US Army Corps
of Engineers
Baltimore District

DRAFT ENVIRONMENTAL ASSESSMENT

RHODES POINT NAVIGATION IMPROVEMENT PROJECT

SOMERSET COUNTY, MARYLAND

June 2017

Prepared by: U.S. Army Corps of Engineers, Baltimore District
10 S. Howard Street
Baltimore, Maryland 21201

RHODES POINT NAVIGATION IMPROVEMENT PROJECT
SOMERSET COUNTY, MARYLAND
DRAFT FINDING OF NO SIGNIFICANT IMPACT

In compliance with the National Environmental Policy Act of 1969, as amended, the U.S. Army Corps of Engineers, Baltimore District, has prepared an environmental assessment (EA) to evaluate and document the potential environmental effects associated with the proposed navigation channel improvements at Rhodes Point on Smith Island, Somerset County, Maryland, being pursued under the authority of the Continuing Authorities Program, Section 107.

The Proposed Action is to implement a small navigation project, which includes realignment of the navigation channel, construction of jetties, and a stone sill. The dredged material and other suitable excavated material will be beneficially used for restoration, enhancement and protection of the wetland located south of the Sheep Pen Gut federal channel. The proposed project would realign a portion of the authorized dimensions of the federal navigation channel at Smith Island in Sheep Pen Gut. The channel would be hydraulically dredged to extend to the -6-foot mean lower low water (MLLW) contour (plus an additional 1 foot allowed for overdredging). Following realignment, the federal channel will be 1,900 feet long in total, extending from within the mouth of Sheep Pen gut into the Chesapeake Bay. From the mouth of Sheep Pen Gut to 1,750 feet from the mouth, the channel will be 50 feet wide. The last 150 feet into the Bay will be 100 feet wide. This realignment of the channel provides more direct access to the Bay. The alignment extends the existing authorized channel by approximately 425 feet northwestward but it removes the need to dredge and maintain the portion of the navigation channel that runs in a southwest direction.

The construction of two jetties (which involves hydraulic dredging of bay bottom and placement of stone) is proposed to reduce shoaling of the realigned and dredged channel. The jetty to the north of the navigation channel would be approximately 650 feet long by 50 feet wide at its base and 6 feet wide at its crest with a footprint of 0.75 acres and aligned from deep water to the existing shoreline in a northeasterly direction. The jetty south of the navigation channel would be approximately 1,150 feet long by 50 feet wide at its base and 6 feet wide at its crest, with a footprint of 1.32 acres and aligned in an east-west direction parallel to the federal channel. Both jetties will be built to a crest elevation of +5 feet MLLW. The construction of a stone sill along the eroding shoreline will contain the material dredged from the channel and the material excavated from the jetty foundation. The stone sill will be approximately 850 feet long, 5 feet wide at the crest, 30 feet wide at the base, with an approximate footprint of 0.6 acre. The sill will be built to a crest elevation of +3 feet MLLW. This sill will provide stabilization for approximately 850 feet of eroding shoreline and will protect approximately 15 acres of wetlands.

Dredged material from the channel, jetty, and sill footprints is estimated to be 24,000 cubic yards (cy). This material will be used beneficially to restore, enhance, and protect wetlands behind the stone sill and to reinforce the tie-in point around the north jetty-tie in. The material will be planted with native plant species restoring about 2.5 acres of wetlands and enhancing approximately 2.5 acres of wetlands. The dredged material will be placed hydraulically. The stone sill will have a series of low notches (openings) for shallow water habitat interaction with the shoreline.

The purpose of the action is to provide navigation improvements to the federally maintained channel at Sheep Pen Gut. Although the primary purpose of the project is satisfied by the construction of the jetties and realignment of the navigation channel, secondary benefits will accrue from the beneficial use of the

dredged material to stabilize the eroding shoreline along the western shore of Smith Island south of the Sheep Pen Gut Channel. This allows for restoration and protection of wetlands in this area.

The project is expected to have these benefits: improve navigable access to Chesapeake Bay from the Smith Island towns of Rhodes Point and Tylerton and protect the Sheep Pen Gut channel from shoaling. Secondary benefits are to restore and enhance the eroded wetland along the western shoreline of Smith Island south of the Sheep Pen Gut Channel.

Potential impacts from the Proposed Action are described and evaluated in the Rhodes Point EA. These were assessed with regard to the physical, chemical, and biological characteristics of the aquatic and terrestrial ecosystem, endangered and threatened species, hazardous and toxic materials, aesthetics and recreation, cultural resources, and the general needs and welfare of the public. The navigation channel, jetties, stone sill, and beneficial use placement site are permanent features. The potential impacts to the environment associated with implementation of this navigation improvement project will occur over a relatively small area. It is anticipated that there will be minor, localized permanent impacts to water depths and circulation, sediment, aesthetics (viewshed), benthos, and vegetation due to the permanent placement of the structures. However, these impacts are small and considered minor within the study area. The affected resources impacted by these structures are expected to recover in the area.

Although the navigation channel, jetty, stone sill, and beneficial use placement site are permanent features the potential impacts to the environment associated with implementation of this navigation improvement project will occur over a relatively small area, will be minor, and most will be temporary in nature. These minor temporary impacts are expected to be associated with the construction of the project and its future maintenance. It is anticipated that there will be minor, temporary impacts to sediments and soils, water depths and water circulation, water quality, noise, air quality, plankton, shellfish, benthos, mammals, birds, fish, vegetation, reptiles, aesthetics (viewshed), navigation and recreation.

The project will produce a net beneficial impact to the environment through the beneficial use of the dredged material by restoring the eroding western shoreline of Smith Island and the stabilization of the wetlands landward of the shoreline. The restoration of this wetland area and stabilization is beneficial to the protection of the larger wetland system, the value and function of the wetlands, and the resources in the waterway including benthos, mammals, birds, fish and vegetative resources. The construction of the jetties is anticipated to have long-term beneficial impacts to the local economy, navigation, recreational boaters, and safety due to these structures reducing the erosion of the federal navigation channel.

Upon reviewing the EA, I find that there would be no significant impacts to the resources considered and that an Environmental Impact Statement is not required for the Proposed Actions.

Edward P. Chamberlayne, Ph.D., P.E.
Colonel, U.S. Army
Commander and District Engineer
Date: _____

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List of Acronyms

CAP	Continuing Authorities Program
CERCLIS	Comprehensive Environmental Response, Compensations, and Liability Information System
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulation
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EO	Executive Order
EPA	Environmental Protection Agency
FFPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact
GED	General Educational Development
HAPC	Habitat Areas of Particular Concern
HTRW	Hazardous, Toxic, and Radioactive Waste
MD DNR	Maryland Department of Natural Resources
MDE	Maryland Department of the Environment
MHT	Maryland Historic Trust
MLLW	Mean Lower Low Water
MSL	Mean sea level
NAAQS	National Ambient Air Quality Standards
NED	National Economic Development
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOB	Natural Oyster Bar
NPL	National Priority List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
RCRIS	Resource Conservation Recovery Information
RTE	Rare, Threatened, or Endangered
SAV	Submerged Aquatic Vegetation
SHPO	State Historic Preservation Office
TOY	Time of Year Restrictions
TRI	Toxic Release Information
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

RHODES POINT NAVIGATION IMPROVEMENT PROJECT
SOMERSET COUNTY, MARYLAND

1 INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, the U.S. Army Corps of Engineers (USACE), Baltimore District, has prepared an environmental assessment (EA) to evaluate and document the potential environmental effects associated with the proposed navigation channel improvements at Rhodes Point on Smith Island, Somerset County, Maryland. Smith Island is approximately 8 miles west of Crisfield, Maryland, in the Chesapeake Bay. Smith Island consists of several smaller islands separated by shallow tidal creeks or channels called "guts". Smith Island is sparsely populated and has three small residential fishing communities. These are Rhodes Point, Ewell, and Tylerton, all located in Maryland and accessible only by boat; the small upland regions are used as residential portions of these three fishing towns (Figure 1-1).

