constructed a harbor on the mainland, and dredged navigation channels into Isle of Wight and Sinepuxent Bays. Maintenance dredging has since been conducted periodically on an as-needed basis. USACE moves the channel positions to take advantage of naturally deeper water if compatible with navigation needs. A hydraulic dredge is utilized, and this dredging is typically conducted with environmental time-of-year restrictions to protect sensitive organisms that could be entrained into (sucked into) the dredge. To minimize that risk, hydraulic dredging is typically conducted in winter. Depending on the hydraulic dredge used, volumes of

[3] The Delaware Coast project was constructed by USACE, Philadelphia District. Other USACE projects described above are undertaken by USACE, Baltimore District.

material dredged per day range from as little as 3,000 cubic yards per day to as much as 8,000 cubic yards per day. Average production is about 5,000 cubic yards per day.

Ocean City Inlet channel was most recently dredged in 2018 with a total of approximately 17,000 cubic yards removed. This material was placed on northern Assateague Island in the same location as material is placed on the island under the LTSM Project. The Sinepuxent Bay channel was most recently dredged in 2015 when approximately 360,000 cubic yards of material was dredged and used beneficially to create three islands to provide nesting habitat for waterbirds (see "Hurricane Sandy Recover" project below). Isle of Wight channel was last dredged in 2015 when approximately 45,000 cubic yards of material was removed. This material was also placed beneficially to create islands to provide nesting habitat for waterbirds (see Hurricane Sandy Recovery Project below). USACE has previously beneficially placed sand from the Isle of Wight Channel on Ocean City beach, with thelast placement completed in 2009. For this placement, sand is pumped from the channel, under Ocean City through a culvert, and onto the ocean beach. Ocean City Harbor was last dredged in 2011. Approximately 26,000 cubic yards of material was removed and trucked to an upland placement site. The availability of USACE Operations and Maintenance funding is insufficient to keep the Ocean City Inlet channel at the authorized depth. Following implementation of the LTSM project in 2004, inlet dredging has been undertaken under both the LTSM project and the Ocean City Harbor and Inlet Project.

Between 1983 – 1985, USACE rehabilitated the southern jetty by constructing a new jetty adjacent (just south) to the inshore portion of the existing stone structure. The outer leg of the south jetty was rehabilitated again in 2002, by raising and sand-tightening that portion of the structure. The finished elevation of the jetty ranges between 5.0 ft and 7.5 ft NGVD29, which corresponds to 6.7 ft and 9.2 ft above MLW, respectively (Buttolph et al 2006).

Hurricane Sandy Recovery

The Sinepuxent and Isle of Wight Channels were dredged in 2014 – 2015 as part of regional Hurricane Sandy recovery efforts. USACE created four islands with approximately 400,000 cubic yards of hydraulically dredged material at locations where USACE had placed side cast dredged material and created islands in 1934. All the islands had largely eroded by the time of this project. One of the restored islands, Collier Island, is in southern Isle of Wight Bay approximately 1.4 miles north of Skimmer Island. The other islands are in the southern coastal bays, with the closet being approximately 4 miles south of the Ocean City Inlet. Three of the islands each utilized about 50,000 cubic yards of dredged material. The southernmost island in Chincoteague Bay (Robin's Marsh) used approximately 200,000 cubic yards. The islands were essentially uncontained (lack structural shorelines), two were planted, and two were left bare for vegetation to naturally colonize them.

Ocean City, Isle of Wight Bay, Emergency Shoreline Stabilization

To address scouring and deterioration of a bulkhead on the bay side of Ocean City in 1989, USACE constructed stone toe bulkhead protection along a 760 foot length of Isle of Wight Bay shoreline between 2nd and 4th Streets.

Assateague Island - Supplemental Information

Sediment Starvation Mitigation and USACE/NPS LTSM Project

Following construction of the Ocean City Inlet jetties, the north end of Assateague Island experienced significant erosion and accelerated shoreline migration. Since then, Assateague's ocean shoreline has shifted westward more than 350 meters, resulting in wholesale geomorphological, habitat, and biotic changes that would not have occurred under natural circumstances. Without the mitigation that was implemented from 2012 to present day under the Assateague Long Term Sand Management (LTSM) project, coastal geologists predicted that the northern portion of Assateague Island would continue to destabilize and that a new inlet or inlets would be created by future storm events. Such a scenario would have a significant impact on the values and purpose of Assateague Island National Seashore. A new inlet or inlets would also have serious implications for the adjacent mainland communities and region as whole, including increased rates of shore erosion, loss of estuarine habitats, and decreased flows through the existing Ocean City and Sinepuxent channels resulting in increased maintenance needs.

