ATLANTIC COAST OF MARYLAND, SHORELINE PROTECTION PROJECT

2026 SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Prepared by:

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March 2026

FINDING OF NO SIGNIFICANT IMPACT

Atlantic Coast of Maryland Shoreline Protection Project
Offshore Shoals in Federal Waters as Sand Sources for Ocean City, Maryland

The U.S. Army Corps of Engineers, Baltimore District (USACE), in cooperation with the U.S. Department of Interior (DOI), Bureau of Ocean Energy Management (BOEM), has conducted a supplemental environmental analysis in accordance with the National Environmental Policy Act (NEPA), of 1969, as amended, with USACE serving as the lead agency. The supplemental Environmental Assessment (sEA) dated January 2026, for the Atlantic Coast of Maryland Shoreline Protection Project (Atlantic Coast Project) entitled *Offshore Shoals in Federal Waters as Sand Sources for Ocean City, Maryland,* supplements a 2008 Supplemental Environmental Impact Statement (2008 EIS) and a 2020 sEA. The Atlantic Coast Project, authorized through 2044, places sand on the beach of Ocean City, Maryland, to reduce risk of coastal storm damage.

The 2026 sEA, incorporated herein by reference, evaluates impacts to Weaver Shoal to meet the immediate sand needs of the Atlantic Coast Project. Because five years have elapsed since issuance of the 2020 sEA, USACE and BOEM prepared this 2026 sEA to update findings of the 2020 sEA to determine whether modifications are warranted to the previous recommended plan, which identified Weaver Shoal as the recommended sand source for the next renourishment cycle (winter 2026/2027) and one more additional cycle thereafter. The updated recommended plan for the Atlantic Coast Project consists of:

- Placing sand on the beach of Ocean City every four years, with the next sand nourishment anticipated in winter 2026/2027.
- Dredging sand from Weaver Shoal for the next beach nourishment cycle in 2026 and one more additional cycle thereafter.
- Conducting dredging under environmental constraints to minimize long-term impacts to offshore shoal habitats.

In addition to a “no-action” plan, the recommended plan was also evaluated. The sEA does not analyze the effects of all resources analyzed in the 2020 sEA if no new information on those resources has been made available since 2020, or NEPA law or policy regarding how to analyze effects to those resources has not changed since 2020. The sEA only analyzes effects on bathymetry/physiography, air quality, natural seafloor habitats, benthic invertebrates, and cultural and tribal resources. For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan is listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Bathymetry/Physiography	☒	☐	☐
Air Quality	☒	☐	☐
Invertebrates	☒	☐	☐
Cultural Resources and Historical Structures	☐	☐	☒

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 sEA will be implemented, if appropriate, to minimize impacts. Table 2 provides a summary of environmental measures to ensure compliance during dredging activities and methods to survey Weaver Shoal after dredging follow state, federal, and local agency recommendations and standards.

Table 2: Environmental Compliance Matrix

Environmental Compliance Matrix	Environmental/Fisheries Rationale
Bathymetry (Dredging)*	
Dredge no more than about 5 percent of the total volume of any shoal	Maintain long-term overall shoal relief and size, and thus habitat value.
Avoid the crest (within 500 feet of peak line)	Shoal habitat value contingent upon greater relief off seafloor and waves/currents at crest. Shoal crest may also play role in long-term shoal geomorphic maintenance.
Dredge evenly and thinly (generally no more than several feet) over a wide area. (Maximum removal thickness in one nourishment cycle would be 10 feet.)	Maintain overall shoal geomorphic character, avoid creation of pits (which could induce fine-grained sediment deposition or low oxygen conditions).
Dredge no deeper than ambient depths of the adjacent seafloor	Avoid exposing underlying clay, silt, or gravel (which would change substrate conditions), avoid creation of pits (which could induce mud deposition or be prone to low oxygen conditions).
Munitions and Explosives Concern (UXO)*	
Screening the intakes at the dragheads on the seafloor to prevent intake of any material with a diameter greater than 1.25 inches.	
Screening outflow onto the beach to prevent discharge of any material with a diameter greater than 0.75 inches.	
Use a robust quality control/quality assurance (QC/QA) program, which includes having an unexploded ordnance (UXO) technician on site during operations.	

*USACE, Baltimore District will be the responsible party for bathymetry survey(s) and MEC oversight. No compensatory mitigation is required as part of the recommended plan.

Pursuant to Section 7 of the Endangered Species Act of 1973, the National Marine Fisheries Service (NMFS) issued a biological opinion in 2006 that determined that the recommended plan may adversely affect but is not likely to jeopardize the continued existence of loggerhead and Kemp's ridley sea turtles. In 2013, NMFS concurred that dredging of the borrow areas was not likely to adversely affect Atlantic sturgeon. In 2018 and 2024, NMFS stated that re-initiation of consultation under the ESA regarding potential impacts on federally listed species under their jurisdiction was not necessary. All terms and conditions, conservation measures, and reasonable and prudent alternatives and measures resulting from these consultations shall be implemented in order to minimize take of endangered species and avoid jeopardizing the species.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, USACE determined that the recommended plan has no potential to cause adverse effects on historic properties. To maintain compliance with Section 106 for the 2026 sEA, USACE sent consulting party letters to state agencies and tribal nations. The Maryland Historical Trust maintained their view that the project would have no effect on cultural resources. The Delaware Nation requested to review the 2019 Phase I archaeological investigation report; however, did not provide comments. No other responses were received.

The scheduled periodic renourishment of the project will be constructed pursuant to all conditions outlined in State of Maryland Wetlands License No. 24-0714 (issued March 25, 2025 and expires March 25, 2035); Maryland Department of the Environment Water Quality Certification No. 15-WQC-0988 (reissued October 10, 2025); State of Delaware Subaqueous Lands Permit No. SP-432/18 (issued February 5, 2019 and expires February 5, 2029); and State of Delaware Water Quality Certification No. WQ-432/18 (issued February 5, 2019 and expires February 5, 2029). An updated authorization of the MD WQC was acquired by USACE on October 10, 2025, and will remain in effect so long as there is no increase in impacts previously authorized per 15-WL-0988.

A determination of consistency with the State of Maryland's Coastal Zone Management Program (CZMP) and the State of Delaware's CZMP pursuant to the Coastal Zone Management Act of 1972 was obtained from MDE (MD20180413-0244) and from the Delaware's Coastal Management Program (FC 2019.0003). The proposed scope of work has not changed from the original consistency determination; therefore, the CZMA consistency document is still applicable for Delaware. Upon the March 25, 2025, renewal of the Maryland Tidal Wetlands License, the Maryland CZMA was also renewed for Maryland and is still applicable. All conditions of the consistency determination shall be implemented in order to minimize adverse impacts to the coastal zone.

A public notice announcing the release of the sEA for the next re-nourishment cycle was available for a 30-day public and agency review on the USACE, Baltimore District project website beginning on September 22, 2025. The notice was also emailed to several local, state, federal and public stakeholders from previous coordination efforts. The public notice provided a website link from which the draft sEA could be downloaded. No comments were received during the public involvement period.

All applicable environmental laws have been considered and coordination with appropriate agencies and officials has been completed. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on these reports, 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 changes in the Recommended Plan from the 2008 EIS would not significantly affect the human environment; therefore, preparation of a new EIS is not required.

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Date

Francis B. Pera
Colonel, U.S. Army
Commander and District Engineer

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2026 SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

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SELECT ACRONYMS AND TERMS USED IN THIS REPORT

Acronym or Term	Explanation
BOEM	Bureau of Ocean Energy Management
CSDR	Coastal Storm Damage Reduction
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
DNREC	Delaware Department of Natural Resources and Environmental Control
EA	Environmental assessment
EFH	Essential Fish Habitat
EIS	Environmental impact statement
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
LTSM	Long-Term Sand Management
MD SHPO	MD State Historic Preservation Officer
MD DNR	MD Department of Natural Resources
MGS	Maryland Geological Survey
MHT	Maryland Historic Trust
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OCS	Outer Continental Shelf
ROD	Record of Decision
sEA	Supplemental Environmental Assessment
sEIS	Supplemental Environmental Impact Statement
USACE	U.S. Army Corps of Engineers
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
WEA	Wind Energy Area
WQC	Water Quality Certification

1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE) *Atlantic Coast of Maryland Shoreline Protection Project* (Atlantic Coast Project) is designed to reduce the risk of coastal flooding and erosion to coastal communities in Ocean City, Maryland (MD) from a one percent annual exceedance probability ("100-year") storm. The project includes maintaining the beach from 4th Street to the MD/Delaware (DE) line (about 8.3 miles), with an additional 1,500-feet transition into DE that connects to the separate USACE *Delaware Coast from Cape Henlopen to Fenwick Island, Fenwick Island DE Coastal Storm Damage Reduction (CSDR) Project*. The MD portion of the nourished beach lies in Worcester County, MD. The transition area into DE lies in Sussex County. By design, periodic re-nourishment and maintenance of the beach are required to maintain the design level for storm damage reduction. Each re-nourishment provides an estimated four years of advanced nourishment so that the design level of storm damage reduction will be maintained for the next four years. After initial beach re-establishment by the State of MD in 1988, USACE has placed approximately 13 million (M) cubic yards of sand on Ocean City Beach within the construction template from the years 1990 to 2021 ("contract volume" in Table 1). USACE obtained this sand from Borrow Areas 2, 3, and 9 within state waters from 1990 to 2017, and from Weaver Shoal in 2021. USACE Baltimore District has requested to enter into a non-competitive negotiated three party agreement with the U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM), and the Maryland Department of Natural Resources (MD DNR) for the use of sand resources from the Outer Continental Shelf (OCS) for the next scheduled periodic renourishment of the Atlantic Coast of Maryland Shoreline Protection Project located in the town of Ocean City, Maryland. The requested agreement would represent a continuation of the ongoing collaboration between USACE, BOEM, and DNR that was initiated in 2021, through BOEM Negotiated Agreement No. OCS-A 0536, executed 04 May 2021. The proposed request is nearly identical, asking for use of the same borrow area and removal of a similar quantity of OCS sand resources for the same shoreline protection project in 2026.

In March of 2024, USACE sent re-initiation / request for updated resource information letters to stakeholders based on past coordination efforts relevant to this project. Electronic letters were sent to the U.S. Environmental Protection Agency (USEPA), Maryland Department of the Environment (MDE), Maryland Historical Trust (MHT), National Oceanic and Atmospheric Administration (NOAA), U.S. Fish and Wildlife Service (USFWS), Delaware Division of Climate, Coastal and Energy, and several tribal nations (Appendix A). The purpose of this sEA is to review prior environmental documents and articulate what (1) new circumstances, (2) new information, (3) changes to the proposed action, or (4) impacts not previously analyzed that could result in significantly different effects from those previously analyzed. New information and recommendations were provided by EPA and MDE for this Supplemental Environmental Assessment (sEA).

Because USACE and BOEM evaluated multiple offshore borrow sites in 2008, this sEA focuses solely on dredging of Weaver Shoal for the action alternative. BOEM is a cooperating agency with USACE in preparation of this sEA for the proposed action in accordance with National Environmental Policy Act (NEPA) requirements, with USACE serving as the lead agency.

2.0 HISTORY OF BEACH RENOURISHMENT AT OCEAN CITY, MD

The Atlantic Coast Project places sand on the beach of Ocean City, generally every four years, to reduce risk of coastal storm damage. The next sand placement is anticipated by the year 2026-2027. USACE and MD Department of Natural Resources (MD DNR) have sometimes placed sand on Ocean City beach more frequently than every four years following severe storms. USACE and the Bureau of Ocean Energy Management (BOEM) prepared an Environmental Impact Statement (EIS) in 2008 evaluating four offshore shoals as sources of sand for the Atlantic Coast Project: Weaver Shoal, Isle of Wight Shoal, Shoal A, and Shoal B (also known as Bass Grounds and First Lump) and are incorporated herein by reference (USACE, 2008). Offshore shoals contain large quantities of suitable sand that can be cost-effectively obtained. The offshore shoals lie in federal waters (beyond three nautical miles from shore) on the Outer Continental Shelf.

Because sand sources in state waters had been exhausted and more than 11 years had elapsed since the 2008 EIS, USACE and BOEM prepared a Finding of No Significant Impact (FONSI) and Supplement Environmental Assessment sEA in 2020, incorporated herein by reference (USACE, 2020). In 2020, USACE and BOEM conducted a National Environmental Policy Act (NEPA) analysis that evaluated the potential effects of dredging sand from four offshore borrow sources located on the outer continental shelf to place on the beach in Ocean City, MD. The NEPA analysis recommended Weaver Shoal as the sand source for the 2021 beach re-nourishment cycle and up to one additional cycle. As of April 2025, the Atlantic Coast Project has utilized the Weaver Shoal for one dredging and placement event in 2021 due to its sufficient sand source and limited physical, natural, and human impacts.

During the winter of 2021, 937,437 cubic yards of sand was dredged from Weaver Shoal using a hopper dredge and placed along 44,500 linear feet of beach. Bathymetric surveys of the Weaver Shoal were completed in 2021 (pre-dredge) and 2023 (post-dredge). Bathymetric surveys were conducted based on prior mitigative commitments to ground truth whether established dredging guidelines to minimize long term dredging impacts to offshore shoal habitats are sufficient and confirm continued dredging at Weaver Shoal for future events. Surveys were conducted before and after and analyzed to re-assess the mitigative dredging constraints and plan future dredging. The findings of this analysis are considered new information for the purpose of this sEA as stated below. Table 2 documents that the mitigative constraints were met during the 2021-2022 dredging event, and Section 2 states that these same constraints will continue to be applied for future events. Table 4 documents how removal of the extra volume will not exceed the 5% constraint. The results of the bathymetric surveys were used to confirm that the 2021-2022 dredge event was conducted in compliance with the Weaver Shoal dredging guidelines and constraints listed in Table 2. Provided that the conditions will stay the same and consistent within the dredging guidelines and constraints, Weaver Shoal can continue to be dredged for future beach re-nourishment events. The next beach re-nourishment event and dredging of Weaver Shoal is proposed to occur in the winter of 2026 - 2027.

Since completion of the 2020 FONSI and sEA, new information has been made available including 2023 bathymetric survey data and updated NEPA guidance. This sEA has been prepared to update this new information and reevaluate the potential effects on certain resources including bathymetry and physiography, air quality, natural seafloor habitats, benthic invertebrates, and cultural resources. Updated agency and tribal coordination, as well as outreach via a project re-initiation

letter sent via e-mail to the local and commercial fishing industry was completed in October 2024. Placement of sand on Ocean City Beach is not considered in this sEA because those impacts were considered in the 2008 EIS (USACE, 2008) and no changes are proposed from the construction practices and impacts evaluated in that document.

Table 1: Total History of USACE Beach Placement at Ocean City, Maryland

Year	Contract Volume* (cubic yards)	Estimated Actual Volume Dredged (cubic yards)
1990	2,199,000	2,419,000
1991	1,623,000	1,785,000
1992	1,592,000	1,751,000
1994	1,245,000	1,370,000
1998	1,290,000	1,419,000
2002	745,000	820,000
2006	932,000	1,025,000
2010	909,000	1,000,000
2014	902,000	992,000
2017	906,000	997,000
2021	894,544	937,437
Total	**13,237,544**	**14,515,437**

*Placed on beach within measured construction template.

3.0 DESCRIPTION OF PROPOSED ACTION

The USACE proposed action is to dredge sand from offshore shoals located on the outer continental shelf for the remaining life of the Atlantic Coast Project (through 2044). It is anticipated that the project would utilize Weaver Shoal for the next re-nourishment cycle and one additional cycle. Re-nourishment cycles generally occur every 4 years. The next re-nourishment is proposed for the winter of 2026-2027. It is expected that a hopper dredge comparable to those used in 2021 will be utilized for future dredging events. A detailed explanation of the proposed dredging operations is located in Section 2.1 of the 2020 sEA (USACE, 2020). Sand would be dredged in accordance with the Weaver Shoal dredging guidelines and constraints intended to maintain offshore shoal habitats over the long-term (Table 2). BOEM is authorized under Public Law 103-426 [43 United States Code (U.S.C.) 1337(k)(2)] to negotiate on a non-competitive basis the rights to outer continental shelf sand resources for shore protection projects. BOEM's action is to issue a negotiated agreement (Appendix D) authorizing use of the sand source areas at the request of USACE and the project sponsor, the MD Department of Natural Resources (MD DNR).

Measures to manage potential munitions and explosives of concern (MEC) found in the dredge area, as well as guidelines provided by the U.S. Coast Guard for vessel operations will be followed as identified in the 2020 sEA. Such actions include:

- Screening the intakes at the drag heads on the seafloor to prevent intake of any material with a diameter greater than 1.25 inches.

- Screening outflow onto the beach to prevent discharge of any material with a diameter greater than 0.75 inches.
- Use a robust quality control/quality assurance (QC/QA) program, which includes having an unexploded ordnance (UXO) technician on site during operations.

Based on past dredging events, no UXOs were discovered; therefore, the probability of UXO being found in this area and subsequently being placed on the beach is low. No new information on MEC was discovered during construction in 2021.

Table 2: Weaver Shoal Dredging Guidelines and Constraints.

Mitigation Constraint	Environmental/Fisheries Rationale	Mitigation Constraint Met Following 2021 Dredging
Dredge no more than about 5 percent of the total volume of any shoal	Maintain long-term overall shoal relief and size, and thus habitat value.	Yes, see Table 4 below.
Avoid the crest (within 500 feet of peak line)	Shoal habitat value contingent upon greater relief off seafloor and waves/currents at crest. Shoal crest may also play role in long-term shoal geomorphic maintenance.	Yes, crest was avoided.
Dredge evenly and thinly (generally no more than several feet) over a wide area. (Maximum removal thickness in one nourishment cycle would be 10 feet.)	Maintain overall shoal geomorphic character, avoid creation of pits (which could induce fine-grained sediment deposition or low oxygen conditions).	Yes, dredging was conducted evenly and thinly over a wide area.
Dredge no deeper than ambient depths of the adjacent seafloor	Avoid exposing underlying clay, silt, or gravel (which would change substrate conditions), avoid creation of pits (which could induce mud deposition or be prone to low oxygen conditions).	Yes, dredging was performed no deeper than the ambient depths of the seafloor.

4.0 TOTAL SAND VOLUME NEED RE-ESTIMATION

Volumes placed in the years 2002 to 2021 were less per re-nourishment cycle than those of the years 1990 to 1998. This occurred because initial establishment of the engineered beach in 1988 and the early 1990s required a substantial sand volume, as well as severe storms in the early 1990s. For the purposes of re-estimating future sand needs for this sEA, it is assumed that beach conditions characteristic of the present started in January 1999, and that each re-nourishment volume placed from 2002 onward thus effectively replaces the volume of sand eroded in the period of several years prior to that placement. For example, placement in 2002 provided sand to compensate for sand lost from the beach in the years 1999, 2000, 2001, and 2002.

The long-term record of the Atlantic Coast Project beginning in 1992 (after initial engineered beach establishment in 1990 and 1991) shows the contract volume averaging 1,046,172 cubic yards placed on the beach per re-nourishment cycle, and the volume of sand dredged from borrow sources averaged 1,145,715 cubic yards per re-nourishment cycle. Assuming that future re-nourishment would occur every four years at the volume of approximately 1.2M cubic yards (contract volume) in the years 2026, 2030, 2034, 2038, and 2042, then total future sand need within the construction template and dredging volume would be approximately 6M cubic yards (Table 3).

Dredging Individual Shoals

Table 2 stipulates that no more than 5 percent of the total volume of sand from any offshore shoal can be dredged. Total shoal volumes were provided in the 2008 sEIS. Table 4 shows the remaining amount of sand that can be dredged from each shoal as of year 2025.

Table 3: Total Shoal Volumes, Maximum Volumes Based on Dredging Constraints, and Remaining Volumes Following Dredge Events.

Volume (cubic yards)	Offshore Shoal			
	Weaver	**Isle of Wight**	**A**	**B**
Total Sand Volume from 2008 sEIS	93,000,000	136,000,000	103,000,000	50,000,000
Maximum 5 percent acceptable to dredge	4,650,000	6,800,000	5,150,000	2,500,000
Estimated actual volume dredged as of year 2025	937,437	0	0	0
Remaining amount acceptable to dredge	3,712,563	6,800,000	5,150,000	2,500,000

Based on the remaining amount of sand acceptable to be dredged from Weaver Shoal and the amount of actual dredged volume estimated for future re-nourishment cycles (both minimum and maximum estimations), it is estimated that sand from Weaver Shoal can be used for one more future re-nourishment event (2030) after the 2026 cycle. The possibility exists that parts of Weaver Shoal may have experienced shoaling since the shoal was dredged in 2021 and since completion of the 2023 bathymetric survey. Therefore, more (or less) sand may be present at Weaver Shoal than USACE has estimated.

A substantial portion of the sand from Weaver Shoal is very similar to the sand on the engineered beach at Ocean City. While these offshore shoals do contain a small percentage of gravel, dredging would be conducted to match as well as possible the mean grain size of the Ocean City engineered beach. Multiple sub-areas have been delineated on each shoal based on sand characteristics and their suitability for use on Ocean City beach (Figure 1). In 2021, sand was dredged evenly from all Weaver Shoal sub-areas. The contractor will determine which sub-areas to use prior to each

dredge event in coordination with USACE and BOEM and based on the results of the previous event's bathymetric survey data and the Weaver Shoal dredging constraints. All dredging activities will comply with the dredging constraints outlined in Table 2.

Bathymetric surveys of the offshore shoals will be conducted within one year following the completion of dredging. These surveys will provide a means to verify that dredging was conducted in accordance with the dredging constraints. Comparison of bathymetric records from multiple years will be conducted to determine whether dredging under the dredging constraints is effectively maintaining longer-term geomorphologic integrity of the offshore shoals, and thus their habitat values. Bathymetric records comparison will focus on overall coarse scale bathymetric character of the shoals. The dredging process is anticipated to leave small scale temporary furrows that would not be monitored, as those furrows would not pose a long-term threat to shoal geomorphic character.

In compliance with the dredging constraints and guidelines highlighted in this sEA as well as the 2020 sEA, USACE performed a before and after dredging bathymetric survey across the borrow area on Weaver Shoal in 2020 (Figure 1).

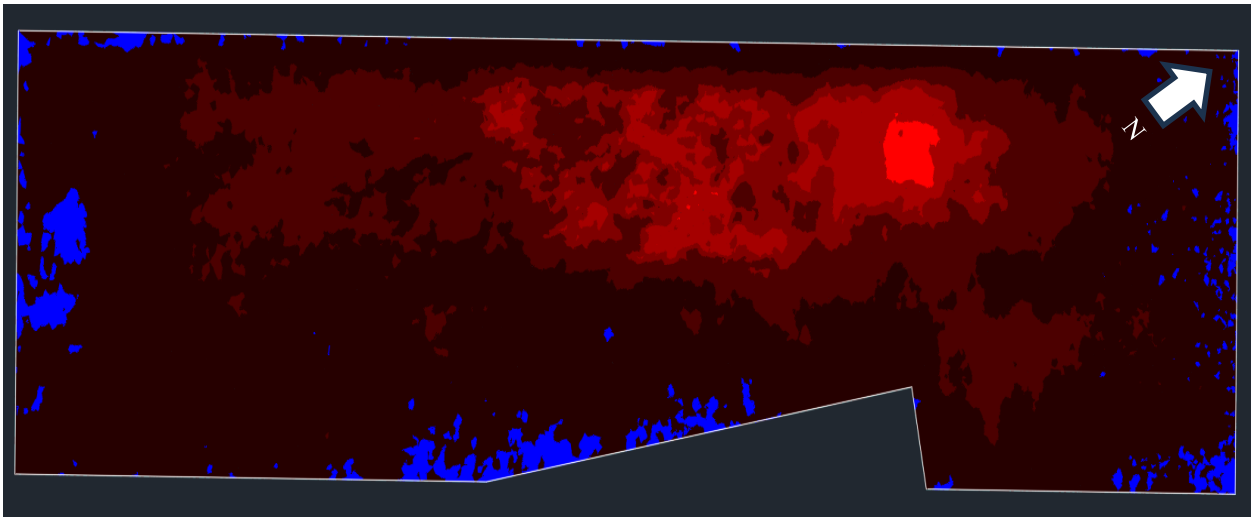

Figure 1: 2020 Before and After Survey of Dredging Event

Figure 1 displays an overlay of the before dredge survey (blue) and after dredge survey (red). The elevation differences were banded into 1 ft increments with the before and after dredging events overlaying one another. The dull/faint red areas demarcated on the figure indicate areas where sand was removed, i.e., the west-northwest section of the approved borrow area. Conversely, areas with brighter red indicate areas that were avoided during the dredging event.

In 2023, Weaver Shoal was surveyed again to assess where the sediment may have relocated across the Weaver Shoal borrow area. The 2023 bathymetric survey was overlaid across the 2020 after dredging survey. Figure 2 shows areas where the 2023 surface is greater than the 2020 after dredging surface. Color banding is in 1 ft increments with depths varying from 0 to 3 ft in difference. The darker blue represents the thickest areas of accretion. Accretion is observed to be greatest in areas where previous dredging occurred.

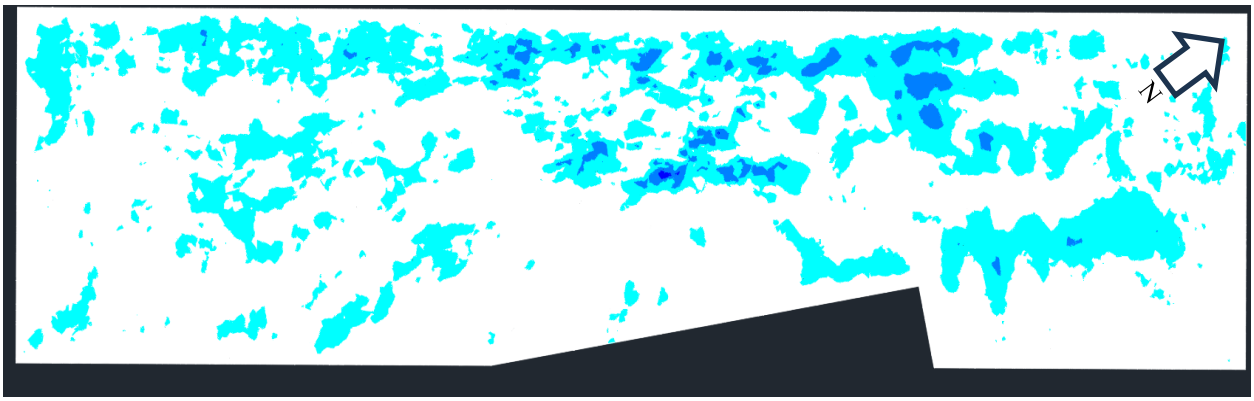

Figure 2: 2023 Bathymetric Survey Overlayed with 2020 After Dredging Event Survey

U.S. Wind Offshore Project

On December 3, 2024, the Department of the Interior announced the approval of the Maryland Offshore Wind Project Construction and Operations Plan. The project is located approximately 10 nautical miles offshore of Ocean City, Maryland, and approximately 9 nautical miles offshore Sussex County, Delaware. The approved 2024 COP includes up to 114 wind turbine generators, four offshore substations, a meteorological tower, and up to four offshore export cable corridors with subsea transmission cables making landfall in Sussex County, Delaware. (BOEM, 2025). (BOEM, 2025). Data acquisition associated with the US Wind Offshore project was leveraged to inform NEPA for this project, where applicable, given their close proximity to one another. On July 30, 2025, BOEM rescinded all Designated Wind Energy Areas (WEA). On August 7, 2025, the Department of Interior announced that BOEM would be launching a full review of wind energy regulations and reviewing existing energy projects, and on September 12, 2025 the United States filed motions in pending litigation to remand the Maryland Offshore Wind COP decision to BOEM, and vacate the COP approval. However, the approved borrow area at Weaver Shoal does not impact the proposed US Wind Offshore Project (OCS-A-0490). Weaver Shoal is approximately 3.7 miles west of the lease for the proposed wind farm. Figure 3 depicts the locations of Weaver Shoal, the wind energy project in the 2024 COP, and Ocean City, MD.

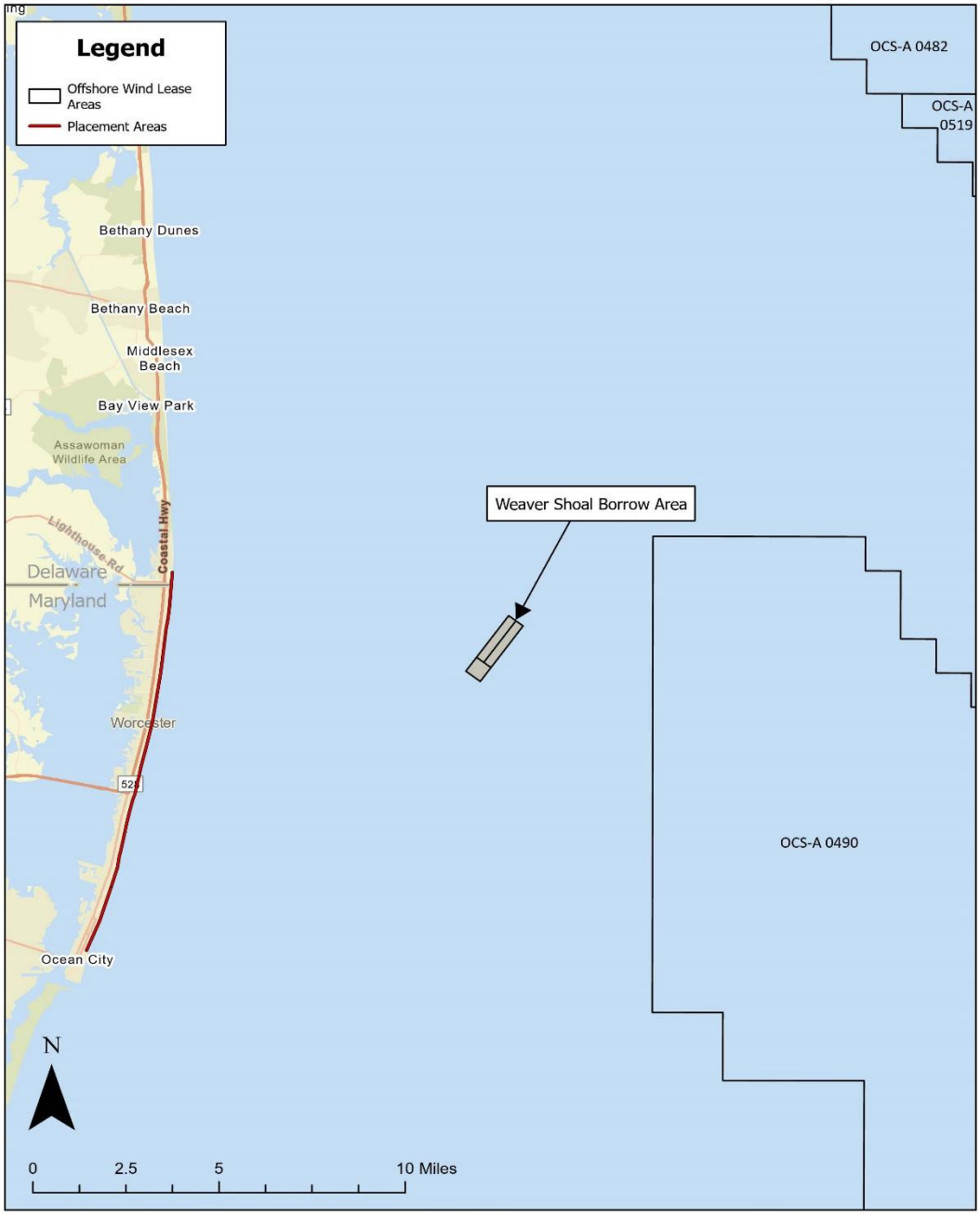

Figure 3: Weaver Shoal Borrow Area in reference to U.S. Wind Project

5.0 ALTERNATIVES CONSIDERED

The formulation of alternatives in the 2020 sEA focused on re-assessment of the four candidate shoals identified in the 2008 sEIS. In the 2020 sEA, Weaver Shoal was recommended as the offshore sand source for the next re-nourishment cycle (2021) and up to one more additional cycle after the 2026-2027 cycle based on the lower fishery value as compared to the Isle of Wight Shoal. Based on the results of the 2020 and 2023 bathymetric surveys and no changes in fishery value

(i.e., no new information from fisherman and no significant geomorphologic change based on analysis of bathymetric surveys), sand will continue to be dredged from Weaver Shoal for up to one more additional cycle after the 2026-2027 cycle. Therefore, this sEA only updates the NEPA effects analysis for the proposed dredging of Weaver Shoal. In the future, dredging of either the Isle of Wight Shoal, Shoal A, or Shoal B could be conducted pending re-assessment of engineering, environmental, and cost considerations. If other offshore borrow areas will be considered for dredging in the future, future NEPA analysis may be needed to update the effects analysis as a result of dredging the other borrow areas.

5.1 NO FEDERAL ACTION ALTERNATIVE

Under the no federal action, USACE would not dredge sand and beach placement would not occur for the Atlantic Coast Project at all in 2026. Resources discussed in Section 6.0 would not have a long-term positive or negative affect as no dredging would occur for the 2026 renourishment cycle. Effects to bathymetry and physiography, air quality, natural seafloor habitats, invertebrates, cultural resources and historical structures would remain consistent with the natural occurring processes.

5.2 RECOMMENDED ALTERNATIVE

Dredging Weaver Shoal for the next beach re-nourishment cycle (2026) and up to one additional cycle after the 2026-2027 cycle is the recommended alternative. Neither Isle of Wight nor Shoal A nor Shoal B would be dredged for the next one or more cycles. The recommended alternative would be conducted in accordance with the dredging guidelines and constraints identified in Table 2. The recommended alternative would not impose any time of year restrictions on dredging. Within one year following the completion of dredging for each nourishment event, USACE will conduct bathymetric monitoring of Weaver Shoal to verify how dredging impacted shoal evolution and whether the dredging constraints are maintaining shoal geomorphic integrity. USACE will conduct volumetric and depth change analyses, prepare seafloor change maps, and coordinate the findings with BOEM, the National Marine Fisheries Service (NMFS), and the MD Geological Survey (MGS). In particular, future monitoring should reassess whether or not dredging should be focused on the leading edge of the shoal but avoid the trailing edge as recommended by various investigators. Whether or not additional dredging constraints should be utilized in planning shoal dredging should also be considered in the future.

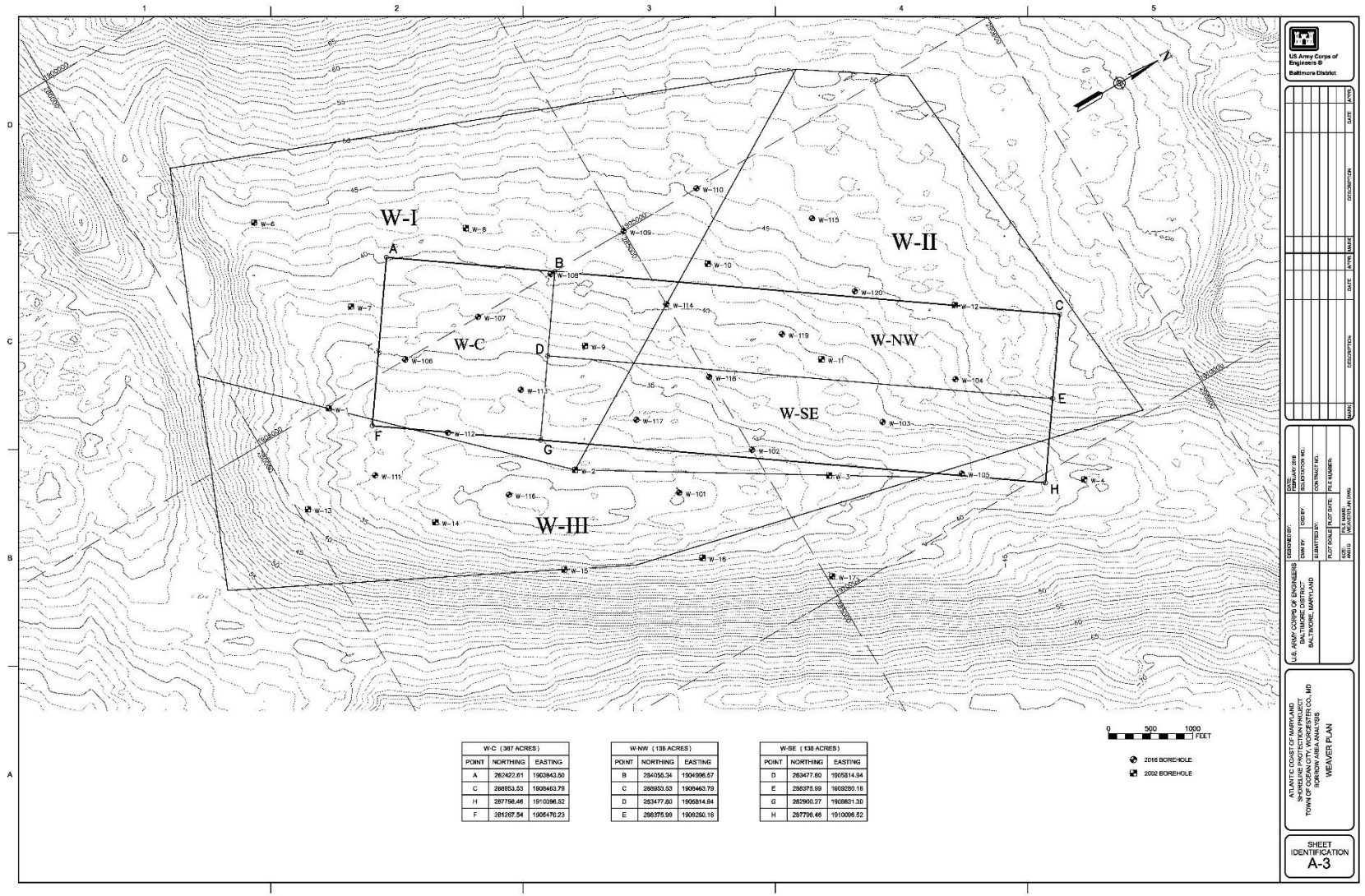

Figure 4: Weaver Shoal Dredge Areas and Sub-areas
(USACE only dredging sub areas W-C, W-NW, and W-SE, as needed)

6.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a summary of new information and/or changes since the 2020 sEA. Potential effects of the no-action and the recommended alternative are described to the degree applicable in terms of type (direct, indirect, cumulative; context; duration (short- or long-term) and intensity (negligible, minor, moderate, major). This sEA does not analyze the effects of all resources analyzed in the 2020 sEA if no new information on those resources has been made available since the 2020 sEA, or NEPA law or policy regarding how to analyze effects to those resources has not changed since 2020. This sEA only analyzes effects on bathymetry/physiography, air quality, natural seafloor habitats, benthic invertebrates, and cultural resources.

Coordination with federal and state agencies was conducted in March 2024 to determine if there was new information available or if the agencies had any comments on the upcoming nourishment event and the continued use of Weaver Shoal as the offshore borrow site. In response to the March 2024 agency re-initiation letters, USACE and BOEM included new information based on requests from USEPA and in response to updated air quality and greenhouse gas emission guidelines. USACE re-engaged the fishing community in October 2024 to reintroduce the project and its intent; however, no responses were received. USACE will hold a public meeting at a future date to discuss the project with the public, local community and stakeholders.

NMFS had no updated information or data to share and recommended that USACE follow the agreed-upon Essential Fish Habitat (EFH) conservation recommendations and best management practices from previous coordination efforts. NMFS also stated that no re-initiation of consultation under the Endangered Species Act (ESA) regarding potential impacts on federally listed species under their jurisdiction was necessary. Previous analysis and finding of effects of the Atlantic Coast Project by NMFS on shortnose sturgeon (*Acipenser brevirostrum*), sea turtles, and whales have not changed.