The existing federal navigation project consists of a channel 6 feet deep, 50 feet wide, and approximately 1 mile in length from the northern limit of the Rhodes Point to Tylerton channel through Sheep Pen Gut channel to the Chesapeake Bay (Figure 1-1). Local users say that after dredging, the Sheep Pen Gut channel shoals within a few months. Once this happens, the 22 commercial watermen who use the channel must travel south from Rhodes Point toward Tylerton, north through Tyler Ditch to Ewell, and then out to the Bay through the Big Thorofare jetties, adding 30 minutes each way and an additional 10 miles roundtrip distance to the watermen's fishing trip (Figure 1-2). In addition, the western shoreline of Smith Island south of the Sheep Pen Gut Channel is exposed to wind and waves approaching the island from the northwest through southwest. Consequently, the western shoreline of Smith Island has long experienced progressive flooding and erosion. (See Appendix E).

The Maryland Department of Natural Resources (MD DNR) is the local sponsor to share the costs of implementing a project.

An integrated EA/feasibility report was prepared for this project and a Finding of No Significant Impact (FONSI) was signed on January 9, 2003. This report, *Rhodes Point Smith Island Maryland Section 107 Feasibility Report and Integrated Environmental Assessment*, is hereby incorporated by reference.

Figure 1-1. Study Area.

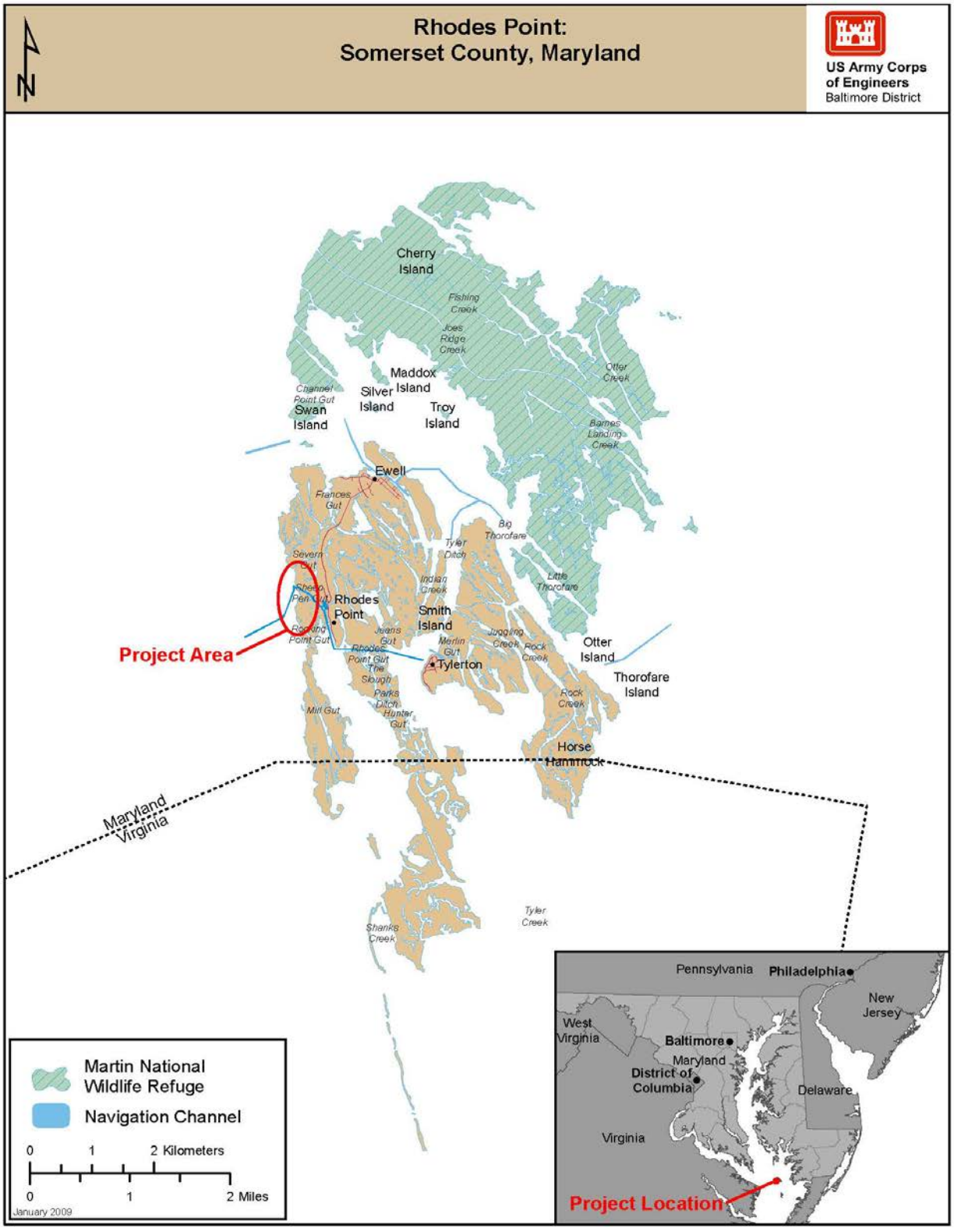
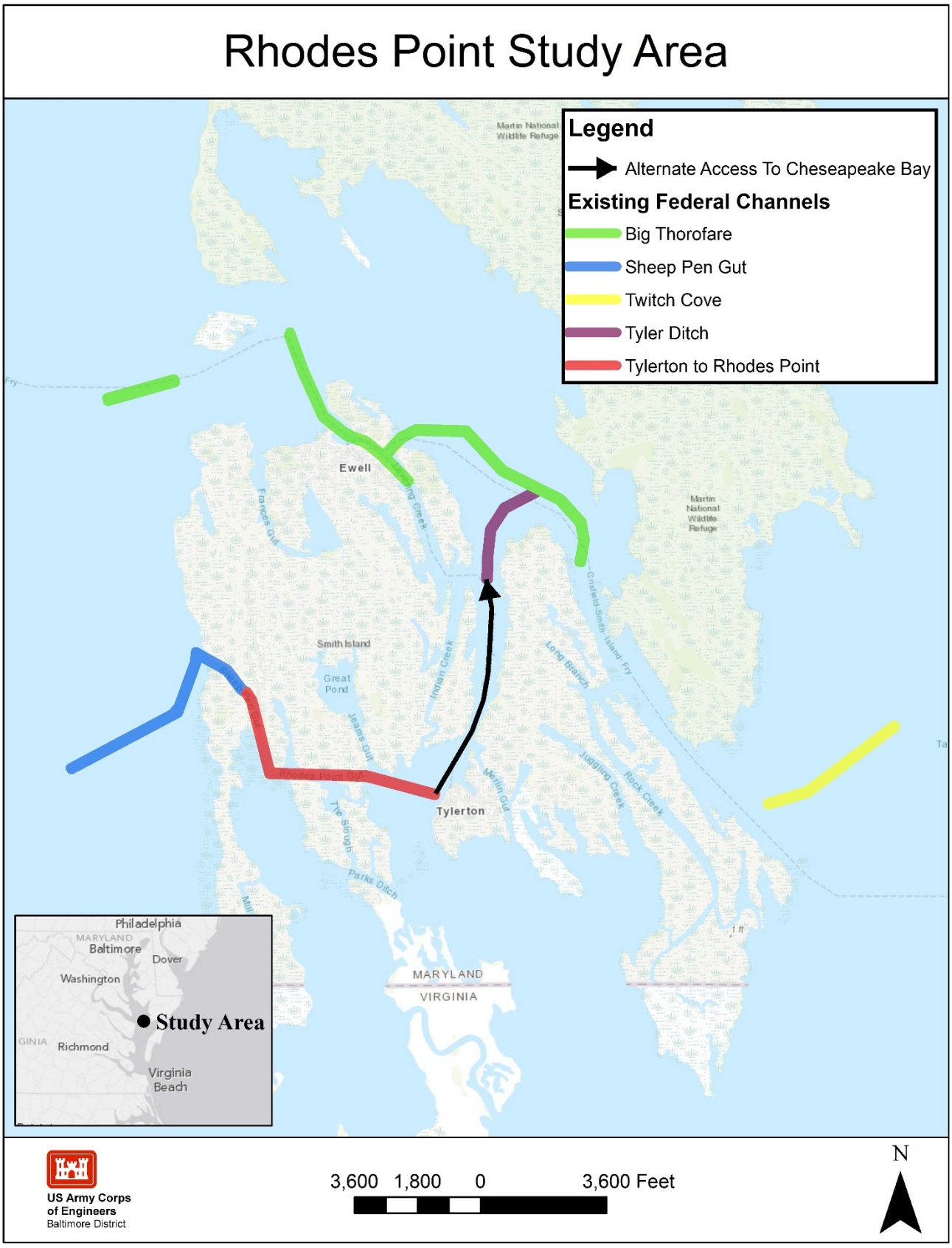


Figure 1-2. Alternate Navigation Route in Study Area.