AINS Establishment

On September 21, 1965, Public Law 89-195 established Assateague Island National Seashore as a unit of the National Park System to protect the natural resources and recreational values of Assateague Island and adjacent coastal waters. The authorized boundary includes approximately 48,700 acres of land and water in Maryland and Virginia. Of this, 8,400 acres in Virginia are managed as Chincoteague National Wildlife Refuge, and 600 acres are managed as Assateague State Park in Maryland. The mission of the national seashore is to preserve the unique coastal resources of Assateague Island and the natural ecosystem conditions and processes upon which they depend, while providing high quality resource-based recreational and educational opportunities.

AINS Significance

Today, Assateague Island National Seashore is nationally significant because it:

• is part of a natural system with geologic processes unique to barrier islands, characterized by constant change both seasonally and daily, subtle and dramatic.

• is one of the last surviving undeveloped shorelines along the east coast of the United States. Assateague's 37 miles of barrier beach and bay are a remnant of a natural continuum of islands that once stretched from Cape Cod to Mexico.

• is characteristic of the ecological habitats normally associated with barrier island systems including ocean, beach, dunes, maritime forest, inlets, salt marshes, and bays.

• is a permanent and temporary home to a great diversity of land and aquatic life, including rare species that depend on the unique habitats that result from the overlap of northern and southern habitat zones and the confluence of estuarine and ocean waters.

• is a critical natural landform in the path of the Atlantic Flyway serving as a major stopover for migratory birds.

• is one of the few publicly accessible places along the developed East Coast where visitors can experience unimpaired seashore values such as clean ocean water and beaches, undeveloped bay and marshlands, natural sounds, quiet, solitude, natural viewsheds and night skies.

• is a premier outdoor recreational and educational resource offering outstanding opportunities for hiking, camping, nature study, beach combing, fishing, hunting, recreational boating, shellfishing, swimming, birding, biking, recreational off-road vehicle (ORV) use, as well as many other leisure and educational activities.

APPENDIX E

DRAFT FINDING OF NO SIGNIFICANT IMPACT

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OCEAN CITY HARBOR AND INLET & SINEPUXENT BAY PROJECT
INLET NAVIGATION IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT
WORCESTER COUNTY, MARYLAND

The U.S. Army Corps of Engineers, Baltimore District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The final Environmental Assessment (EA) dated **DATE OF IFR/EA**, for the **Ocean City Harbor and Inlet & Sinepuxent Bay Project** addresses **navigation improvement** opportunities and feasibility in Worcester County, MD. The National Park Service is a cooperating agency. The final recommendation is contained in the Engineering Design Report for the project, dated **DATE OF REPORT**. Additionally, the 1998 **Ocean City, Maryland, and Vicinity, Water Resources Study, Feasibility Report and Integrated Environmental Impact Statement** also serves as a co-decision document for the project.

The Final EA, incorporated herein by reference, evaluated various alternatives that would **improve inlet navigation** by providing a more permanent solution to shoaling problems. The recommended plan is the **National Economic Development (NED) Plan** and includes:

- **Connecting existing gapped breakwaters at the north end of Assateague Island with 600 feet of rock breakwater, and constructing a 150-foot rock jetty extending to the northwest. The additional rock structures would train the channel and optimize self-scouring.**
- The existing inlet navigation channel would be realigned immediately south of its current position into deeper water. Approximately 15,500 cubic yards of sand would be removed from the Inlet Channel and Sinepuxent Bay Channel to realign the inlet channel
- Future maintenance dredging of the inlet channel would be conducted less frequently. At existing shoaling rates, maintenance dredging would be expected once every five years rather than multiple times per year.