To maintain compliance with Section 106 of the National Historic Preservation Act (NHPA) for this sEA, USACE sent consulting party letters to the following state agencies and tribal nations: MD Historical Trust (MHT), Cayuga Nation, Chickahominy Indian Tribe, Chickahominy Indian Tribe Eastern Division, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Monacan Indian Nation, Nansemond Indian Nation, Oneida Indian Nation, Oneida Nation of Wisconsin, Onondaga Nation, Pamunkey Indian Tribe, Rappahannock Indian Tribe, Seneca Nation, Seneca-Cayuga Tribe, Shawnee Tribe, St. Regis Mohawk Tribe, Stockbridge Munsee Community of Mohican Indians, Tonawanda Band of Seneca, Tuscarora Nation, and the Upper Mattaponi Tribe. The MHT maintained their view that the project would have no effect on cultural resources. The Delaware Nation requested to review the 2019 Phase I archaeological investigation report; however, did not provide comments. No other responses have been received.

6.1 BATHYMETRY AND PHYSIOGRAPHY

The 2008 sEIS provided a regional overview of the offshore shoals and ocean seafloor offshore of Ocean City. The bathymetry of the study area is essentially a smooth underwater plain with a number of large shoals that rise gently up from the seafloor.

Table 4: Weaver Shoal Characteristics.

Shoal (N to S)	Distance Offshore – Shoal Centroid (miles)	Area (square miles)	Base Length (miles)	Maximum Width (miles)	Relief Off Seafloor (feet)
Weaver Shoal	7.2	3.8	4.1	1.4	31

USACE conducted a bathymetric survey of Weaver Shoal in 2023 in accordance with the USACE Hydrographic Manual EM-1110-2-1003. Updated Weaver Shoal characteristics are shown in Table 5 based on the updated bathymetric survey. The highest elevation (where the shallowest waters occur) was -31 feet. The lowest elevations (where water depths are the greatest) was approximately -48 feet.

Direct Effects

Adverse direct effects to bathymetry are considered moderate due to the potential for dredging to create long furrows that could be deepened up to 10 feet. These effects could be short term or long-term depending on the rate of natural shoaling over time. The 2008 sEIS stated that furrows would gradually fill in. The sEIS also stated that overall, shoal height over the long-term would gradually be reduced by up to about 1 foot caused by a loss of up to 5 percent of each shoal's volume, based upon the relationship of volume to height. In the 2020 sEA, USACE forecasted that overall shoal height may not change under certain conditions if the crest is avoided during dredging (one of the dredging constraints). To mitigate the adverse effects to offshore shoal bathymetry, the proposed action will be conducted in compliance with the dredging constraints identified in Table 2. Section 4 of this sEA describing the before and after bathymetric survey data confirms adherence to the mitigation requirements and supports some of these assumptions. USACE will include stipulations in the dredging contract that incorporate the constraints, and thus defines the boundaries of the area to be dredged and limits the thickness of material that can be removed from any one place during a single dredging cycle, effectively spreading impacts over a wide area during each cycle. Bathymetric surveys of the borrow area will be conducted within one year upon completion of dredging to verify that the borrow activity was conducted in accordance with dredging guidelines and constraints. The rate of sand to return to the shoal through naturally occurring processes depends on various environmental factors and continued use of the shoal. The dredging constraints should mitigate any adverse effects as confirmed in the analysis of data collected in association with the prior event.

Indirect Effects

Indirect effects may occur through increased turbidity within the water column. Localized changes in wave action may occur around the shifting elevation of the shoal.

6.2 AIR QUALITY

The U.S. Environmental Protection Agency's (USEPA) "Green Book" lists Worcester County, MD, as being in attainment with the National Ambient Air Quality Standards (NAAQS), and Sussex County, DE as being in marginal non-attainment for 8-hour ozone (2008 standard) (USEPA, 2025). The waters of the project area lie offshore of the Eastern Shore Air Quality Control Region (AQCR 114) as designated by the USEPA. DE is also part of the Ozone Transport Region, which includes states in the northeast United States that must adhere to stricter conformity

thresholds for nitrogen oxides and volatile organic compounds, which are precursors for ozone. An air quality analysis conducted as part of the 2020 sEA found that emission quantities from the project were vastly smaller than the emission quantities of concern that would require a General Conformity Analysis. Therefore, while the project is expected to temporarily degrade air quality during each beach re-nourishment cycle, effects will not undermine regional efforts to improve air quality as captured in the State Implementation Plan. Accordingly, no mitigation measures that could reduce or minimize impacts of air pollution are required.

Additionally, in March 2024, USEPA suggested USACE perform an air quality analysis that analyzes emissions of carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) from construction equipment. This analysis was not conducted in the 2020 sEA. Results this analysis were obtained in February 2025 and are located in Appendix C. USACE is aware that Executive Order (EO) 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, has been rescinded, and that on July 29, 2025, EPA announced a proposed rulemaking that will revisit regulations interpreting Section 202 of the Clean Air Act. The completed February 2025 analysis for this project is included unaltered.

Direct Effects

Direct emissions relative to the recommended alternative include emissions from construction equipment used to dredge the material as well as equipment used to place the pipeline. No long-term emissions are expected since the recommended alternative does not include the construction of buildings or equipment that would produce additional emissions after the conclusion of the project. The direct, short-term emissions calculated for the recommended alternative are not expected to substantially decrease air quality. The results of the air quality analysis indicate that short-term, direct project emissions could reach roughly 2,342 metric tons of carbon dioxide equivalents (CO2e). The recommended alternative was compared to the State of MD and State of DE predicted emissions for 2025, i.e., 60 MMT CO2e and 18 MMT CO2e, respectively. Emissions estimated for the recommended alternative was 2,342 metric tons CO2e. Calculated emissions in CO2e is roughly 0.004 percent of the overall State of MD emissions goal for 2025, and 0.013 percent of the State of DE emissions goal for 2025. These percentages assume that the entire recommended alternative takes place in either the State of MD or the State of DE. However, project emissions will occur between both states resulting in a lower percentage. Therefore, the recommended alternative would not have a significant impact on air quality.

6.3 INVERTEBRATES

Invertebrates range from sessile (fixed position) organisms such as barnacles, to weakly mobile organisms such as mollusks, to highly mobile crustaceans. Benthic invertebrates are an important food source for many fish species and include animals that live in the substrate (infauna), such as worms and clams, as well as animals that live on the surface of the seafloor (epifauna), such as crabs. Invertebrates also include organisms that swim freely in the water column and that don't typically occur on the bottom known as pelagic invertebrates. The 2008 sEIS included information from multiple regional and shoal specific studies of animal life of the offshore shoal areas that had been conducted up to that time. Generally, these studies found that offshore shoals tend to possess lower numbers of benthic organisms, species, and biomass than adjacent deeper intershoal areas.

BOEM (USACE, 2020) contains findings of several investigations of the MD WEA conducted over the period of 2003-2012 that captured and photographed benthic invertebrates (BOEM, 2017). The western and southern portions of the MD WEA have ridge and swale topography and water depths similar to that of the offshore shoal area of interest. (Conversely, the eastern side of the MD WEA contains seafloor plains at greater depths). BOEM (USACE, 2020) reports 72 taxa of benthic infauna taken in trawl samples in the MD WEA. Benthic infauna were dominated by polychaetae worms. BOEM (2017) reports that 38 taxa of benthic epifauna were taken in trawl samples (BOEM, 2017).

Direct Effects

Overall impacts to invertebrates are anticipated to be similar to the forecast presented in the 2008 sEIS, which stated that dredging would destroy non-motile benthos by direct entrainment during dredging, or by burial concomitant with bottom slumping into furrows created by the dredge. Invertebrates that would be most impacted are ones that are immobile or nearly so during at least one life stage and are thus unable to escape from habitats subject to possible anthropogenic disturbance. Sand dollars, moon snails, and other abundant benthic invertebrates would be destroyed in large numbers. A variety of juvenile and adult shellfish of importance commercially would be impacted, including sea scallops, calico scallops, surf clams, and ocean quahogs. (These anticipated significant impacts to benthic invertebrates were one of the principal reasons the 2008 sEIS was prepared.)

A review of benthic community recovery following dredging of sand by Brooks et al. (2006), reported "general faunal recovery in 3 months to 2.5 years" in the U.S. Gulf and Atlantic east coasts. This same review also revealed that while biomass recovered during these durations, taxonomic composition and species diversity could differ from pre-dredging conditions for more than 3-5 years. BOEM's literature review of impacts associated with dredging offshore sand (2013) found that re-colonization with comparable total abundance and diversity occurs within several years of dredging.

The 2008 sEIS did not address impacts to egg masses of longfin squid that may be present on the offshore shoals. Because dredging would not occur during summer, it is anticipated that only negligible or minor impacts to longfin egg masses would occur (USACE, 2020).

Indirect Effects

Indirect impacts to invertebrates are anticipated to be negligible, as stated in the 2008 EIS. BOEM (BOEM, 2017), in a review of dredging impacts, found that benthos generally recover within several years to pre-project conditions on sandy substrates. Because the post-borrow substrate would remain sandy with good water quality and change in depth of only several feet, it is anticipated that benthos would largely recover to pre-project condition within a several year period.

6.4 CULUTRAL RESOURCES AND HISTORICAL STRUCTURES

Section 106 consultation was initiated with the MHT and federally recognized tribal nations as part of the 2020 sEA. A Phase I maritime archaeological investigation was conducted in 2019 to identify potential submerged cultural resources within the Area of Potential Effects, including Weaver and Isle of Wight Shoals. Surveys were conducted in accordance with guidelines provided

by the Maryland State Historic Preservation Office (SHPO) in a letter dated December 4, 2018 (Appendix A). No remote-sensing targets resembling potential submerged cultural resources were documented during the investigation and borrow areas located within Weaver and Isle of Wight Shoals are located within modern reworked sandy marine deposits. The survey utilized a cesium marine magnetometer, a side-scan sonar, and a sub-bottom profiler to investigate the possible occurrence of shipwrecks, aircraft, and other submerged cultural resources. The MHT concurred with USACE's no effect determination, while the Delaware Tribe of Indians and the Nansemond Nation responded with an interest in consulting on the project. To this end, USACE continued coordination with the Delaware Tribe of Indians and the Nansemond Nation and sent the 2019 archaeological investigation for their review and comment. Neither tribe commented on the results of the archaeological investigation; and therefore, USACE considered the consultation sufficient and closed.

To maintain compliance with Section 106 of the NHPA for this sEA, USACE sent additional consulting party letters on November 12, 2024 to the following: MHT, Cayuga Nation, Chickahominy Indian Tribe, Chickahominy Indian Tribe Eastern Division, Delaware Nation, Delaware Tribe of Indians, Eastern Shawnee Tribe of Oklahoma, Monacan Indian Nation, Nansemond Indian Nation, Oneida Indian Nation, Oneida Nation of Wisconsin, Onondaga Nation, Pamunkey Indian Tribe, Rappahannock Indian Tribe, Seneca Nation, Seneca-Cayuga Tribe, Shawnee Tribe, St. Regis Mohawk Tribe, Stockbridge Munsee Community of Mohican Indians, Tonawanda Band of Seneca, Tuscarora Nation, and the Upper Mattaponi Tribe. The MHT maintained their view that the project would have no effect on cultural resources. The Delaware Nation requested to review the 2019 Phase I archaeological investigation report; however, did not provide comments. No other responses have been received.

Direct Impacts

Because the offshore shoals consist of modern reworked sediment, they do not contain intact archaeological resources associated with any precontact groups that may have lived in the project area at time of lower sea level. Landforms that could contain such features are being avoided. Additionally, no potential submerged cultural resources were documented during the 2019 investigation. Thus, the project has no potential to effect precontact archaeological resources. This was confirmed by the 2019 Phase I archeological survey. Prior to pipeline placement, the contractor will adhere to the standards put in place by MHT and the SHPO. Additional language will be added into the contract documents and specifications.

Another project component that could cause direct impacts to cultural resources is the placement of pipes that pump sand onto Ocean City beach and their associated anchor points. Composed of welded steel, the pipes are typically between 30 and 36 inches in diameter and can be between 2,000 and 3,000 feet long. These are positioned in four to five different locations perpendicular to the beach. In a letter dated December 4, 2018, USACE consulted with MHT regarding specific pipeline corridors. The letter states that,

> "MHT understands the Corps does not plan to designate specific pipeline corridors which will be reused throughout the life of the project but will site these temporary pipelines on an as needed basis over a broad area of hard bottom. Four-to-five temporary pipeline placements are expected per renourishment episode with each

> lasting less than two weeks and potentially impacting an area measuring up to 2000 ft x 100 ft. Therefore, MHT recommends that targeted pre-installation side scan sonar surveys are integrated into the overall project workflow to identify objects and areas for avoidance which represent or contain potential submerged archeological historic properties".

The placements could cause a direct impact to cultural resources if they were placed on top of any shipwrecks or sunken craft; however, the pipe corridors are surveyed via multi-beam sonar prior to pipe placement. Additionally, the pipe corridors are only placed on smooth bottom where they have no likelihood of contacting any objects on the seafloor to ensure that the pipe is not damaged. Direct impacts to cultural resources from placement of pipes are not anticipated as the same routes are being proposed for the next renourishment cycle.

Indirect Impacts

While the proposed dredging would affect the bathymetric and geologic evolution of the offshore shoals from which dredging is conducted, no intact cultural or historic resources are known to be located in close proximity to the borrow areas. The seafloor in the vicinity of pipes through which sand would be pumped is naturally dynamic, and the pipes would not cause any indirect impacts beyond changes that would naturally occur. Thus, it is anticipated that there would be negligible indirect impacts to cultural resources. As stated in the section above, the same pipeline routes are being proposed for the next renourishment cycle.

7.0 COMPLIANCE WITH ENVIRONMENTAL STATUTES

Magnuson-Stevens Fishery Conservation and Management Act. USACE informally coordinated with NMFS Habitat & Ecosystem Services Division in March 2024. NMFS responded in an email on April 30, 2024, stating that the Division has no updated data to share relevant to the Atlantic Coast Project. As planning for this effort continues, NMFS requested that USACE continue to follow the agreed upon conservation recommendations and best management practices from previous coordination efforts in 2008 and 2020. Additionally, USACE sent re-initiation letters to the local and commercial fishing industry in October 2024. The outreach list was based on previous contact information from the 2020 sEA. No responses were received from any of the recipients.

Endangered Species Act (USFWS). On November 21, 2018, the U.S. Fish and Wildlife Service (USFWS) provided a Planning Aid Report to support USACE compliance with the Fish and Wildlife Coordination Act. The report concluded that there are no USFWS-listed species or critical habitat in Weaver Shoal. The Planning Aid Report is provided as an appendix of the 2020 sEA. Additionally, USACE coordinated with USFWS in March 2024 to request updated information and data as necessary relevant to the next re-nourishment cycle. USFWS responded in an email on June 4, 2024, recommending that USACE coordinate with NMFS for updated assessments. In addition, it was recommended that USACE update the USFWS Information for Planning and Consultation (IPaC) screening. The IPaC report identified the roseate tern (*Sterna dougallii dougallii*) as an endangered species that could occur in the project area. The 2020 sEA evaluated the effects of dredging Weaver Shoal on the roseate tern. No effect would occur to the roseate tern as a result of the proposed action.

Endangered Species Act (NMFS). NMFS stated that no re-initiation of consultation under the ESA regarding potential impacts on federally listed species under their jurisdiction was necessary. Previous analysis and finding of effects of the Atlantic Coast Project by NMFS on shortnose sturgeon, sea turtles, and whales have not changed.

Coastal Zone Management Act (CZMA). Both DE and MD determined that the proposed action is consistent with their state coastal zone management programs and are valid. A copy of the DE Coastal Zone Consistency Determination is located in Appendix D the 2020 sEA. The most recent MD consistency determination is contained within the MD Board of Public Works Wetlands License, provided in Appendix F in the 2020 sEA. Since the project scope within DE's coastal zone has not changed from that described in the conditional concurrence issued by the Delaware Coastal Management Program dated January 3, 2019, then that conditional concurrence would still be in effect.

Clean Water Act (CWA). Water Quality Certificates (WQC) pursuant to Section 401 of the CWA have been routinely obtained from the States of MD and DE for project actions in state waters. An updated authorization was acquired by USACE on October 10, 2025, and will remain in effect so long as there is no increase in impacts previously authorized per 15-WL-0988. The current Delaware Department of Natural Resources and Environmental Control WQC and Subaqueous Lands Permit expires in 2029. The MD DNR is the holder of these DE permits and is responsible to obtain new ones when these expire. A copy of the MD WQC is in Appendix E of the 2020 sEA and a copy of the DE WQC is in Appendix G of the 2020 sEA. A copy of the MD Board of Public Works Wetland License is included in Appendix F of the 2020 sEA.

Because dredging of the offshore shoals would occur within federal waters, state standards of MD and DE do not apply. However, it is anticipated that all dredging within federal waters would conform to requirements of MD and DE WQCs. Because effects of the proposed action on the offshore shoals lie within the parameters of the CWA 404(b)(1) Analysis contained in the 2008 sEIS, no new 404(b)(1) Analysis for offshore shoal dredging was prepared for this sEA.

Outer Continental Shelf Lands Act. Under this act, the Secretary of Interior is responsible for the administration of mineral exploration and development of the outer continental shelf. BOEM was a cooperating agency in preparation of this sEA with USACE to ensure compliance with the Outer Continental Shelf Lands Act (as well as NEPA) (Appendix A of 2020 sEA). Prior to dredging offshore sands, USACE would obtain a lease from BOEM in accordance with BOEM procedures/requirements. BOEM published regulations on October 3, 2017, that define the process used by the Marine Minerals Program for issuing negotiated, noncompetitive agreements for sand, gravel, and shell resources on the OCS (https://www.boem.gov/82-FR-45962/).

Table 5. Permits obtained from State Agencies.

Permitting Agency	Permittee	Type of Permit	Permit Issued/Expires
Maryland State Clearinghouse	USACE Baltimore	MD20180413-0244	N/A
MD Department of Natural Resources/Maryland Department of the Environment	MD DNR	MD Wetlands License No 15-0988	10-Mar-2025 (issued)
Delaware Department of Natural Resources and Environmental Control	USACE Baltimore	Subaqueous Lands Permit (SP-432/18) Water Quality Certification (WQ-432/18)	5-Feb-2029 (expires)
*Delaware Coastal Management Program - Federal Consistency Determination	USACE Baltimore	FC 2019.0003	3-Jan-2019 (issued)

*Maryland's Federal Consistency Determination (approval) is embedded in the Maryland Water Quality Certification under the General Conditions section (Appendix A).

Table 6: Compliance of the Proposed Action with Statutes.

Federal Statutes	Level of Compliance
Anadromous Fish Conservation Act	Full
Archeological Resources Protection Act	Full
Clean Air Act	Full
Clean Water Act	Full
Coastal Barrier Resources Act	N/A
Coastal Zone Management Act	Full
Comprehensive Environmental Response, Compensation and Liability Act	N/A
Endangered Species Act	Full
Federal Water Project Recreation Act	Full
Fish and Wildlife Coordination Act	Full
Magnuson-Stevens Fishery Conservation and Management Act	Full
Marine Protection, Research and Sanctuaries Act	Full
Marine Mammal Protection Act	Full
Migratory Bird Treaty Act	Full
National Environmental Policy Act	Full
National Historic Preservation Act	Full
Noise Control Act	Full

Federal Statutes	Level of Compliance
Outer Continental Shelf Lands Act	Full
Rivers and Harbors Act	Full
Submerged Land Act	Full
Water Resources Planning Act	Full
Watershed Protection and Flood Prevention Act	Full

Table 7: Compliance of the Proposed Action with Executive Orders.

Executive Order (EO)	Level of Compliance
Protection and Enhancement of Environmental Quality (EO 11514)	Full
Protection and Enhancement of Cultural Environment (EO 11593)	Full
Floodplain Management (EO 11988)	Full
Recreational Fisheries (EO 12962)	Full
Indian Sacred Sites (EO 13007)	Full
Consultation and Coordination with Indian Tribal Governments (EO 13175)	Full
Responsibility of Federal Agencies to Protect Migratory Birds (EO 13186)	Full
Stewardship of the Oceans, Our Coasts and the Great Lakes (E.O. 13547)	Full

8.0 COORDINATION/PUBLIC INVOLVEMENT

Appendix A contains documentation of the agency coordination for this sEA including a copy of the study re-initiation notice and copies of responses from resource agencies.

A public notice announcing the release of the sEA for the next re-nourishment cycle was available for a 30-day public and agency review on the USACE, Baltimore District project website beginning on September 22, 2025. The notice was also emailed to several local, state, federal and public stakeholders from previous coordination efforts. The public notice provided a website link from which the draft sEA could be downloaded. No comments were received during the public involvement period.

9.0 CONCLUSION

Since completion of the 2020 FONSI and sEA, new information has been made available including 2023 bathymetric survey data and updated NEPA guidance. This new information warranted a reevaluation of certain resources including bathymetry/physiography, air quality, natural seafloor habitats, benthic invertebrates, and cultural resources. Updated agency coordination was also completed.

Based on the reevaluation of effects to the resources listed above, the recommended alternative would result in minor to moderate adverse effects to resources. Moderate direct adverse effects would occur to bathymetry; however, to mitigate these effects, the proposed action will be

conducted in compliance with the dredging constraints. Direct, short-term air quality emissions calculated for the recommended alternative are not expected to decrease air quality. Approximately 500 acres of bottom habitat would be impacted each dredging cycle (about every 4 years). However, complying with the dredging constraints would minimize effects to offshore shoal geomorphic integrity. General faunal recovery typically occurs within 3 months to 2.5 years based on past BOEM studies and literature (2006 & 2013). Invertebrates that would be most impacted are ones that are immobile or nearly so during at least one life stage and are thus unable to escape from habitats subject to possible anthropogenic disturbance. Based on literature produced by BOEM (2013) re-colonization of benthic species with comparable total abundance and diversity occurs within several years of dredging.

Accordingly, it has been determined that the preparation of an updated EIS is not warranted. A FONSI was prepared, a copy of which is provided at the beginning of this sEA. It should be noted that the environmental reviews for this action were initiated and were substantially completed prior to the issuance of the Department of Defense National Environmental Policy Act Implementing Procedures on June 30, 2025. BOEM has served as a cooperating agency in the development of this sEA, has conducted its own independent review, and will prepare its own decision document prior to authorizing use of outer continental shelf sand resources for the Atlantic Coast of MD Project. The District maintained consistent coordination with BOEM throughout the public review process and informed BOEM of all minor modifications to Final sEA. As a cooperating agency under NEPA for the Atlantic Coast of MD project, BOEM has actively contributed to the development of the sEA, conducted its own independent review and comment on the document, participated in the Public Review process, and worked with the District to ensure all comments were addressed in the Final sEA. BOEM intends to adopt the Final sEA following USACE signing of its FONSI and will prepare and sign its own FONSI prior to execution of the Negotiated Agreement.

Based on the results of the 2023 bathymetric survey, the 2021 dredge event was conducted in compliance with the Weaver Shoal dredging guidelines and constraints. USACE has determined that Weaver Shoal can continue to be dredged for the 2026 beach re-nourishment event and one additional event after the 2026-2027 cycle. USACE would conduct dredging in accordance with Weaver Shoal dredging guidelines and constraints such that only a minor loss of offshore shoal height and volume would occur over the long term. USACE is committed to monitoring the offshore shoals and evaluating impacts of dredging to ensure that long-term geomorphic integrity, and thus their habitat values, is maintained. USACE will coordinate monitoring with BOEM, NMFS, and MGS. In the future, the value of Weaver Shoal as fishing grounds will be re-assessed in making decisions over which offshore shoal to dredge.

10.0 REFERENCES

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Appendix A

Agency and Public Re-initiation

Coordination (2024-2025)

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

March 21, 2024

Civil Project Development Branch
Planning Division

RE: Request for Updated Resource Information
Atlantic Coast of Maryland Shoreline Protection Project,
Ocean City, Worcester County, Maryland.

The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge an offshore shoal in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project (project) starting in September 2025. The project is located in the Town of Ocean City, Worcester County, Maryland. The project places sand on the beach of Ocean City, generally every four years, to reduce the risk of coastal storm damage. The last renourishment was completed in January 2021.

USACE is preparing to dredge approximately 900,000 cubic yards of sand from the borrow area known as Weaver Shoal, located in federal waters offshore of Ocean City, Maryland, for placement along 8.3 miles of shoreline in Ocean City and along 1,500 feet of shoreline in Sussex County, Delaware. This work will be accomplished by a construction contract issued and administered by the Baltimore District and is scheduled to occur between September 2, 2025, and May 24, 2026. A plan showing project placement location and the Weaver Shoal borrow area is enclosed.

The Atlantic Coast of Maryland Shoreline Protection Project is a federal coastal storm risk management project that was authorized by Section 501(a) of the Water Resources Development Act of 1986 (PL 99-662), as amended by Section 104 of the Energy and Water Development Appropriations Act of 1990 (PL 101-101). Its purpose is to reduce the risk of damage to infrastructure in Ocean City, Maryland from coastal storms. The project consists of an 8.3-mile elevated beach berm backed by a 1.4-mile concrete-capped steel sheet pile bulkhead and a 6.9-mile vegetated sand dune, with a 1,500-foot transition into Sussex County, DE that ties the project into the Fenwick Island Coastal Storm Damage Reduction Project, a federal project managed by USACE, Philadelphia District.

A local cooperation agreement between the Department of the Army and the State of Maryland, represented by the Secretary of the Maryland DNR, was executed for initial construction and 50 years of periodic renourishment on March 30, 1990. Initial construction was completed in 1994, with a cost share of 65% federal and 35% non-federal. Seven periodic renourishments have occurred since 1998, the most recent being completed in 2021. Since 1990 the project has prevented an estimated $927M in damages to Ocean City.

The proposed borrow area, known as Weaver Shoal, is located 7.2 miles offshore of Ocean City, Maryland in the U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM) Mid-Atlantic Planning Area. The shoal is approximately 3.8 square miles in area, with a length of 4.1 miles and a maximum width of 1.4 miles. Water depths range from 29 to 65 feet. The area of the shoal that is specifically slated for use as a borrow area is described in the June 2019 Baltimore District geotechnical engineering report entitled *Renourishment Borrow Study – Isle of Wight and Weaver Shoals*. The borrow area (designated as W-C) is 8,000 feet long by 2,000 feet wide and encompasses 367 acres, with water depths ranging from 31 to 49 feet. Adhering to established requirements to minimize long-term impacts to the shoal, sand will be hydraulically excavated from the specified borrow area by trailing suction hopper dredge, then transported to the project area and hydraulically pumped from the hopper dredge to the shoreline.

An August 2008 Supplemental Environmental Impact Statement (SEIS) and February 2020 Environmental Assessment (EA) for this project were prepared with BOEM serving as a formal cooperating agency, consistent with the tenets of the National Environmental Policy Act (NEPA), and with USACE serving as the lead agency, with substantial input from the non-federal sponsor. Both documents, which can be found at https://www.nab.usace.army.mil/OceanCity/, included a comprehensive suite of physical environment, habitat, and living resource parameters, including essential fish habitat, endangered species, and historic and cultural resources within federal waters that could be affected by the proposed action. Analyses included potential direct and indirect impacts associated with the proposed action. Of the four shoals considered in the 2020 EA, two were removed from consideration for this action due to their high fishery value (Shoal B and Isle of Wight Shoal). Material from the Weaver Shoal was dredged during the 2020-2021 re-nourishment event.

The Finding of No Significant Impact (FONSI) signed in February 2020 determined that all practicable means to avoid and minimize adverse environmental effects had been incorporated into the EA and that changes in the proposed project from the 2008 SEIS would not significantly affect the human environment; therefore, no additional Environmental Impact Statement (EIS) was warranted.

The scheduled periodic re-nourishment of the project will be constructed pursuant to all conditions outlined in State of Maryland Wetlands License No. 15-0988 (issued March 23, 2016 and expires March 23, 2026); Maryland Department of the Environment Water Quality Certification No. 15-WQC-0988 (issued March 23, 2016 and expires March 23, 2026); State of Delaware Subaqueous Lands Permit No. SP-432/18 (issued February 5, 2019 and expires February 5, 2029); and State of Delaware Water Quality Certification No. WQ-432/18 (issued February 5, 2019 and expires February 5, 2029). As the Maryland permits (Water Quality Certification and Tidal Wetlands License) expire prior to the end of the anticipated construction window, Maryland DNR is working to renew and extend these permits.

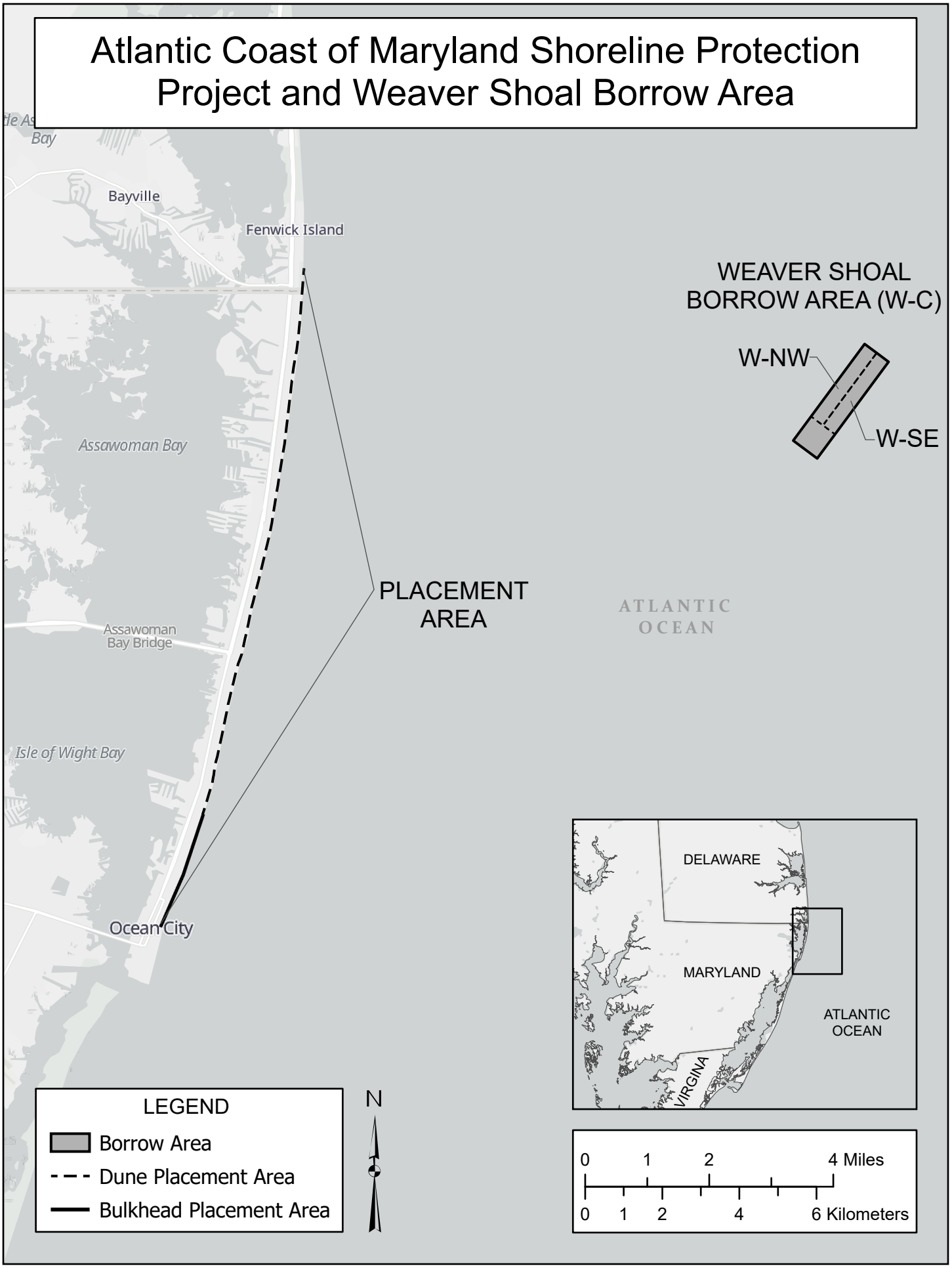
The schedule for the periodic renourishment includes bid advertisement in April 2025, bid opening in May 2025, and contract award in July 2025. As currently scheduled, the selected contractor will commence work sometime after Labor Day of 2025 and complete all work prior to Memorial Day weekend of 2026.

USACE is requesting the recipients of this letter to provide updated information and data, as necessary, relevant to their respective disciplines and areas of expertise. Responses are requested by April 30, 2024. USACE will review any additional data received as a result of this request. If you have any questions regarding the Atlantic Coast of Maryland project or this request, please contact Christopher Johnson by email at Christopher.a.johnson@usace.army.mil, or mail at USACE, Planning Division, 2 Hopkins Plaza, Baltimore, MD 21201.

Sincerely,

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

Enclosures
cc: Perry Otwell, Maryland DNR
Doug Piatkowski, BOEM


Atlantic Coast of Maryland Shoreline Protection Project and Weaver Shoal Borrow Area
Bay
Bayville
Fenwick Island
WEAVER SHOAL BORROW AREA (W-C)
W-NW
W-SE
Assawoman Bay
PLACEMENT AREA
ATLANTIC OCEAN
Assawoman Bay Bridge
Isle of Wight Bay
Ocean City
DELAWARE
MARYLAND
ATLANTIC OCEAN
VIRGINA
LEGEND
Borrow Area
Dune Placement Area
Bulkhead Placement Area
N
0 1 2 4 Miles
0 1 2 4 6 Kilometers

From: Holmes, Jennifer L. (DNREC)
To: Johnson, Christopher A CIV USARMY CENAB (USA)
Cc: Cole, Kimberly B. (DNREC)
Subject: [Non-DoD Source] RE: Atlantic Coast of MD Shoreline Protection Project - DE 2024
Date: Friday, April 12, 2024 1:43:54 PM
Attachments: image001.png

Dear Chris Johnson,

Thank you for the updates regarding this project. If the scope of the project within Delaware's coastal zone has not changed from that described in the conditional concurrence issued by the Delaware Coastal Management Program dated January 3, 2019, then that conditional concurrence would still be in effect. Please feel free to contact me if you have any questions.

Thank you,
Jennifer

Jennifer L. Holmes
Coastal Regulatory Programs Manager
Delaware Coastal Programs
Phone: 302-739-9283
Direct Line: 302-739-9255
Email: jennifer.holmes@delaware.gov
100 W. Water St., Suite 7B, Dover, DE 19904

From: Johnson, Christopher A CIV USARMY CENAB (USA) <Christopher.A.Johnson@usace.army.mil>
Sent: Wednesday, March 20, 2024 2:57 PM
To: Cole, Kimberly B. (DNREC) <Kimberly.Cole@delaware.gov>; Clark, John (DNREC) <John.Clark@delaware.gov>
Cc: Leasure, Charles W CIV USARMY CENAB (USA) <Charles.W.Leasure@usace.army.mil>; Perkins, Catherine J (Katie) CIV USARMY CENAB (USA) <Catherine.J.Perkins@usace.army.mil>; Eldridge, Purvis I CIV USARMY USACE (USA) <Purvis.I.Eldridge@usace.army.mil>; douglas.piatkowski@boem.gov <douglas.piatkowski@boem.gov>; perry.otwell@maryland.gov <perry.otwell@maryland.gov>
Subject: Atlantic Coast of MD Shoreline Protection Project - DE 2024

Good Afternoon,

The U.S. Army Corps of Engineers – Baltimore District would like to reinitiate coordination with the Delaware Department of Natural Resources and Environmental Control and Delaware Coastal Management Program regarding the Atlantic Coast of MD Shoreline Protection Project in Ocean City, Worcester County, MD.

An August 2008 Supplemental Environmental Impact Statement (SEIS) and February 2020 Environmental Assessment (EA) for this project were prepared with BOEM serving as a formal cooperating agency, consistent with the tenets of the National Environmental Policy Act (NEPA), and

with USACE serving as the lead agency.

As USACE prepares for the next cycle of renourishment, we are requesting the recipients of the attached letter to provide updated information and data, as necessary, relevant to their respective disciplines and areas of expertise. Previous coordination efforts from 2019 are attached to the letter for your reference. We ask that responses to this letter are received no later than April 30, 2024.

Please feel free to reach out to me at any time with questions or concerns.

Thank you for your participation!

Chris Johnson
Biologist
U.S. Army Corps of Engineers
Baltimore District, Planning Division
2 Hopkins Plaza Baltimore, MD 21201
Office: (410) 962-2926
Work: (410) 478-4140
Email: christopher.a.johnson@usace.army.mil

From:	Traver, Carrie
To:	Johnson, Christopher A CIV USARMY CENAB (USA)
Cc:	Witman, Timothy; Esch, Emma (she/her/hers)
Subject:	[Non-DoD Source] RE: Atlantic Coast of MD Shoreline Protection Project - 2024
Date:	Tuesday, April 30, 2024 1:54:26 PM

Dear Mr. Johnson,

Thank you for reinitiating coordination with the US Environmental Protection Agency (EPA) for the Atlantic Coast of Maryland Shoreline Protection Project (Project). As described, the US Army Corps of Engineers (USACE) is preparing to dredge approximately 900,000 cubic yards of sand from the borrow area known as Weaver Shoal, located in federal waters offshore of Ocean City, Maryland, for placement along 8.3 miles of shoreline in Ocean City and along 1,500 feet of shoreline in Sussex County, Delaware. The proposed work is scheduled to occur between September 2, 2025, and May 24, 2026.

In 2008, USACE prepared a supplemental Environmental Impact Statement (EIS) evaluating four shoals in federal waters and in February 2020 prepared a supplemental Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). EPA offers the following comments for your consideration:

Supporting Documentation

The Request for Updated Resource Information indicates that the area of the shoal that will be used as a borrow area is described in the June 2019 Baltimore District *Renourishment Borrow Study – Isle of Wight and Weaver Shoals* geotechnical report. We request that you provide a copy of this document to EPA and provide a link to on the project website, if it can be made publicly available.

Climate Change

The 2008 EIS and 2020 EA did not address impacts to climate or assess greenhouse gas emissions (GHGs). Section 5.1.4 of the 2020 EA states "Greenhouse gases produced by dredging activities would indirectly impact climate but constitute a negligible human greenhouse gas contribution overall. In accordance with President Trump's *Executive Order on Energy Independence (EO 13783)*, USACE did not quantify emissions of various greenhouse gases nor give detailed consideration to their impacts on climate in preparation of this EA." EO 13783 was revoked by EO 13990 *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, on January 20, 2021.

- In response to EO 13990, on January 9, 2023, the Council on Environmental Quality (CEQ) published interim guidance to assist federal agencies in assessing and disclosing climate change impacts during environmental reviews.(https://www.federalregister.gov/documents/2023/01/09/2023-00158/national-environmental-policy-act-guidance-on-consideration-of-greenhouse-gas-emissions-and-climate) CEQ indicated that agencies should use this interim guidance to inform the NEPA review for proposed actions as appropriate. EPA

recommends the USACE apply the guidance to ensure robust consideration of potential climate impacts, mitigation, and adaptation. Overall, impacts of climate change on the Project should be considered, including from sea level rise.

- This guidance states, "Given the urgency of the climate crisis and NEPA's important role in providing critical information to decision makers and the public, NEPA reviews should quantify proposed actions' GHG emissions, place GHG emissions in appropriate context and disclose relevant GHG emissions and relevant climate impacts, and identify alternatives and mitigation measures to avoid or reduce GHG emissions. CEQ encourages agencies to mitigate GHG emissions associated with their proposed actions to the greatest extent possible, consistent with national, science-based GHG reduction policies established to avoid the worst impacts of climate change." Please note that the interim guidance also indicates that stating emissions from a proposed federal action are only a small fraction of global or domestic emissions "merely notes the nature" of climate change, and is not useful context for considering climate change effects under NEPA. We suggest evaluating GHG emissions and considering ways that emissions could be reduced or mitigated where possible.