1.1 STUDY AUTHORITY

Section 107 of the River and Harbor Act of 1960, as amended, provides authority for USACE to develop projects and improve navigation, including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties, and groins, through a partnership with non-federal government sponsor such as cities, counties, special chartered authorities (such as port authorities), or units of state government for harbor protection.

1.2 PURPOSE AND NEED

The purpose of the project is to provide improvements to the federally maintained channel located in Sheep Pen Gut to improve and maintain navigable access. A secondary benefit of the project is the beneficial use of dredged material for the stabilization of the highly erodible shoreline along the western shore of Smith Island south of Sheep Pen Gut. Currently, the federal navigation channel is in constant need of dredging to maintain navigable access. The existing channel shoals quickly and the shoaled channel depths are unsuitable for the range of vessels that require access through the channels. Economic interests would benefit from navigation improvements to the channel because they would provide unimpeded navigation to commercial fishing vessels and to other general boating interests.

1.3 SCOPE

This EA has been prepared in accordance with NEPA, the Council on Environmental Quality's (CEQ) regulations published at 40 Code of Federal Regulations (CFR) Part 1500, and 33 CFR Part 230, Engineer Regulation (ER) 200-2-2 Procedures for Implementing NEPA, and Section 404 of the Federal Water Pollution Control Act of 1972 (Clean Water Act), as amended. The EA will include descriptions of the purpose and need of the proposed action, details of the proposed action and design, stabilization design alternatives; existing site conditions, and an assessment of the potential effects to the human and natural environment from the activities described in Section 2.4, "Proposed Action."

2 PROPOSED ACTION/ALTERNATIVES ANALYSIS

Pursuant to the requirements of NEPA Section 102(2) (E), 33 CFR part 230 and ER 200-2-2 (March 4, 1988), this section presents alternatives to the Proposed Action, including the No Action Alternative.

2.1 NO ACTION

The No Action Alternative results in not realigning the federal navigation channel at Sheep Pen Gut or constructing any navigation improvements, such as jetties, and allowing the channel to continue to be at its existing location. With the No Action Alternative, navigation impeding shoals will continue to form in the channel approximately 3 to 6 months following dredging. Because of a lack of available federal funds, maintenance dredging has been intermittent, preventing the channel from being efficiently used until funding for maintenance dredging is available. The channel will continue to fill with sediment and watermen who use the waterways for their livelihood and other boaters would continue to utilize a longer alternate route or re-suspend this accumulating sediment and cause turbidity in the area.

The shoreline erodes in this area at a rate of 1.5 to 9.3 feet per year. Without the secondary benefit of the Proposed Action, which is the beneficial reuse of dredged material to restore, protect, and enhance wetlands along the western shore of Smith Island south of the Sheep Pen Gut Channel, there would be a potential loss over time of the 15 acres of wetlands located at landward of the shoreline.

Additionally there is a probable increase over time in the magnitude of storm damages to the town of Rhodes Point, a loss of land and increased sedimentation in the area (See Appendix E). Sea level is rising at a rate of 3.1 mm per year in the Chesapeake Bay. Higher tides allow the waves to propagate closer to shore before breaking. If the tide elevation is great enough, large portions of the island can be inundated allowing direct wave attack on interior portions of the island (Appendix E).

The No Action Alternative is the plan against which the other potential plans will be compared. If no other alternative was found to be economically and environmentally acceptable, then the No Action Alternative would be the recommended plan. Primarily, the utilization of this alternative would lead to the continuation of the current condition of sedimentation in the federal channel. During the last dredging cycle (2009), within 3 to 6 months of being dredged, the channel shoaled to a depth of 2 to 3 feet. There is no indication that this shoaling will cease without the proposed action. Secondarily, erosion will continue in the gut and along the shoreline (as described in Appendix E).

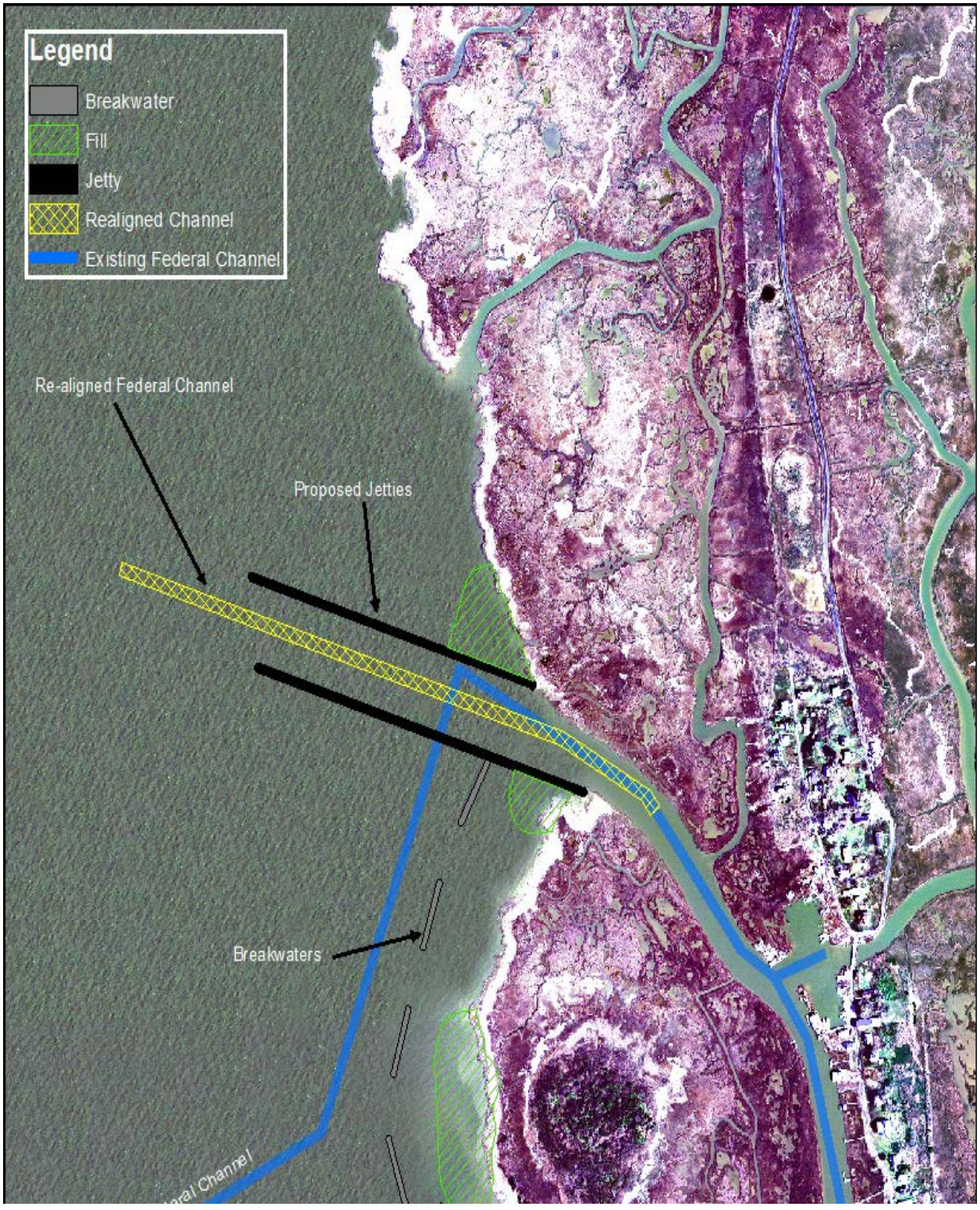
2.2 REALIGNED CHANNEL WITH TWIN JETTIES- ALTERNATIVE 2