In addition to a "no action" plan, **multiple** alternatives were evaluated. The alternatives included various structural solutions on northern Assateague Island and Fenwick Island, channel realignment, and channel deepening. Three alternatives were modeled in detail by USACE Engineer Research and Development Center (ERDC): 1 **no action, 2 constructing a jetty extending northwest into Sinepuxent Bay plus realigning the inlet channel, and 3 connecting existing rock structures on northern Assateague, plus constructing a jetty off northern Assateague into Sinepuxent Bay, plus realigning the channel.**

SUMMARY OF POTENTIAL EFFECTS:

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

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Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☒	☐	☐
Fish and wildlife habitat	☒	☐	☐
Threatened/Endangered species/critical habitat	☒	☐	☐
Historic properties	☒	☐	☐
Other cultural resources	☒	☐	☐
Floodplains	☒	☐	☐
Hazardous, toxic & radioactive waste	☒	☐	☐
Hydrology	☒	☐	☐
Land use	☒	☐	☐
Navigation	☐	☒	☐
Noise levels	☒	☐	☐
Public infrastructure	☒	☐	☐
Socio-economics	☒	☐	☐
Recreation	☐	☒	☐
Environmental justice	☒	☐	☐
Soils	☒	☐	☐
Tribal trust resources	☒	☐	☐
Water quality	☒	☐	☐
Climate change	☒	☐	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the IFR/EA will be implemented, if appropriate, to minimize impacts. Mechanical dredging to be conducted would have minimal impacts to the aquatic ecosystem and no minimization measures are proposed. To minimize impacts to recreation and navigation, it is anticipated that a time-of-year restriction would be imposed limiting dredging to cold-weather months.

COMPENSATORY MITIGATION:

No compensatory mitigation is required as part of the recommended plan.

Public review of the draft IFR/EA and FONSI was completed on **DATE DRAFT EA AND FONSI REVIEW PERIOD ENDED**. All comments submitted during the public review period were responded to in the Final IFR/EA and FONSI. A 30-day state and agency review of the Final IFR/EA was completed on **DATE SAR PERIOD ENDED**. **PICK OPTION BASED ON RESULTS OF STATE AND AGENCY REVIEW**.

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ENDANGERED SPECIES ACT

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan may affect but is not likely to adversely affect the following federally listed species or their designated critical habitat: **seabeach amaranth, loggerhead sea turtle, Kemp's ridley sea turtle, and Piping Plover**. The **PICK THE APPROPRIATE AGENCY** concurred with the Corps' determination on **DATE OF CONCURRENCE LETTER**

NATIONAL HISTORIC PRESERVATION ACT

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to cause adverse effects on historic properties. The **MD Historic Trust** concurred with the determination on **15 October 2020.**

CLEAN WATER ACT SECTION 404(B)(1) COMPLIANCE

Pursuant to the Clean Water Act of 1972, as amended, the discharge of dredged or fill material associated with the recommended plan has been found to be compliant with section 404(b)(1) Guidelines (40 CFR 230). The Clean Water Act Section 404(b)(1) Guidelines evaluation is found in **Appendix A** of the IFR/EA.

CLEAN WATER ACT SECTION 401 COMPLIANCE:

A water quality certification pursuant to section 401 of the Clean Water Act and a Tidal Wetlands and Waterways Permit will be obtained from the **MD Department of the Environment (MDE)** prior to construction. USACE coordinated with MDE during plan formulation. In a letter dated **DATE OF LETTER**, the **STATE, TERRITORY, OR TRIBE** stated that the recommended plan appears to meet the requirements of the water quality certification, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the water quality certification will be implemented in order to minimize adverse impacts to water quality.

COASTAL ZONE MANAGEMENT ACT

A determination of consistency with the **Maryland** Coastal Zone Management program pursuant to the Coastal Zone Management Act of 1972 will be obtained from the **MD Coastal Zone Management Program** prior to construction. In a letter dated **DATE OF LETTER**, the **STATE OR TERRITORY NAME** stated that the recommended plan appears to be consistent with state Coastal Zone Management plans, pending confirmation based on information to be developed during the pre-construction engineering and design phase. All conditions of the consistency determination shall be implemented in order to minimize adverse impacts to the coastal zone.

OTHER SIGNIFICANT ENVIRONMENTAL COMPLIANCE:

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All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed. **NMFS was coordinated with during the study regarding Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act. USFWS and NMFS were coordinated with during the study to ensure compliance with the Fish and Wildlife Coordination Act. .**

FINDING

Technical, environmental, and economic criteria used in the formulation of alternative plans were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.

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Date

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Estee S. Pinchasin
Colonel, Corps of Engineers
District Commander

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