Monitoring

As described in the 2020 EA, surveys focusing "on overall coarse scale bathymetric character" of the offshore shoal will be conducted before and after each dredging event. We recommend assessing the bathymetric monitoring data to ensure geomorphologic integrity of the shoals is being maintained. In addition, we recommend conducting pre- and post- dredging monitoring of benthic communities to ensure recovery of biota as well to inform future dredging efforts.

During this assessment, we recommend that the USACE evaluate whether new information relevant to potential impacts to species, habitats, and/or mitigation measures warrants an updated analysis. For example, the availability of new information regarding dredging impacts to sea turtles or the occurrence of horseshoe crab concentration areas on the OCS could inform additional avoidance or mitigation measures.

Thank you for coordinating with EPA. We look forward to continue to working with you on the Project.

Sincerely,
Carrie

Carrie Traver
NEPA Branch
EJ, Community Health, & Environmental Review Division
U.S. Environmental Protection Agency, Region 3
215-814-2772
traver.carrie@epa.gov

From:	Danielle Spendiff -MDE-
To:	Johnson, Christopher A CIV USARMY CENAB (USA)
Cc:	Alex Vazquez -MDE-
Subject:	[Non-DoD Source] Re: Atlantic Coast of MD Shoreline Protection Project - MDE 2024
Date:	Tuesday, April 30, 2024 5:07:12 PM

Good afternoon Chris,

Please find MDE's comments and recommendations below with regard to reinitiation of the Atlantic Coast of MD Shoreline Protection Project in Ocean City, Worcester County, MD:

- The request notes that an extension of time will be needed due to the expiration of State of Maryland Wetlands License No. 15-0988 on March 23, 2026. The following information will need to be submitted to MDE prior to a recommendation of reauthorization and extension of the Wetlands License to the Maryland Board of Public Works:

1. Reason the structure or activity could not be constructed or performed within the license period;
2. Revised schedule for completion of the structure or activity (annual, or one-time occurence);
3. Assurance that all other State, federal, and local approvals either have not expired or have been authorized or extended; and
4. Detailed justification for the new request of 900,000 cubic yards of placement of sand, which is 4.5 times greater than the authorized amount of 200,000 cubic yards. The justification will need to include updated information on purpose and need including beach erosion, and the number of years that the activity is planned to occur.

- MDE notes that 15-WQC-0988 issued on March 23, 2016 also specifies a volume of 200,000 cubic yards of sand for placement; as such, a new WQC may be required. Please provide the detailed justification requested above as well as updated plans for the project for MDE to determine whether the WQC conditions are adequate to protect water quality.

- A new Federal Consistency Determination under the Coastal Zone Management Act may be required for this work as the previous determination was issued concurrent with 15-WQC-0988; should a new Federal Consistency Determination be required, MDE requests submission of the request via our CZM portal including updated Coastal Policy Checklists, as applicable.

MDE appreciates the opportunity to review the updated information and looks forward to continued coordination on the project- please do not hesitate to reach out if you have any questions regarding this information.

Thank you,

--

From: Maryland Historical Trust
To: Johnson, Christopher A CIV USARMY CENAB (USA)
Subject: [Non-DoD Source] MHT e106 project review – MHT Completed Comments
Date: Thursday, April 11, 2024 11:42:11 AM

Date: April 11, 2024

To: Chris Johnson
U.S. Army Corps of Engineers Baltimore District, Planning Division

Project Name: Atlantic Coast of MD Shoreline Protection Project
County: Worcester County
Agency: Corps of Engineers
Second Agency: -- Not noted --
MHT Log #: 202401470

MHT Response: Thank you for providing the Maryland Historical Trust the opportunity to comment on the above-referenced undertaking using the MHT e106 system. The Maryland Historical Trust has reviewed the submitted project for its effects on historic and archeological resources, pursuant to Section 106 of the National Historic Preservation Act of 1966 and/or the Maryland Historical Trust Act of 1985. We offer the following comments and/or concurrence with the agency's findings:

Please refer to the note below or attached document for MHT's comments on the undertaking and/or specific recommendations for continuing consultation with our office.

Thank you for your recent letter. It is unclear from the management summary provided to MHT if any work was conducted in Maryland state waters. MHT / MD SHPO comments and recommendations dating from 2018 are still valid and we have no new information about potential historic properties within the APE and no new comments.

Thank you for your cooperation in this review process. Since the MHT response is now complete, this response will appear in the Completed section of your project dashboard. No hard copy of this response or attachments will be sent. If you have questions, please contact the following MHT project reviewers:

Troy Nowak troy.nowak@maryland.gov

Maryland Historical Trust
Project Review and Compliance
100 Community Place
Crownsville, MD 21032
mht.section106@maryland.gov

MHT.Maryland.gov
Planning.Maryland.gov

From: Robert Bourdon - NOAA Federal
To: Johnson, Christopher A CIV USARMY CENAB (USA)
Subject: [Non-DoD Source] Atlantic Coast of MD Shoreline Protection Project - NOAA 2024
Date: Tuesday, April 30, 2024 12:29:54 PM

Good afternoon Chris,

NOAA Fisheries Habitat & Ecosystem Services Division has no updated data to share relevant to the Atlantic Coast of MD Shoreline Protection Project. As planning for this effort continues, we request that the Corps continue to follow the agreed upon conservation recommendations and best management practices from our previous coordination efforts. Additionally, applicable Mid-Atlantic Fishery Management Council policies regarding beach nourishment should continue to be followed to the greatest extent possible (https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/56c4cac42fe131b524a95387/1455737546729/HabPolicies-Combined.pdf).

Thank you for the opportunity to provide input to this project. We look forward to coordination with your office for future cycles of beach renourishment.

Regards,
Rob

--
Robert Bourdon
Marine Habitat Resource Specialist
NOAA Fisheries Greater Atlantic Regional Fisheries Office
Habitat & Ecosystem Services Division (Habitat Conservation)
Annapolis, MD Field Office
(410) 205-6055 (Office - forwarded to mobile)

From: Deeley, Sabrina M
To: Johnson, Christopher A CIV USARMY CENAB (USA)
Cc: LaRouche, Genevieve
Subject: [Non-DoD Source] RE: [EXTERNAL] RE: Atlantic Coast of MD Shoreline Protection Project - 2024
Date: Tuesday, June 4, 2024 8:30:58 AM
Attachments: 2024-05 IPaC_roughpolygon_AtlanticCoastShoreLine.pdf

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Hello Chris,
I apologize for the delay. Thank you for giving us an opportunity to review/comment on this effort.

Our conclusions regarding USFWS' resources remains unchanged.
However, please note that

- If not already accomplished, USACE should coordinate with National Marine Fisheries Service for updated assessments of their resources outlined in the PAR/EA.
- For an updated list of possible bird species in the area, you may want to run your project through IPaC to get an updated bird species list. Since we did not have a shapefile, we ran the with an overly-large polygon (attached).

Please feel free to contact me if you require anything more.
Thanks!
Sabrina

Sabrina Deeley, PhD
Fish and Wildlife Biologist
Chesapeake Bay Field Office
U.S. Fish and Wildlife Service
Office: 410-573-4535
Sabrina_Deeley@fws.gov

From: Johnson, Christopher A CIV USARMY CENAB (USA) <Christopher.A.Johnson@usace.army.mil>
Sent: Friday, May 24, 2024 11:29:17 AM
To: LaRouche, Genevieve <Genevieve_LaRouche@fws.gov>; Koppie, Craig <craig_koppie@fws.gov>
Cc: Leasure, Charles W CIV USARMY CENAB (USA) <Charles.W.Leasure@usace.army.mil>; Perkins, Catherine J (Katie) CIV USARMY CENAB (USA) <Catherine.J.Perkins@usace.army.mil>; Piatkowski, Douglas N <Douglas.Piatkowski@boem.gov>; perry.otwell@maryland.gov <perry.otwell@maryland.gov>
Subject: [EXTERNAL] RE: Atlantic Coast of MD Shoreline Protection Project - 2024

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To: 01/28/2025 15:52:40 UTC
Project code: 2025-0048159
Project Name: Atlantic Coast of Maryland Shoreline Restoration Project

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Federal agency coordination under the Endangered Species Act, Section 7 for 'Atlantic Coast of Maryland Shoreline Restoration Project'

Dear Chris Johnson:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on January 28, 2025, for "Atlantic Coast of Maryland Shoreline Restoration Project" (here forward, Project). This project has been assigned Project Code 2025-0048159 and all future correspondence should clearly reference this number.

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northeast Determination Key (DKey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative effect(s)), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17). Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no further consultation with, or concurrence from, the Service is

required (ESA §7). If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13]).

The IPaC results indicated the following species is (are) potentially present in your project area and, based on your responses to the Service's Northeast DKey, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Roseate Tern (*Sterna dougallii dougallii*)	Endangered	No effect

Conclusion If there are no updates on listed species, no further consultation/coordination for this project is required for the species identified above. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional consultation with the Service should take place before project implements any changes which are final or commits additional resources.

Please Note: If the Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) by the prospective permittee may be required. Please contact the Migratory Birds Permit Office, (413) 253-8643, or PermitsR5MB@fws.gov, with any questions regarding potential impacts to Eagles.

If you have any questions regarding this letter or need further assistance, please contact the Chesapeake Bay Ecological Services Field Office and reference the Project Code associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

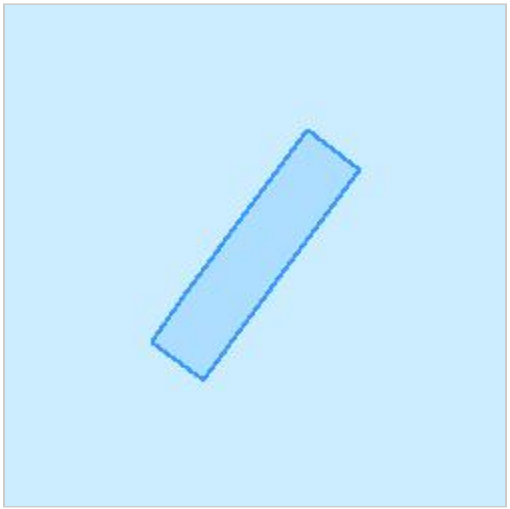
Atlantic Coast of Maryland Shoreline Restoration Project

2. Description

The following description was provided for the project 'Atlantic Coast of Maryland Shoreline Restoration Project':

> The United States Army Corps of Engineers (USACE) Atlantic Coast of Maryland Shoreline Protection Project (Atlantic Coast Project) includes the placement of sand on the beach of Ocean City, MD, generally every four years, to reduce risk of coastal storm damage. USACE and U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM), prepared an Environmental Impact Statement (EIS) in 2008 recommending four offshore shoals on the Outer Continental Shelf (OCS) as future sources of sand for the Atlantic Coast Project: Weaver Shoal, Isle of Wight Shoal, Shoal "A," and Bass Grounds (also known as First Lump or Shoal “B”). The most recent beach replenishment effort, completed in December 2017, exhausted readily available sand from nearby shoals in state ocean waters. Accordingly, USACE is proposing to obtain future sand for the project from offshore shoals in the OCS as recommended in the 2008 EIS. The next beach nourishment is scheduled for 2026 and is anticipated every four years thereafter for duration of the project authorized life (through 2044). USACE has occasionally placed sand on Ocean City beach more frequently than every four years following severe storms, most recently in 2017 when only three years had passed since the previous beach nourishment in 2014.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.43097105,-74.92403402605504,14z



QUALIFICATION INTERVIEW

1. As a representative of this project, do you agree that all items submitted represent the complete scope of the project details and you will answer questions truthfully?

   Yes

2. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed species?

   Note: This question could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered, or proposed species.

   No

3. Is the action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

4. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) the lead agency for this project?

   No

5. Are you including in this analysis all impacts to federally listed species that may result from the entirety of the project (not just the activities under federal jurisdiction)?

   Note: If there are project activities that will impact listed species that are considered to be outside of the jurisdiction of the federal action agency submitting this key, contact your local Ecological Services Field Office to determine whether it is appropriate to use this key. If your Ecological Services Field Office agrees that impacts to listed species that are outside the federal action agency's jurisdiction will be addressed through a separate process, you can answer yes to this question and continue through the key.

   Yes

6. Are you the lead federal action agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   Yes

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)?

   No

8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

9. Is the lead federal action agency the Natural Resources Conservation Service?

   No

10. Will the proposed project involve the use of herbicide where listed species are present?

    No

11. Are there any caves or anthropogenic features suitable for hibernating or roosting bats within the area expected to be impacted by the project?

    No

12. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **birds** (e.g., plane-based surveys, land-based or offshore wind turbines, communication towers, high voltage transmission lines, any type of towers with or without guy wires)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

13. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **bats** (e.g., plane-based surveys, land-based or offshore wind turbines)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

14. Will the proposed project result in permanent changes to water quantity in a stream or temporary changes that would be sufficient to result in impacts to listed species?

    For example, will the proposed project include any activities that would alter stream flow, such as water withdrawal, hydropower energy production, impoundments, intake structures, diversion structures, and/or turbines? Projects that include temporary and limited water reductions that will not displace listed species or appreciably change water availability for listed species (e.g. listed species will experience no changes to feeding, breeding or sheltering) can answer "No". Note: This question refers only to the amount of water present in a stream, other water quality factors, including sedimentation and turbidity, will be addressed in following questions.

    No

15. Will the proposed project affect wetlands where listed species are present?

    This includes, for example, project activities within wetlands, project activities within 300 feet of wetlands that may have impacts on wetlands, water withdrawals and/or discharge of contaminants (even with a NPDES).

    No

16. Will the proposed project activities (including upland project activities) occur within 0.125 miles of the water's edge of a stream or tributary of a stream where listed species may be present?

    No

17. Will the proposed project directly affect a streambed (below ordinary high water mark (OHWM)) of the stream or tributary where listed species may be present?

    No

18. Will the proposed project bore underneath (directional bore or horizontal directional drill) a stream where listed species may be present?

    No

19. Will the proposed project involve a new point source discharge into a stream or change an existing point source discharge (e.g., outfalls; leachate ponds) where listed species may be present?

    No

20. Will the proposed project involve the removal of excess sediment or debris, dredging or in-stream gravel mining where listed species may be present?

    No

21. Will the proposed project involve the creation of a new water-borne contaminant source where listed species may be present?

    Note New water-borne contaminant sources occur through improper storage, usage, or creation of chemicals. For example: leachate ponds and pits containing chemicals that are not NSF/ANSI 60 compliant have contaminated waterways. Sedimentation will be addressed in a separate question.

    No

22. Will the proposed project involve perennial stream loss, in a stream of tributary of a stream where listed species may be present, that would require an individual permit under 404 of the Clean Water Act?

    No

23. Will the proposed project involve blasting where listed species may be present?

    No

24. Will the proposed project include activities that could negatively affect fish movement temporarily or permanently (including fish stocking, harvesting, or creation of barriers to fish passage).

    Yes

25. Will the proposed project involve earth moving that could cause erosion and sedimentation, and/or contamination along a stream or tributary of a stream where listed species may be present?

    Note: Answer "Yes" to this question if erosion and sediment control measures will be used to protect the stream.

    No

26. Will the proposed project impact streams or tributaries of streams where listed species may be present through activities such as, but not limited to, valley fills, large-scale vegetation removal, and/or change in site topography?

    No

27. Will the proposed project involve vegetation removal within 200 feet of a perennial stream bank where aquatic listed species may be present?

    No

28. Will erosion and sedimentation control Best Management Practices (BMPs) associated with applicable state and/or Federal permits, be applied to the project? If BMPs have been provided by and/or coordinated with and approved by the appropriate Ecological Services Field Office, answer "Yes" to this question.

    No

29. Is the project being funded, lead, or managed in whole or in part by U.S Fish and Wildlife Restoration and Recovery Program (e.g., Partners, Coastal, Fisheries, Wildlife and Sport Fish Restoration, Refuges)?

    No

30. Will the proposed project result in changes to beach dynamics that may modify formation of habitat over time?

    Note: Examples of projects that result in changes to beach dynamics include 1) construction of offshore breakwaters and groins; 2) mining of sand from an updrift ebb tidal delta; 3) removing or adding beach sands; and 4) projects that stabilize dunes (including placement of sand fences or planting vegetation).

    Yes

31. [Hidden Semantic] Is the project area located within the roseate tern AOI?

    Automatically answered
    Yes

32. If you have determined that the roseate tern is unlikely to occur within your project's action area or that your project is unlikely to have any potential effects on the roseate tern, you may wish to make a "no effect" determination for the roseate tern. Additional guidance on how to make this decision can be found in the project review section of your local Ecological Services Field Office's website. CBFO: https://www.fws.gov/office/chesapeake-bay-ecological-services/project-review ; MEFO: https://www.fws.gov/office/maine-ecological-services ; NJFO: https://www.fws.gov/office/new-jersey-ecological-services/new-jersey-field-office-project-review-guide ; NEFO: https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review#Step5 ; WVFO: https://www.fws.gov/office/west-virginia-ecological-services/project-planning. If you are unsure, answer "No" and continue through the key.

    Would you like to make a no effect determination for the roseate tern?

    Yes

33. [Semantic] Does the project intersect the Virginia big-eared bat critical habitat?

    Automatically answered
    No

34. [Semantic] Does the project intersect the Indiana bat critical habitat?

    Automatically answered
    No

35. [Semantic] Does the project intersect the candy darter critical habitat?

    Automatically answered
    No

36. [Semantic] Does the project intersect the diamond darter critical habitat?

    Automatically answered
    No

37. [Semantic] Does the project intersect the Big Sandy crayfish critical habitat?

    Automatically answered
    No

38. [Hidden Semantic] Does the project intersect the Guyandotte River crayfish critical habitat?

    Automatically answered
    No

39. Do you have any other documents that you want to include with this submission?

    Yes

    SUBMITTED DOCUMENTS

    - *USFWS PAR 2018_ACMD.pdf* *https://ipac.ecosphere.fws.gov/project/6FGYQMQZMVFAFEWHP27PHEG4VY/projectDocuments/156246631*

PROJECT QUESTIONNAIRE

1. Approximately how many acres of trees would the proposed project remove?

   0

2. Approximately how many total acres of disturbance are within the disturbance/ construction limits of the proposed project?

   375

3. Briefly describe the habitat within the construction/disturbance limits of the project site.

   Underwater sandy shoal and beach.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Chris Johnson
Address: 2 Hopkins Place
City: Baltimore
State: MD
Zip: 21201
Email christopher.a.johnson@usace.army.mil
Phone: 4438077461

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127

In Reply Refer To: 01/28/2025 15:40:41 UTC
Project Code: 2025-0048159
Project Name: Atlantic Coast of Maryland Shoreline Restoration Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

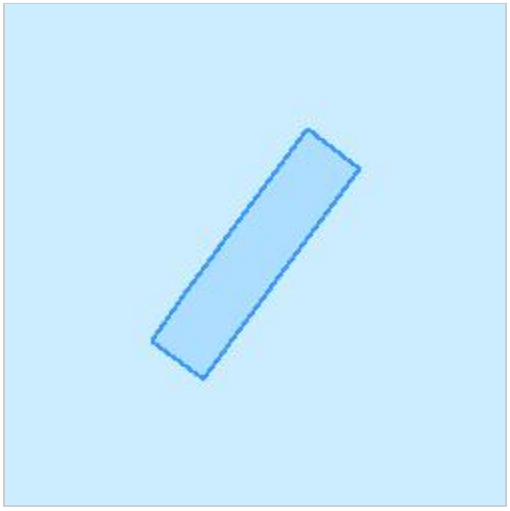
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

PROJECT SUMMARY

Project Code: 2025-0048159
Project Name: Atlantic Coast of Maryland Shoreline Restoration Project
Project Type: Beach nourishment
Project Description: The United States Army Corps of Engineers (USACE) Atlantic Coast of Maryland Shoreline Protection Project (Atlantic Coast Project) includes the placement of sand on the beach of Ocean City, MD, generally every four years, to reduce risk of coastal storm damage. USACE and U.S. Department of Interior, Bureau of Ocean Energy Management (BOEM), prepared an Environmental Impact Statement (EIS) in 2008 recommending four offshore shoals on the Outer Continental Shelf (OCS) as future sources of sand for the Atlantic Coast Project: Weaver Shoal, Isle of Wight Shoal, Shoal "A," and Bass Grounds (also known as First Lump or Shoal “B”). The most recent beach replenishment effort, completed in December 2017, exhausted readily available sand from nearby shoals in state ocean waters. Accordingly, USACE is proposing to obtain future sand for the project from offshore shoals in the OCS as recommended in the 2008 EIS. The next beach nourishment is scheduled for 2026 and is anticipated every four years thereafter for duration of the project authorized life (through 2044). USACE has occasionally placed sand on Ocean City beach more frequently than every four years following severe storms, most recently in 2017 when only three years had passed since the previous beach nourishment in 2014.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.43097105,-74.92403402605504,14z



Counties:

ENDANGERED SPECIES ACT SPECIES

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii*	Endangered

Population: Northeast U.S. nesting population
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/2083

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Chris Johnson
Address: 2 Hopkins Place
City: Baltimore
State: MD
Zip: 21201
Email christopher.a.johnson@usace.army.mil
Phone: 4438077461

Maryland Board of Public Works Wetlands License (2025)

State of Maryland
Board of Public Works
Wetlands Administration
80 Calvert Street, Room 117, Annapolis, Maryland 21401
410-260-7791

Wes Moore
Governor

Dereck E. Davis
Treasurer

Brooke Lierman
Comptroller

John T. Gontrum, Esq.
Executive Secretary

William Morgante, PWS
Wetlands Administrator

WETLANDS LICENSE NO. 24-0714
MARYLAND DEPARTMENT OF NATURAL RESOURCES

The Maryland Board of Public Works authorizes you to:

I. Maintenance dredge by hydraulic method, approximately 200,000 cubic yards of sand annually from offshore borrow sites in the Atlantic Ocean
II. Place the sand by pumping along the entire 10-mile length of the Ocean City beach within a maximum of 165 feet channelward of the mean high water line.
III. Provide for a 10-year license.

Atlantic Ocean, Ocean City, Worcester County, Maryland

Issuance of this Tidal Wetlands License constitutes the State's determination that the authorized activities are consistent with the Maryland Coastal Zone Management Program (CZMP), as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended [16 U.S.C. §1456]. Accordingly, the State concurs with the Licensee's certification in the Joint Permit Application that the project complies with and will be conducted in a manner consistent with the Maryland CZMP.

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING SPECIAL CONDITION(S):

None.

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING STANDARD CONDITIONS:

1. Licensee shall conduct the authorized work in accordance with the plans and drawings dated as accepted by MDE on September, 2024**,** which are hereby incorporated into this License.
2. Until the authorized work is complete, Licensee shall have available at the site a copy of this License including the plans and drawings.
3. This License constitutes Maryland's authorization to conduct the authorized work under the State Tidal Wetlands Law. This License does not bestow any other federal, State, or local government authorization.
4. Licensee shall have all proposed work above Mean High Water reviewed and authorized by the local county Department of Planning and Zoning or applicable agency.
5. Licensee shall notify MDE's Compliance Program by BOTH phone AND in writing of the following:
   (a) start date at least five business days before beginning work; and

(b) completion date no more than five business days after project completion.
Eastern Division: 410-901-4020 407 Race Street, Cambridge, MD 21613

6. Licensee shall comply with any regulations, conditions, or instructions issued by MDE, including any Water Quality Certification issued with respect to the authorized work.
7. Licensee shall conduct the authorized work in accordance with Critical Area Commission requirements. This License does not authorize disturbance in the Buffer. If authorized work will disturb the Buffer, Licensee shall have a Commission-approved or locally approved Buffer Management Plan before beginning the authorized work.
   "Buffer" means the 100-foot Critical Area Buffer and any expanded area that is immediately landward of the mean high-water line of the tidal waters or is immediately landward of tidal wetlands. The Buffer includes expanded contiguous area if the contiguous area includes steep slopes, hydric soil, or highly erodible soil, or otherwise meets the criteria of COMAR 27.01.09.01.E(7). "Disturbance" means any alteration or change to the land including any amount of clearing. Clearing includes vegetation removal, grading, and construction activity.
8. Licensee may not fill, dredge, or otherwise alter or destroy tidal marsh or its vegetation unless this License specifically authorizes the activity.
9. Licensee may not stockpile material in State tidal wetlands/State tidal waters of the U.S.
10. Licensee shall allow unfettered public use of State wetlands/State tidal waters of the U.S.
11. This License does not transfer a property interest of the State.
12. Licensee shall file a Miss Utility ticket for the proposed work at least 10 days before beginning work. *Miss Utility***:** 800-257-7777
13. Licensee shall ensure that structures (for example, piers and piles) removed from the site are taken to an upland disposal facility approved by MDE's Compliance Program.
14. If the authorized work impacts more than 5,000 square feet or includes 100 or more cubic yards of fill, Licensee shall conduct the authorized work in accordance with a locally approved Soil Erosion and Sediment Control Plan.
15. If the authorized work is not performed by the property owner, all work performed under this Tidal Wetlands License shall be conducted by a marine contractor licensed by the Marine Contractors Licensing Board (MCLB) in accordance with Title 17 of the Environment Article of Annotated Code of Maryland. A list of licensed marine contactors may be obtained by contacting the MCLB at 410-537-3249, by email at MDE.MCLB@maryland.gov or by accessing the Maryland Department of the Environment, Environmental Boards webpage.
16. Licensee shall allow State officials and employees to make inspections at reasonable times and cooperate with those inspections.
17. This License is granted only to the Licensee. Licensee may transfer the license only with written approval from the Board of Public Works. If the Board of Public Works approves the transfer, the transferee is subject to all License terms and conditions.
18. Licensee shall indemnify, defend, and save harmless the State of Maryland, its officials, officers, and employees from and against any and all liability, suits, claims, and actions of whatever kind, caused by or arising from, the work this License authorizes.
19. The Board of Public Works or its Wetlands Administrator may modify, suspend, or revoke this License in its reasonable discretion. Licensee shall promptly comply upon notice of any such action.
20. This License expires .

If the authorized work is not completed by the expiration date, all activity must stop. Note: A three-year license may be renewed for one additional three-year term if the Licensee requests an extension before the expiration date and all other conditions are met. A six-year license may not be renewed; instead, Licensee must reapply to MDE for a new license. Contact the Board of Public Works to determine if this License may be extended. *Board of Public Works: 410-260-7791*

21. In conducting work authorized under this license, licensee may not cause injury to private property; invade the rights of others; or infringe any federal, state, or local laws or regulations.
22. Licensee shall maintain any authorize structure in good condition and perform the authorized activity in a workmanlike manner in accordance with this license.
23. In conducting work authorized under this license, licensee shall eliminate or minimize adverse effects on fish, wildlife, and the natural environment.

By the authority of the Board of Public Works:

William Morgante
Wetlands Administrator

Effective Date:
Approved as: Secretary's Agenda Item 6
Board of Public Works Meeting Date: February 12, 2025

I accept this License and all its conditions.

3/20/2025
Date

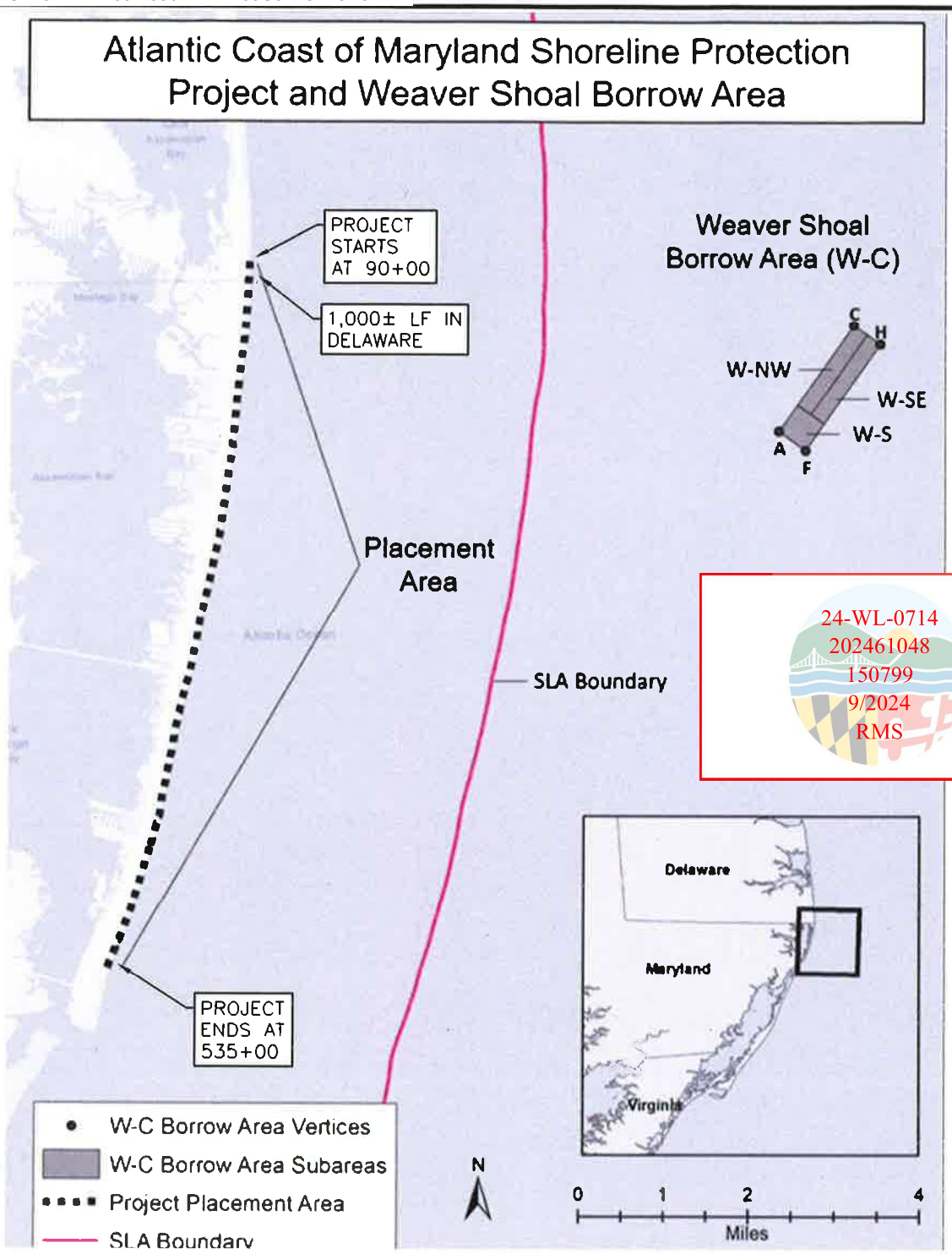
Signed by: Lee W. Mayer 5C47B55CE88B4D8...
Licensee (Signature)

Lee W. Mayer
Name (Printed)

Infrastructure Supervisor
Title

Lee.mayer@maryland.gov
Email (to receive completed license)

Atlantic Coast of Maryland Shoreline Protection Project and Weaver Shoal Borrow Area



24-WL-0714
202461048
150799
9/2024
RMS

PROJECT LENGTH = TOTAL = 44,500± LF =8.42 ± MILES
MARYLAND = 43,500± LF
DELAWARE = 1,000± LF

PURPOSE NOTE

A. PROVIDE STORM PROTECTION & REPAIR ERODED BEACH FRONT.
B. MAINTAIN BEACH FOR TEN (10) YEARS.

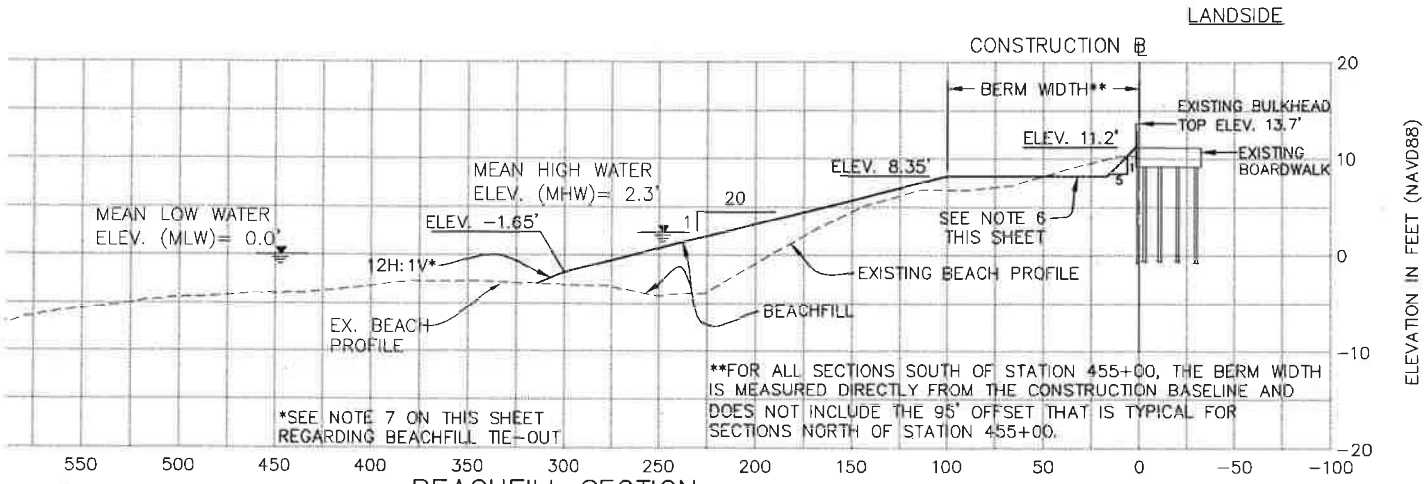
MAINTAIN REPLENISHED BEACH AS REQUIRED FOR A MINIMUM PERIOD OF TEN (10) YEARS. ESTIMATED ANNUAL REPLENISHMENT REQUIRED = 200,000 CUBIC YARDS

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 1 OF 2

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15, 9/24

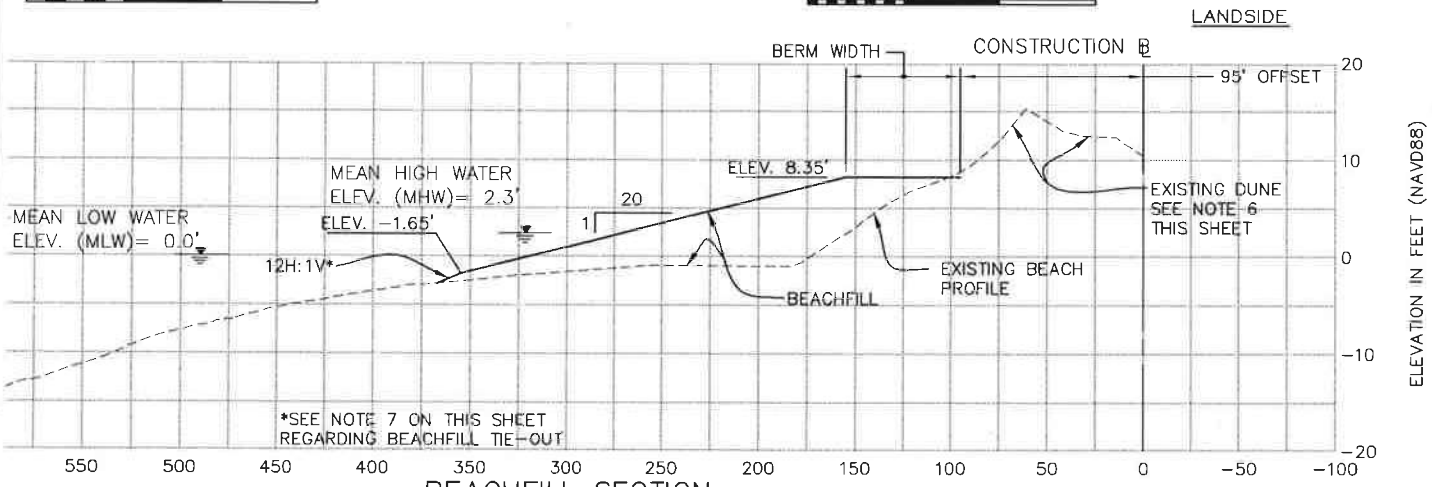


BEACHFILL SECTION AT BULKHEAD

STA. 455+00 TO STA. 535+00

HORIZONTAL SCALE: 1 IN.=100 FT.
50 0 50 100

VERTICAL SCALE: 1 IN.= 20 FT.
10 0 10 20



BEACHFILL SECTION AT DUNE

STA. 90+00 TO STA. 455+00

24-WL-0714
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9/2024
RMS

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 2 OF 2

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15, 9/24

October 10, 2025

MD DNR Engineering & Construction Division
c/o Lee Mayer
580 Taylor Avenue, D-3
Annapolis, MD 21401
Lee.mayer@maryland.gov

Re: MD DNR/Town of Ocean City Beach Replenishment
Water Quality Certification No. 15-WQC-0988
Tracking No. 201561754 & 202461048
AI No. 150799

Dear Lee Mayer:

The purpose of this letter is to confirm that Water Quality Certification No. 15-WQC-0988, originally issued for the MD DNR/Town of Ocean City Permit No. 15-WL-0988, remains in effect so long as there is no increase from the impacts previously authorized per 15-WL-0988.

Should you have any questions, please feel free to contact me at 410-901-4044 or robertm.simmons@maryland.gov.

Sincerely,

R Miles Simmons

R. Miles Simmons
Natural Resource Planner
Tidal Wetlands Division

cc: Todd Beser, Baltimore District, U.S. Army Corps of Engineers
Danielle Spendiff, MDE
Jon Stewart, MDE
Perry Otwell, DNR

US Army Corps of Engineers
Baltimore District

September 22, 2025

PUBLIC NOTICE

Atlantic Coast of Maryland Shoreline Protection Project

Preparation of Supplementary Environmental Assessment
Offshore Shoals in Federal Waters as Sand Sources

All Interested Parties: The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project in 2026. The project is in the Town of Ocean City, Worcester County, Maryland.

The USACE, in cooperation with the U.S. Department of Interior (DOI), Bureau of Ocean Energy Management (BOEM), has conducted a supplemental environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), with USACE serving as the lead agency. The supplemental Environmental Assessment (sEA), dated September 2025, for the Atlantic Coast of Maryland Shoreline Protection Project entitled Offshore Shoals in Federal Waters as Sand Sources for Ocean City, Maryland, supplements a 2008 Supplemental Environmental Impact Statement (2008 EIS) and a 2020 sEA. The Atlantic Coast Project, authorized through 2044, places sand on the beach of Ocean City, Maryland, to reduce risk of coastal storm damage.

The 2025 sEA evaluates impacts to Weaver Shoal to meet the immediate sand needs of the Atlantic Coast Project. Because five years have elapsed since issuance of the 2020 sEA, USACE and BOEM prepared this 2025 sEA to update findings of the 2020 sEA to determine whether modifications are warranted to the previous recommended plan, which identified Weaver Shoal as the recommended sand source for the next renourishment cycle (winter 2026/2027) and one more additional cycle thereafter. The updated recommended plan for the Atlantic Coast Project consists of:

- Placing sand on the beach of Ocean City every four years, with the next sand nourishment anticipated in winter 2026/2027.
- Dredging sand from Weaver Shoal for the next beach nourishment cycle in 2026 and one more additional cycle thereafter.
- Conducting dredging under environmental constraints to minimize long-term impacts to offshore shoal habitats.

The sEA does not analyze the effects of all resources analyzed in the 2020 sEA if no new information on those resources has been made available since 2020, or NEPA law or policy regarding how to analyze effects to those resources has not changed since the 2020.

The sEA only analyzes effects on bathymetry/physiography, air quality, natural seafloor habitats, benthic invertebrates, and cultural and tribal resources.

USACE and MD DNR are seeking input on offshore shoal concerns that may assist in the evaluation of Weaver Shoal. Study efforts are being coordinated with other federal and state agencies, local governments and the public. For federal and state agencies receiving a copy of this notice, we request that you provide information concerning interests within your organization's area of responsibility or expertise. All comments are requested within 30 calendar days of this notice to the address below.