Alternative 2 consists of the realigned navigation channel extending from the mouth of Sheep Pen Gut to the Bay, construction of twin jetties, one on either side of the channel and the construction of four offshore breakwaters south of the jetties (Figure 2-1). A realignment of the existing federal navigation channel requires a shorter, less expensive structure to protect the area from shoaling, and serves to provide more direct access to deeper water. The realigned channel would be 1,500 feet long. This design would substantially reduce the material deposited in the navigation channel from both the north and the south, such that the frequency of dredging could be reduced to an 8-year cycle compared to the No Action Alternative in which navigation impeding shoals form in the channel 3 to 6 months following dredging. The jetty to the north of the channel will be 1,300 feet long; while the jetty to the south of the channel will be 1,500 feet long. The crest elevation of the jetties would be +4.5 MLLW. The twin jetties be placed a minimum of 200 feet apart to provide adequate room for the channel and possible enlargement of the channel due to natural scour. In total, approximately 28,000 cy of material would be excavated for dredging and realignment of the channel and for excavation for construction of the jetties and breakwaters.

Dredged material would be used beneficially behind the breakwaters in the restoration of a wetland and the planting of 2 acres of wetland plants along the shoreline. This alternative was developed before updated hydrographic and topographic surveys were completed (see Appendix E for results of these surveys) causing other alternatives to be investigated. This alternative was screened out for the following reasons:

- Updated hydrographic and topographic survey data and hydraulic modeling of the existing conditions (water depths are up to 1 foot deeper and shoreline is receding eastward).
- Design review which identified opportunities to lower the construction costs including reducing the length of the twin jetties.

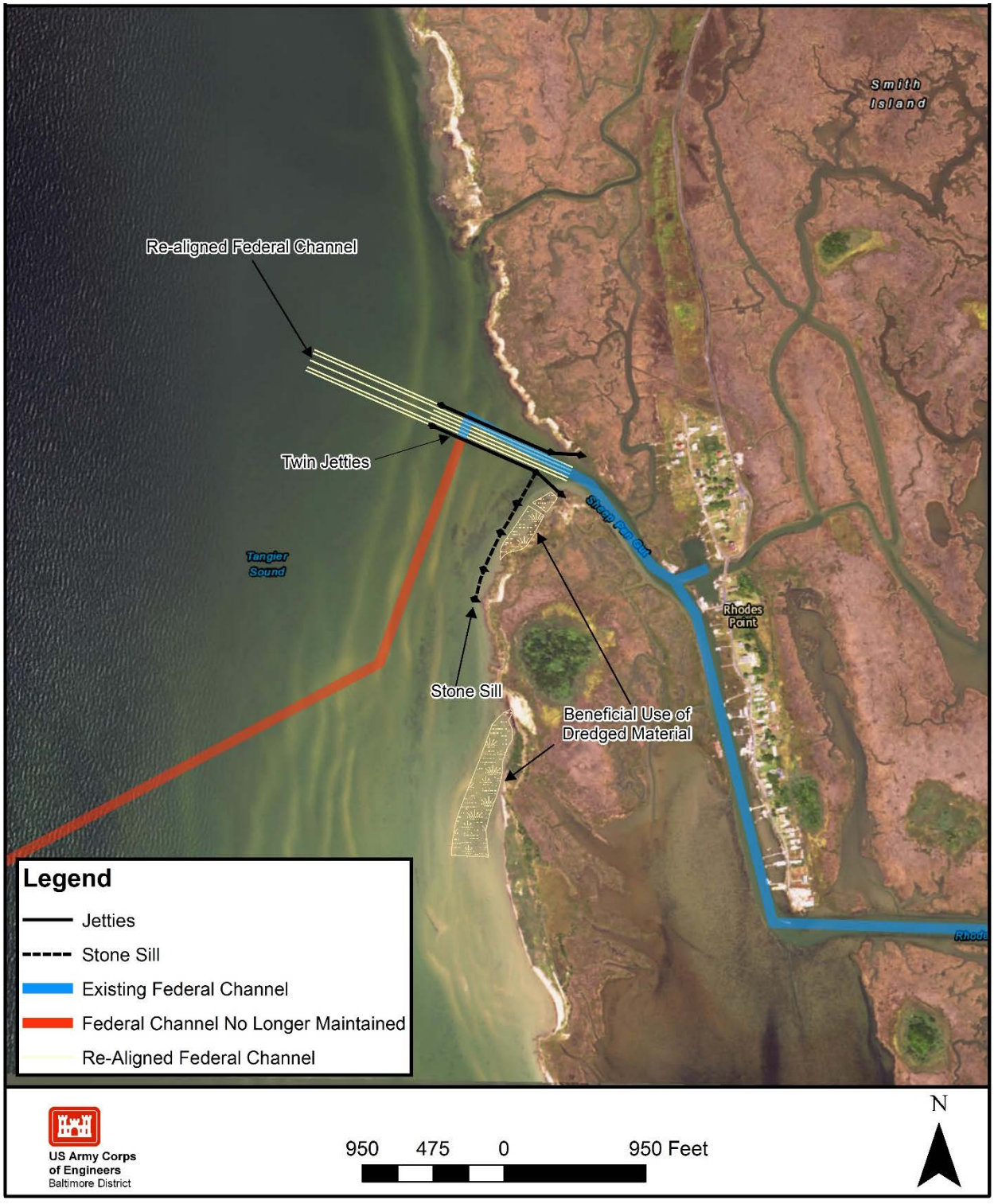
Figure 2-1. Alternative 2 Realigned Channel with Twin Jetties



2.3 REDUCED TWIN JETTIES WITH A REALIGNED CHANNEL- ALTERNATIVE 3

Alternative 3 (Figure 2-2) consists of a realigned channel, the construction of twin parallel jetties reduced in size from Alternative 2, a stone sill along 850 feet of the shoreline, and beneficial use of the dredged material to restore the eroding shoreline and protect the wetlands landward of the site. Under the alternative, the north jetty was planned to be 1,000 feet long by 50 feet wide (at the base) and the south jetty was to be 1,150 feet long by 50 feet wide (at the base). In total, approximately 27,000 cy of material would be excavated for dredging and realignment of the channel and for excavation for construction of the jetties and breakwaters.

Figure 2-2. Alternative 3 Realigned Channel with Reduced Twin Jetties



2.4 ROTATED NORTH JETTY PARALLEL SOUTH JETTY WITH A REALIGNED CHANNEL -ALTERNATIVE 4

Alternative 4 (Figure 2-3) includes realignment of the navigation channel and dredging of the federal navigation channel at Smith Island in Sheep Pen Gut. The channel would be hydraulically dredged to extend to the -6-foot mean lower low water (MLLW) contour (plus an additional 1 foot allowed for overdredging). Following realignment, the federal channel will be 1,900 feet long in total, extending from within the mouth of Sheep Pen gut into the Chesapeake Bay. From the mouth of Sheep Pen Gut to 1,750 feet from the mouth, the channel will be 50 feet wide. The last 150 feet into the Bay will be 100 feet wide. This realignment of the channel provides more direct access to the Bay. The alignment extends the existing authorized channel by approximately 425 feet northwestward but it removes the need to dredge and maintain the portion of the navigation channel that runs in a southwest direction (see red lined channel on Figure 2-3).

Alternative 4 includes the construction of two jetties (which involves hydraulic dredging of bay bottom and placement of stone) to reduce shoaling of the realigned and dredged channel. The jetty to the north of the navigation channel would be approximately 650 feet long by 50 feet wide at its base, 6 feet wide at its crest, with a footprint of 0.75 acres and aligned from deep water to the existing shoreline in a northeasterly direction. This includes a 150 foot jetty extension that ties in adjacent to the land to prevent flanking[1]. The north jetty is rotated and running from deeper water in a northeasterly direction to the shoreline. The jetty south of the navigation channel would be approximately 1,150 feet long by 50 feet wide at its base, 6 feet wide at its crest with a footprint of 1.32 acres and aligned in an east-west direction parallel to the federal channel. This includes a 200 foot long spur or jetty extension running parallel to the channel on the south side. Both jetties would be built to a crest elevation of +5 feet MLLW. The armor stone size ranges for the both the north and south jetty trunk are 810-1,620 pounds with the head 1,425-2,850 pounds (the head section is the outer 150 feet).

The construction of a stone sill along the eroding shoreline will contain the material dredged from the channel and the material excavated from the jetty foundation. The sill will also protect the shoreline from erosion. Material dredged from the channel and excavated to construct the jetties and sill will be beneficially used to restore, enhance, and protect the wetlands behind the sill on Smith Island. Construction of the stone sill would involve hydraulic dredging of material and placement of stone that would be approximately 850 feet long, 5 feet wide at the crest, approximately 30 feet wide at the base, with an approximate footprint of 0.6 acres. The sill would be built to a crest elevation of +3 feet MLLW. The stone sill will have a series of low notches (openings) to allow tidal interaction with the wetlands landward of the shoreline. The stone sill is a type of coastal revetment that is a lower-cost solution for coastal erosion defense in areas where wave action may otherwise erode the coastline. The sill will provide stabilization for approximately 850 feet of shoreline and protection to approximately 15 acres of wetlands.

Approximately 24,000 cy of dredged and excavated material from the channel and jetty and sill footprints will be beneficially used to restore, enhance and protect the existing coastal wetlands system. The dredged material will also reinforce the tie-in point around the north jetty. The disturbed area and placed dredged material will be planted with native plant species restoring approximately 5 acres of coastal wetlands along the shoreline. The dredged material will be placed hydraulically. The wetland will be constructed at a slope ranging from 10:1 to 30:1 extending from the lower to upper limits of the tidal zone and planted. Heavy operating equipment may be required to achieve this desired slope; the specific construction equipment to be utilized will be determined by the contractor during construction. The change in the slope from the back of the sill to the high tide points will add vegetation variety to the wetland, intertidal habitat,

[1] Flanking erosion takes place at ends of jetties or seawalls where they tie into the shore.

and reduce wave energy. Table 2-1 provides the details of the placement site and Figure 2-5 provides a visual of the placement site. Once the wetland has been planted, notches will be placed in the stone sill allow for improved fish passage and adequate flushing to improve wetland habitat and minimize impacts to nearby SAV habitat.

Table 2-1. Beneficial Use Placement Site

Feature	Acreage/Linear Feet	Elevation (feet)	Plants	Spacing
Hammock	1.28	3.5-7.0	Groundsel Tree (*Baccharis halimifolia*) Wax Myrtle (*Morella cerifera*) Marsh Elder (*Iva frutescens*) Beach Plum (*Prunus virginiana*) Elderberry (*Sambucus canadensis*) Red Chokeberry (*Photinia pyrifolia*) Northern Bayberry (*Morella pensylvanica*) Sweet Pepperbush (*Clethra alnifolia*) Red Chokeberry (*Aronia arbutifolia*)	2 gallon container stock shrubs on 3.3 ft spacing.
High Marsh	2.5	2.0-3.5	Salt Marsh Hay (*Spartina patens*)	2" plugs on 1.5 ft spacing.
Low Marsh	.84	0.0-2.0	Smooth cordgrass (*Spartina alterniflora*)	2" plugs on 3 ft spacing.
Channel	850 ft	-0.1-0.0	N/A	N/A

*Beneficial use placement site includes beneficial use site south of Sheep Pen Gut plus small site around north jetty tie-in.

With the construction of these two jetties and a realigned channel, the material deposited in the navigation channel from both the north and the south will be reduced substantially. Shoals will not form in the navigational channel until approximately year 8 of the dredging cycle.

The likely sequence of construction would start with dredging the stone sill location and placement of material on shore with temporary containment, followed by construction of the stone sill. After this, dredging of the jetty locations and jetty construction would occur. This would be followed by dredging of the navigation channel to the new alignment, placement of dredged material behind the stone sill, grading the dredged material to the planned elevations, planting native plants on the material, and finally removal of portions of stone sill to create notches. It is estimated that construction of the stone sill and jetties, dredging of the navigation channel to the new alignment, placement of dredged material behind the stone sill and grading of the dredged material will take approximately 5 months. Planting of the restored areas will take place after the dredged material dewaters. No work will be done during the Time of Year (TOY restrictions) of April 1 to October 31 with the possible exception of the planting of native plants on the dredged material. The TOY restriction will be implemented to avoid impacts to the aquatic organisms in the area. There will be no access roads required. There will be a limit of disturbance (LOD) of approximately 25 feet for placement of material and access and movement, and also a fan shaped pad

at the jetty tie in locations. The entire LOD, including the placement area and 25 foot buffer, for both the north jetty tie-in and placement area south of the south jetty, encompasses approximately 7 acres. Planting will be done on the land and staging will be via barge or within LOD (Figure 2-6).

Operation and maintenance components of the project include maintenance of the jetty and the navigation channel. The jetty will be inspected to determine that the structure is performing as designed. Maintenance of the navigation channel will occur as needed and as funding allows to maintain the authorized depths.