If any questions arise regarding this assessment, please contact Chris Johnson by email at Christopher.a.johnson@usace.army.mil, or by mail at U.S. Army Corps of Engineers, Planning Division, 2 Hopkins Plaza, Baltimore, Maryland 21201. Information about the assessment is posted on the USACE Baltimore District website: https://www.nab.usace.army.mil/Missions/Civil-Works/Atlantic-Coast-of-Maryland-Shoreline-Protection/

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

From:	Johnson, Christopher A CIV USARMY CENAB (USA)
To:	Kimberly.Cole@delaware.gov; john.clark@delaware.gov; david.blazer@maryland.gov; Perry Otwell -DNR-; Katherine Charbonneau; Danielle Spendiff -MDE-; Richard Ortt; Elizabeth Hughes -MDP-; myra.barnes@maryland.gov; Karen Greene - NOAA Federal; jonathan.watson; Traver, Carrie; genevieve; Deeley, Sabrina M; Brian D Hopper - NOAA Federal
Bcc:	Piatkowski, Douglas N; Beser, Todd M CIV USARMY CENAB (USA); Callahan, Justin B CIV USARMY CENAB (USA); Bierly, Daniel M CIV USARMY CENAB (USA); Leasure, Charles W CIV USARMY CENAB (USA); Perkins, Catherine J (Katie) CIV USARMY CENAB (USA); Bean, Ethan A CIV USARMY CENAB (USA); Lorenz, Carl J CIV USARMY CENAB (USA); Lazo, Carlos J CIV USARMY CENAB (USA)
Subject:	**Public/Agency Notice** 2025 Atlantic Coast of Maryland Shoreline Protection Project
Date:	Monday, September 22, 2025 1:52:00 PM
Attachments:	Atlantic Coast of MD Public Notice.pdf

To Whom it May Concern,

The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project in 2026. The project is in the Town of Ocean City, Worcester County, Maryland.

USACE and MD DNR are seeking input on offshore shoal concerns that may assist in the evaluation of Weaver Shoal. USACE sent a project reinitiation letter in March 2024 to the agencies listed in the 'To' line of this email. Responses were received from Delaware Coastal Programs, EPA, MDE, MHT, NOAA, and USFWS between April-June 2024. USACE acknowledged and incorporated agency responses within the 2025 Supplemental Environmental Assessment.

With this Public/Agency Notice, USACE requests any additional information concerning interests within your organization's area of responsibility or expertise. All comments are requested within 30 calendar days of this notice to the address below.

If any questions arise regarding this assessment, please contact Chris Johnson by email at Christopher.a.johnson@usace.army.mil, or by mail at:
U.S. Army Corps of Engineers, Planning Division
2 Hopkins Plaza
Baltimore, Maryland 21201.

Information about the 2025 Supplemental EA, as well as previous assessments are posted on the USACE Baltimore District website: https://www.nab.usace.army.mil/Missions/Civil-Works/Atlantic-Coast-of-Maryland-Shoreline-Protection/

Thank you,

Chris Johnson
Biologist
U.S. Army Corps of Engineers
Baltimore District, Planning Division

From:	Johnson, Christopher A CIV USARMY CENAB (USA)
Bcc:	"info@asafishing.org"; "information@ccamd.org"; "davidsikorski@ccamd.org"; "frank.bonanno@gmail.com"; "jDepersenaire@joinrfa.org"; "gcaputi@joinrfa.org"; "captadam@karenannii.com"; "lindajcharters@verizon.net"; "info@nacocharters.org"; "patiencesportfishing@comcast.net"; "Linda.Nasko@state.de.us"; "Jill.DeFelice@state.de.us"; "Blaise.Belfiore@state.de.us"; "Greenfluke@optonline.net"; "info@marylandwatermen.com"; "rickmarks@gardenstateseafood.org"; "delmarvafisheries@gmail.com"; "jeremy@wreckersportfishing.com"; "jeremy@wreckersportfishing.com"
Subject:	**Public Notice** 2025 Atlantic Coast of Maryland Shoreline Protection Project
Date:	Monday, September 22, 2025 2:05:00 PM
Attachments:	Atlantic Coast of MD Public Notice.pdf

To Whom it May Concern,

The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project in 2026. The project is in the Town of Ocean City, Worcester County, Maryland.

USACE and MD DNR are seeking input on offshore shoal concerns that may assist in the evaluation of Weaver Shoal. Study efforts are being coordinated with other federal and state agencies, local governments and the public. All comments are requested within 30 calendar days of this notice to the address below.

If any questions arise regarding this assessment, please contact Chris Johnson by email at Christopher.a.johnson@usace.army.mil, or by mail at:
U.S. Army Corps of Engineers, Planning Division
2 Hopkins Plaza
Baltimore, Maryland 21201.

Information about the 2025 Supplemental EA, as well as previous assessments are posted on the USACE Baltimore District website:
https://www.nab.usace.army.mil/Missions/Civil-Works/Atlantic-Coast-of-Maryland-Shoreline-Protection/

Thank you,

Chris Johnson
Biologist
U.S. Army Corps of Engineers
Baltimore District, Planning Division
2 Hopkins Plaza Baltimore, MD 21201

From:	Johnson, Christopher A CIV USARMY CENAB (USA)
To:	"JKurtz@OceanCityMD.gov"; "tmcgean@oceancitymd.gov"; "jgerthoffer@oceancitymd.gov"
Cc:	Beser, Todd M CIV USARMY CENAB (USA); Perry Otwell -DNR-
Subject:	**Public Notice** 2025 Atlantic Coast of Maryland Shoreline Protection Project
Date:	Monday, September 22, 2025 2:45:00 PM
Attachments:	Atlantic Coast of MD Public Notice.pdf

Good Afternoon,

The U.S. Army Corps of Engineers, Baltimore District (USACE), in partnership with the Maryland Department of Natural Resources (MD DNR), is proposing to dredge offshore shoals in federal waters to obtain sand for the Atlantic Coast of Maryland Shoreline Protection Project in 2026. The project is in the Town of Ocean City, Worcester County, Maryland.

USACE and MD DNR are seeking input on offshore shoal concerns that may assist in the evaluation of Weaver Shoal. Study efforts are being coordinated with other federal and state agencies, local governments, and the public. All comments are requested within 30 calendar days of this notice to the address below.

If any questions arise regarding this assessment, please contact Chris Johnson by email at Christopher.a.johnson@usace.army.mil, or by mail at:
U.S. Army Corps of Engineers, Planning Division
2 Hopkins Plaza
Baltimore, Maryland 21201.

Information about the 2025 Supplemental EA, as well as previous assessments are posted on the USACE Baltimore District website:
https://www.nab.usace.army.mil/Missions/Civil-Works/Atlantic-Coast-of-Maryland-Shoreline-Protection/

Thank you,

Chris Johnson
Biologist
U.S. Army Corps of Engineers
Baltimore District, Planning Division
2 Hopkins Plaza Baltimore, MD 21201

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

December 15, 2025

Daniel M. Bierly, P.E.
Chief, Civil Project Development Branch
Planning Division
U.S. Army Corps of Engineers
Baltimore District
2 Hopkins Plaza
Baltimore, Maryland 21201

RE: PN - Atlantic Coast of Maryland Shoreline Protection Project
Supplemental Environmental Assessment of Offshore Shoals in Federal Waters as Sand Resources - Weaver Shoal

Dear Mr. Bierly:

We have reviewed the Public Notice dated September 22, 2025, and the associated September 2025 draft Supplement Environmental Assessment (sEA) for continued use of Weaver Shoal as a sand borrow area to support the US Army Corps of Engineers (USACE) Baltimore District's (District) Atlantic Coast of Maryland Shoreline Protection Project. This project is located in the Town of Ocean City, Worcester County, Maryland. The project places sand on the beaches of Ocean City generally every four years to reduce the risk of coastal storm damage. The most recent replenishment occurred in 2021 with sand sourced from Weaver Shoal which is located in federal waters beyond the 3-mile limit. We recognize and appreciate the best management practices the District has employed to reduce adverse impacts to essential fish habitat and other NOAA trust resources. However, we continue to recommend that the EFH conservation recommendations (CRs) provided to the District in our September 24, 2019, letter be incorporated into the project design and implementation, particularly our recommendation to undertake pre- and post-dredging physical and biological monitoring of Weaver Shoal (EFH CR #2).

Project History

The use of Weaver Shoal as a sand borrow area was previously evaluated in a 2008 Environmental Impact Statement prepared by USACE and then again in a supplemental environmental assessment dated 2020. On May 3, 2018, we provided scoping comments to help you prepare the sEA, and on September 24, 2019, we provided you with EFH CRs at the conclusion of the EFH consultation with us. On November 7, 2019, you responded to our CRs and reiterated dredging guidelines and constraints you planned to execute to reduce adverse impacts to EFH. This letter also indicated that you did not intend to accept our recommendations to undertake pre and post construction physical biological monitoring as described in CR #3.

In our November 15, 2019, letter, we stated our appreciation for your thoughtful responses and planned adherence to the identified dredging guidelines but we continued to recommend pre-and-post-construction physical and biological monitoring to more accurately determine impacts to the

shoal from the proposed dredging. The sEA evaluated a total of two cycles. Sand from Weaver Shoal was then used in the 2021 nourishment, the first of the two evaluated cycles.

On March 20, 2024, we received notice from you of your intent to prepare an updated sEA for continued use of Weaver Shoal as a borrow area, now with one additional cycle for a total of three borrow cycles. The additional borrow cycle does not change the total volume of sand proposed for extraction, which is limited to no more than 5% of the shoal's total volume. The notice also requested we share any updated data for incorporation into the draft 2025 sEA. On April 30, 2024, we responded that we had no new information or data to share for incorporation into the forthcoming draft sEA and requested that the USACE continue to follow the previously agreed upon conservation recommendations and best management practices from the 2019 EFH consultation. We received email confirmation from USACE that same day agreeing to continue following the conservation recommendations.

Based on our review of the draft 2025 sEA, our conservation recommendation for monitoring has not been executed in full. While we appreciate the incorporation of physical monitoring data documenting changes to bathymetry prior to and after the 2021 dredging was performed, the draft 2025 sEA does not contain any there biological monitoring information, nor was a separate documentation of biological monitoring provided. Without biological monitoring to accompany the physical monitoring, the temporary, long-term, or cumulative impacts resulting from the multiple dredging cycles cannot be evaluated. We continue to recommend that our CR be implemented in full, where pre- and post-construction physical and biological monitoring be performed in association with the upcoming 2026/2027 dredging cycle and the final cycle in approximately year 2030.

In addition, we wish to advise you that the New England and Mid-Atlantic Fishery Management Councils and the NOAA Fisheries Highly Migratory Species Program are in the process of reevaluating and updating their EFH designations, and there are likely to be changes to the EFH designations for some federally-managed species within the next year to two. If changes to EFH designations occur, an updated EFH assessment and reinitiation of the consultation will be needed pursuant to 50CFR 600.920(G). Further, if other new information becomes available, or if the project is revised in such a manner as affects the basis for our 2019 EFH CRs, EFH consultation must also be reinitiated.

Endangered and Threatened Species- Endangered Species Act

Federally listed species may be present in the project area. USACE is responsible for determining whether the proposed action may affect listed species. Please be aware that we have recently provided on our website guidance and tools to assist action agencies with their description of the action and analysis of effects to support their determination. You can also find information about the temporal and spatial distribution of species and their different life stages on our interactive ESA Section 7 Mapper. If it is determined that the proposed action may affect a listed species, determination of effects, along with justification and a request for concurrence to the attention of the Section 7 Coordinator, nmfs.gar.esa.section7@noaa.gov. After receiving a complete, accurate comprehensive request for consultation, in accordance with the guidance and instructions on our website, we would then be able to conduct a consultation under Section 7 of the ESA. Should project plans change or new information become available that changes the

basis for this determination, further coordination should be pursued. If you have any questions regarding these comments, please contact Brian Hopper at brian.d.hopper@noaa.gov.

We appreciate the opportunity to work with your staff to provide these comments. If you have any questions or need additional information, please contact Kira Dacanay at kira.dacanay@noaa.gov.

Sincerely,

Karen M. Greene
Mid-Atlantic Branch Chief
Habitat and Ecosystem Services Division

cc. USACE - D. Bierly, C. Johnson
BOEM - D. Piatkowski
NOAA HESD - J. Watson, R. Bourdon
NOAA PRD - B. Hopper
USFWS - R. Li
EPA Region III - A. Blair
MDE - H. Nelson,
MDNR - P. Otwell, S. VanRyswick
MAMFC - J. Coakley
NEFMC - M. Bachman
ASMFC - S. Kaalstad

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

February 11, 2026

Ms. Karen Greene
Mid-Atlantic Branch Chief
National Oceanic and Atmospheric Administration – National Marine Fisheries Service
Habitat and Ecosystem Services Division

RE: Atlantic Coast of Maryland Shoreline Protection Project – Supplemental Environmental Assessment of Offshore Shoals in Federal Waters as Sand Resources – Weaver Shoal.

Dear Ms. Greene,

The U.S. Army Corps of Engineers, Baltimore District (USACE), and the Bureau of Ocean Energy Management (BOEM) received a letter on December 15, 2025, from the National Oceanic and Atmospheric Administration (NOAA) – National Marine Fisheries Service (NMFS) Habitat and Ecosystem Services Division. The letter was a response to USACE's Public Notice for the Atlantic Coast of Maryland Shoreline Protection Project – Supplemental Environmental Assessment (sEA) of Offshore Shoals in Federal Waters as Sand Resources – Weaver Shoal.

This letter referenced a NOAA NMFS letter dated September 24, 2019, that provided Conservation Recommendations related to the borrow of sand resources from the continental shelf. The two projects covered in the 2019 and 2026 NEPA documents are substantively the same; borrowing sand from the Weaver Shoal for the renourishment of the beach at Ocean City, Maryland and part of the shoreline in Delaware. Therefore, USACE and BOEM are not reinitiating Essential Fish Habitat (EFH) consultation at this time. USACE and BOEM prepared this letter, at the request of NOAA NMFS, to formally respond to the reiteration of Conservation Recommendation #3 (pre- and post-biological surveys of the borrow area) provided in their Public Notice response letter.

USACE hosted a teleconference with representatives from NOAA NMFS and the Bureau of Ocean Energy Management (BOEM) on January 15, 2026. List of attendees on the teleconference included:

- Karen Greene (NOAA Fisheries, Mid-Atlantic Branch Chief)
- Kira Dacanay (NOAA Fisheries, Marine Habitat Resource Specialist)
- Doug Piatkowski (BOEM, Marine Biologist, Marine Minerals Division)
- Charles Leasure (USACE, Supervisory Biologist)
- Todd Beser (USACE, Project Manager)
- Chris Johnson (USACE, Biologist)

During the teleconference, USACE acknowledged NOAA NMFS concerns regarding fulfillment of NOAA's Conservation Recommendations discussed in previous coordination

efforts dating back to 2019/2020. While USACE and BOEM appreciate NOAA NMFS's Conservation Recommendations, extensive research performed through BOEM has evaluated short-term implications of offshore dredging activities. BOEM publications document short-term reduction in benthic species abundance and diversity following dredging, with recovery typically occurring within 1-4 years following completion of dredging activities - assuming general avoidance and minimization measures presented in the supplemental environmental assessment are conducted.

Pre- and post- bathymetric surveys of the borrow area will be conducted by the Baltimore District and required by BOEM to assess the volume of material dredged, which is also true for any proposed future use. These surveys will help document the physical response of the shoal based on implementation of the mitigative measures. Based on existing literature, it is assumed that if the shoal morphology is maintained, dredging depths are not excessive, post dredge sediments are similar to pre-dredge environment, then biological recovery will occur. USACE defines this position further in the November 7, 2019 response letter to NMFS. USACE and BOEM do not agree with the recommendation for pre- and post-borrow biological monitoring. USACE and BOEM agree to conduct pre-construction and post-construction bathymetric surveys.

USACE also acknowledges that the New England and Mid-Atlantic Fishery Management Councils and the NOAA Fisheries Highly Migratory Species Program are in the process of reevaluating and updating their EFH designations, and there are likely to be changes to the EFH designations for some federally managed species within the next year to two. If changes to EFH designations occur, an updated EFH assessment and reinitiation of the consultation will be needed pursuant to 50CFR 600.920(G). Further, if other new information becomes available, or if the project is revised in such a manner that affects the basis for the 2019 EFH Conservation Recommendations, EFH consultation must also be reinitiated.

Sincerely,

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

2016 and 2019 Agency Coordination

DNREC Permits

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL
DIVISION OF CLIMATE, COASTAL, & ENERGY

DELAWARE COASTAL MANAGEMENT PROGRAM

100 W. WATER STREET, SUITE 7B
DOVER, DELAWARE 19904

Phone: (302) 739- 9283
http://de.gov/coastal

January 3, 2019

Andrew May
USACE, Baltimore District
2 Hopkins Plaza
Baltimore, MD 21201

RE: Delaware Coastal Management Program — Federal Consistency Determination Conditional Concurrence for USACE Baltimore District Atlantic Coast of Maryland (FC 2019.0003)

Dear Mr. May,

The Delaware Coastal Management Program (DCMP) of the Delaware Department of Natural Resources and Environment Control (DNREC) has completed its review of the above referenced project. This letter is in response to the federal consistency determination dated and received November 2, 2018, submitted by you on behalf of the U.S. Army Corps of Engineers (USACE) Baltimore District.

PROPOSED ACTION

The USACE Baltimore District is proposing to continue periodic placement of up to 95,000 cubic yards of beach-compatible sand on the Atlantic coast beach, from the Maryland/Delaware state line to a point not more than 0.3 miles north at Fenwick Island, Delaware. Placement is anticipated to occur approximately every four years as part of the continuing Atlantic Coast of Maryland Project. The purpose of this project is to provide coastal flood and erosion risk management in the vicinity of Ocean City, Maryland, against a one percent annual chance storm event on the Atlantic Ocean.

FEDERAL CONSISTENCY UNDER THE COASTAL ZONE MANAGEMENT ACT

Pursuant to the Coastal Zone Management Act of 1972, as amended, federal activities located inside or outside of Delaware's federally approved coastal management area that can have reasonably foreseeable effects on coastal uses must be implemented in a manner consistent with the enforceable policies of the DCMP including: wetlands management, beach management, coastal waters management, subaqueous lands and coastal strip management, public lands management, flood hazard areas management, historic and cultural areas management, state owned coastal recreation and conservation, recreation and tourism, air quality management, living resources, pollution prevention, and coastal management coordination.

FEDERAL CONSISTENCY ANALYSIS

The Delaware CZM Program consists of a network of programs administered by several agencies. The DNREC DCMP coordinates the review of consistency determinations with agencies administering the enforceable and advisory policies of the program. The following agencies participated in this review:

DNREC, Division of Parks and Recreation
DNREC, Division of Watershed Stewardship, Shoreline and Waterway Management
DNREC, Division of Fish and Wildlife
DNREC, Division of Air Quality
DNREC, Division of Water, Wetlands and Subaqueous Lands

To protect living resources of the State, the DNREC, Division of Fish and Wildlife recommended further coordination with the appropriate agencies if specific nesting birds are documented in the area (see Conditional Concurrence section).

PUBLIC PARTICIPATION

In accordance with 15 CFR §930.42, the public was invited to participate in the review of the Atlantic Coast of Maryland project. Public notice of this proposed action was published in the Delaware State News, The News Journal, and DNREC public notices list service on November 11, 2018. The public was given 20 days to submit comments on the published notice. No public comments were received in response to this notice.

CONDITIONAL CONCURRENCE

Based on its review and pursuant to National Oceanic and Atmospheric Administration regulations (15 CFR 930), the DCMP conditionally concurs that the USACE Atlantic Coast of Maryland Project, as proposed above, is consistent to the maximum extent practicable with the program.

The project area may be utilized by piping plovers (Charadrius melodus). As such, to be consistent with the DCMP's enforceable and advisory policies, the following condition must be satisfied as it relates to the Living Resources policies 5.11.2.1, 5.11.3.1, 5.11.3.2, and 5.11.4.1:

1. If piping plovers nest within the project site, the USACE will need to coordinate and cooperate with DNREC, Division of Fish and Wildlife on the protection and management of this new nesting habitat.

Failure to comply with 15 CFR §930.4 as it relates to the condition above will result in this conditional concurrence being considered an objection. Under this scenario, the applicant is advised that pursuant to 15 CFR 930, subpart H, and within 30 days from receipt of this letter, a request may be submitted to the Secretary of Commerce to override the objection. In order to grant an override request, the Secretary must find that the activity is consistent with the objectives or purposes of the Coastal Management Act, or is necessary in the interest of national security. A copy of the request and supporting information must be sent to the Delaware Coastal Management Program and the federal permitting or licensing agency. The Secretary may collect fees for administering and processing the request.

Thank you for the opportunity to review and respond to the Atlantic Coast of Maryland federal consistency determination. If you have any questions, please contact me or Jennifer Holmes of my staff at (302) 739-9283.

Sincerely,

Kimberly B. Cole, Administrator
Delaware Coastal Management Program

KBC/jlh

cc: FC File 2019.0003
Robert Ehemann, DNREC DPR
Mike Powell, DNREC DWS
Audrey DeRose-Wilson, DNREC DFW
Katie Esposito, DNREC WSLS
Deanna Morozowich Cuccinello, DNREC DAQ

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

WETLANDS & SUBAQUEOUS
LANDS SECTION

TELEPHONE (302) 739-9943
FAX (302) 739-6304

The State of Maryland
Department of Natural Resources
Tawes State Office Building, D-3
580 Taylor Avenue, Annapolis, MD 21401
C/o: Andy Hanas
Tax Parcel: N/A – Linear project

Subaqueous Lands Permit: SP-432/18
Water Quality Certification: WQ-432/18
Date of Issuance: 2/5/2019
Construction Exp. Date: 2/5/2029
Amended Date: N/A

SUBAQUEOUS LANDS PERMIT & WATER QUALITY CERTIFICATION

GRANTED TO:

The State of Maryland

FOR THE FOLLOWING ACTIVITIES:

To place approximately 95,000 cubic yards of sand dredged from an offshore borrow source for beach replenishment

LOCATED ON PUBLIC SUBAQUEOUS LANDS:

**Along the Atlantic coast shoreline,
Between Virginia Avenue and the Delaware/Maryland state line,
Fenwick Island, Sussex County, Delaware**

Pursuant to the provisions of 7 Del. C., §7205, and the Department's Regulations Governing the Use of Subaqueous Lands, 7 Del. C., Section 6003, the Department's Regulations Governing the Control of Water Pollution and Section 401 of the Clean Water Act, permission is hereby granted on this 5th day of February A.D. 2019, to construct the above-referenced project in accordance with the approved plans (3 sheets), as approved on February 4, 2019; and the application dated October 12, 2018, and received by this Division on October 15, 2018.

WHEREAS, pursuant to the provisions of 7 Del. C., §7203, the Secretary of the Department of Natural Resources and Environmental Control through his duly authorized representative finds that it is not contrary to the public interest if this project is approved subject to the terms and conditions herein set forth.

WHEREAS, in accordance with Section 401 of the Clean Water Act, 33 U.S.C Section 1341 and 7 Del. C., §6003, the State of Delaware, by and through the Department of Natural Resources and Environmental Control, certifies that the permitted activity will be conducted in a manner which will not violate the applicable water quality standards of the State of Delaware subject to the terms and conditions of this approval.

NOW THEREFORE, this Permit/Certification is issued subject to the attached Subaqueous Lands Permit General Conditions, Water Quality Certification General Conditions, and the following Special Conditions:

SPECIAL CONDITIONS:

1. This approval is in accordance with the plans and application submitted to the Department of Natural Resources and Environmental Control, a copy of which is attached hereto and made a part hereof.
2. This Permit/Certification is valid for 10 years and shall expire **on February 5, 2029**. The previous Permit/Certification issued to the State of Maryland, SP-234/09 and WQ-233/09 shall be considered null and void.
3. This Permit/Certification authorizes the placement of up to 95,000 cubic yards of clean, compatible sand for periodic beach replenishment, as part of the continuing US Army Corps of Engineers Atlantic Coast of Maryland project.
4. The purpose of this project is to replenish beach and dune systems, anticipated to occur every four (4) years unless severe storms require emergency replenishments, as needed for shoreline protection from major storm events. Any other use without prior approval shall constitute reason for this Permit/Certification being revoked.
5. Piping Plover migration occurs between March 1 through June 15 and August 1 through September 15. If nesting piping plovers occur within the project area, the permittee shall notify the DNREC Division of Fish and Wildlife, Species Conservation and Research Program.
6. The permittee shall notify the DNREC Division of Fish and Wildlife, Species Conservation and Research Program within 24 hours of the observation or interaction (including captures, injuries or mortalities) of any State and/or federally listed species.
7. No work shall occur within 300 meters of American Oystercatcher nests or broods. The applicant shall coordinate with DNREC, Division of Fish and Wildlife staff.
8. Harbor, Gray, Harp and Hooded seals migration typically occurs between November through April. If seals are present on the beach nourishment segment, work shall stop immediately and the DNREC Division of Fish and Wildlife, Species Conservation and Research Program shall be notified immediately for guidance.
9. Borrow areas include the Weaver, Isle of Wright and Borrow Area #9, all located in Federally-jurisdictional waters off the coast of Ocean City, Maryland. Sand will be hydraulically-pumped from the borrow area to the shoreline and graded to profile with dozers.
10. All pipelines shall be placed in a manner that avoids resulting in navigation hazards.
11. There shall be no activities, including staging and stockpiling of equipment, in State-regulated wetlands or subaqueous lands unless authorized by this Permit/Certification and approved plans.
12. The work authorized by this permit is subject to the terms and conditions of the appropriate Department of the Army Individual Permit.

IN WITNESS WHEREOF, I, Tyler Brown, the duly authorized representative of Shawn M. Garvin, Secretary of the Department of Natural Resources and Environmental Control, have hereunto set my hand this 5th day of February, 2019.

By Tyler Brown, Section Manager
the duly authorized representative of the Secretary of the
Department of Natural Resources and Environmental Control

Katie Esposito, Environmental Scientist
Wetlands and Subaqueous Lands Section

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

WETLANDS & SUBAQUEOUS
LANDS SECTION

TELEPHONE (302) 739-9943
FAX (302) 739-6304

SUBAQUEOUS LANDS PERMIT & WATER QUALITY CERTIFICATION CONTRACTOR'S COMPLETION REPORT POST-CONSTRUCTION

Subaqueous Lands Permit & Water Quality Certification Number: SP-432/18; WQ-432/18

Name: State of Maryland

Project Location: Atlantic coast shoreline, Fenwick Island, Sussex County, Delaware
Parcel #: N/A – Linear project

I hereby certify that I have constructed the project authorized by the above-referenced Subaqueous Lands Permit in accordance with the approved plans for the project.

Printed Name of Contractor _____ **Name of Company** _____

Contractor's Signature _____ **Date** _____

Telephone Number _____

Upon completion of construction, this form shall be completed, signed by the contractor, and mailed to the Wetlands and Subaqueous Lands Section at:

DNREC
Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, Delaware 19901

Or faxed to the Wetlands and Subaqueous Lands Section at: **302-739-6304**

This form must be received by the Department within ten days of the date that construction is completed.

For official use only

*Compliance inspection date*_____ *Built in accordance with plans* ☐ *Yes* ☐ *No*

Scientist: _____

Affix
Proper
Postage
Here

Mail to:

DNREC – Wetlands and Subaqueous Lands Section
89 Kings Highway
Dover, DE 19901

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DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

WETLANDS AND SUBAQUEOUS LANDS SECTION

PERMIT NO.: SP-432/18; WQ-432/18 **CONSTRUCTION EXPIRATION DATE:** 2/5/2029

TO CONDUCT THE FOLLOWING ACTIVITIES:

To place approximately 95,000 cubic yards of sand dredged from an offshore borrow source for beach replenishment

LOCATED ON PUBLIC SUBAQUEOUS LANDS:

Along the Atlantic coast shoreline,
Between Virginia Avenue and the Delaware/Maryland state line,
Fenwick Island, Sussex County, Delaware

ISSUED TO: State of Maryland

LOCATION OF WORK: Same as above

DISPLAY THIS CERTIFICATE IN A HIGHLY VISIBLE LOCATION ON THE JOB SITE.

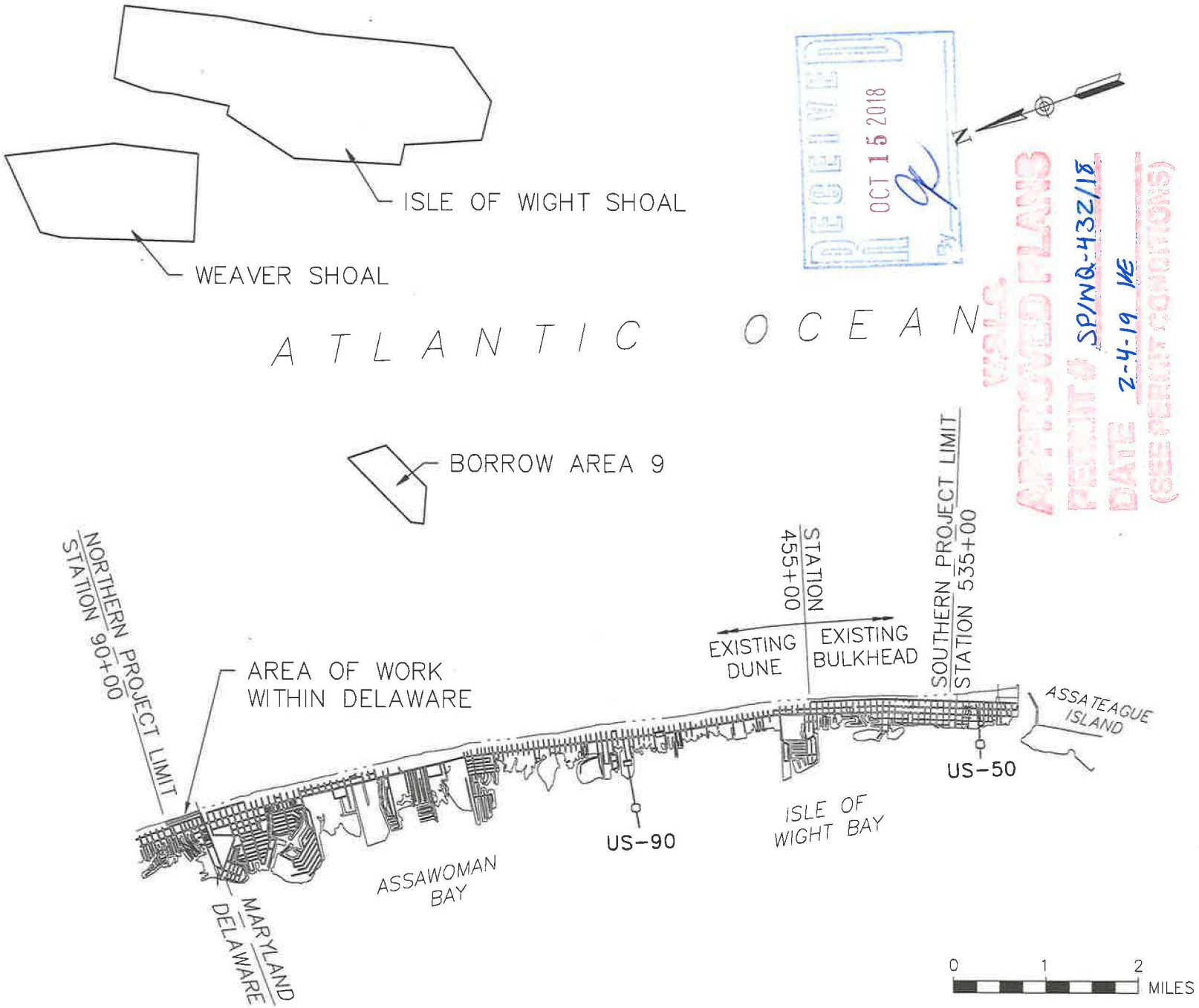
Authorized by: _____

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

GENERAL CONDITIONS

1. The permittee and contractor shall at all times comply with all applicable laws and regulations of the Department of Natural Resources and Environmental Control.
2. The activities authorized herein shall be undertaken in accordance with the Permit conditions, the final stamped and approved plans, and with the information provided in the Permit application.
3. A copy of this Permit and the stamped approved plans shall be available on-site during all phases of construction activity.
4. The conditions contained herein shall be incorporated into any and all construction contracts associated with the construction authorized herein. The permittee and contractor are responsible to ensure that the workers executing the activities authorized by this Permit have full knowledge of, and abide by, the terms and conditions of this Permit.
5. No portion of the structure shall be constructed using creosote treated lumber.
6. No portion of the structure(s) authorized by this Permit shall exceed the dimensions for that structure identified on Page One of this Permit.
7. The activities authorized herein shall be conducted so as not to violate the State of Delaware's Surface Water Quality Standards in effect at the date of Permit authorization.
8. The issuance of this Permit does not constitute approval for any activities that may be required by any other local, state or federal government agency.
9. The issuance of this Permit does not imply approval of any other part, phase, or portion of any overall project the permittee may be contemplating.
10. This Permit authorizes only the activities described herein. Modifications to the project may require a supplemental approval from this office prior to the initiation of construction. A determination of the need for a supplemental approval will be made by this office pursuant to the permittee submitting written notification and revised plans indicating project changes. Failure to contact the Department prior to executing changes to the project shall constitute reason for this Permit being revoked.
11. The Contractors Completion Report shall be filled out and returned within 10 days of completion of the authorized work.
12. The permittee shall protect and hold the State of Delaware harmless from any loss, cost or damage resulting from the activities authorized herein.
13. Representatives of the Department of Natural Resources and Environmental Control shall be allowed to access the property to inspect all work during any phase of the construction and may conduct pre and post-construction inspections, collect any samples or conduct any tests that are deemed necessary.
14. The permittee shall maintain all authorized structures and activities in a good and safe condition.

15. All construction materials, waste or debris associated with this activity shall be properly disposed of and contained at all times to prevent its entry into waters or wetlands. Construction materials shall not be stockpiled in subaqueous lands or wetlands.
16. The permittee and contractor shall employ measures during construction to prevent spills of fuels, lubricants or other hazardous substances. In the event of a spill, the permittee and contractor shall make every effort to stop the leak and contain the spill, and shall immediately contact the Hazardous Spill Response Team (HAZMAT) at 1-800-662-8802 and this office at (302) 739-9943. The permittee and contractor are responsible to comply with all directives to contain and clean up the spilled material(s) as stipulated by the HAZMAT team, and to restore the site as may be required by this office.
17. No construction shall occur after the construction expiration date identified on Page One of this Permit. The permittee may file a construction expiration date extension request of up to one (1) year if necessary to complete the authorized work. Such requests must be received by the Department at least thirty (30) days prior to the construction expiration date.
18. Any actions, operations or installations which are found by the Department to be contrary to the public interest may constitute reason for the discontinuance and/or removal of said action, operation or installation. Removal and restoration shall be at the expense of the permittee and/or upland property owner within thirty (30) days of receipt of written notice of revocation and demand for removal.
19. Disturbance of subaqueous lands or wetlands adjacent to the authorized structures or activities is prohibited unless specifically addressed in the special conditions of this Permit. Disturbance of subaqueous lands or wetlands in the path of construction activities shall be minimized. Any temporarily impacted subaqueous lands or wetlands shall be returned to pre-disturbance elevations and conditions.
20. This Permit is personal and may not be transferred without the prior written consent of the Department. Prior to the transfer of the adjacent upland property, the permittee shall obtain the written consent of the Department to transfer the Permit to the new upland property owner. Failure to obtain such written consent may result in the revocation of this Permit and the removal of all structures authorized by this Permit at the expense of the permittee.
21. The permittee shall notify the Wetlands and Subaqueous Lands Section prior to the commencement of the work authorized by this Permit.
22. No portion of the structure shall be installed within ten (10) feet of the adjacent property lines.
23. No portion of the structure shall exceed 20% of the width of the water body as measured at mean low water.
24. The structures authorized by this Permit shall be constructed and maintained in a manner so as to assure water access to adjacent properties.
25. This Permit does not authorize any future repairs below the water line, or any additions or modifications to the structures authorized herein. Such activities require separate written authorization from the Department of Natural Resources and Environmental Control.
26. Failure to comply with any of the terms or conditions of this Permit may result in enforcement action which could include the revocation of this Permit and subsequent restoration of the site to preconstruction conditions.