Figure 2-3. Alternative 4: Proposed Action

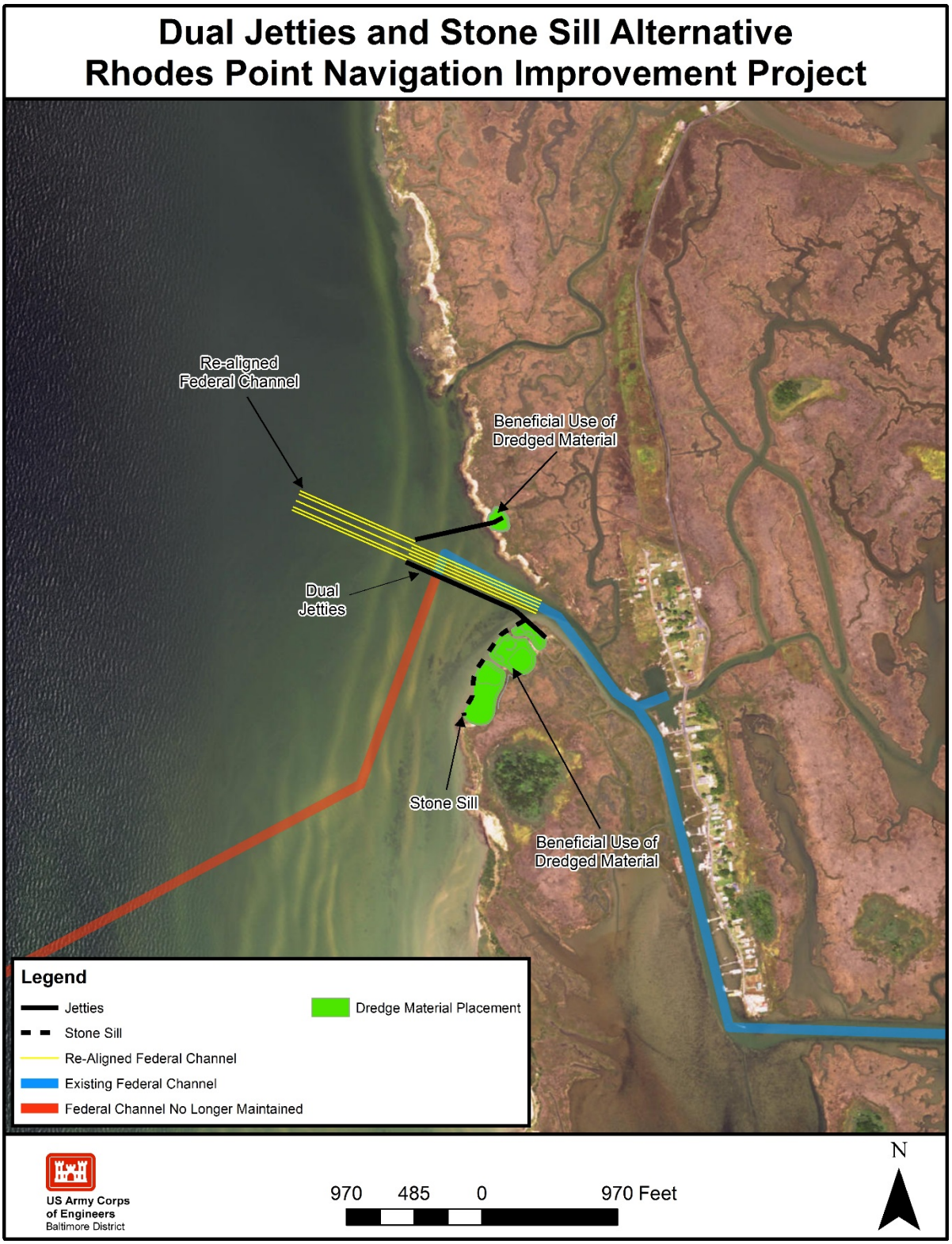


Figure 2-4. Proposed Action with Bathymetry

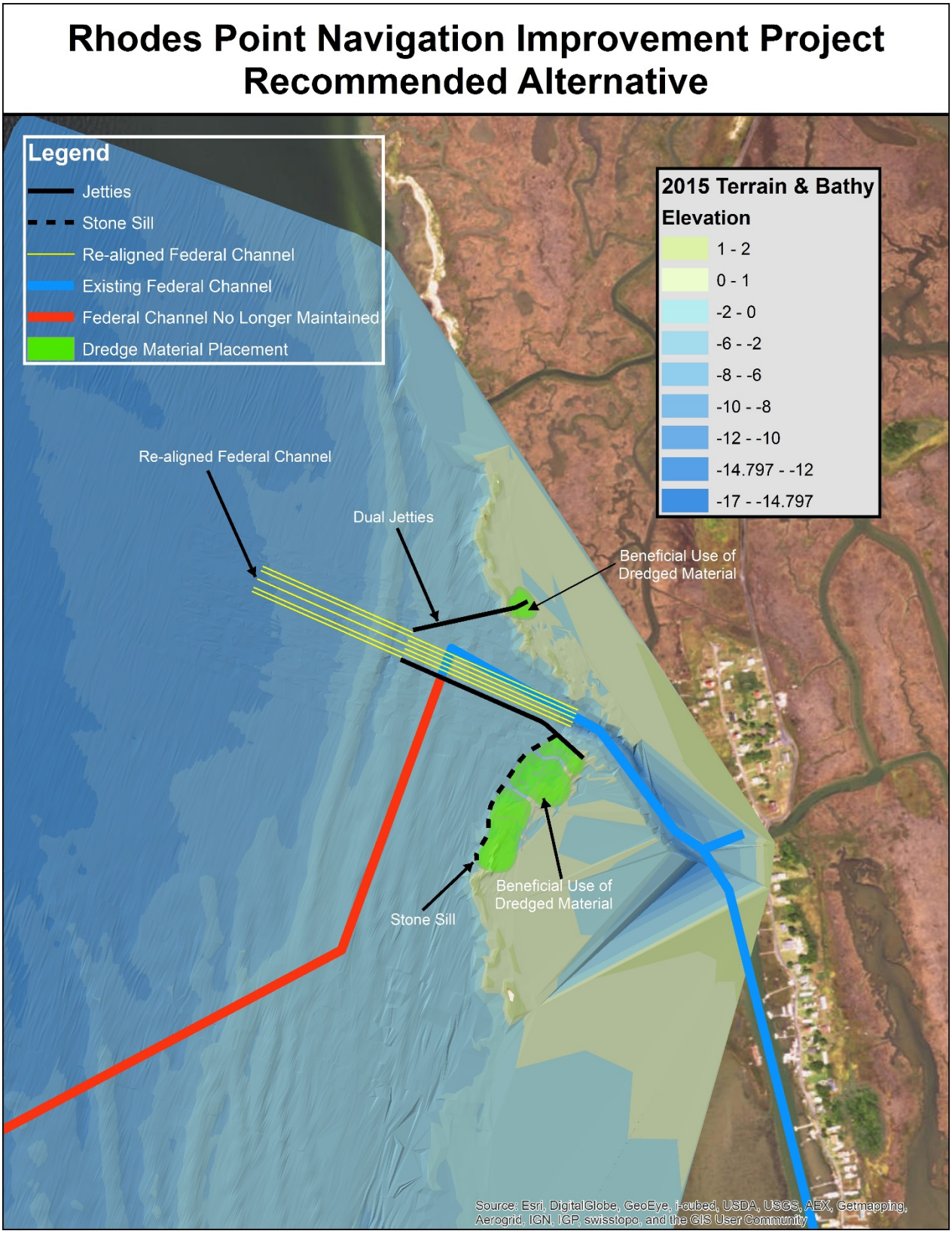


Figure 2-5. Proposed Action Planting Zones

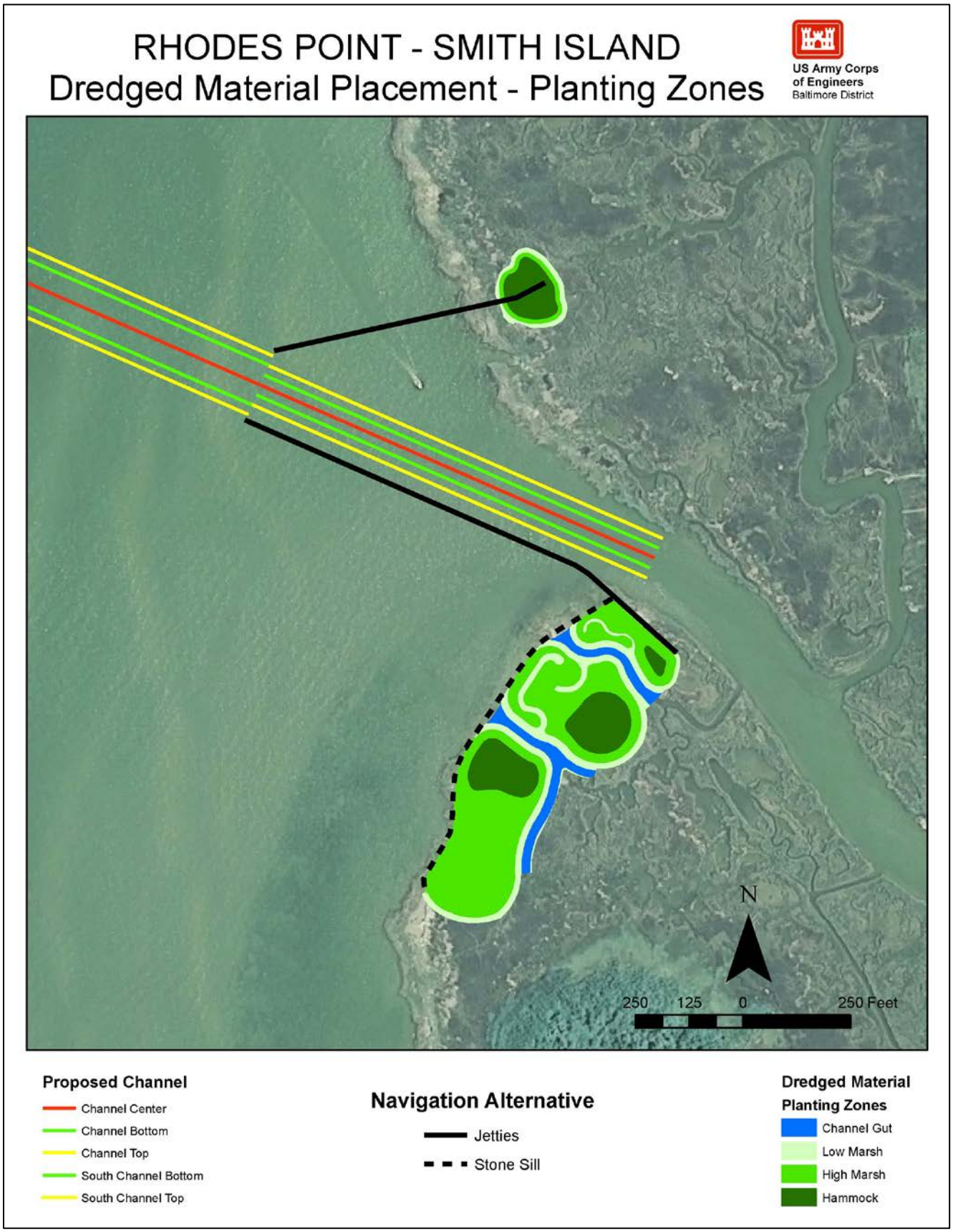
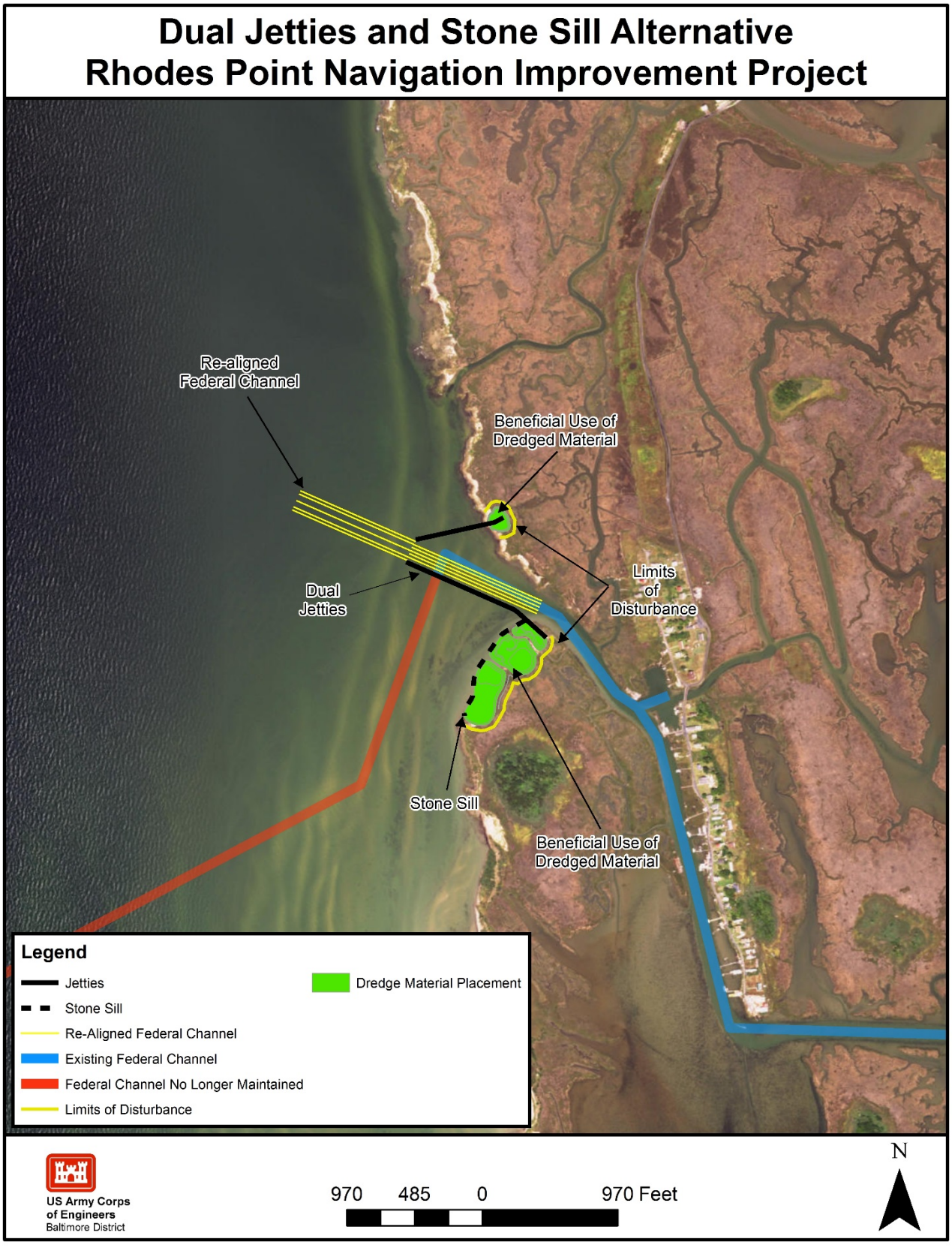


Figure 2-6. Alternative 4 with Limit of Disturbance



2.5 ALTERNATIVES ANALYSIS

The No Action Alternative involves not realigning the channel or constructing any navigation improvements and allowing the channel to continue to be at its existing location with rapid shoaling that limits the ingress and egress of boats in the area. This alternative does not address the purpose and need of the project. With this alternative, there are no introduced impacts, the channel continues to shoal, and watermen will continue to be impacted by the lack of a navigable channel (e.g., increased vessel maintenance, boat damage, etc.). With No Action, navigation impeding shoals form in the channel 3 to 6 months following dredging. Because of a lack of available federal funds, maintenance dredging has been intermittent, This prevents the channel from being efficiently used until funding for maintenance dredging is available. Without dredging, the channel would continue to fill with sediment. Watermen who use the waterways for their livelihood and other boaters would continue to utilize a longer alternate route or re-suspend this accumulating sediment and cause turbidity in the area.

Alternative 2 (realigned channel with twin jetties) involves a channel realignment, construction of two twin jetties, and a breakwater to contain material dredged from the channel to be utilized beneficially to restore 2 acres of wetlands. SAV surveys conducted over the past five years show substantial amounts (high density) of SAV in the area where the breakwaters were proposed and at the planned location for dredged material placement (immediately south of the mouth of Sheep Pen Gut). This alternative was determined to be unacceptable, because permanent impacts to SAV were anticipated. Besides SAV, there will be minor, localized permanent impacts to water depths and circulation, sediment, aesthetics (viewshed), benthos, and vegetation due to the permanent placement of the structures and minor temporary impacts to sediments and soils, water depths and water circulation, water quality, noise, air quality, plankton, shellfish, benthos, mammals, birds, fish, vegetation, reptiles, aesthetics (viewshed), navigation and recreation associated with construction and future maintenance. In addition to these impacts, as shown in Table 2-2, Alternative 2 has the largest permanent footprint of the structures and the dredged material placement area.