RECEIVED
OCT 15 2018
By

APPROVED PLANS
PERMIT # SP/NQ-432/18
DATE 2-4-19 ME
(SEE PERMIT CONDITIONS)

U.S. Army
Corps of Engineers
Baltimore District

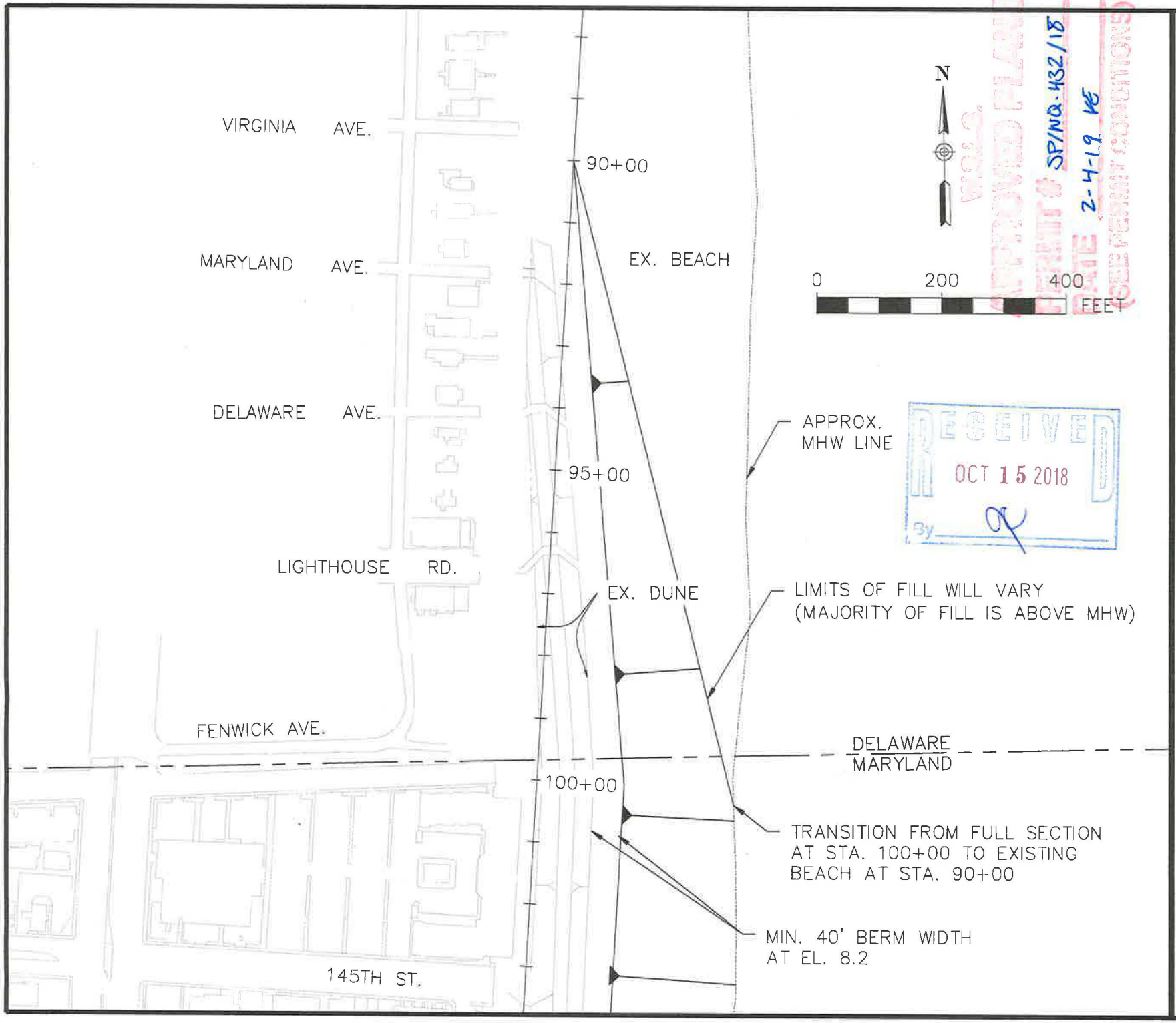
State of Maryland DNR
Annapolis, MD

ATLANTIC COAST OF MARYLAND SHORELINE PROTECTION PROJECT

GENERAL PLAN

Figure:

1

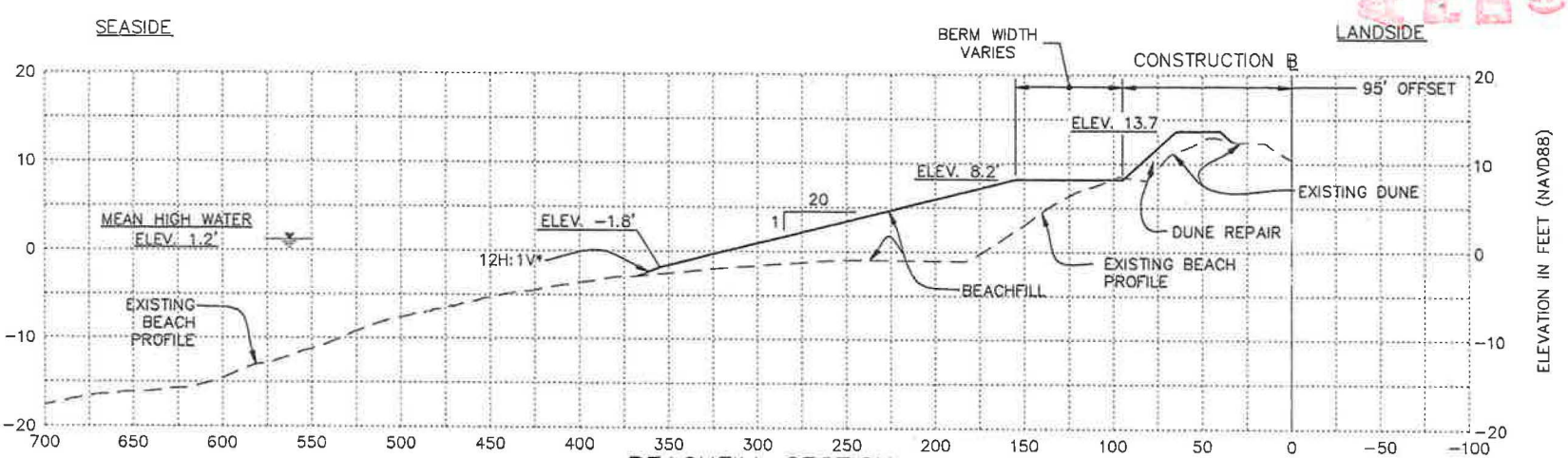


U.S. Army Corps of Engineers Baltimore District

State of Maryland DNR Annapolis, MD

ATLANTIC COAST OF MARYLAND
SHORELINE PROTECTION PROJECT
PLAN VIEW

Figure:
2



BEACHFILL SECTION AT DUNE

STA. 90+00 TO STA. 455+00

SPWQ-432/18 DATE 2-4-19 KE

RECEIVED OCT 15 2018 By

U.S. Army Corps of Engineers Baltimore District

State of Maryland DNR Annapolis, MD

ATLANTIC COAST OF MARYLAND SHORELINE PROTECTION PROJECT

TYPICAL CROSS SECTION

Figure: 3

MD Board of Public Works Wetlands License

State of Maryland
Board of Public Works
Wetlands Administration
Post Office Box 1510
Annapolis, Maryland 21404
410-260-7791
Fax: 410-974-5240
Toll Free: 1-877-591-7320

William Morgante, PWS
Wetlands Administrator

Lawrence J. Hogan, Jr.
Governor

Nancy K. Kopp
Treasurer

Peter Franchot
Comptroller

Sheila C. McDonald
Executive Secretary

April 18, 2016

MD Dept. of Natural Resources
Attn: Jordan Loran
Tawes Building – 580 Taylor Avenue – D-3
Annapolis, MD 21401

Dear Applicant(s):

RE: Wetlands License No. 15-0988, Atlantic Ocean, Worcester Co., MD

Enclosed please find the original and one copy of the above-mentioned wetlands license issued to you on March 23, 2016.

After you have read all the conditions of the license, please ensure that the license is **signed** by the named licensee and **the entire original (including plans) is returned** to this office **within 15 business days** in the enclosed envelope. Please retain the copy of the license for your records. This license is valid for a period of three years, as indicated on page three.

10 years

Please note that you must notify the MD Department of the Environment, Inspections and Compliance Program, by calling (410) 537-3510 in Baltimore, or (410) 901-4020 in Cambridge, five days prior to commencing work.

This does not constitute your federal authorization. Please contact the U.S. Army Corps of Engineers, Baltimore District, at (410) 962-4500 (Maryland Section Southern) or (410) 962-4252 (MD Section Northern) regarding the status of the federal permit.

If you have any questions concerning any of the terms and conditions of the attached license, please contact me at the address or telephone number shown above.

Sincerely,

William Morgante

William Morgante
Wetlands Administrator

Enclosure
cc: MDE, Tidal Wetlands Division

State of Maryland
Board of Public Works
Wetlands Administration
Post Office Box 1510
Annapolis, Maryland 21404
410-260-7791
Fax: 410-974-5240
Toll Free: 1-877-591-7320

William Morgante, PWS
Wetlands Administrator

Lawrence J. Hogan, Jr.
Governor

Nancy K. Kopp
Treasurer

Peter Franchot
Comptroller

Sheila C. McDonald
Executive Secretary

WETLANDS LICENSE NO. 15-0988

MARYLAND DEPARTMENT OF NATURAL RESOURCES

The Maryland Board of Public Works authorizes you to:

Maintenance dredge by hydraulic method, approximately 200,000 cubic yards of sand annually from off shore borrow sites in the Atlantic Ocean and pump sand for placement along the entire 10 mile length and 260-foot wide strand of the Ocean City beach within a maximum of 260 feet channelwrd of the mean high water with the inclusion of a maintenance dredging provision for the period of ten years, as depicted on the plans dated November 14, 2015.

Atlantic Ocean along a 10-mile strand of the Ocean City beach in Ocean City, Worcester County, Maryland

Issuance of this Tidal Wetlands License constitutes the State's determination that the authorized activities are consistent with the Maryland Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended [16 U.S.C. §1456]. Accordingly, the State concurs with the Licensee's certification in the Joint Permit Application that the project complies with, and will be conducted in a manner consistent with the Maryland CZMP.

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING SPECIAL CONDITIONS:

The dredger shall have a person at the discharge point in constant radio communication. If a problem is incurred the dredging operation shall be immediately shut down until the reason for the problem can be ascertained and rectified. MDE Compliance shall be notified.

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING STANDARD CONDITIONS:

1. Licensee shall conduct the authorized work in accordance with the plans and drawings dated November 14, 2015, which are hereby incorporated into this License.

2. Until the authorized work is complete, Licensee shall have available at the site a copy of this License including the plans and drawings.

3. This License constitutes Maryland's authorization to conduct the authorized work under the State Tidal Wetlands Law. This License does not bestow any other federal, State, or local government authorization.

4. Licensee shall notify MDE's Inspection and Compliance Program, in writing, of the project:
   - start date at least five business days before beginning work; and
   - completion date no more than five business days after project completion.
   MDE/Inspection and Compliance Program: ***410-537-3510***

5. If MDE has issued a Water Quality Certification with respect to the authorized work, Licensee shall comply with all conditions of that certification.

6. Licensee shall conduct the authorized work in accordance with Critical Area Commission requirements. This License does not authorize disturbance in the Buffer. If authorized work will disturb the Buffer, Licensee shall have a Commission-approved or locally-approved Buffer Management Plan before beginning the authorized work.

   "Buffer" means the 100-foot Critical Area Buffer and any expanded area that is immediately landward of the mean high water line of the tidal waters or is immediately landward of tidal wetlands. The Buffer includes expanded contiguous area if the contiguous area includes steep slopes, hydric soil, or highly erodible soil, or otherwise meets the criteria of COMAR 27.01.09.01.E(7). "Disturbance" means any alteration or change to the land including any amount of clearing. Clearing includes vegetation removal, grading, and construction activity.

7. Licensee may not fill, dredge, or otherwise alter or destroy tidal marsh or its vegetation unless this License specifically authorizes the activity.

8. Licensee may not stockpile material in State tidal wetlands or State tidal waters of the U.S.

9. Licensee shall allow unfettered public use of State wetlands and State tidal waters of the U.S.

10. This License does not transfer a property interest of the State.

11. Licensee shall file a Miss Utility ticket for the proposed work at least 10 days before beginning work. *Miss Utility*: **800-257-7777**

12. Licensee shall ensure that structures (for example, piers and piles) removed from the site are taken to an upland disposal facility approved by MDE's Inspection and Compliance Program.

13. If the authorized work impacts more than 5,000 square feet or includes 100 or more cubic yards of fill, Licensee shall conduct the authorized work in accordance with a locally-approved Soil Erosion and Sediment Control Plan.

14. Unless the property owner performs his or her own authorized work, only a marine contractor registered with the Marine Contractors' Licensing Board may perform the authorized work. The Registered Marine Contractors list may be obtained from MDE. ***410-537-3249; MDE.MCLB @maryland.gov***

15. Licensee shall allow State officials and employees to make inspections at reasonable times and cooperate with those inspections.

16. This License is granted only to the Licensee. Licensee may transfer the license only with written approval from the Board of Public Works. If the Board of Public Works approves the transfer, the transferee is subject to all License terms and conditions.

17. Licensee shall indemnify, defend, and save harmless the State of Maryland, its officials, officers, and employees from and against any and all liability, suits, claims, and actions of whatever kind, caused by or arising from, the work this License authorizes.

18. The Board of Public Works or its Wetlands Administrator may modify, suspend, or revoke this License in its reasonable discretion.

19. This License expires March 23, 2026. If the authorized work is not completed by the expiration date, all activity must stop.

By the authority of the Board of Public Works:

Sheila C. McDonald
Executive Secretary

Effective Date: March 23, 2016
Approved as: Secretary's Agenda Item 2
Board of Public Works Meeting Date: March 23, 2016

I accept this License and all its conditions.

Date

Licensee (Signature)

Name (Printed)

13. If the authorized work impacts more than 5,000 square feet or includes 100 or more cubic yards of fill, Licensee shall conduct the authorized work in accordance with a locally-approved Soil Erosion and Sediment Control Plan.

14. Unless the property owner performs his or her own authorized work, only a marine contractor registered with the Marine Contractors' Licensing Board may perform the authorized work. The Registered Marine Contractors list may be obtained from MDE. ***410-537-3249; MDE.MCLB @maryland.gov***

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17. Licensee shall indemnify, defend, and save harmless the State of Maryland, its officials, officers, and employees from and against any and all liability, suits, claims, and actions of whatever kind, caused by or arising from, the work this License authorizes.

18. The Board of Public Works or its Wetlands Administrator may modify, suspend, or revoke this License in its reasonable discretion.

19. This License expires March 23, 2026. If the authorized work is not completed by the expiration date, all activity must stop.

By the authority of the Board of Public Works:

Sheila C. McDonald
Executive Secretary

Effective Date: March 23, 2016
Approved as: Secretary's Agenda Item 2
Board of Public Works Meeting Date: March 23, 2016

I accept this License and all its conditions.

4/20/2016
Date

Licensee (Signature)

JORDAN LORAN
Name (Printed)

Attachment A

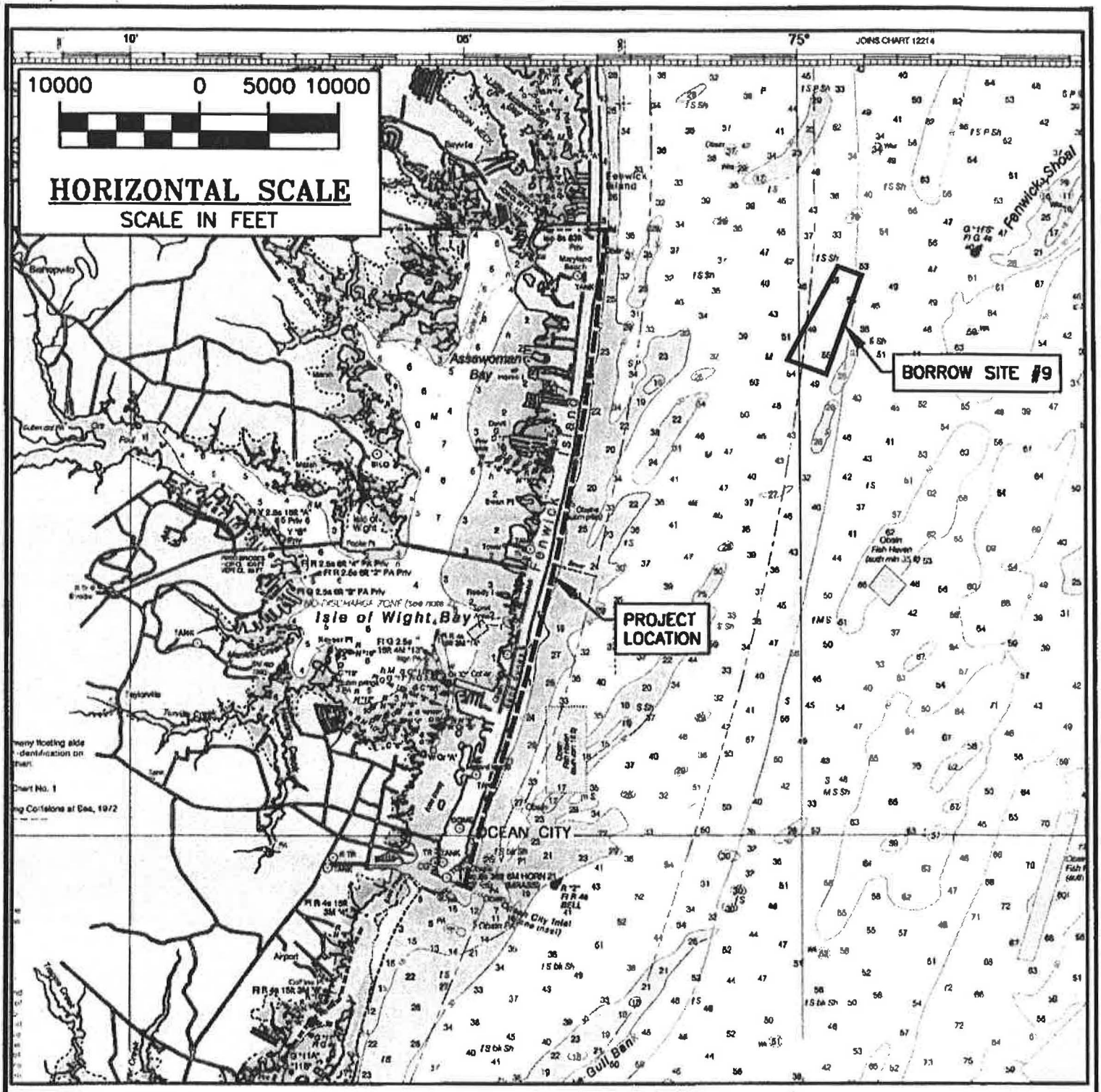
Adjacent property owner:

State of Delaware

Department of Natural Resources and Environmental Control

89 Kings Highway

Dove, Delaware 19901



PROJECT LENGTH

15-WK-0988
AI # 150764
20156175-4
11/4/15

PURPOSE NOTE

A. PROVIDE STORM PROTECTION & REPAIR ERODED BEACH FRONT.
B. MAINTAIN BEACH FOR TEN (10) YEARS.

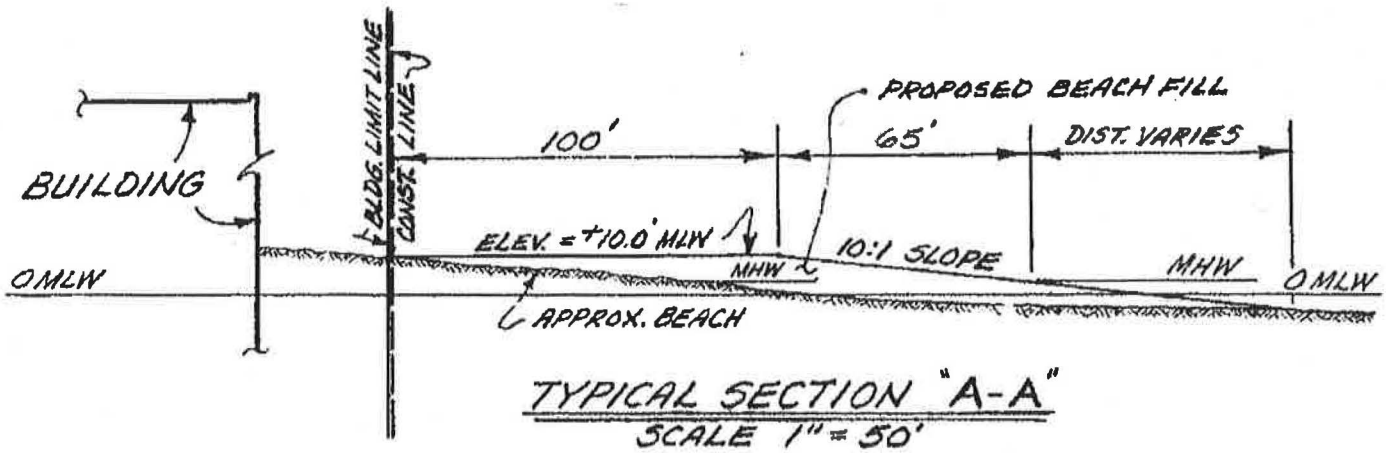
MAINTAIN REPLENISHED BEACH AS REQUIRED FOR A MINIMUM PERIOD OF TEN (10) YEARS. ESTIMATED ANNUAL REPLENISHMENT REQUIRED = 200,000 YDS³

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

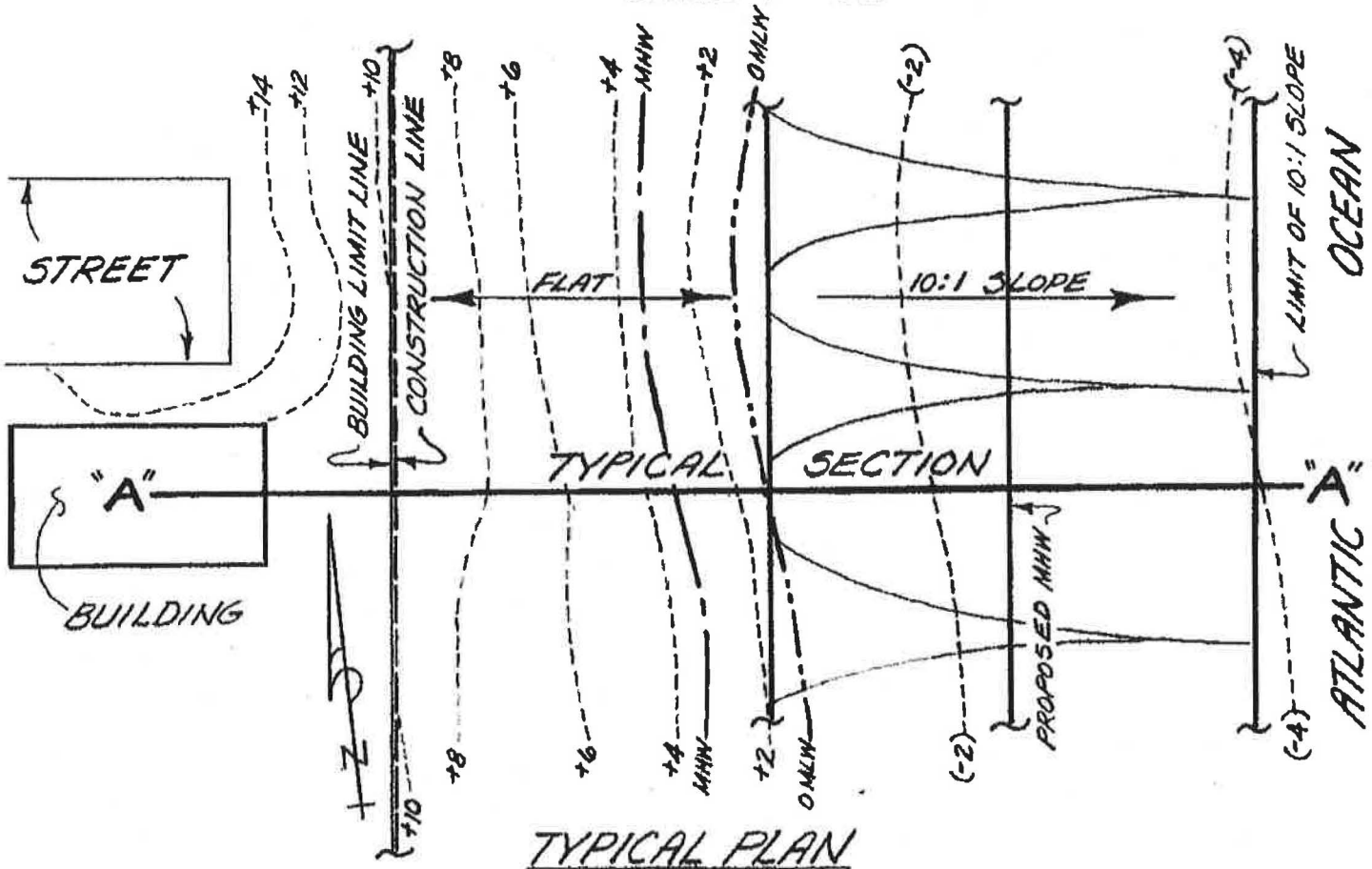
BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 1 OF 5

REVISED. 11/86, 6/87, 5/88, 9/95, 5/96, 11/15



TYPICAL SECTION "A-A"
SCALE 1" = 50'

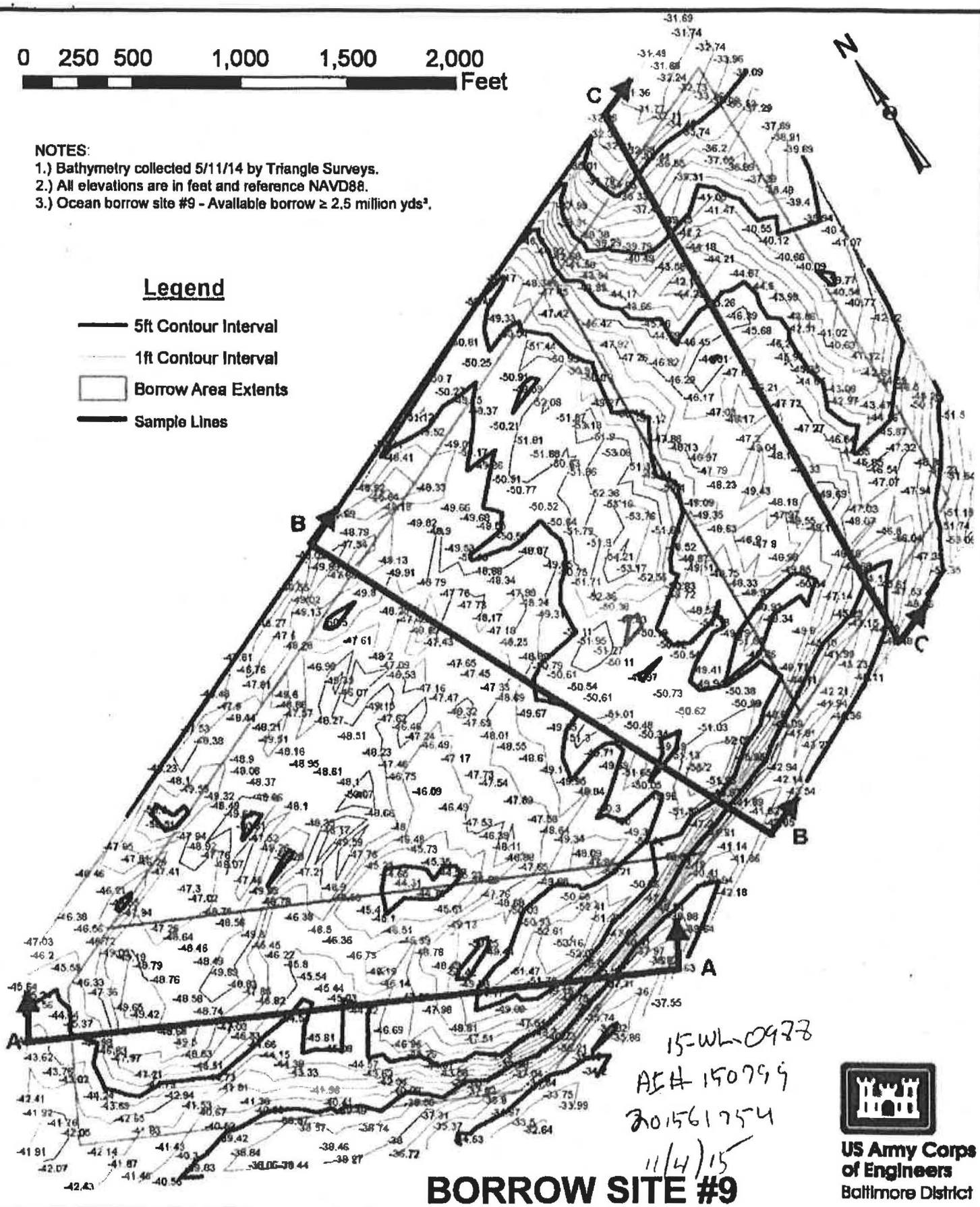


TYPICAL PLAN
SCALE 1" = 50'

15-Wh-0978
AI # 150799
20156175 H
11/4/15

STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES ENGINEERING AND CONSTRUCTION ANNAPOLIS, MARYLAND	BEACH REPLENISHMENT PROJECT TOWN OF OCEAN CITY WORCESTER COUNTY, MARYLAND SHEET 2 OF 5

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15



BORROW SITE #9

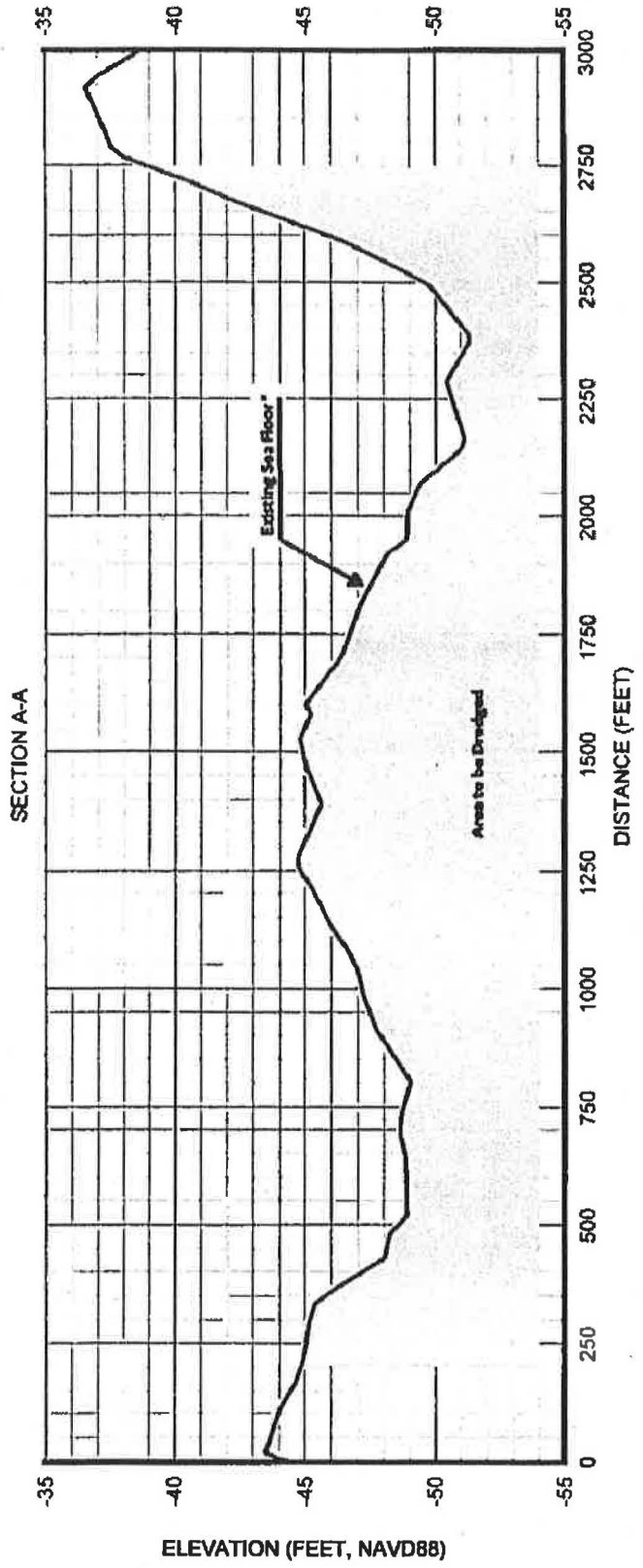
US Army Corps of Engineers
Baltimore District

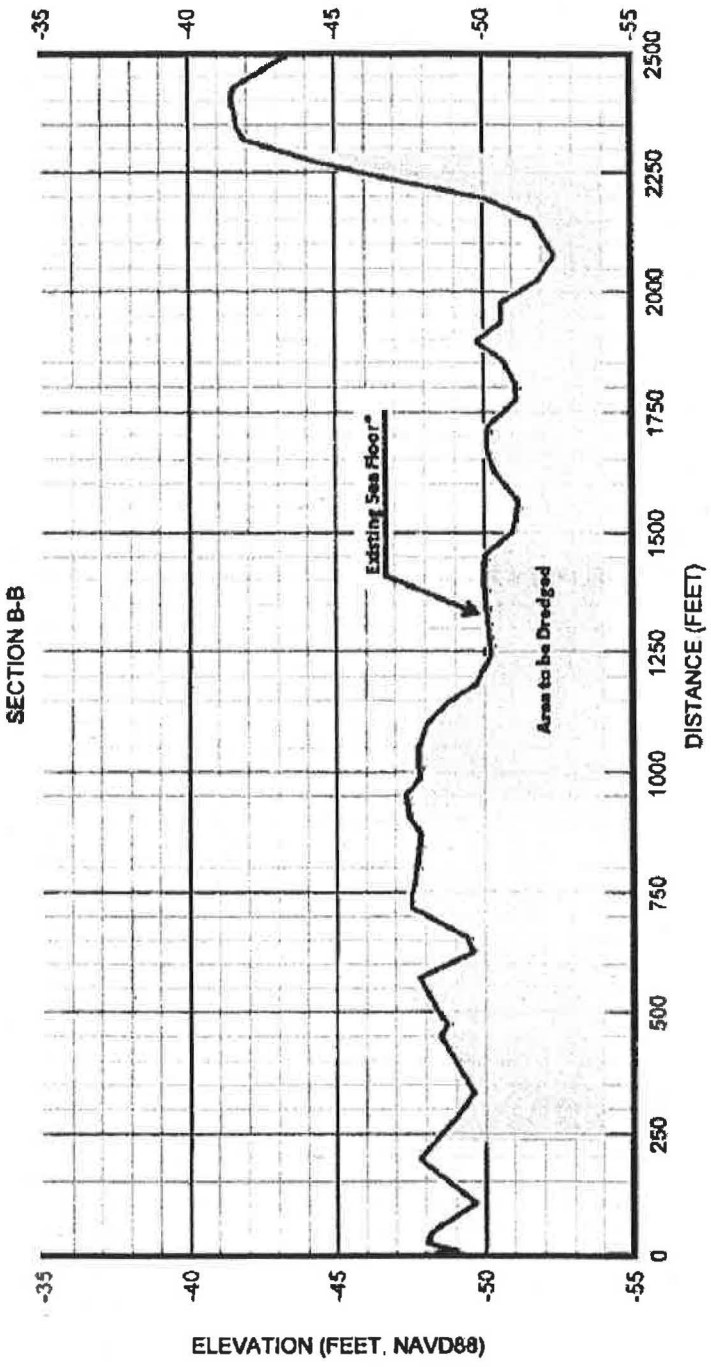
STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 3 OF 5

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15





PER POST BORROW SURVEY BY TRIANGLE
SURVEYS 5/11/14 15-WL-0637
AI#150799
20156175U 11/4/15

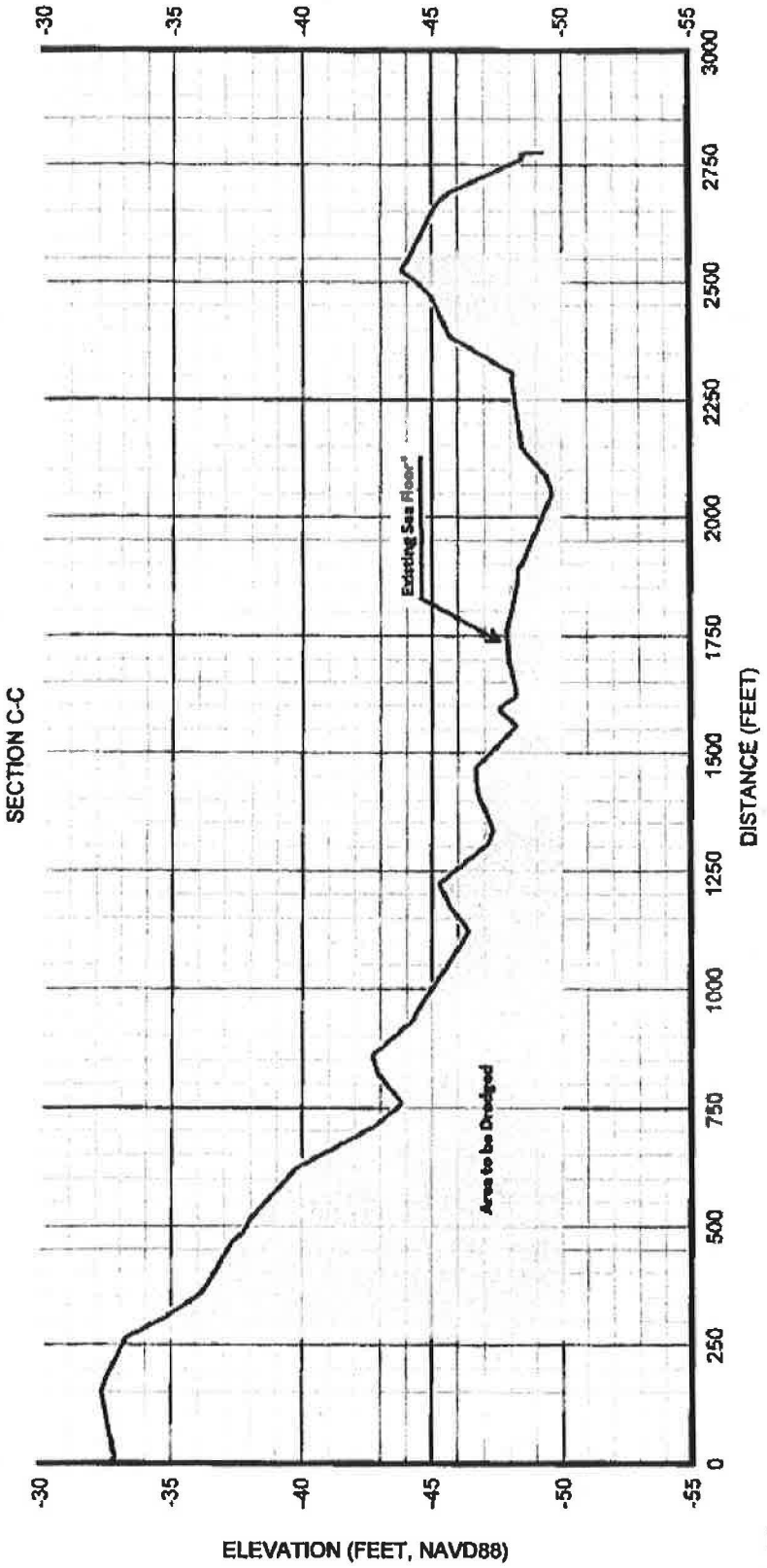
SECTION A-A & SECTION B-B, BORROW SITE #9

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 4 OF 5

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15



PER POST BORROW SURVEY BY TRIANGLE SURVEYS 5/11/14 15-WL-0987 AT # 150799 20156754 11/4/15

SECTION C-C, BORROW SITE #9

STATE OF MARYLAND
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
ANNAPOLIS, MARYLAND

BEACH REPLENISHMENT PROJECT
TOWN OF OCEAN CITY
WORCESTER COUNTY, MARYLAND

SHEET 5 OF 5

REVISED: 11/86, 6/87, 5/88, 9/95, 5/96, 11/15

MDE Water Quality Certification

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER MANAGEMENT ADMINISTRATION
WATER QUALITY CERTIFICATION

for

WETLAND LICENSE 15-WL-0988

WATER QUALITY CERTIFICATION NUMBER: **15-WQC-0988**
EFFECTIVE DATE: **March 23, 2016**
EXPIRATION DATE: **Marcy 23, 2026**
CERTIFICATION HOLDER: **MD Dept of Natural Resources**
ADDRESS: **Attn: Jordan Loran Tawes State Office**
Building 580 Taylor Avenue, D-3
Annapolis, Maryland 21401
PROJECT LOCATION: **Route 50 to Delaware State Line**
Ocean City, MD 21842
Atlantic Ocean in Worcester

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND IT ADMENDMENTS AND IN ACCORDANCE WITH §9-313 THROUGH §9-323, INCLUSIVE, ANNOTATED CODE OF MARYLAND, THE WATER MANAGEMENT ADIMINSTRATION ("ADMINISTRATION") HAS DETERMINED THAT THE FOLLOWING REGULATED ACTIVITY, IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION AND THE ATTACHED PLANS APPROVED BY THE ADMINISTRATION'S TIDAL WETLANDS DIVISION DATED November 4, 2015, AND PREPARED BY Jordan Loran AND INCORPORATED HEREIN, WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS:

To maintenance dredge by hydraulic method, approximately 200,000 cubic yards of sand annually from off source borrow sites in the Atlantic Ocean; and pump sand for placement along the entire 10 mile length and 260 foot wide strand of the Ocean City beach within a maximum of 260 feet channelward of the mean high water with the inclusion of a maintenance dredging provision for the period of ten (10) years as depicted on the plans dated November 14, 2015.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVAL, LICENSES OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS.

THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

SPECIAL CONDITIONS

A. None.

GENERAL CONDITIONS

A. The proposed project shall be constructed in a manner which will not violate Maryland's Water Quality Standards as set forth in COMAR 26.08.02. The applicant is to notify this department ten (10) days prior to commencing work. Verbal notification is to be followed by written notice within ten (10) days.

B. The Maryland Department of the Environment has determined that the proposed activities comply with, and will be conducted in a manner consistent with the State's Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended.

C. If the authorized work is not performed by the property owner, all work performed under this Water Quality Certification shall be conducted by a marine contractor registered with the Maryland Department of the Environment in accordance with Chapter 286 of the 2010 Laws of Maryland. A list of registered marine contractors can be obtained by contacting the Department at 410-537-3249 or by e-mail at MDE.MCLB@maryland.gov.

D. The Certification Holder shall ensure the proposed project shall be constructed in accordance with the authorized plan and any authorized revisions.

E. The Certification Holder shall ensure that all fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.

F. The Certification Holder shall notify the Water Management Administration, Tidal Wetlands Division, in writing, upon transferring property ownership or responsibility for compliance with these conditions to another person. The new owner/operator shall request, in writing, transfer of this Water Quality Certification to his/her name.

G. The Certification Holder shall allow representatives of the Maryland Department of the Environment to inspect the authorized activities.

H. The Certification Holder shall ensure that a copy of this Permit, including the approved plans, is available at the site until the authorized work is complete.

I. The Certification does not relieve the Certification holder from the responsibility of obtaining all necessary federal, State and local government authorizations.