Alternative 3 (reduced twin jetties with a realigned channel) involves realigning the channel, construction of two twin jetties reduced in size from Alternative 2, and a stone sill to contain material dredged to be beneficially used to restore 2.5 acres of wetlands and enhance approximately 3 acres of wetlands. To minimize the impact to the existing SAV bed and to lower the construction costs, the proposed off-shore breakwaters identified in Alternative 2 were recommended to be replaced with a stone sill along the shoreline. The sill would be placed along the shoreline for Alternative 3, avoiding the high density SAV bed in the waterway. Similarly, placement of material behind the sill for Alternative 3 would also avoid direct impact to SAV. Alternative 3 has a reduced footprint in comparison to Alternative 2 and has less impact to shallow water habitat, SAV, and the local benthic community. With implementation of Alternative 3 it is anticipated that there will be minor, localized permanent impacts to water depths and circulation, sediment, aesthetics (viewshed), benthos, and vegetation due to the permanent placement of the structures and minor, temporary impacts to sediments and soils, water depths and water circulation, water quality, noise, air quality, plankton, shellfish, benthos, mammals, birds, fish, vegetation, reptiles, aesthetics (viewshed), navigation and recreation associated with construction and future maintenance.

Alternative 4 (rotated north jetty, parallel south jetty with a realigned channel), includes a realigned channel with a parallel south jetty and a rotated north jetty. The rotation of the north jetty allows the jetty to be shortened, thereby reducing its environmental footprint and cost while still providing the same navigational benefits. Material dredged from the channel will be beneficially used to restore approximately 2.5 acres of wetlands lost along the shoreline and enhance an additional 2.5 acres. A stone

sill will be used instead of a breakwater to contain the material. This alternative has a smaller footprint and therefore fewer environmental impacts than both Alternatives 2 and 3. With regards to SAV, Alternative 4 has reduced impacts as compared to Alternative 2 since the sill proposed under Alternative 4 is located outside of the SAV bed. Alternative 4 also has fewer SAV impacts than Alternative 3, since the sill is reduced in length from 950 feet to 850 feet. With implementation of Alternative 4 it is anticipated that there will be minor, localized permanent impacts to water depths and circulation, sediment, aesthetics (viewshed), benthos, and vegetation due to the permanent placement of the structures and minor, temporary impacts to sediments and soils, water depths and water circulation, water quality, noise, air quality, plankton, shellfish, benthos, mammals, birds, fish, vegetation, reptiles, aesthetics (viewshed), navigation and recreation associated with construction and future maintenance.