J. The Certification Holder shall comply with all Critical Area requirements and obtain all necessary authorizations from local jurisdiction. This Certification does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. "Disturbance" in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from local jurisdiction in the form of a Buffer Management Plan.

Failure to comply with these conditions shall constitute reason for suspension or revocation of the Water Quality Certification and legal proceedings may be instituted against the Certification Holder in accordance with the Annotated Code of Maryland. In granting this certification, the Department reserves the right to inspect the operations and records regarding this project at anytime.

CERTIFICATION APPROVED

Andrew J. May, Chief
Tidal Wetlands Division

May 9, 2016

Tracking Number: 201561754
Agency Interest Number: 150799

Enclosure: Plans dated November 4, 2015
cc: WMA Inspection & Compliance Program

Appendix B

2023 Weaver Shoal Bathymetric Survey

U.S. Army Corps of Engineers
Baltimore District

HYDROGRAPHIC SURVEY REPORT

WEAVER BORROW SURVEY

Ocean City, Maryland

Contract No.: W912DR20D0016

Delivery Order No: W912DR23F03

December 2023

Prepared by:

Gahagan & Bryant Associates, Inc.
9008-O Yellow Brick Road
Baltimore, MD 21237

Prepared for:

W. F. Baird & Associates, Ltd.
60 Broad Street
24th Floor, Ste. 2422
New York, NY 10004

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Gahagan & Bryant Associates (GBA) was requested by W. F. Baird & Associates, Ltd. and the U.S. Army Corps of Engineers, Baltimore District (USACE) (Contract: W912DR20D0016 | Delivery Order No: W912DR23F0358) to collect multibeam hydrographic data across the Weaver Shoal Borrow Area extents as shown in Figure 1 below. The project area is approximately 1.5 miles wide by 2.75 miles long totaling approximately 2,600 acres of survey area. The purpose of the survey is to document the existing conditions of the project area. Survey work conducted under this task was completed in accordance with the scope of work dated September 18, 2023 and the approved Survey Plan (October 2023).

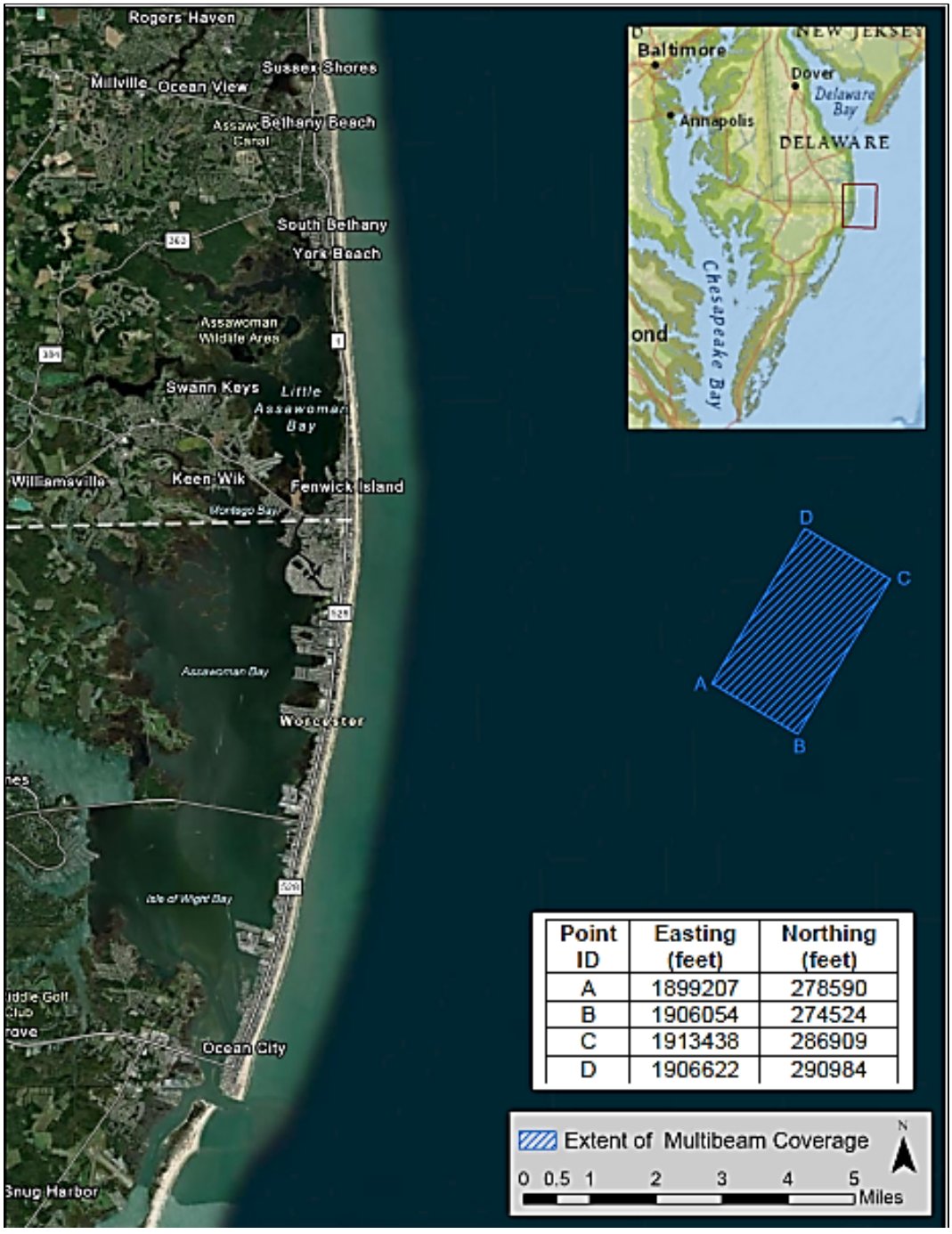


Figure 1 – Weaver Borrow Area Project Location

2.0 CONTROL SURVEY

On October 10, 2023, a GBA survey crew mobilized to Ocean City, Maryland to perform project control surveys. The crew checked into Speicher with a Leica rover using Leica smart net. The crew subsequently established a fixed project base station on top of Carousel Hotel in Ocean City Maryland using the Leica rover. Three 180 epoch observations were stored and averaged together to establish a Northing, Easting, and Elevation on the base station mount point. The GBA survey crew then set up a Trimble Base Station consisting of a Trimble SPS 461, Zephyr Geo Mdl2, and Trimark III radio. The fixed project base station point "Carousel" was established at the rooftop of Carousel Hotel (Elevation 203.18') and the GPS system was set up to broadcast at a rate of 10 Hz. GBA recovered USACE survey control points 146th St. and Bath and performed GPS observations to verify the positional accuracy of the established coordinates on "Carousel." Both known control points measured checked within project specified accuracies. Horizontal and vertical deltas are shown on Attachment 1 project control report.

3.0 HYDROGRAPHIC SURVEY

Prior to mobilization to the site, predetermined survey lines were set up in HYPACK survey software to ensure that all lines were placed at the appropriate transect locations, as per the specifications in the scope of work. The HYPACK software is run on a PC aboard the survey vessel. The software provides real-time navigation for the boat operator to steer the vessel. An R-2 Sonic multibeam echosounder sends out an acoustic signal (sonar), which determines the water depth, and the GPS positioning system provides the vessel's position. Both depth and position are recorded on the PC computer using Hypack data acquisition software package. The software matches the water depth with the position to generate an accurate horizontal location and vertical depth file. GBA utilized *RV Pricus* for the hydrographic survey efforts. The *RV Pricus* is a 40-foot Small Waterplane Area Twin Hull (SWATH) vessel powered by twin Cummins C9 motors.

The survey system on the survey vessel *RV Pricus* consisted of:

1) GPS – Applanix PosMv reciever system and a Trimble TDL-450 receiving corrections from the Trimble Base Station referenced to USACE monument "146th St.".
2) Echosounder – R-2 Sonic multibeam echosounder for water depth measurements,
3) IMU – Applanix PosMv system updating at 20Hz to compensate for heave, pitch, and roll and
4) A survey grade computer running Windows 11 professional.

Hydrographic survey data was collected from October 12, 2023, through October 19, 2023. Weather conditions at the time of the survey were suitable for data acquisition on the small vessel required for this type of work.

Sound Velocity profiles were performed approximately every 2 hours during survey operations to ensure proper calibration of the echosounder for draft and sound velocity. Sound Velocity profiles were collected using an AML Sound Velocity Profiler. RTK Tide checks were conducted before and after each day of data collection. RTK position checks were checked against TBM 'Sunset'.
Prior to production surveys in the borrow area the survey system was checked for latency, and the

multibeam system was patch and performance tested. Additionally, an uncertainty analysis was performed to identify potential survey errors and uncertainties.

4.0 DATA PROCESSING

Upon completion of the hydrographic survey all data was edited and processed using PosPac and HYPACK 2021 and GBA internal software utilities. During processing, corrections for vessel motion and tidal variation were applied and errant soundings were removed from the database. Using Hypack's Hysweep editor, final XYZ data files were generated based on the average cell depth value using 5', 10', 20', and 50' bin sizes. All data points are provided in Maryland State Plane coordinate (Zone 1900) and reference the vertical plane of the North American Vertical Datum 1988 (NAVD88).

5.0 QUALITY CONTROL/QUALITY ASSURANCE

GBA performed QA/QC procedures throughout the survey project. RTK control checks were performed before and after all Topographic data collection. Sound Velocity profiles were collected during all hydrographic data collection to eliminate speed of sound and transducer draft errors. Patch and performance tests were run to eliminate offset and latency errors. The data was reviewed daily to ensure proper coverage and quality. Crossline hydrographic survey data was collected at 2000-foot increments perpendicular to long axis of the borrow site. This data was compared to the longitudinally collected data and compared for consistency. Additionally, GBA data was compared to the historical USACE data. Statistical analysis of the data sets showed that the GBA collected data was within project specified tolerances.

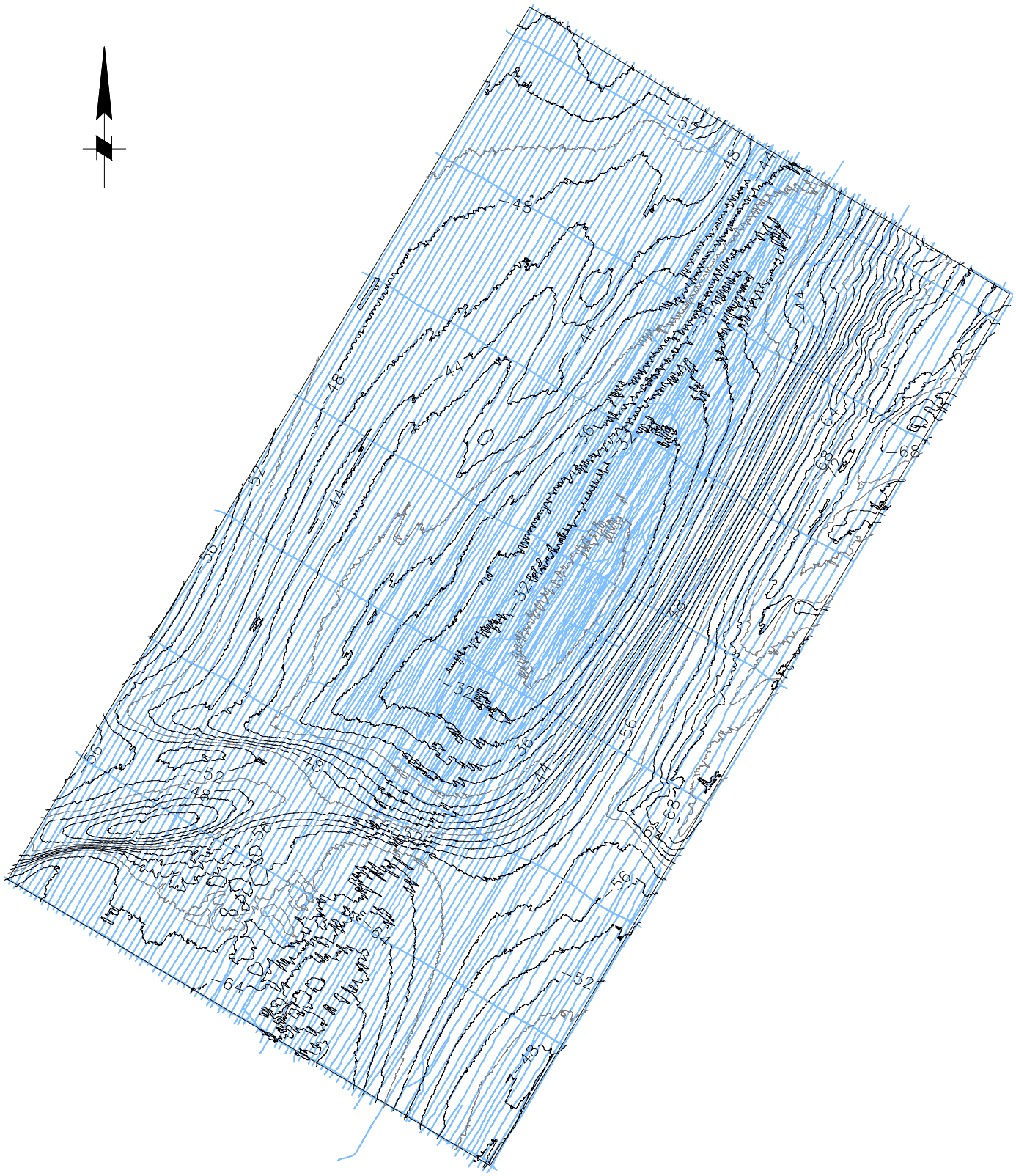
All data meet or exceed minimum performance standards established in the USACE Engineering and Design Manual EM 1110-2-1003.

6.0 CONTACT INFORMATION

Gahagan & Bryant Associates, Inc.
9008-O Yellow Brick Road
Baltimore, MD 21237
Office: 410-682-5595

Survey Manager:
Christopher Marello, PLS email: ctmarello@gba-inc.com

Technical Project Manager:
Edward DeAngelo email: edeangelo@gba-inc.com



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GAHAGAN & BRYANT ASSOCIATES, INC.
BALTIMORE, MARYLAND
(410) 682-5595

WEAVER SHOAL BORROW SITE
OCEAN CITY, MD

CONDITION SURVEY

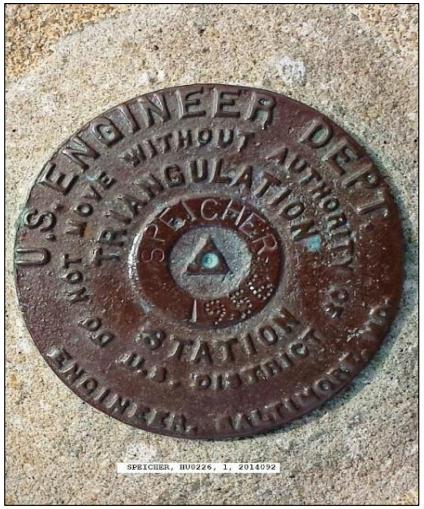
Drawing Date:	DEC 1, 2023
Drawn By:	ECD
Checked By:	CTM
Drawing Name:	2023_CONDITION
Drawing Scale:	1"=2000'

APPENDIX 1

Weaver Borrow Area Control Report

Weaver Borrow Area Control Report - October 10, 2023

CONTROL POINT	STATUS	EASTING	NORTHING	VERTICAL	EASTING	NORTHING	VERTICAL	EASTING	NORTHING	VERTICAL	COMMENTS
		GIVEN			FOUND			DELTA			
SPEICHER	Found - Good	1,860,780.12	245,550.83	9.66	1860780.207	245551.003	9.630	0.087	0.173	-0.030	Check Using Leica Rover on Smart Net
146th STREET	Found - Good	1870474.488	291689.393	8.15	1870474.601	291689.393	8.248	0.113	0.000	0.098	Checked using Trimble Base set at Carousel
BATH	Found - Good	1870336.551	298776.04	3.432	1870336.608	298775.946	3.498	0.057	-0.094	0.066	Checked using Trimble Base set at Carousel



Speicher

146th Street

Bath

Fixed Project Base Station "Carousel"

APPENDIX 2

Hydrographic Survey Field Notes

Z31010

WEAVER BORROW AREA
CONTROL RECON / BASE
STATION SETUP

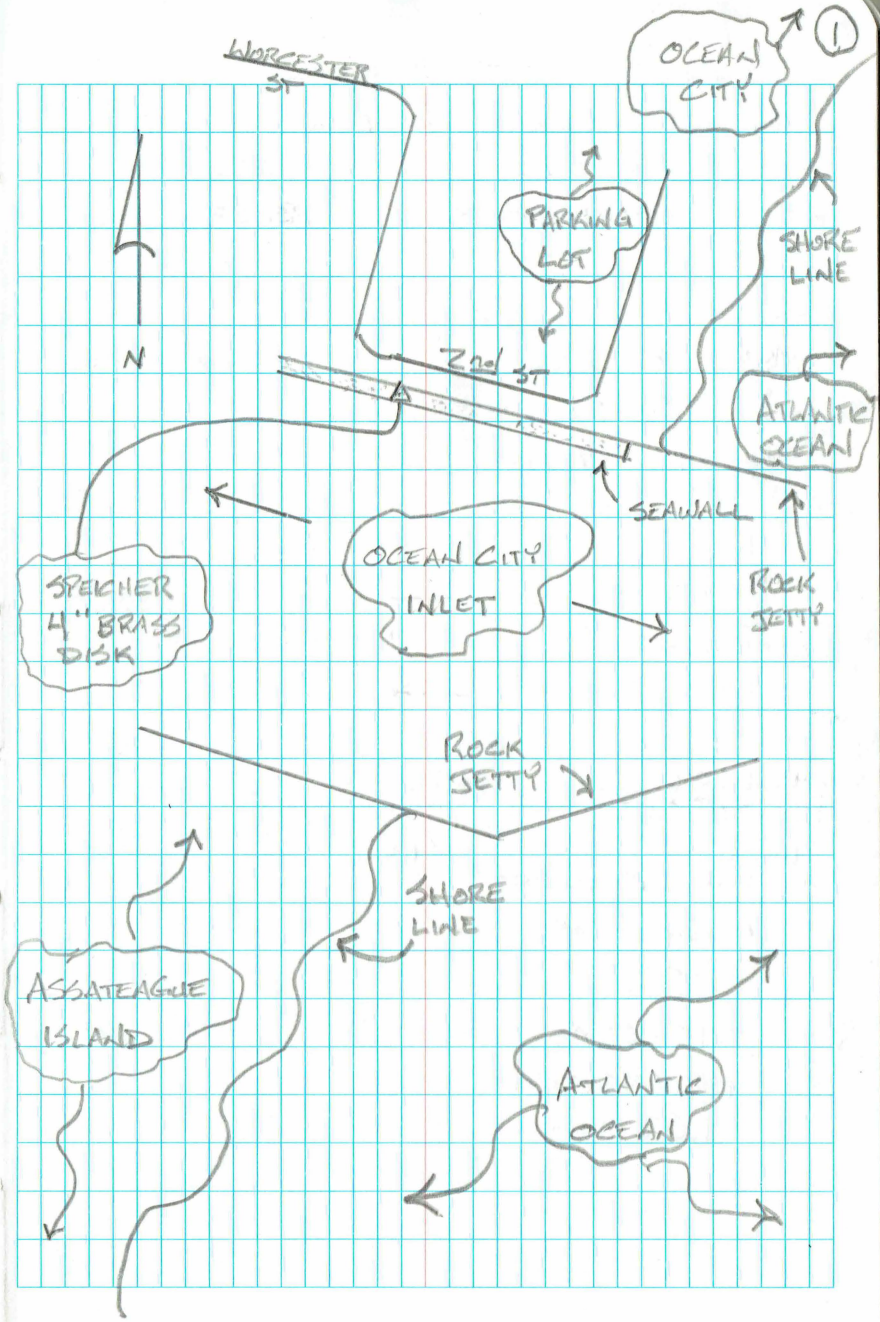
CREW CTM
TRS

WX CLEAR
55°-70°

EQUIP
TRIMBLE R8 + TSC3
TRIMBLE SPS 852 + TDL 450
LEICA ROVER + DATA COLLECTOR

WORK PERFORMED:

- CONTROL CHECKINS W/ LEICA ROVER
- ESTABLISH BASE STATION MOUNT POINT FOR PROJECT
- CONTROL CHECKIN'S W/ TRIMBLE ROVER



3 3 MINUTE OBSERVATIONS 180 EPOCH
ON SPEICHER W/ LEICA ROVER

KNOWN COORDINATES SPEICHER

NAD 83 NAVD 88
MD SPC 1900
N:) 245550.83
E:) 1860780.12
EL:) 9.66

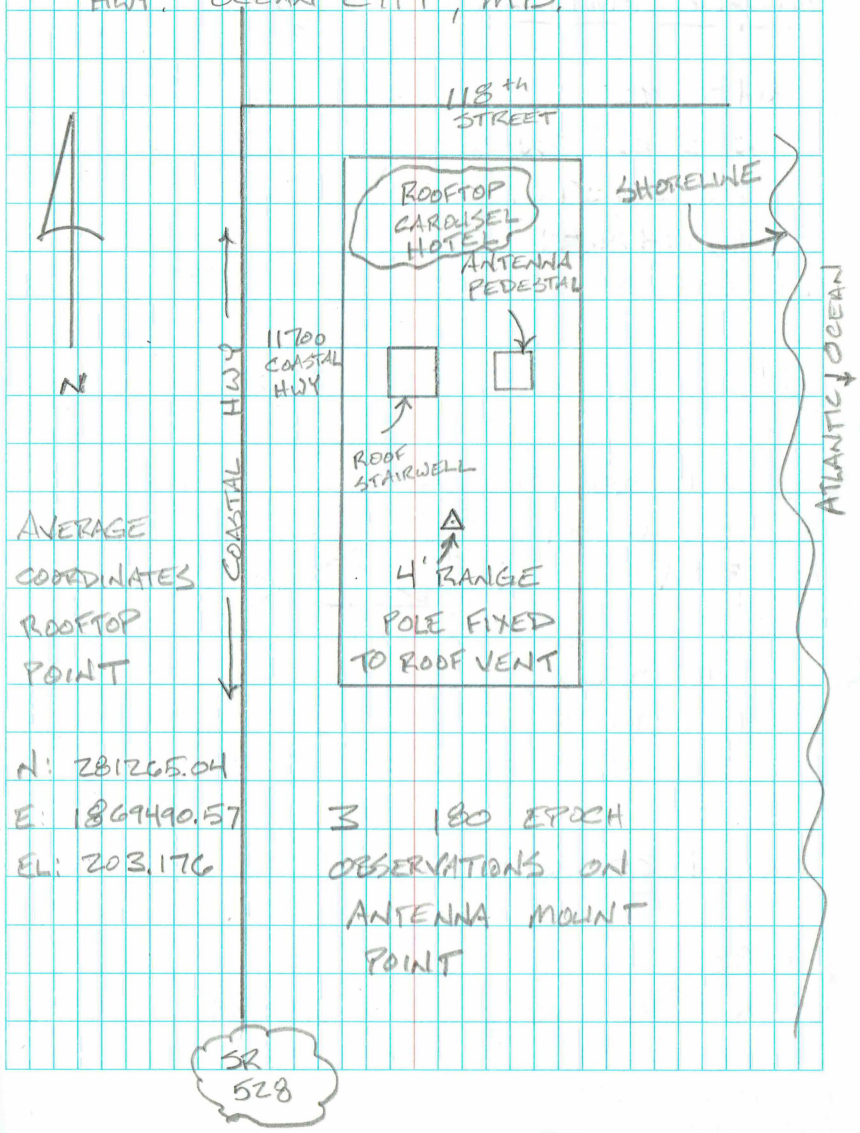
OBSERVED

① ② ③

	①	②	③
N	245551.00	245555.00	245551.00
E	1860780.20	1860780.21	1860780.21
EL	9.64	9.63	9.62

(2)

PROJECT BASE STATION FIXED CONTROL POINT ESTABLISHED ON CAROUSEL HOTEL ROOF 11700 COASTAL HWY. OCEAN CITY, MD.



AVERAGE COORDINATES ROOFTOP POINT

N: 281265.04
E: 1869490.57
EL: 203.176

3 180 EPOCH OBSERVATIONS ON ANTENNA MOUNT POINT

CONTROL CHECK IN @ 146th ST AND BATH

KNOWN COORDINATES:

- 146th ST

NAD 83	NAVD 88	SPC MD 1900
N: 291689.39		
E: 1870474.49		
EL: 8.15		

OBSERVED

①	②
N: 291689.38	N: 291689.40
E: 1870474.59	E: 1870474.60
EL: 8.24	EL: 8.24

③
N: 291689.37
E: 1870474.54
EL: 8.25

KNOWN COORDINATES:

- BATH

NAD 83	NAVD 88	SPC MD 1900
N: 298776.04		
E: 1870336.55		
EL: 3.42		

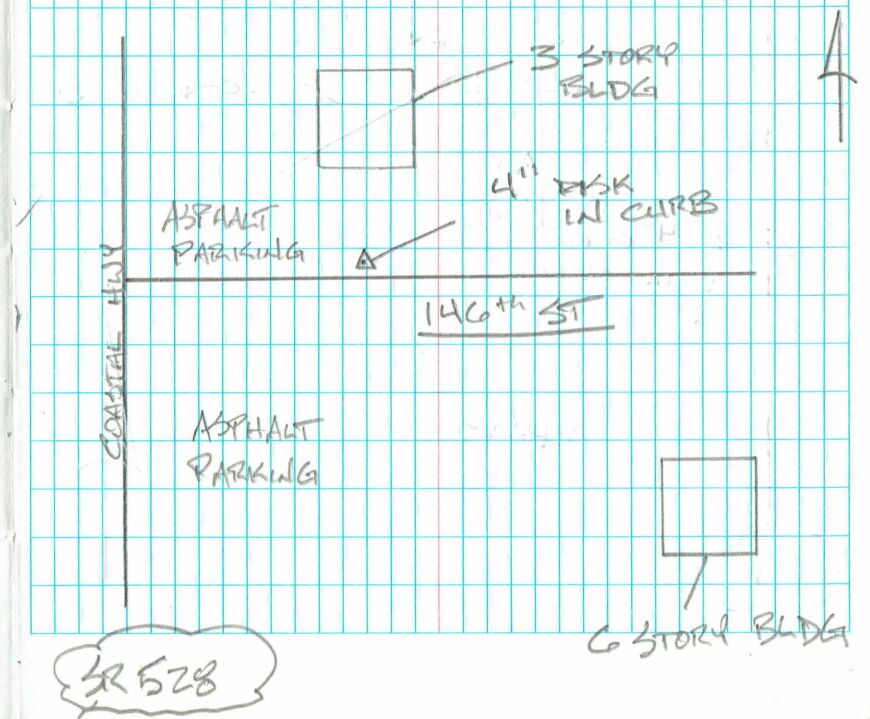
OBSERVED

① N: 298775.95
E: 1870336.61
EL: 3.51

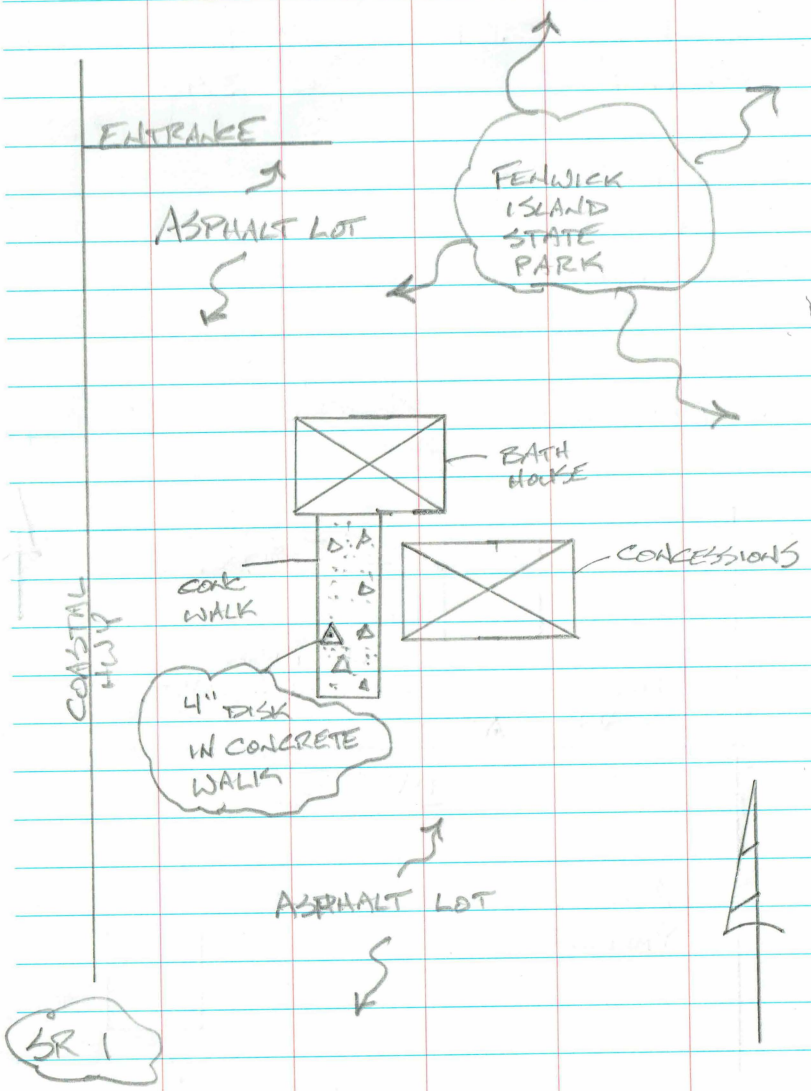
② N: 298775.94
E: 1870336.61
EL: 3.48

③ N: 298775.94
E: 1870336.61
EL: 3.51

LOCATION SKETCH 146th



LOCATION SKETCH BATH



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9008-O Yellow Brick Road
Baltimore, MD 21237
(410) 682-5595

Prepared By: C MARELLO

Hydrographic Survey Field Logs

Body of Water: ATL. OCEAN
Location: O. CITY MARYLAND
Weather: OVERCAST
Wind: NE 10-15
Sea State: 2-4
Vessel Speed: 4.6 KTS

Date: 13 OCT 2023
Project: WENER BORROW
Proj. No.
Vessel: PRIUS
Crew: CTM
DKN

Multi-Beam Survey

File Name: 231013_RAW
Positioning System: POS. MV
Echosounder: R-2 SONIC

Single Beam Survey

File Name:
Positioning System
Echosounder:

Boat Positioning

KNOWN
Position A: X 1856157.8 Y 246889.6
Position B: X 1856162.9 Y 246910.0
Delta AB: X Y
Position C: X Y
Delta AC-BC: X Y

O/S TO POSITIONAL ANTENNA

Boat Positioning

Position A: X Y
Position B: X Y
Delta AB: X Y
Position C: X Y
Delta AC-BC: X Y

Transducer Calibration

Sound Velocity Casts

Time: 0815	A	Speed of Sound:	4971
Time: 1015	B	Speed of Sound:	4970
Time: 1220	C	Speed of Sound:	4971
Time: ~~1500~~	D	Speed of Sound:	
Time: 1500	E	Speed of Sound:	4972
Time: 1720	F	Speed of Sound:	4971

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base : CAROUSEL Elev: 203.17 Datum: 88
Tide Gauge: SUNSET Elev: 2.97 Datum: 88

Time	0730	1730		
Rod	2.97	2.97		
Water Level	1.90	1.70		
Boat	2.00	1.80		

Differential GPS

Tide Gauge: Elev: Datum:
HOBO Launch Time: Recover Time:

Time				
Elevation				
Rod				
Water Level				

Comments:

HYDROGRAPHIC SURVEY LOG SHEET Survey #: 231013 Sheet # 1 of Date: 13 - Oct - 23

Project Details: WEAVER SHOAL BORROW AREA SURVEY

Fathometer Frequency : 200	Survey Crew : CTM, DKN
Draft of Fathometer :	Survey Vessel : PRICUS
GPS Mode : FIXED RTK	Sea State : 3'-4'
GPS Latency :	Avg. Speed of Sound : 4975
Vessel Squat :	HYPACK File Information :
Project Bench Mark :	
Bench Mark Elev and Datum :	
Bench Mark LAT/Y :	
Bench Mark LONG/X :	
Horizontal Datum : NAD 83 MD SPC	
Vertical Datum : 88	
MLLW-NAVD88 Relationship :	

Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	
1 WS403	10:36:15	10:52:54	-0.98	6.24	30.89	2.03	0.00	
2 WS394	11:04:54	11:24:09	-1.51	7.60	210.89	2.23	0.00	
3 WS388	11:27:39	11:51:36	-0.46	6.02	30.89	3.97	0.00	
4 WS381	11:56:22	12:13:58	0.06	8.13	210.89	4.22	0.00	
5 WS376	12:17:21	12:42:50	-1.17	5.39	30.89	4.86	0.00	
6 WS366	12:42:50	12:43:07	-0.98	5.19	210.89	4.87	0.00	
7 WS367	12:53:29	13:11:13	0.09	7.61	210.89	1.96	0.00	
8 WS372	13:13:25	13:36:34	0.75	6.02	30.89	2.01	0.00	
9 WS359	13:40:01	13:56:59	0.85	8.64	210.89	2.25	0.00	
10 WS352	13:58:54	14:12:12	0.43	6.28	30.89	1.65	0.00	
11 WS352	14:12:12	14:21:56	0.07	6.27	30.89	2.02	0.00	
12 WS344	14:27:24	14:32:35	-0.08	8.84	210.89	2.15	0.00	
13 WS344	14:32:36	14:38:59	0.12	8.87	210.89	2.25	0.00	
14 WS344	14:38:59	14:44:18	-0.14	8.33	210.89	2.34	0.00	
15 WS336	14:46:25	14:53:35	-0.00	6.52	30.89	2.50	0.00	
16 WS336	14:53:35	15:01:36	-0.10	6.37	30.89	2.59	0.00	
17 WS336	15:01:36	15:09:08	-0.34	6.16	30.89	2.60	0.00	
18 WS329	15:19:29	15:24:50	-0.49	8.93	210.89	1.84	0.00	
19 WS329	15:24:50	15:33:39	-0.80	8.17	210.89	1.84	0.00	
20 WS329	15:33:39	15:36:54	-0.89	7.99	210.89	1.76	0.00	
21 WS322	15:38:57	15:45:09	-0.93	6.59	30.89	2.23	0.00	
22 WS322	15:45:10	16:01:05	-0.38	6.48	30.89	2.42	0.00	
23 WS315	16:16:51	16:36:45	-0.90	10.76	210.89	1.99	0.00	
24 P1	17:18:53	17:19:37	-2.14	6.30	28.36	2.28	0.00	
25 P2	17:21:38	17:22:13	-1.99	5.95	208.36	2.26	0.00	
26 P3	17:23:51	17:24:26	-1.95	6.40	28.36	2.24	0.00	
27 P4	17:26:13	17:26:47	-2.32	6.80	208.36	2.22	0.00	
28 P5	17:28:12	17:28:52	-2.13	6.13	27.45	2.59	0.00	
29 P7	17:31:06	17:31:39	-2.26	6.09	119.85	2.58	0.00	
30 P8	17:33:12	17:33:41	-1.96	6.76	299.85	2.56	0.00	
31 P9	17:35:59	17:36:28	-2.05	5.79	119.85	2.54	0.00	
32 P10	17:38:17	17:38:48	-2.19	5.88	299.85	2.51	0.00	
33 P11	17:41:01	17:41:31	-2.47	5.71	119.85	2.48	0.00	
34 P6	17:43:38	17:44:10	-2.16	5.92	299.85	2.45	0.00	

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Baltimore, MD 21237
(410) 682-5595

Prepared By: C. MARELLO

Hydrographic Survey Field Logs

Body of Water: ATL OCEAN
Location: O. CITY MARYLAND
Weather: OVERCAST
Wind: N 5-10
Sea State: 2-3
Vessel Speed: 4-6 KTS

Date: 14 OCT 2025
Project: WEAVER BORROW
Proj. No. _____
Vessel: PRICE 3
Crew: CSTM
PRW
DKE DKN

Multi-Beam Survey

File Name: 251014_RAW
Positioning System POS MV
Echosounder: R-2 SONIC

Single Beam Survey

File Name: _____
Positioning System _____
Echosounder: _____

Boat Positioning

KNOWN
Position A: X 1856157.80 Y 246889.63
Position B: X 1856162.63 Y 246909.01
Delta AB: X _____ Y _____
Position C: X _____ Y _____
Delta AC-BC: X _____ Y _____

Boat Positioning

Position A: X _____ Y _____
Position B: X _____ Y _____
Delta AB: X _____ Y _____
Position C: X _____ Y _____
Delta AC-BC: X _____ Y _____

Transducer Calibration

Sound Velocity Casts

Time: 0905	A	Speed of Sound: 4969
Time: 1105	B	Speed of Sound: 4970
Time: 1325	C	Speed of Sound: 4967
Time: 1735	D	Speed of Sound: 4970
Time: _____	E	Speed of Sound: _____
Time: _____	F	Speed of Sound: _____

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base : CAROUSEL Elev: _____ Datum: NAD83
Tide Gauge: SUNSET Elev: 2.97 Datum: NAD83

Time	0745	1840		
Rod	2.97	2.97		
Water Level	2.00	1.66		
Boat	2.20	1.80		

Differential GPS

Tide Gauge: _____ Elev: _____ Datum: _____
HOBO Launch Time: _____ Recover Time: _____

Time				
Elevation				
Rod				
Water Level				

Comments: _____

HYDROGRAPHIC SURVEY LOG SHEET

Survey #: 231014	Sheet # 1 of	Date: 14 - Oct - 23	Project Details: WEAVER
Fathometer Frequency	200	Survey Crew	CTM, PRW, DKN
Draft of Fathometer		Survey Vessel	PRICUS
GPS Mode	FIXED RTK	Sea State	3'-4'
GPS Latency		Avg. Speed of Sound	4969
Vessel Squat		HYPACK File Information	
Project Bench Mark			
Bench Mark Elev and Datum			
Bench Mark LAT/Y			
Bench Mark LONG/X			
Horizontal Datum	NAD 83 MD SPC		
Vertical Datum	88		
MLLW-NAVD88 Relationship			

Line Name	Start Time	End Time	Tide	Speed
WS307	09:33:55	09:52:59	-2.15	7.33
WS301	09:55:03	10:00:49	-2.05	7.46
WS301	10:00:49	10:09:28	-2.37	7.34
WS301	10:09:28	10:15:11	-2.25	7.08
WS291	10:19:51	10:30:33	-1.64	6.55
WS291	10:30:33	10:34:42	-1.61	6.47
WS291	10:34:42	10:42:19	-1.45	6.22
WS296	10:44:13	10:53:10	-1.53	6.88
WS296	10:53:10	10:59:23	-1.37	6.86
WS296	10:59:23	11:05:06	-1.22	7.57
WS304	11:11:33	11:17:54	-0.94	6.48
WS304	11:17:54	11:25:48	-1.26	6.67
WS304	11:25:48	11:32:50	-0.94	6.78
WS287	11:34:42	11:41:31	-0.42	6.47
WS287	11:41:31	11:48:33	-0.54	6.36
WS287	11:48:33	11:55:30	-0.72	7.97
WS283	11:58:57	12:04:55	-0.61	7.31
WS283	12:04:55	12:12:53	-0.63	7.38
WS283	12:12:53	12:18:57	-0.38	7.38
WS278	12:21:57	12:28:37	-0.50	7.78
WS278	12:28:37	12:35:16	-0.46	7.82
WS278	12:35:16	12:40:24	-0.44	8.43
WS273	12:41:58	12:47:26	0.29	8.26
WS273	12:47:26	13:00:40	0.13	7.75
WS268	13:02:19	13:16:41	0.14	7.66
WS268	13:16:41	13:20:43	0.31	8.39
WS263	13:34:38	13:40:23	0.37	7.98
WS263	13:40:23	13:48:02	0.83	7.56
WS263	13:48:02	13:53:49	0.44	7.43
WS258	13:55:58	14:02:19	0.62	7.98
WS258	14:02:19	14:11:17	0.46	7.79
WS258	14:11:17	14:14:51	0.42	8.06
WS253	14:23:22	14:37:33	0.44	7.17
WS253	14:37:33	14:42:45	0.38	7.45
WS256	14:44:33	14:57:55	0.38	8.77
WS261	14:59:48	15:07:46	0.45	8.37

WS261	15:07:46	15:13:48	0.37	7.61
WS270	15:15:46	15:21:39	0.29	7.01
WS270	15:21:39	15:31:17	-0.25	7.52
WS280	15:33:38	15:43:07	-1.86	6.87
WS280	15:43:07	15:47:57	0.02	6.51
WS265	15:50:39	15:55:07	0.01	6.59
WS265	15:55:07	16:02:05	-0.96	7.22
WS260	16:03:22	16:06:14	-0.91	6.60
WS259	16:17:45	16:22:19	0.00	0.00
WS257	16:24:10	16:24:53	-0.43	7.08
WS276	16:25:22	16:34:15	-0.82	6.21
WS272	16:34:15	16:34:53	-0.79	6.34
WS266	16:34:53	16:36:21	-0.48	6.56
WS280	16:39:02	16:40:07	-1.78	6.32
WS319	16:41:33	16:47:10	-0.85	6.78
WS319	16:47:10	17:02:01	-1.25	7.14
WS348	17:03:37	17:08:30	-1.51	6.38
WS348	17:08:30	17:13:11	0.00	0.00
WS348	17:13:33	17:20:48	-1.37	6.56
WS348	17:20:48	17:26:09	-1.34	5.73

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Baltimore, MD 21237
(410) 682-5595

Prepared By: P.WINCHELL

Hydrographic Survey Field Logs

Body of Water: ATLANTIC OCEAN
Location: OCEAN CITY, MD
Weather: PARTLY CLOUDY 45-60F
Wind: NW 5-15 KTS
Sea State: 2-4FT
Vessel Speed: 4-6 KTS

Date: 16 OCT 2023
Project: WEAVER BORROW
Proj. No. 201-23:01
Vessel: PRICUS
Crew: PRW
DKN

Multi-Beam Survey

File Name: 231016_RAW
Positioning System: POS MV
Echosounder: R2 SONIC

Single Beam Survey

File Name:
Positioning System
Echosounder:

Boat Positioning

	X	Y
Position A (KNOWN)	1856157.80	246 889.63
Position B	1856162.43	246909.32
Delta AB	4.63	19.69
Position C	1856163.52	246908.90
Delta AC-BC	5.72	19.27

Boat Positioning

	X	Y
Position A		
Position B		
Delta AB		
Position C		
Delta AC-BC		

Transducer Calibration

Sound Velocity Casts

Time: 0809	A Speed of Sound:	4960.6
Time: 1015	B Speed of Sound:	4964.7
Time: 1210	C Speed of Sound:	4960.8
Time: 1428	D Speed of Sound:	4961.2
Time: 1612	E Speed of Sound:	4961.6
Time: 1740	F Speed of Sound:	4963.5

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base: CAROUSEL Elev: Datum: NAVD88
Tide Gauge: SUNSET Elev: 2.97 Datum: NAVD88

Time	0717	1829		
Rod	1.12 ~~1.85~~	2.12		
Water Level	1.85	0.85		
Boat	2.07	0.98		

Differential GPS

Tide Gauge: Elev: Datum:
HOBO Launch Time: Recover Time:

Time				
Elevation				
Rod				
Water Level				

Comments: Vessel positioned approx. 20FT North of tidepoint at Fitel T-Head pier Face

HYDROGRAPHIC SURVEY LOG SHEET Survey #: 231016 Sheet # 1 of Date: 16 - Oct - 23

Project Details: WEAVER SHOAL BORROW AREA SURVEY

Fathometer Frequency : 200	Survey Crew : PRW, DKN
Draft of Fathometer :	Survey Vessel : PRICUS
GPS Mode : FIXED RTK	Sea State : 3'-4'
GPS Latency :	Avg. Speed of Sound : 4961
Vessel Squat :	HYPACK File Information :
Project Bench Mark :	
Bench Mark Elev and Datum :	
Bench Mark LAT/Y :	
Bench Mark LONG/X :	
Horizontal Datum : NAD 83 MD SPC	
Vertical Datum : 88	
MLLW-NAVD88 Relationship :	

Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
WS250	08:35:08	08:42:32	-3.55	7.17	30.89	2.81	0.00	WS250.RAW	W/ AutoPilot
WS250	08:42:32	08:51:39	-3.41	7.01	30.89	2.73	0.00	WS250_0001.RAW	W/ AutoPilot
WS250	08:51:39	08:56:36	-3.42	6.96	30.89	2.68	0.00	WS250_0002.RAW	W/ AutoPilot
WS247	09:07:23	09:16:00	-3.27	7.66	210.89	2.31	0.00	WS247.RAW	W/ AutoPilot
WS247	09:16:00	09:23:42	-3.15	7.44	210.89	2.39	0.00	WS247_0001.RAW	W/ AutoPilot
WS247	09:23:42	09:26:27	-3.11	8.42	210.89	4.77	0.00	WS247_0002.RAW	W/ AutoPilot
WS243	09:29:25	09:36:31	-2.99	6.68	30.89	4.54	0.00	WS243.RAW	AutoPilot Turned Off
WS243	09:36:31	09:44:32	-3.30	6.70	30.89	4.15	0.00	WS243_0001.RAW	
WS243	09:44:32	09:51:24	-2.93	6.78	30.89	4.71	0.00	WS243_0002.RAW	
WS243	09:51:24	09:51:32	-2.95	6.30	30.89	4.70	0.00	WS243_0003.RAW	
WS239	09:53:32	09:59:33	-3.46	7.94	210.89	4.17	0.00	WS239.RAW	
WS239	09:59:33	10:13:04	-2.98	7.51	210.89	3.45	0.00	WS239_0001.RAW	
WS235	10:18:53	10:26:46	-2.83	5.90	30.89	2.28	0.00	WS235.RAW	
WS235	10:26:46	10:39:24	-2.56	5.57	30.89	2.04	0.00	WS235_0001.RAW	
WS235	10:39:24	10:43:23	-2.48	6.23	30.89	2.00	0.00	WS235_0002.RAW	
WS230	10:45:54	11:00:25	-2.26	7.92	210.89	999.00	0.00	WS230.RAW	
WS230	11:00:25	11:08:29	-2.37	6.50	210.89	2.27	0.00	WS230_0001.RAW	
WS225	11:10:09	11:21:18	-2.58	5.61	30.89	2.31	0.00	WS225.RAW	
WS225	11:21:18	11:28:11	-2.47	5.77	30.89	2.30	0.00	WS225_0001.RAW	
WS225	11:28:11	11:35:11	-2.16	6.26	30.89	4.25	0.00	WS225_0002.RAW	
WS220	11:37:29	11:46:15	-2.43	7.24	210.89	3.64	0.00	WS220.RAW	
WS220	11:46:15	11:50:51	-1.96	7.82	210.89	3.46	0.00	WS220_0001.RAW	
WS220	11:50:51	11:57:35	-1.65	6.68	210.89	4.25	0.00	WS220_0002.RAW	
WS215	12:01:54	12:07:31	-1.15	5.83	30.89	4.34	0.00	WS215.RAW	Discard. Autopilot test w/ hypack support
WS215	12:17:05	12:30:50	-0.59	5.67	30.89	4.91	0.00	WS215_0001.RAW	
WS215	12:30:50	12:37:29	-0.28	5.28	30.89	4.93	0.00	WS215_0002.RAW	
WS215	12:37:29	12:43:02	-1.32	5.78	30.89	4.78	0.00	WS215_0003.RAW	
WS210	12:44:42	12:52:20	-1.63	6.93	210.89	1.92	0.00	WS210.RAW	
WS210	12:52:20	12:59:27	-0.79	6.12	210.89	1.96	0.00	WS210_0001.RAW	
WS210	12:59:27	13:06:31	-1.07	6.01	210.89	2.00	0.00	WS210_0002.RAW	
WS205	13:08:36	13:18:53	-0.52	5.25	30.89	1.96	0.00	WS205.RAW	
WS205	13:18:53	13:29:44	-0.29	6.06	30.89	2.07	0.00	WS205_0001.RAW	
WS205	13:29:44	13:33:59	-0.34	5.37	30.89	2.11	0.00	WS205_0002.RAW	
WS200	13:36:13	13:36:24	0.09	5.44	210.89	2.14	0.00	WS200.RAW	Discard
WS200	13:37:52	13:45:22	-0.25	7.57	210.89	2.26	0.00	WS200_0001.RAW	

Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
WS200	13:45:22	13:51:18	0.02	7.96	210.89	1.62	0.00	WS200_0002.RAW	
WS200	13:51:18	13:58:15	-0.00	7.25	210.89	1.64	0.00	WS200_0003.RAW	
WS195	14:00:45	14:08:53	0.21	5.91	30.89	2.01	0.00	WS195.RAW	
WS195	14:08:53	14:19:08	-0.06	5.54	30.89	2.14	0.00	WS195_0001.RAW	
WS195	14:19:08	14:26:12	-0.03	5.68	30.89	2.25	0.00	WS195_0002.RAW	
WS232	14:37:06	14:44:11	0.61	7.04	210.89	2.54	0.00	WS232.RAW	
WS232	14:44:11	14:52:34	0.72	7.12	210.89	2.61	0.00	WS232_0001.RAW	Begin Infill
WS222	14:54:37	15:06:13	0.80	5.00	30.89	1.83	0.00	WS222.RAW	
WS222	15:06:13	15:14:15	0.71	5.95	30.89	1.84	0.00	WS222_0001.RAW	
WS241	15:29:12	15:33:28	0.61	3.56	30.89	1.72	0.00	WS241.RAW	Discard. Autopilot test
WS213	15:51:59	16:07:29	0.71	6.94	210.89	2.05	0.00	WS213.RAW	
WS203	16:17:57	16:24:58	0.41	5.33	30.89	2.00	0.00	WS203.RAW	
WS203	16:24:58	16:38:27	0.42	5.60	30.89	2.15	0.00	WS203_0001.RAW	
WS233	16:40:13	16:51:58	0.51	7.16	210.89	2.27	0.00	WS233.RAW	
WS227	16:51:58	16:54:43	-0.05	7.51	30.89	2.28	0.00	WS227.RAW	
WS241	16:56:27	17:12:49	0.08	6.18	30.89	2.61	0.00	WS241_0001.RAW	
WS212	17:19:01	17:21:06	-0.28	6.07	210.89	2.57	0.00	WS212.RAW	
WS228	17:22:18	17:27:50	-0.00	6.66	210.89	2.50	0.00	WS228.RAW	
WS218	17:28:21	17:33:46	-0.22	6.42	210.89	2.43	0.00	WS218.RAW	TGT: 17:32:20 - 1904673.40 , 281432.29

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9008-O Yellow Brick Road
Baltimore, MD 21237
(410) 682-5595

Prepared By: P. WINCHELL

Hydrographic Survey Field Logs

Body of Water: ATLANTIC OCEAN
Location: OCEAN CITY, MD
Weather: PARTLY CLOUDY, 45-65 F
Wind: NW 10-15 KTS
Sea State: 1-3 FT
Vessel Speed: 4-6 KTS

Date: 17 OCT 2023
Project: WEAVER BORROW
Proj. No. 201-23:01
Vessel: PRICUS
Crew: PRW
DKN

Multi-Beam Survey

File Name: 231017_RAW
Positioning System POS MV
Echosounder: R2 SONIC

Single Beam Survey

File Name:
Positioning System
Echosounder:

Boat Positioning

	X	Y
Position A:	1856157.80	246889.63
Position B:	1856164.26	246909.03
Delta AB:	6.46	19.40
Position C:	1856162.05	246908.43
Delta AC-BC:	4.25	18.80

Boat Positioning

	X	Y
Position A:		
Position B:		
Delta AB:		
Position C:		
Delta AC-BC:		

Transducer Calibration

Sound Velocity Casts

		Speed of Sound:
Time: 0815	A	4959.3
Time: 1038	B	4961.4
Time: 1231	C	4960.1
Time: 1501	D	4961.0
Time: 1642	E	4960.5
Time:	F	

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base: CAROUSEL Elev: Datum: NAVD88
Tide Gauge: SUNSET Elev: 2.97 Datum: NAVD88

Time	0715	1808		
Rod	1.64	2.53		
Water Level	1.33	0.44		
Boat	1.65	0.75		

Differential GPS

Tide Gauge: Elev: Datum:
HOBO Launch Time: Recover Time:

Time				
Elevation				
Rod				
Water Level				

Comments: Vessel positioned approx. 20 FT North of tide point @ Fixed T-head Pier Face
Infill survey over shoal performed before further production

HYDROGRAPHIC SURVEY LOG SHEET Survey #: 231017 Sheet # 1 of Date: 17 - Oct - 23

Project Details: WEAVER SHOAL BORROW AREA SURVEY

Fathometer Frequency : 200	Survey Crew : PRW, DKN
Draft of Fathometer :	Survey Vessel : PRICUS
GPS Mode : FIXED RTK	Sea State : 2'-3'
GPS Latency :	Avg. Speed of Sound : 4960
Vessel Squat :	HYPACK File Information :
Project Bench Mark :	
Bench Mark Elev and Datum :	
Bench Mark LAT/Y :	
Bench Mark LONG/X :	
Horizontal Datum : NAD 83 MD SPC	
Vertical Datum : 88	
MLLW-NAVD88 Relationship :	

Line #	Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
1	WS193	08:27:32	08:45:36	-3.17	6.13	30.89	2.75	0.00	WS193.RAW	
2	WS193	08:45:36	08:51:35	-3.40	6.15	30.89	2.69	0.00	WS193_0001.RAW	
3	WS188	08:53:39	08:53:49	-3.57	6.75	210.89	2.67	0.00	WS188.RAW	Discard
4	WS188	08:56:00	09:15:31	-3.48	7.09	210.89	2.45	0.00	WS188_0001.RAW	
5	WS188	09:15:31	09:17:37	-3.46	7.59	210.89	2.42	0.00	WS188_0002.RAW	
6	WS191	09:25:11	09:35:56	-3.40	6.15	30.89	4.38	0.00	WS191.RAW	Infill
7	WS191	09:35:56	09:43:30	-3.31	6.47	30.89	3.99	0.00	WS191_0001.RAW	Infill
8	WS203	09:44:39	09:45:06	-3.30	7.28	210.89	3.90	0.00	WS203.RAW	Infill
9	WS198	09:46:21	09:47:21	-3.23	6.81	210.89	4.70	0.00	WS198.RAW	Infill
10	WS201	09:50:15	09:51:06	-3.56	7.20	210.89	4.45	0.00	WS201.RAW	Infill
11	WS207	09:51:24	09:59:22	-3.23	7.18	210.89	3.93	0.00	WS207.RAW	Infill
12	WS197	10:00:23	10:09:30	-3.47	6.08	30.89	3.43	0.00	WS197.RAW	Infill
13	WS217	10:11:00	10:16:49	-3.40	6.72	210.89	2.30	0.00	WS217.RAW	Infill
14	WS217	10:16:49	10:17:24	-3.18	7.16	210.89	2.30	0.00	WS217_0001.RAW	Infill
15	WS211	10:17:38	10:19:46	-3.44	7.38	210.89	2.29	0.00	WS211.RAW	Infill
16	WS233	10:21:12	10:27:32	-2.80	6.20	30.89	2.10	0.00	WS233.RAW	Infill
17	WS221	10:28:53	10:34:21	-2.97	7.06	210.89	2.05	0.00	WS221.RAW	Infill
18	WS249	10:46:00	10:57:21	-3.14	5.38	30.89	2.32	0.00	WS249.RAW	Infill
19	WS249	10:57:21	11:05:59	-3.20	6.09	30.89	2.25	0.00	WS249_0001.RAW	Infill
20	WS251	11:13:06	11:20:34	-2.97	7.48	210.89	2.31	0.00	WS251.RAW	Infill
21	WS248	11:22:06	11:24:01	-3.07	4.84	30.89	2.30	0.00	WS248.RAW	Infill
22	WS259	11:24:50	11:27:11	-2.66	5.14	30.89	4.55	0.00	WS259.RAW	Infill
23	WS255	11:28:25	11:30:40	-2.36	6.74	210.89	4.29	0.00	WS255.RAW	Infill
24	WS266	11:33:18	11:35:45	-2.96	5.57	30.89	3.97	0.00	WS266.RAW	Infill
25	WS247	11:36:45	11:38:42	-2.59	6.20	210.89	3.81	0.00	WS247.RAW	Infill
26	WS271	11:40:04	11:46:18	-2.75	5.57	30.89	3.48	0.00	WS271.RAW	Infill
27	WS258	11:48:10	11:49:27	-2.21	6.89	210.89	3.39	0.00	WS258.RAW	Infill
28	WS289	11:51:24	11:55:16	-2.73	5.60	30.89	4.25	0.00	WS289.RAW	Infill
29	WS299	11:56:30	11:57:59	-2.30	6.12	30.89	4.26	0.00	WS299.RAW	
30	WS184	12:06:12	12:14:31	-2.27	6.13	210.89	4.98	0.00	WS184.RAW	
31	WS184	12:14:31	12:19:58	-1.90	6.52	210.89	4.67	0.00	WS184_0001.RAW	
32	WS184	12:19:58	12:26:26	-2.25	8.26	210.89	4.91	0.00	WS184_0002.RAW	
33	WS179	12:33:41	12:42:30	-1.07	4.94	30.89	4.32	0.00	WS179.RAW	
34	WS179	12:42:30	12:54:55	-1.36	5.10	30.89	1.96	0.00	WS179_0001.RAW	
35	WS179	12:54:55	13:01:11	-1.65	5.36	30.89	1.99	0.00	WS179_0002.RAW	
36	WS176	13:23:54	13:24:05	-1.15	1.22	30.89	2.05	0.00	WS176.RAW	Discard
37	WS174	13:50:32	13:59:19	-0.16	7.42	210.89	1.67	0.00	WS174.RAW	

Line #	Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
38	WS174	13:59:19	14:07:36	-0.25	7.83	210.89	2.04	0.00	WS174_0001.RAW	
39	WS174	14:07:36	14:09:33	-0.22	7.70	210.89	2.07	0.00	WS174_0002.RAW	
40	WS170	14:11:14	14:19:19	-0.73	5.57	30.89	2.20	0.00	WS170.RAW	
41	WS170	14:19:19	14:28:21	-0.24	5.39	30.89	2.35	0.00	WS170_0001.RAW	
42	WS170	14:28:21	14:36:49	-0.12	5.79	30.89	2.50	0.00	WS170_0002.RAW	
43	WS164	14:38:40	14:44:34	0.08	7.47	210.89	2.59	0.00	WS164.RAW	
44	WS164	14:44:34	14:51:06	-0.03	8.22	210.89	2.62	0.00	WS164_0001.RAW	
45	WS164	14:51:07	14:57:40	0.28	7.43	210.89	1.82	0.00	WS164_0002.RAW	
46	WS159	15:05:35	15:18:06	0.13	5.78	30.89	1.76	0.00	WS159.RAW	
47	WS159	15:18:06	15:30:58	0.59	5.46	30.89	1.71	0.00	WS159_0001.RAW	
48	WS154	15:32:42	15:38:44	0.69	7.63	210.89	2.43	0.00	WS154.RAW	
49	WS154	15:38:44	15:45:25	0.30	7.54	210.89	2.43	0.00	WS154_0001.RAW	
50	WS154	15:45:25	15:52:05	0.53	7.29	210.89	2.40	0.00	WS154_0002.RAW	
51	WS149	15:53:35	16:02:01	0.64	5.90	30.89	2.06	0.00	WS149.RAW	
52	WS149	16:02:01	16:11:01	0.78	5.88	30.89	1.82	0.00	WS149_0001.RAW	
53	WS149	16:11:01	16:18:38	0.89	5.76	30.89	1.83	0.00	WS149_0002.RAW	
54	WS144	16:20:14	16:27:59	0.53	7.75	210.89	2.08	0.00	WS144.RAW	
55	WS144	16:27:59	16:33:44	0.67	7.79	210.89	2.14	0.00	WS144_0001.RAW	
56	WS144	16:33:44	16:39:11	0.32	7.71	210.89	2.20	0.00	WS144_0002.RAW	

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Prepared By: P. WINCHELL

Hydrographic Survey Field Logs

Body of Water: ATLANTIC OCEAN
Location: OCEAN CITY, MD
Weather: CLEAR, 50-65F
Wind: NW 2-10 KTS
Sea State: 1-2 FT
Vessel Speed: 4-6 KTS

Date: 18 OCT 2023
Project: WEAVER BORROW
Proj. No. 201-23:01
Vessel: PRICUS
Crew: PRW
DKW

Multi-Beam Survey

File Name: 231018_RAW
Positioning System: POSMV
Echosounder: R2 SONIC

Single Beam Survey

File Name:
Positioning System:
Echosounder:

Boat Positioning

	X	Y
Position A:	1856157.80	246889.63
Position B:	1856159.29	246908.04
Delta AB:	1.49	18.41
Position C:	1856162.43	246907.78
Delta AC-BC:	4.63	18.15

Boat Positioning

	X	Y
Position A:		
Position B:		
Delta AB:		
Position C:		
Delta AC-BC:		

Transducer Calibration

Sound Velocity Casts

Time: 0752	A	Speed of Sound:	4958.4
Time: 1011	B	Speed of Sound:	4959.8
Time: 1246	C	Speed of Sound:	4961.7
Time: 1515	D	Speed of Sound:	4962.6
Time: 1750	E	Speed of Sound:	4960.8
Time:	F	Speed of Sound:	

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base: CAROUSEL Elev: Datum: NAVD88
Tide Gauge: SUNSET Elev: 2.97 Datum: NAVD 88

Time	0705	1838		
Rod	2.44	2.95		
Water Level	0.53	0.02		
Boat	0.35	0.08		

Differential GPS

Tide Gauge: Elev: Datum:
HOBO Launch Time: Recover Time:

Time				
Elevation				
Rod				
Water Level				

Comments: Vessel positioned approx. 20FT North of tide point @ Fishing T-head Pier Face

Progress made From Sta. 140 - Sta. 55

HYDROGRAPHIC SURVEY LOG SHEET Survey #: 231017 Sheet # 1 of Date: 18 - Oct - 23

Project Details: WEAVER SHOAL BORROW AREA SURVEY

Fathometer Frequency : 200	Survey Crew : PRW, DKN
Draft of Fathometer :	Survey Vessel : PRICUS
GPS Mode : FIXED RTK	Sea State : 2'-3'
GPS Latency :	Avg. Speed of Sound : 4960
Vessel Squat :	HYPACK File Information :
Project Bench Mark :	
Bench Mark Elev and Datum :	
Bench Mark LAT/Y :	
Bench Mark LONG/X :	
Horizontal Datum : NAD 83 MD SPC	
Vertical Datum : 88	
MLLW-NAVD88 Relationship :	

Line #	Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
1	WS167	08:06:06	08:19:05	-1.95	6.60	30.89	2.82	0.00	WS167.RAW	Infill
2	WS167	08:19:05	08:23:47	-1.91	6.63	30.89	2.83	0.00	WS167_0001.RAW	Infill
3	WS176	08:26:11	08:32:21	-2.12	6.55	210.89	2.82	0.00	WS176.RAW	Infill
4	WS176	08:32:21	08:41:19	-2.11	6.57	210.89	2.75	0.00	WS176_0001.RAW	Infill
5	WS157	08:42:42	08:51:19	-2.22	6.70	30.89	2.65	0.00	WS157.RAW	Infill
6	WS157	08:51:19	08:55:17	-2.45	6.46	30.89	2.60	0.00	WS157_0001.RAW	Infill
7	WS147	08:56:25	09:10:01	-2.44	6.42	210.89	2.30	0.00	WS147.RAW	Infill
8	WS179	09:13:19	09:16:57	-2.65	6.88	30.89	2.37	0.00	WS179.RAW	Infill
9	WS185	09:17:15	09:18:01	-2.53	6.82	30.89	2.36	0.00	WS185.RAW	Infill
10	WS162	09:21:18	09:26:34	-2.86	6.79	210.89	4.60	0.00	WS162.RAW	Infill
11	WS166	09:28:22	09:30:15	-2.28	6.65	30.89	4.45	0.00	WS166.RAW	Infill
12	WS152	09:33:47	09:37:46	-2.82	6.87	30.89	4.07	0.00	WS152.RAW	Infill
13	WS140	09:44:26	09:51:44	-2.53	6.25	210.89	4.14	0.00	WS140.RAW	
14	WS140	09:51:44	09:59:37	-2.90	6.17	210.89	3.70	0.00	WS140_0001.RAW	
15	WS140	09:59:37	10:07:02	-2.94	6.77	210.89	3.36	0.00	WS140_0002.RAW	
16	WS135	10:15:18	10:23:34	-2.56	6.14	30.89	2.10	0.00	WS135.RAW	
17	WS135	10:23:34	10:31:02	-2.40	6.38	30.89	2.04	0.00	WS135_0001.RAW	
18	WS135	10:31:02	10:38:11	-2.25	6.30	30.89	1.97	0.00	WS135_0002.RAW	
19	WS130	10:40:35	10:47:56	-2.82	6.74	210.89	2.35	0.00	WS130.RAW	
20	WS130	10:47:56	10:56:01	-2.66	6.22	210.89	2.30	0.00	WS130_0001.RAW	
21	WS130	10:56:01	11:03:49	-2.42	6.18	210.89	1.86	0.00	WS130_0002.RAW	
22	WS125	11:05:36	11:12:55	-2.74	6.02	30.89	2.32	0.00	WS125.RAW	
23	WS125	11:12:55	11:22:29	-2.59	6.24	30.89	4.61	0.00	WS125_0001.RAW	
24	WS125	11:22:29	11:28:35	-2.66	6.20	30.89	4.17	0.00	WS125_0002.RAW	
25	WS120	11:31:52	11:43:34	-2.49	6.48	210.89	3.44	0.00	WS120.RAW	
26	WS120	11:43:34	11:49:07	-2.28	6.20	210.89	4.27	0.00	WS120_0001.RAW	
27	WS120	11:49:07	11:55:30	-2.48	6.35	210.89	4.28	0.00	WS120_0002.RAW	
28	WS115	11:56:58	12:04:52	-2.07	5.90	30.89	4.57	0.00	WS115.RAW	
29	WS115	12:04:52	12:14:29	-2.26	5.92	30.89	4.61	0.00	WS115_0001.RAW	
30	WS115	12:14:29	12:21:10	-2.34	5.86	30.89	4.90	0.00	WS115_0002.RAW	
31	WS111	12:22:55	12:29:52	-2.24	6.80	210.89	4.95	0.00	WS111.RAW	
32	WS111	12:29:52	12:38:42	-2.03	6.91	210.89	4.32	0.00	WS111_0001.RAW	
33	WS111	12:38:42	12:44:32	-2.02	7.11	210.89	1.92	0.00	WS111_0002.RAW	
34	WS106	12:51:58	12:59:02	-1.74	6.31	30.89	2.00	0.00	WS106.RAW	
35	WS106	12:59:02	13:06:44	-1.40	6.33	30.89	2.18	0.00	WS106_0001.RAW	
36	WS106	13:06:44	13:14:06	-1.39	6.60	30.89	1.99	0.00	WS106_0002.RAW	
37	WS102	13:15:45	13:25:45	-0.92	7.05	210.89	2.11	0.00	WS102.RAW	

Line #	Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
39	WS102	13:25:45	13:33:32	-0.93	7.03	210.89	2.21	0.00	WS102_0001.RAW	
40	WS102	13:33:32	13:36:03	-0.74	7.06	210.89	2.24	0.00	WS102_0002.RAW	
41	WS97	13:37:28	13:44:43	-0.83	6.27	30.89	1.62	0.00	WS97.RAW	
42	WS97	13:44:43	13:54:41	-0.62	6.45	30.89	1.66	0.00	WS97_0001.RAW	
43	WS97	13:54:41	14:00:22	-0.56	6.14	30.89	1.96	0.00	WS97_0002.RAW	
44	WS93	14:02:07	14:08:35	-0.63	7.33	210.89	2.00	0.00	WS93.RAW	
45	WS93	14:08:35	14:15:16	-0.34	6.95	210.89	2.01	0.00	WS93_0001.RAW	
46	WS93	14:15:16	14:22:04	-0.47	7.55	210.89	2.00	0.00	WS93_0002.RAW	
47	WS87	14:25:44	14:34:25	-0.40	6.19	30.89	1.93	0.00	WS87.RAW	
48	WS87	14:34:25	14:43:17	0.14	6.31	30.89	1.85	0.00	WS87_0001.RAW	
49	WS87	14:43:17	14:49:50	0.03	5.96	30.89	1.78	0.00	WS87_0002.RAW	
50	WS82	14:51:37	14:58:10	0.27	7.06	210.89	1.62	0.00	WS82.RAW	
51	WS82	14:58:11	15:05:03	0.39	7.05	210.89	1.84	0.00	WS82_0001.RAW	
52	WS82	15:05:03	15:11:38	0.03	7.43	210.89	1.84	0.00	WS82_0002.RAW	
53	WS77	15:20:11	15:30:25	0.54	6.07	30.89	1.74	0.00	WS77.RAW	
54	WS77	15:30:25	15:36:17	0.89	6.35	30.89	2.43	0.00	WS77_0001.RAW	
55	WS77	15:36:17	15:43:23	1.03	6.43	30.89	2.42	0.00	WS77_0002.RAW	
56	WS73	15:44:59	15:51:16	0.79	7.56	210.89	2.37	0.00	WS73.RAW	
57	WS73	15:51:16	15:58:23	0.98	7.86	210.89	2.06	0.00	WS73_0001.RAW	
58	WS73	15:58:23	16:04:50	0.84	7.37	210.89	1.81	0.00	WS73_0002.RAW	
59	WS68	16:06:17	16:14:03	1.05	6.05	30.89	1.84	0.00	WS68.RAW	
60	WS68	16:14:03	16:22:31	1.05	6.25	30.89	2.07	0.00	WS68_0001.RAW	
61	WS68	16:22:31	16:29:15	1.19	6.56	30.89	2.14	0.00	WS68_0002.RAW	
62	WS64	16:31:12	16:37:25	1.28	7.11	210.89	2.22	0.00	WS64.RAW	
63	WS64	16:37:25	16:46:06	2.27	6.94	210.89	2.28	0.00	WS64_0001.RAW	
64	WS64	16:46:06	16:51:02	2.29	7.46	210.89	2.30	0.00	WS64_0002.RAW	
65	WS59	16:52:32	17:00:29	1.01	6.35	30.89	2.27	0.00	WS59.RAW	
66	WS59	17:00:29	17:08:12	0.87	6.33	30.89	2.60	0.00	WS59_0001.RAW	
	WS59	17:08:12	17:11:30	0.71	1.87	30.89	2.58	0.00	WS59_0002.RAW	Ended line for mystery vibration inspection.
67	WS59	17:16:43	17:20:47	0.96	6.33	30.89	2.49	0.00	WS59_0003.RAW	
68	WS55	17:26:16	17:32:43	0.85	6.87	210.89	2.34	0.00	WS55.RAW	
69	WS55	17:32:43	17:40:13	0.68	6.96	210.89	2.25	0.00	WS55_0001.RAW	
70	WS55	17:40:13	17:46:40	1.12	7.36	210.89	2.04	0.00	WS55_0002.RAW	

GBA
ENGINEERS ★ SURVEYORS
9008-O Yellow Brick Road
Baltimore, MD 21237
(410) 682-5595

Prepared By: P. WINCHELL

Hydrographic Survey Field Logs

Body of Water: ATLANTIC OCEAN
Location: OCEAN CITY, MD
Weather: CLEAR, 45-65 F
Wind: 5-15 KTS, S
Sea State: 1-2 FT
Vessel Speed: 4-6 KTS

Date: 19 OCT 2023
Project: WEAVER BORROW
Proj. No. 201-23:01
Vessel: PRIOUS
Crew: PRW
DKN

Multi-Beam Survey

File Name: 231019_RAW
Positioning System: POSMV
Echosounder: R2 SONIC

Single Beam Survey

File Name:
Positioning System
Echosounder:

Boat Positioning

	X	Y
Position A:	1856157.80	246889.63
Position B:	1856163.25	246909.13
Delta AB:	5.45	19.50
Position C:	1856162.72	246907.20
Delta AC-BC:	4.92	17.57

Boat Positioning

	X	Y
Position A:		
Position B:		
Delta AB:		
Position C:		
Delta AC-BC:		

Transducer Calibration

Sound Velocity Casts

Time: 0809	A Speed of Sound:	4959.8
Time: 1035	B Speed of Sound:	4959.7
Time: 1304	C Speed of Sound:	4959.9
Time: 1537	D Speed of Sound:	4960.5
Time: 1857	E Speed of Sound:	4958.6
Time:	F Speed of Sound:	

Transducer Calibration

Bar Check

Time	Draft Hi	Draft Lo	Depths	Speed of Sound

RTK-GPS

RTK Base: CAROUSEL Elev: Datum: NAVD88
Tide Gauge: SUNSET Elev: 2.97 Datum: NAVD88

Time	0701	2012			
Rod	3.10	3.08			
Water Level	-0.13	-0.11			
Boat	-0.04	-0.03			

Differential GPS

Tide Gauge: Elev: Datum:
HOBO Launch Time: Recover Time:

Time				
Elevation				
Rod				
Water Level				

Comments: Vessel positioned approx. 20FT North of Tide Point "Sunset"
Gaps Filled, Production Finished, XLines complete

HYDROGRAPHIC SURVEY LOG SHEET Survey #: 231019 Sheet # 1 of Date: 19 - Oct - 23

Project Details: WEAVER SHOAL BORROW AREA SURVEY

Fathometer Frequency : 200	Survey Crew : PRW, DKN
Draft of Fathometer :	Survey Vessel : PRICUS
GPS Mode : FIXED RTK	Sea State : 1'-4'
GPS Latency :	Avg. Speed of Sound : 4960
Vessel Squat :	HYPACK File Information :
Project Bench Mark :	
Bench Mark Elev and Datum :	
Bench Mark LAT/Y :	
Bench Mark LONG/X :	
Horizontal Datum : NAD 83 MD SPC	
Vertical Datum : 88	
MLLW-NAVD88 Relationship :	

Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
1 WS402	08:19:25	08:26:43	-0.84	6.88	30.89	1.84	0.00	WS402.RAW	Gap Filling
2 WS364	08:29:34	08:37:54	0.00	0.00	210.89	0.00	0.00	WS364.RAW	Gap Filling. Hypack Crash
3 WS363	08:40:09	08:41:07	-1.90	7.03	30.89	1.84	0.00	WS363.RAW	Gap Filling
4 WS377	08:43:34	08:49:27	-1.53	6.47	30.89	1.80	0.00	WS377.RAW	Gap Filling
5 WS384	08:52:00	08:59:02	-1.62	6.68	210.89	1.55	0.00	WS384.RAW	Gap Filling
6 WS399	09:00:50	09:08:08	-1.28	6.37	30.89	1.67	0.00	WS399.RAW	Gap Filling
7 WS363	09:10:29	09:11:06	-1.90	6.53	210.89	1.67	0.00	WS363_0001.RAW	Gap Filling
8 WS312	09:13:03	09:18:41	-1.77	6.74	30.89	2.02	0.00	WS312.RAW	Gap Filling
9 WS328	09:20:49	09:21:46	-1.88	7.18	30.89	2.04	0.00	WS328.RAW	Gap Filling
10 WS331	09:24:58	09:27:48	-2.14	7.10	30.89	2.08	0.00	WS331.RAW	Gap Filling
11 WS273	09:28:34	09:29:37	-1.91	6.23	30.89	2.10	0.00	WS273.RAW	Gap Filling
12 WS273	09:29:37	09:30:12	-1.86	6.60	30.89	2.10	0.00	WS273_0001.RAW	Gap Filling
13 WS245	09:30:51	09:31:11	-1.93	7.03	210.89	2.11	0.00	WS245.RAW	Gap Filling
14 WS219	09:33:26	09:41:05	-1.98	6.02	210.89	2.87	0.00	WS219.RAW	Gap Filling
15 WS219	09:41:05	09:42:55	-1.94	6.90	210.89	2.89	0.00	WS219_0001.RAW	Gap Filling
16 WS225	09:44:00	09:45:18	-1.77	5.91	30.89	2.92	0.00	WS225.RAW	Gap Filling
17 WS239	09:45:38	09:50:05	-1.77	6.53	30.89	2.96	0.00	WS239.RAW	Gap Filling
18 WS227	09:51:04	09:52:26	-2.08	7.05	30.89	2.96	0.00	WS227.RAW	Gap Filling
19 WS209	09:53:34	09:54:27	-2.15	6.93	30.89	2.96	0.00	WS209.RAW	Gap Filling
20 WS202	09:56:03	09:56:49	-2.26	6.82	210.89	2.95	0.00	WS202.RAW	Gap Filling
21 WS238	09:58:07	09:58:50	-2.04	6.26	210.89	2.93	0.00	WS238.RAW	Gap Filling
22 WS288	10:00:19	10:00:47	-1.91	5.97	210.89	2.91	0.00	WS288.RAW	Gap Filling
23 WS271	10:02:09	10:02:50	-2.48	5.67	210.89	2.88	0.00	WS271.RAW	Gap Filling
24 WS280	10:03:31	10:05:34	-2.44	6.57	210.89	2.11	0.00	WS280.RAW	Gap Filling
25 WS266	10:06:38	10:08:01	-2.52	6.07	210.89	2.10	0.00	WS266.RAW	Gap Filling
26 WS281	10:09:31	10:11:00	-2.60	6.88	30.89	2.09	0.00	WS281.RAW	Gap Filling
27 WS247	10:12:43	10:13:00	-2.69	6.28	210.89	2.08	0.00	WS247.RAW	Gap Filling
28 WS240	10:13:00	10:15:46	-2.54	6.67	210.89	2.06	0.00	WS240.RAW	Gap Filling
29 WS265	10:16:42	10:17:42	-2.51	5.53	210.89	2.05	0.00	WS265.RAW	Gap Filling
30 WS245	10:19:05	10:19:47	-2.31	6.89	210.89	1.81	0.00	WS245_0001.RAW	Gap Filling
31 WS218	10:20:49	10:21:36	-2.58	6.30	210.89	1.80	0.00	WS218.RAW	Gap Filling
32 WS213	10:22:26	10:23:21	-2.44	6.65	210.89	1.79	0.00	WS213.RAW	Gap Filling
33 WS184	10:26:58	10:28:31	-2.95	5.37	210.89	1.76	0.00	WS184.RAW	Gap Filling
34 WS199	10:29:43	10:30:09	-2.68	6.60	210.89	1.74	0.00	WS199.RAW	Gap Filling
35 WS209	10:43:07	10:43:51	-2.65	6.04	30.89	2.08	0.00	WS209_0001.RAW	Gap Filling
36 WS333	10:46:56	10:48:14	-2.72	6.82	30.89	2.07	0.00	WS333.RAW	Gap Filling
37 WS332	10:49:53	10:50:36	-2.69	6.63	30.89	2.06	0.00	WS332.RAW	Gap Filling

Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
3WS363	10:54:30	10:55:50	-3.33	6.16	30.89	2.04	0.00	WS363_0002.RAW	Gap Filling
3YS199	10:56:44	10:57:10	-3.47	6.11	30.89	2.03	0.00	WS199_0001.RAW	Gap Filling
4CS213	10:58:12	11:00:15	-2.84	6.52	30.89	1.64	0.00	WS213_0001.RAW	Gap Filling
4ES220	11:00:15	11:01:05	-2.96	5.07	30.89	1.64	0.00	WS220.RAW	Gap Filling
4GS264	11:02:08	11:03:28	-2.83	6.11	30.89	1.64	0.00	WS264.RAW	Gap Filling
4IS289	11:04:05	11:04:25	-2.51	6.89	30.89	1.63	0.00	WS289.RAW	Gap Filling
4KS198	11:06:28	11:06:53	-2.60	7.12	30.89	1.63	0.00	WS198.RAW	Gap Filling
4MS225	11:11:21	11:12:38	-2.95	6.42	30.89	1.92	0.00	WS225_0001.RAW	Gap Filling
4OS208	11:13:35	11:14:06	-2.96	7.45	30.89	1.92	0.00	WS208.RAW	Gap Filling
4QS200	11:14:06	11:15:57	-2.79	7.44	210.89	1.93	0.00	WS200.RAW	Gap Filling
4SS50	11:23:09	11:31:32	-2.69	6.36	210.89	2.87	0.00	WS50.RAW	Production
4US50	11:31:32	11:39:14	-2.94	6.36	210.89	2.82	0.00	WS50_0001.RAW	
5CS50	11:39:14	11:45:56	-2.71	6.46	210.89	3.34	0.00	WS50_0002.RAW	
5ES45	11:47:38	11:55:46	-2.47	6.91	30.89	3.46	0.00	WS45.RAW	
5GS45	11:55:46	12:02:27	-2.57	6.98	30.89	3.57	0.00	WS45_0001.RAW	
5IS45	12:02:27	12:08:28	-2.63	7.08	30.89	3.67	0.00	WS45_0002.RAW	
5KS40	12:10:17	12:22:50	-2.48	5.93	210.89	2.76	0.00	WS40.RAW	
5MS40	12:22:50	12:25:06	-2.27	6.08	210.89	2.75	0.00	WS40_0001.RAW	
5OS41	12:25:06	12:33:31	-2.39	6.12	30.89	2.44	0.00	WS41.RAW	
5QS36	12:39:44	12:49:56	-2.22	6.78	30.89	1.74	0.00	WS36.RAW	
5SS36	12:49:56	12:55:23	-2.07	7.04	30.89	1.79	0.00	WS36_0001.RAW	
5US36	12:55:23	13:01:03	-1.89	6.79	30.89	1.98	0.00	WS36_0002.RAW	
6CS32	13:08:28	13:15:14	-1.91	6.48	210.89	1.98	0.00	WS32.RAW	
6ES32	13:15:14	13:23:28	-1.83	6.52	210.89	2.08	0.00	WS32_0001.RAW	
6GS32	13:23:28	13:30:33	-1.49	6.62	210.89	2.15	0.00	WS32_0002.RAW	
6IS27	13:32:40	13:39:00	-1.39	6.50	30.89	1.58	0.00	WS27.RAW	
6KS27	13:39:00	13:46:56	-0.98	6.66	30.89	1.61	0.00	WS27_0001.RAW	
6MS27	13:46:56	13:53:17	-0.91	7.07	30.89	1.63	0.00	WS27_0002.RAW	
6OS23	13:59:07	14:06:17	-1.31	6.44	210.89	2.00	0.00	WS23.RAW	
6QS23	14:06:17	14:14:38	-1.19	6.24	210.89	2.01	0.00	WS23_0001.RAW	
6SS23	14:14:38	14:22:37	-1.07	6.23	210.89	1.98	0.00	WS23_0002.RAW	
6US18	14:24:42	14:32:35	-0.68	6.48	30.89	1.91	0.00	WS18.RAW	
7CS18	14:32:35	14:39:39	-0.36	6.79	30.89	1.85	0.00	WS18_0001.RAW	
7ES18	14:39:39	14:46:15	-0.70	7.07	30.89	1.78	0.00	WS18_0002.RAW	
7GS14	14:48:29	14:55:36	-0.74	6.40	210.89	1.61	0.00	WS14.RAW	
7IS14	14:55:36	15:03:14	-0.53	6.51	210.89	1.85	0.00	WS14_0001.RAW	
7KS14	15:03:14	15:10:42	-0.71	6.61	210.89	1.76	0.00	WS14_0002.RAW	
7MS9	15:14:19	15:21:37	-0.20	7.03	30.89	2.23	0.00	WS9.RAW	
7OS9	15:21:37	15:28:01	-1.02	6.87	30.89	2.42	0.00	WS9_0001.RAW	
7QS9	15:28:01	15:34:57	0.71	7.81	30.89	2.43	0.00	WS9_0002.RAW	
7SS5	15:41:44	15:49:52	0.32	6.13	210.89	2.35	0.00	WS5.RAW	
7US5	15:49:52	15:56:52	0.28	6.54	210.89	2.05	0.00	WS5_0001.RAW	
8CS5	15:56:52	16:04:37	0.23	5.74	210.89	1.83	0.00	WS5_0002.RAW	
8IS84	16:15:28	16:16:37	0.50	7.21	30.89	2.05	0.00	WS84.RAW	Gap Fill
8KS133	16:19:04	16:24:25	0.68	5.95	30.89	2.13	0.00	WS133.RAW	Gap Fill
8MS123	16:26:39	16:28:43	0.34	6.17	210.89	2.18	0.00	WS123.RAW	Gap Fill
8OS118	16:29:51	16:30:25	0.47	7.47	210.89	2.20	0.00	WS118.RAW	Gap Fill
8QS85	16:33:28	16:34:15	0.43	7.24	30.89	2.23	0.00	WS85.RAW	Gap Fill
8SS6	16:42:56	16:50:50	0.70	6.67	120.70	2.30	0.00	XL6.RAW	XLines
8US6	16:50:50	16:55:26	0.70	6.40	120.70	2.28	0.00	XL6_0001.RAW	
9CS5	16:58:28	17:04:54	1.18	6.68	300.70	2.60	0.00	XL5.RAW	
9ES5	17:04:54	17:11:08	1.29	6.45	300.70	2.55	0.00	XL5_0001.RAW	

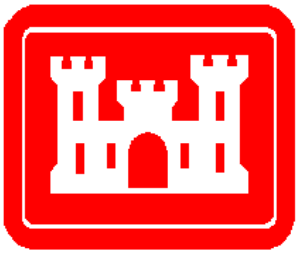
Line Name	Start Time	End Time	Tide	Speed	Heading	HDOP	Satellites	File Name	Remarks
XL4	17:14:06	17:20:13	0.98	6.77	120.70	2.45	0.00	XL4.RAW	
XL4	17:20:13	17:26:15	1.16	6.72	120.70	2.37	0.00	XL4_0001.RAW	Crab pot floats on line
XL3	17:29:09	17:35:34	1.39	6.41	300.70	2.25	0.00	XL3.RAW	Crab pot floats on line
XL3	17:35:34	17:41:32	1.18	6.82	300.70	2.04	0.00	XL3_0001.RAW	
XL2	17:44:31	17:51:17	1.09	6.14	120.70	1.99	0.00	XL2.RAW	
XL2	17:51:17	17:57:33	1.18	6.19	120.70	1.62	0.00	XL2_0001.RAW	
XL2	17:58:40	17:59:53	0.68	4.02	300.70	1.64	0.00	XL2_0002.RAW	Gap fill to reach border file at northeast corner.
XL7	18:09:56	18:17:07	0.98	7.67	300.70	1.73	0.00	XL7.RAW	
XL7	18:17:07	18:21:26	0.77	7.17	300.70	1.74	0.00	XL7_0001.RAW	
XL8	18:24:57	18:31:16	0.81	6.71	120.70	2.68	0.00	XL8.RAW	
XL8	18:31:16	18:37:20	0.79	6.55	120.70	2.80	0.00	XL8_0001.RAW	
XL9	18:40:24	18:46:32	0.98	6.15	300.70	2.65	0.00	XL9.RAW	
XL9	18:46:32	18:52:47	1.19	6.90	300.70	2.74	0.00	XL9_0001.RAW	

Appendix C

2025 Greenhouse Gas Emissions Analysis

GREENHOUSE GAS EMISSIONS ANALYSIS

ATLANTIC COAST OF MARYLAND
SHORELINE PROTECTION PROJECT
OCEAN CITY, WORCESTER COUNTY, MARYLAND



Prepared by

U.S. Army Corps of Engineers

Baltimore District

2 Hopkins Plaza

Baltimore, Maryland 21201

February 2025

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

%	Percent
AC	Atlantic coast
CEQ	Council on Environmental Quality
CH_4	Carbon monoxide
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalents
CSNA	Climate Solutions Act Now
CY	Cubic yard
ECB	Engineering and Construction Bulletin
EO	Executive order
EPA	US Environmental Protection Agency
GGRA	Greenhouse Gas Reduction Act
GHG	Greenhouse gas
GWP	Global warming potential
HP	horsepower
MMT	Million metric tons
N_2O	Nitrous oxide
NEPA	National Environmental Policy Act
SCGHG	Social cost of GHG emissions
USACE	US Army Corps of Engineers
UTV	Utility terrain vehicle

1 BACKGROUND

This greenhouse gas (GHG) emissions analysis was performed as a component to the Atlantic Coast (AC) of Maryland, Shoreline Protection Project, Supplemental Environmental Assessment, managed by the US Army Corps of Engineers (USACE), Baltimore District, Civil Project Development Branch. The analysis was completed to quantify anticipated emissions in order to determine if the actions taken during the Atlantic Coast (AC) of Maryland, Shoreline Protection Project have the potential for positive or negative GHG impacts. These impacts are based on the type of construction proposed, extent of activities impacting GHG emissions, and potential positive impacts on GHG emissions (i.e., GHG sequestration) associated with ecosystem restoration.

As documented in the Supplemental Environmental Assessment, the AC of Maryland, Shoreline Protection Project, the recommended Alternative herein referred to as 'the Alternative', is located in the Town of Ocean City, Worchester County, Maryland. The Alternative includes dredging 900,000 cubic yards (CYs) of sand from the borrow area known as Weaver Shoal, located in Federal waters approximately 7.2 miles offshore of Ocean City, Maryland for placement along 8.3 miles of shoreline in Ocean City and along 1,500 feet of shoreline in Sussex County, Delaware. Project activities consist of an 8.3-mile elevated beach berm backed by a 1.4-mile concrete capped steel pile bulkhead and a 6.9-mile vegetative sand dune, with a 1,500-foot transition into Sussex County, Delaware. This is generally done every four years to reduce the risk of coastal storm damage.

Emissions relative to the Alternative include short-term Direct Emissions from construction equipment used to dredge the material and place along the shoreline. The Alternative does not involve the construction of buildings or equipment that would produce additional emissions once built, therefore no long-term emissions, indirect emissions, downstream emissions, or upstream emissions exist.

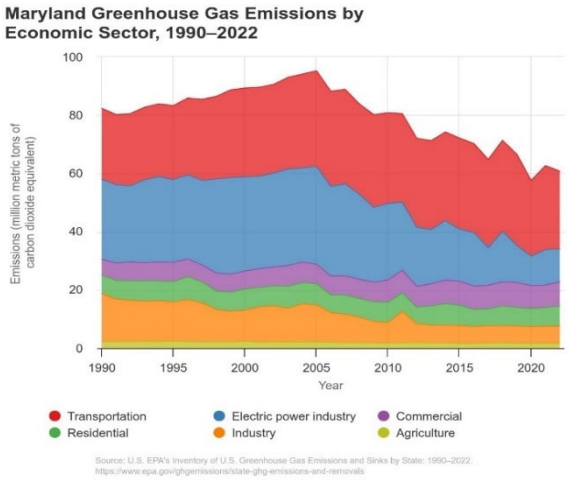


Figure 1-1: Maryland GHG Emissions by Sector

Under the No Federal Action Alternative, the Alternative (i.e., dredging of the borrow area) would not take place. Under the No Federal Action Alternative, no GHG emissions would be produced. It is expected that the same number of people would still enjoy the beach in this area.

1.1 Regional Greenhouse Gas Emissions

The US Environmental Protection Agency's (EPA's) *Greenhouse Gas Inventory Data Explorer* is an interactive tool that provides access to the

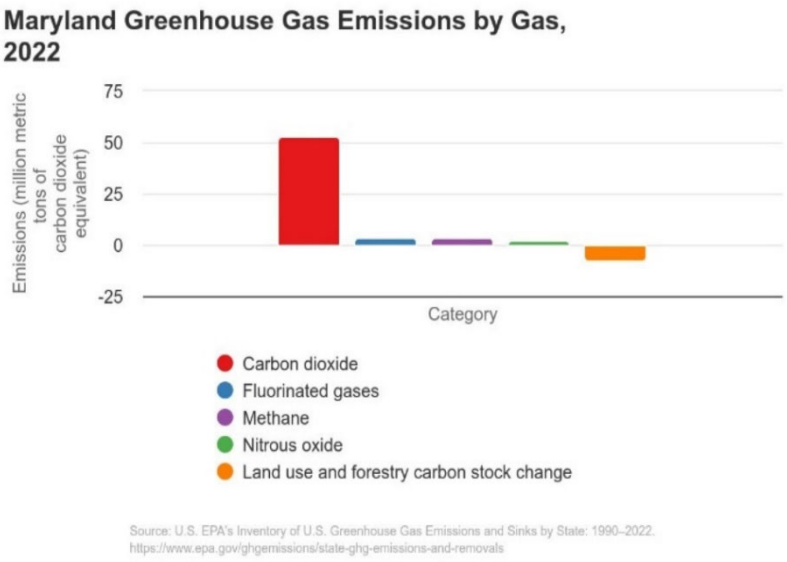


Figure 1-2: Maryland GHG Emissions by Gas

EPA's annual *Inventory of US GHG Emissions and Sinks by State.* From the most recent data provided in 2022, the gross total of GHG emissions in the US was approximately 6,343 million metric tons (MMT) of carbon dioxide (CO_2) equivalent (excluding the land sector). In the same year the gross total of GHG emissions in Maryland, the location of this Project, was approximately 57 MMT of CO_2 equivalent or approximately 0.9% of the US total GHG emissions (GHG Inventory Data Explorer, EPA.gov).

As identified in **Figure 1-1,** Maryland follows the US with the Transportation sector contributing the highest amount of GHG to the total emission rate at 43.9 percent [%]. The electric power industry (18.6%), Commercial (13.7%), Residential (11.4%), Industry (9.9%), and Agriculture (2.6%) sectors comprise the remaining total of GHG emissions by Sector for Maryland.

Specifically looking at the individual GHGs, CO_2 accounts for approximately 85.9% of Maryland's GHG emissions as depicted in **Figure 1-2.** While fluorinated gases and methane (CH_4) comprise 5.6% and 5.5% respectively. Nitrous oxide (N_2O) accounts for the lowest contribution in Maryland at 3.0%.

1.2 Greenhouse Gas Emissions

Climate change refers to any substantial change in measure of climate, such as temperature or precipitation, lasting for decades or longer. Natural factors have caused the climate to change, however human activities are the main cause of climate changes that are currently being observed. Increasing emissions from human activities worldwide, such as the burning of fossil fuels, have led to a substantial increase in atmospheric concentration of GHGs, especially CO_2. Other contributing major GHGs emitted to the atmosphere include CH_4, N_2O, and fluorinated gases (EPA, 2024).

Increasing concentrations of GHGs in the Earth's atmosphere trap excessive heat which leads to higher temperatures near the Earth's surface, altering weather patterns and raising the temperature of the oceans. This action is known as the 'Greenhouse Effect,' where incoming solar radiation (i.e., energy from the sun) that is absorbed by the Earth's surface has difficulty radiating back into the atmosphere due to absorption from GHGs. Many of the major GHGs (i.e., CO_2, CH_4, N_2O, and fluorinated gases) can remain in the atmosphere for tens to thousands of years after being released

(EPA, 2024). Their emissions are often measured in CO_2 equivalents which account for the gas' global warming potential (GWP).

Sources of GHGs are produced entirely by human activity or a combination of natural sources and human activities. As identified in **Section 1.1**, the sources from human activities include the combustion of fossil fuels for electricity, transportation, and heat as well as agricultural (e.g., synthetic fertilizers and livestock digestion) and industrial processes including landfilling.

1.3 Regulations

Consistent with Executive Order (EO) 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis* the Council on Environmental Quality (CEQ) issued interim National Environmental Policy Act (NEPA) Guidance on Consideration of GHG Emissions and Climate Change (CEQ,2023). This guidance builds upon and updates the CEQ's 2016 *Final Guidance for Federal Departments and Agencies on Consideration of GHG Emissions and the Effects of Climate Change in NEPA Reviews* to assist Federal agencies in the consideration of the effects of GHG emissions and climate change when evaluating proposed major Federal actions in accordance with NEPA. The goal of the GHG emissions analysis is to quantify anticipated GHG emissions in order to determine whether the Project has potential for positive or negative GHG impacts based on type of construction proposed, extent of activities impacting GHG emissions, and potential positive impacts on GHG emissions (i.e. GHG sequestration) associated with ecosystem restoration.

On 16 August 2024, the USACE issued an Engineering and Construction Bulletin (ECB) with Guidance for Incorporating GHG Emissions Analysis in NEPA reviews. The ECB applies to any USACE action that requires NEPA compliance, including actions under supplemental NEPA documents with the objective of enhancing the USACE analysis of GHG emissions for planned, new, and existing projects.

1.3.1 State of Maryland Regulations

In 2009, the state of Maryland adopted the Greenhouse Gas Emissions Reduction Act (GGRA), which required the State to reduce GHG emissions 25% from the 2006 baseline by 2020. The law was amended in 2016 and set a new benchmark requiring a 40% reduction of emissions from 2006 levels by 2030 ("40 by 30") to ensure continued progress after 2020 toward the State's long-term GHG reduction goals (MDOT, 2024).

In 2022 the State passed into law the Climate Solutions Act Now (CSNA) which sets an even stronger benchmark by requiring the State to reduce its GHG emissions 60% from 2006 levels by 2-31 and achieve net-zero emissions by 2045. The CSNA, however, does not outline a dedicated funding source to implement the plan (MDE, 2023).

1.3.2 State of Delaware Regulations

In 2023, the state of Delaware passed the Climate Change Solutions Act. The Act follows the State's Climate Action Plan in 2021 by establishing a statutory target of GHG emission reductions to mitigate the adverse effects of climate change due to anthropogenic GHG emissions on the State. The Act establishes a series of emission reduction goals – 50% net reduction by 2030, and net-zero by 2050, and among others requires State agencies to consider climate change in decision-making, rulemaking, and procurement (State of Delaware).

1.4 Determining Significant Effects

The GHG emissions calculated during this analysis will be compared against the Federal 2050 net zero emissions goal which was laid out in the 2021, Federal Sustainability Plan (Office of the Federal Chief Sustainability Officer, 2021). At this time there are no numerical thresholds associated with this goal, so it will be used as a metric to qualitatively assess if the GHG emissions from the Alternative will prevent the Federal 2050 Net Zero Emissions Goal from being met. If so, the Alternative will result in a determination of significant impact.

Due to the lack of numerical thresholds in the Federal 2050 Net Zero Emissions Goal, the Alternative GHG emissions will also be evaluated against State of Maryland and State of Delaware specific thresholds. Based on the State of Maryland's 2030 GGRA Plan, predicted GHG emissions values for 2025 are roughly 60 million metric tons (MMT) of carbon dioxide equivalents. The Climate Change Solutions Act of 2023 for the State of Delaware is predicting that their GHG emissions for this time period will be around 18 MMT carbon dioxide equivalents. These values are being provided for transparency of review and are not being formally adopted as the USACE standard for determining significant impact. This determination will still be based on comparison to the Federal 2050 Net Zero Emissions Goal.

2 GHG EFFECTS ANALYSIS

2.1 Metric for Significant Effect

The GHG emissions calculate during this analysis will be compared against the Federal 2050 net zero emissions goal which was laid out in the 2021, Federal Sustainability Plan (Office of the Federal Chief Sustainability Officer, 2021). This goal involves achieving net-zero carbon emissions across Federal operations by 2050 and will be used as a metric to evaluate the Alternative's GHG emissions.

If GHG emission from the Alternative prevent the Federal 2050 Net Zero Emissions Goal from being met, it would result in a determination of significant impacts.

2.2 GHG Analysis

This Section presents the GHG analysis and supporting calculations for the short-term, direct project emissions from construction equipment used for the Alternative. As identified in **Section 1**, no GHG emissions are anticipated under the No Federal Action Alternative.

2.2.1 Methodology

Due to the relative project size (i.e., medium-large) and construction timespan of less than one year, the Fuel Volume Method was used to produce this GHG emissions analysis (USACE, 2024). The Fuel Volume Method involves calculating GHG emissions from the Alternative using fuel emissions factors to convert from a unit volume of fuel to GHG quantities. These quantities were calculated using the fuel emission factors (FEF) from the "Emission Factors for Greenhouse Gas Inventories" (EPA's GHG Emission Factors Hub,2025) as inputs into **Equation 1**, the Fuel Volume Emissions Equation. The total GHG emissions for the Alternative was calculated using **Equation 2**. However, as noted above there are no anticipated GHG emissions from the No Federal Action Alternative. Therefore, the net emissions for the Alternative equaled the total emissions for the Alternative in this analysis. **Equations 3** and **Equations 4** were used to determine the total carbon dioxide equivalents and provide a social cost to the Alternative's short-term, direct construction emissions, respectively.

Equation 1: Fuel Volume Emissions Equation

$$\text{GHG Emissions} = FV * FEF$$

Where:

Emissions = metric tons of a unique GHG (i.e. CO_2, CH_4, N_2O, etc.)
FV = Fuel Volume = gallons for how much fuel is used
FEF = Fuel Emissions Factor = grams, kilograms, pounds, or metric tons of emissions by GHG type per unit of fuel volume. EPA's GHG Emission Factors Hub (https://www.epa.gov/climateleadership/ghgemissionfactors-hub) provides regularly updated default emission factors (EFs) for a variety of fuel types for both mobile and stationary equipment

For example, the total number of metric tons of CO_2 generated from 222,902 gallons of diesel by Marine equipment was calculated using the following equation:

$$CO_2 \text{ Emissions (grams)} = 222,902 \text{ gallons} * 10,210 \text{ (grams of emissions per gallons of fuel)}$$

A conversion factor of $1x10^{-6}$ was used to convert grams to metric tons. To determine the annual emissions, the result was divided by the number of years for construction. Due to the scope of the Alternative, this project is not expected to last longer than one year.

Equation 2: Net Emissions

The total proposed action emissions were determined based on the following equation:

$$E_{Net} = A_E - NA_E$$

Where:

E_{Net} = net emissions for the proposed action (grams, pounds, metric tons)

A_E = total emissions for the proposed action (subtracting sequestered emissions)

NA_E = total emissions for the no action alternative.

As discussed in Section 1, the total emissions for the No Federal Action Alternative are assumed to be zero based on no anticipated changes occurring to visitor behavior.

Again, using CO_2 as an example, the calculated net emissions for the Alternative generated from 2,275.8 metric tons of CO_2 emissions is based on the following equation:

$$E_{Net\,(metric\,tons)} = 2{,}275.8 - 0 = 2275.8$$

Equation 3: Carbon Dioxide Equivalents (CO2e)

As identified in **Section 1.2**, GHG emissions are often measured in CO_2 equivalents (CO_{2e}) to account for the gas' GWP. The conversion of individual GHG emissions (e.g., CO_2, N_2O, CH_4) for a specific fuel type to total CO_{2e} were computed using the following equation:

$$CO_2e = X * CO2 + Y * N2O + Z * CH4$$

Where:

X = 100 Year Global Warming Potential for CO_2 = 1

Y = 100 Year Global Warming Potential for N_2O = 298

Z = 100 Year Global Warming Potential for CH_4 = 25.

CFR Title 40 Chapter I Subchapter C Part 98: Table A-1 Global Warming Potential

For example, based on the calculations using **Equation 1** for the marine diesel equipment, the total metric tons of emissions for CO_2, N_2O, and CH_4 were 2,275.8, 1.45, and 0.04, respectively. The CO_{2e} for equipment using marine diesel based on these values were determined by the following equation:

$$CO_2e\,(metric\,tons) = 2{,}275.8 \times 1 + 0.04 * 298 + 25 \times 1.45 = 2{,}324$$

Equation 4: The Social Cost of Greenhouse Gas

The Social Cost of Greenhouse Gas (SCGHG) is a measure used to estimate the economic damages associated with a small increase in greenhouse gas emissions. It represents a monetary value of the net harm to society from emitting GHG. The SCGHG was calculated for the Alternative using the below equation for each year in which emissions are anticipated. The Alternative is anticipated to be completed within one year.

$$SCGHG = \sum_{I}^{J} CO_2 \; x \; SCCO_2 + \sum_{I}^{J} N_2O \; x \; SCN_2O + \sum_{I}^{J} CH_4 \; x \; SCCH_4$$

Where:

period I to J represents the project lifetime
SCGHG = total social costs of all GHGs in dollars
CO_2 = metric tons of carbon dioxide
$SCCO_2$ = social cost of carbon dioxide specific for each year in period I to J
N_2O = metric tons of nitrous oxide for each year in period I to J
SCN_2O = social cost of nitrous oxide specific for each year in period I to J
CH_4 = metric tons of methane for each year in period I to J
$SCCH_4$ = social cost of methane specific for each year in period I to J

Based on the emissions presented under **Equation 3** as an example for the marine diesel equipment and the 2025, 3% average social cost of CO_2, CH_4, and N_2O ($56, $1,700, and $21,000, respectively), the total SCGHG was calculated as:

$$SCGGHG = \sum_{0}^{1} 2275.83 \; tons \; x \; \$56 + \sum_{0}^{1} 0.04 \; tons \; x \; \$1{,}700 + \sum_{0}^{1} 1.45 \; tons \; x \; \$21{,}000 = \$157{,}964.48$$

Aquatic Habitat Greenhouse Gas Emissions Equations:

The construction activities for the Alternative, involves dredging and placement of material along the shoreline in the State of Maryland and the State of Delaware. No area of wetlands or aquatic habitat will be created in response to this action. Therefore, no values were calculated for the Aquatic Habitat Carbon Dioxide Sequestration, Aquatic Habitat Methane Production, and the Aquatic Habitat Nitrous Oxide Production.

2.2.2 Assumptions

The following assumptions were used to calculate the GHG emissions for the Alternative. It is anticipated that the action will take place during the off-summer season in 2025.

- Based on previous dredging reports for similar activities from previous years, it is anticipated that an average amount of material dredged per day is **9,182.5 CY per day**.

- Using the total amount of material to be dredged of 900,000 CY and dividing by the average dredged per day, the total number of days for dredging was calculated to be **98**

days. This agrees with the initial provided schedule estimate of 3 months of field activities.

- Based on the provided dredge reports from previous years, the marine fuel consumption rate is 0.241 gallons per CY. Using the 900,000 CYs of material to be dredged, this equates to **216,900 gallons** of diesel fuel consumed by the dredge boat over the length of the project.

- Assume crews travel to/from the dredging location using the crew boats Bayou Chene (560 horsepower [HP]) and Captain Tom (600 HP). It is assumed that the boats travel approximately 2 hours per day, both boats support the proposed action, and the engines are shut off during dredging operations.

- Fuel consumption rate for marine diesel equipment is based on a 10% assumption of the engines HP in liters per hour. The conversion from liters to gallon of 0.264 was used to calculate a quantity of marine diesel fuel in gallons.

- The dozers and fork loaders are considered medium types of equipment. Therefore, fuel consumption rates for the dozer are assumed to be 8 gallons per hour (D-6 Caterpillar Dozer) and 6 gallons per hour (D-8 Caterpillar Dozer) based on the difference in HP ratings. Fuel consumption for the 972-Fork Loader is assumed to fall in the middle of these two pieces of equipment at 7 gallons per hour.

- Fuel consumption for the light plants was determined based on Bobcat specification for the PL65 Light Tower. It is anticipated that a similar type of equipment would be used on this project. The equipment has a usable fuel capacity of 52.4 gallons with 210 hours of runtime with 4 LED lights. This equates to a fuel consumption rate of 0.25 gallons per hour.

- As stated above, it is assumed that the work will take place during the Fall/Winter months where there is approximately 10 hours of daylight per day. Therefore, the light plants are assumed to operate for 14 hours per day for the duration of the project. It is assumed that three light plants will be used to illuminate the project area.

- It is anticipated that each delivery of land-based equipment will be escorted by a competent person in a utility terrain vehicle (UTV). It is assumed that the UTV will travel a total of 10 miles per load to the staging area. It is assumed that a load is considered 1 piece of equipment, therefore approximately 25 loads are anticipated. It is additionally assumed that the UTV will drive 16 miles a day, travelling the approximate length of the project site. These assumptions total to 1,593 miles driven by the UTV.
- Fuel consumption for the UTV is approximately 15 miles per gallon.

- Crews, in addition to two security guards during mobilization, will travel to the site using gasoline pick-up trucks.

- 5 crew personnel (working per shift, 2 shifts per day) for the duration of the project, in addition to two security guards present during mobilization estimated to take 21 days. These personnel will likely travel a total 20 miles each per day.

- As estimated above, dredging crews take the crew boats to the dredging location.

- Trucks delivering equipment are anticipated to be Class 8 trucks, assumed to travel approximately 250 miles (500 miles roundtrip). It is assumed that three deliveries will be made per truck at 5.7 miles per gallon (https://afdc.energy.gov/data/10310).

- Beach crews are assumed to work in 12-hour shifts, and dredge crews will work in 12-hour shifts for the duration of the Alternative action.

- The fuel types for the marine equipment (i.e., dredges and support boats) is diesel. The fuel type for earth moving equipment and hauling trucks is diesel. The fuel type for the passenger pick-up trucks used by the work crew to get to the site is gasoline.

2.2.3 GHG Emissions

The Alternative equipment list was pared down to determine which equipment was anticipated to have emissions associated with its use. The identified equipment is included in Table 2-1, below. This table also identified the fuel consumption rates used for each type of equipment based on the assumptions identified above and uses those values to determine an overall fuel consumption value in gallons for the Alternative.

Table 2-1: Total Fuel Volumes by Alternative Equipment

Alternative Equipment	Fuel Type	Power Rating	Fuel Consumption	Fuel Volume (gallons)
Marine Equipment				
Hopper Dredge(s) BE Lindholm and R.N. Weeks	Marine Diesel	-	-	216,900
Crew boat Bayou Chene	Marine Diesel	560 HP	14.784 gal/hr	2,898
Captain Tom	Marine Diesel	600 HP	15.84 gal/hr	3,104
Land Equipment				
D-6 Caterpillar Dozer	Diesel	215 HP	8 gal/hr	6,272
D-8 Caterpillar Dozer	Diesel	363 HP	6 gal/hr	4,704
972 Fork Loaders	Diesel	339 HP	7 gal/hr	1,176
Light Plants	Diesel	6 kW	0.2495 gal/hr	1,027
Four Passenger UTV's	Diesel	25 HP	15 miles/gal	106
On Road Equipment				
Pick-up Truck	Gasoline	-	23 miles/gal	1,230
Similar to a Class 8 truck	Diesel	-	5.7 miles/gal	263

Table 2-2: Total Fuel Volumes by Fuel Type

Fuel Type	Fuel Volume (gallons)
Marine Diesel	222,902
Diesel Land Equipment	13,285
On-road Diesel	263
On-road Gasoline	1,230

Using the fuel volume method and equations presented in **Section 2.2.1**, the total volumes of fuel for the Alternative equipment presented in **Table 2-2** were used to estimate the GHG emissions for the proposed action.

Tables 2-3 through 2-6 present the GHG volume emissions analysis for the Alternative based on the equipment fuel type.

Table 2-3: Fuel Volume Emissions Analysis for Alternative: Marine Equipment

Calculation of Emissions Using Fuel Volumes					Total Emissions from Fuel Volumes		
Diesel Marine Equipment	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (grams)	Emissions Total (grams)	Emissions Total (pounds)	Emissions Total (Metric Tons)
	CO_2	222,902	10210	2,275,829,420	2,275,829,420	5,017,349.12	2,275.83
	CH_4	222,902	6.51	1,451,092.02	1,451,092	3199.11	1.45
	N_2O	222,902	0.17	37,893.34	37,893	83.54	0.04

Table 2-4: Fuel Volume Emissions Analysis for Alternative: Land Equipment

Calculation of Emissions Using Fuel Volumes					Total Emissions from Fuel Volumes		
Diesel Land Equipment	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (grams)	Emissions Total (grams)	Emissions Total (pounds)	Emissions Total (Metric Tons)
	CO_2	13,285	10.21	135,639.85	135,640	299.035	0.136
	CH_4	13,285	1.01	13,417.85	13,418	29.581	0.013
	N_2O	13,285	0.94	12,487.9	12,488	27.531	0.012

Note: CO_2 EF values come from Table 1 of EPA's GHG Emission Factors Hub.

Table 2-5: Fuel Volume Emissions Analysis for Alternative: On Road Diesel Trucks

Calculation of Emissions Using Fuel Volumes					Total Emissions from Fuel Volumes		
	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (grams)	Emissions Total (grams)	Emissions Total (pounds)	Emissions Total (Metric Tons)
On Road Diesel Trucks	CO_2	263	10,210	2,685,230	2,685,230	5,919.924	2.6852
	CH_4	263	0.009	2.367	2	0.0052	0.0000
	N_2O	263	0.005	1.315	1	0.0029	0.0000

Note: Note CH4 and N2O values are taken from EPA's GHG Emission Factors Hub.

Table 2-6: Fuel Volume Emissions Analysis for Alternative: On Road Gas Trucks

Calculation of Emissions Using Fuel Volumes					Total Emissions from Fuel Volumes		
	GHG	Fuel Volume (Gallons)	Emissions Factor (Grams of Emissions/ Gallons of Fuel)	Emissions (grams)	Emissions Total (grams)	Emissions Total (pounds)	Emissions Total (Metric Tons)
On Road Gas Trucks	CO_2	1,230	8,780	10,799,400	10,799,400	23,808.621	10.799
	CH_4	1,230	0.0079	9.717	10	0.021	0.000
	N_2O	1,230	0.0012	1.476	1	0.003	0.000

The emission totals in metric tons for each GHG and equipment type were used in Table 2-7 below to calculate carbon dioxide equivalences. As stated above, there are not expected emissions from the no action alternative and carbon sequestration which would have been subtracted from these total values due to the nature of the Alternative action.

Table 2-7: Emissions Summary Table for Gross and Net Total Emissions

	Gross Emissions		Net Emissions	
No Action	*Pounds*	*Metric Tons*	*Pounds*	*Metric Tons*
Carbon Dioxide(CO_2)	0	0	0	0
Methane (CH_4)	0	0	0	0
Nitrous Oxide (N_2O)	0	0	0	0
CO_{2eq}	0	0	0	0
Alternative: Marine Equipment	*Pounds*	*Metric Tons*	*Pounds*	*Metric Tons*
Carbon Dioxide(CO_2)	5,017,349	2,276	5,017,349	2,276
Methane (CH_4)	3,199	2	3,199	2
Nitrous Oxide (N_2O)	84	0.04	84	0.04
CO_{2eq}	5,122,222	2,324	5,122,222	2,324
Alternative: Land Equipment	*Pounds*	*Metric Tons*	*Pounds*	*Metric Tons*
Carbon Dioxide(CO_2)	299	0.136	299	0.136
Methane (CH_4)	30	0.013	30	0.013
Nitrous Oxide (N_2O)	28	0.012	28	0.012
CO_{2eq}	9,243	4	9,243	4
Alternative: On Road Diesel Trucks	*Pounds*	*Metric Tons*	*Pounds*	*Metric Tons*
Carbon Dioxide(CO_2)	5,920	3	5920	3
Methane (CH_4)	0.0052	0	0.0052	0
Nitrous Oxide (N_2O)	0.0029	0	0.0029	0
CO_{2eq}	5,921	3	5,921	3
Alternative: On Road Gas Trucks	*Pounds*	*Metric Tons*	*Pounds*	*Metric Tons*
Carbon Dioxide(CO_2)	23,809	11	23,809	11
Methane (CH_4)	0	0	0	0
Nitrous Oxide (N_2O)	0	0	0	0
CO_{2eq}	23810	11	23810	11

Green shaded cells denote net negative emissions are expected which is advantageous for the environment
Red shaded cells denote net positive emissions are expected which is disadvantageous for the environment

Using Equation 4, presented in **Section 2.2.1**, the social cost of the GHG emissions for the Alternative were determined based on the total metric tons calculated in Tables 2-3 through 2-6, and summarized in **Table 2-7**, above. The total social cost of the Alternative is summarized in **Table 2-8**, below.

Table 2-8: Social Cost of GHG for the Alternative

	Social Cost of GHG Emissions
No Action	$0
Marine Equipment	$157.964.48
Land Equipment	$301.02
On Road Diesel Trucks	$150.37
On Road Gas Trucks	$604.74
Total Sum of SCGHG Cost:	**$159,020.61**

2.3 Summary of Results

Based on the GHG analysis presented in **Section 2.2**, the total GHG emissions in carbon dioxide equivalents for the Alternative is 2,342 metric tons. Approximately 99% of the Alternative GHG emissions are from the marine diesel equipment used during dredging operations.

Looking at the total GHG emissions by gas type for the Alternative, CO_2 has the highest total emissions at approximately 2,290 metric tons, followed by CH_4 at 2.013 metric tons, and N_2O at 0.052 metric tons.

The total calculated social cost of the GHG emissions for the Alternative is $159,020. 61.

2.4 Effects Determination

The calculated GHG emissions for the Alternative were compared against the Federal 2050 Net Zero Emissions Goal laid out in the 2021, Federal Sustainability Plan (Office of the Federal Chief Sustainability Officer, 2021). This goal involves achieving net-zero carbon emissions across Federal operations by 2050.

The results of the GHG analysis indicate that short-term, direct project GHG emissions could reach roughly 2,342 metric tons of carbon dioxide equivalents. **Figure 2-1** identifies the reduction in CO_2 emissions by sector to reach the 2050 Federal Net Zero Goal. Emissions are presented in gigatons or roughly 1,000,000,000 metric tons. CO_2 emissions from the Alternative reach only a fraction of the percent of the total energy emissions. Therefore, the Alternative is not expected to prevent the Federal 2050 Net Zero Goal of being met and therefore not expected to result in a determination of significant impact.

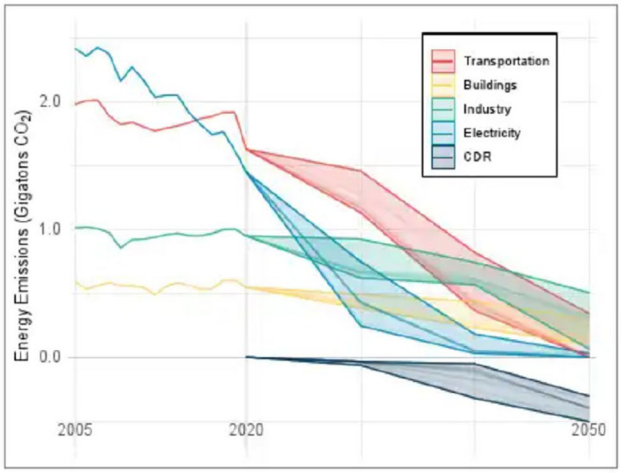


Figure 2. 2050 Federal Net Zero Goal Reductions by Sector

For comparison purposes only, the Alternative was compared to the State of Maryland and State of Delaware predicted emissions for 2025, i.e., 60 MMT CO_{2e} and 18 MMT CO_{2e}, respectively. The GHG emissions estimated for the Alternative was 2,342 metric tons CO_{2e}. Calculated GHG emissions in CO_{2e} is roughly 0.004% of the overall State of Maryland emissions goal for 2025 and 0.013% of the State of Delaware Emissions goal for 2025. These percentages assume that the entire Alternative takes place in either the State of Maryland or the State of Delaware. However, project emissions will occur between both States resulting in a lower percentage.

2.5 Mitigation Measures

Options for managing GHG emissions for the Alternative include using the cleanest available fuels for construction equipment. Due to the size of this equipment, it is not anticipated that electric powered equipment would be a viable option. However, reducing runtimes of equipment, idling engines from the marine engines or carpooling between personnel should be considered in order to reduce GHG emissions from the Alternative action.

3 CONCLUSIONS

The direct, short-term GHG emissions calculated for the Alternative are not expected to prevent the Federal 2050 Net Zero Goal of being met. Therefore, the Alternative emissions are not considered to result in a determination of significant impact.

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