Table 2-2 provides a summary of each alternative to allow for comparison. From Table 2-2 ("Footprint of General Navigation Features" column), it can be seen that Alternatives 2 and 3 have a larger footprint of direct impacts from the jetty, channel, and breakwaters/sill than Alternative 4.

Alternative 4 is the Proposed Action, because this alternative was estimated to provide the same navigational benefits as Alternatives 2 and 3 and a reduced footprint leading to fewer impacts to SAV, wetlands, shallow water habitat and the local benthic community. The features of the Proposed Action (Alternative 4) are described in Section 2.4.

Table 2-2. Alternative Analysis Summary

	No Action	***Alternative 2- Realigned Channel with Twin Jetties-***	***Alternative 3- Realigned Channel with Reduced Twin Jetties***	***Alternative 4 (Proposed Action) - Realigned Channel with Parallel South Jetty and Rotated North Jetty***
North Jetty Structure	-	Stone Jetty - 1,300 ft long, parallel to realigned channel.	Stone Jetty - 1,000 ft long and 200 ft spur	Stone Jetty - rotated perpendicular to shoreline, 650 ft long. Approximately 50 ft wide at base, 6 ft wide at crest.
South Jetty Structure	-	Stone Jetty - 1,500 ft long, parallel to realigned channel.	Stone jetty, 1,150 ft including a 200 ft long angled spur. Approximately 50 ft wide at base, 6 ft wide at the crest.	Stone jetty, 1,150 ft including a 200 ft long angled spur. Approximately 50 ft wide at base, 6 ft wide at the crest.
Shoreline Protection Structure	-	Series of offshore breakwaters 250 ft long, with 125 ft gaps, 1,500 ft long in total, 100 ft from shoreline.	Stone sill structures - 850 ft long immediately adjacent to shoreline with series of notches to serve as openings for shallow water habitat interaction with the shoreline; approximately 30 feet wide at the base, 5 feet wide at the crest.	Stone sill structures - 850 ft long immediately adjacent to shoreline with series of notches to serve as openings for shallow water habitat interaction with the shoreline; approximately 30 feet wide at the base, 5 feet wide at the crest.
Navigation Channel	-	Realigned channel - 1,900 ft,tying into depths from 6-10 ft.	1,900 ft of dredging with 550 feet of the channel realigned tying into depths from 6-10 ft.	1,900 ft of dredging with 550 feet of the channel realigned tying into depths from 6-10 ft.
Dredge Material	-	Up to 28,000 cy in total, including approximately 11,600 cy (for 6 foot channel with 1 foot of overdredging); 9,000 cy (north jetty); 6,900 cy (south jetty); 200 cy (breakwater)	Up to 27,100 cy in total including approximately 11,600 cy (for 6 foot channel with 1 foot of overdredging); 8,300 cy (north jetty); 5,300 cy (south jetty); 1,850 cy (sill)	Up to 24,000 cy in total including 11,600 cy (for 6 foot channel with 1 foot of overdredging); 4,500 cy (north jetty); 5,300 cy (south jetty); 1,850 cy (sill)

Dredging Frequency (Benefits)	-	8-year cycle, reduced shoaling, less dredging, reduced maintenance cost.	8-year cycle, reduced shoaling, less dredging, reduced maintenance cost.	8-year cycle, reduced shoaling, less dredging, reduced maintenance cost.
Beneficial Use Site	-	Placement of dredged material along shoreline, restoring approximately 2.5 acres of wetlands and enhancing approximately 3.5 acres of wetlands.	Placement of dredged material behind stone sill, restoring approximately 2.5 acres of wetland plants and enhancing approximately 3 acres of wetlands.	Placement of dredged material behind stone sill and at location of north jetty tie-in with the land, restoring approximately 2.5 acres of wetlands and enhancing approximately 2.5 acres at a slope ranging from 10:1 to 30:1.
Footprint of General Navigation Features	-	Breakwaters (1.04 acres), channel (1.89 acres), Jetty (3.44 acres), TOTAL (6.37 acres).	Stone Sill (.59 acres), Channel (1.89 acres), Jetties (2.3 acres), TOTAL (4.78 acres)	Stone Sill (.59 acres), Channel (1.89 acres), Jetties (2.07 acres), TOTAL (4.55 acres).
Impacts	-	Larger footprint, more impacts to aquatic resources than proposed action	Larger footprint, more impacts to aquatic resources than proposed action	Smaller footprint, less impact to aquatic resources versus other alternatives. Stabilized shoreline and navigation improvement compared to No Action.
Cost	-	5.1M*	13.8M	10.6M

**This alternative was developed originally as part of the USACE (2003) Rhodes Point Feasibility report. These costs are 2003 plan costs escalated to FY 2017. One of the major differences between the escalated 2003 costs and the costs for Alternative 3 and the Proposed Action which were developed more recently is in the cost of Planning, Engineering, and Design. The increased cost reflects the cumulative costs of work that has been done in planning the project over the last 15 years. The other major cost increases is within the Channels and Canals account, which includes all of the actual project construction. Cost increases here account for increases in labor costs, fuel costs, and stone prices. Therefore, it is noted that the increase in project costs is the result of cost inflation and not an increase in the project scope of work. In fact, the size of the project features in the approved feasibility report dated January 2003 have been realigned slightly and reduced in order to lower the total project costs.*

3 AFFECTED ENVIRONMENT

The Environmental Consequences section addresses the impacts associated with the construction of the Proposed Action while this section provides information on the existing conditions of the project area.

3.1 LAND USE

Smith Island is located 8 miles west of Crisfield, Maryland, and 95 miles south of Baltimore, Maryland (Figure 1-1). Smith Island is a low-lying complex of islands with an area of almost 8,000 acres. The western shore of the island is exposed to a long open-water fetch from the west, southwest, and northwest. Because of its exposed position, the entire island is subject to shoreline erosion.

The island once supported agricultural fields and pastures, but is currently a complex of salt marsh islands separated primarily by narrow tidal creeks and shallow water areas. Upland areas on the island are limited to the towns of Ewell, Tylerton, and Rhodes Point, several former dredged material placement areas, and approximately a dozen isolated hammocks, dunes, and ridges. Because of its low elevation and exposed location, Smith Island is vulnerable to flooding. Vulnerability to the effects of erosion, flooding, and subsidence constitute an obvious problem for the three towns on the island; however, important natural resources are also threatened.

3.2 SEDIMENTS AND SOILS

The erosion at Smith Island is caused by waves and winds wearing away the exposed shorelines and tidal currents that affect the interior portions of the island. The bottom sediment character in the navigation channel, as revealed by soil borings, is alternating layers of clay and sandy silts to a depth of 16 feet. Analysis of the wind records indicates that the wave driven sediment transport is fairly evenly split between transport to the south and transport to the north, along the western shoreline of Smith Island, with transport to the south exceeding transport to the north by about 12 percent. This is based on an analysis of winds in the northwest and southwest quadrants that contribute to wave generation and wave driven transport. Actual wave driven transport quantities will depend on the availability of sediment in the nearshore area, orientation of the local shoreline, and local wave refraction effects.

The soils found in the wetlands in the area are Transquaking and Mispillion series, and the dredged material beneficial use site consists of an Annemessex-Manokin complex (USDA NRCS, 2015). Transquaking and Mispillion soils are very frequently flooded, tidal soils with a parent material of organic deposits from dominantly herbaceous plants, underlain by loamy fluvial or marine mineral sediments. An Annemessex-Manokin complex has a parent material of silty eolian deposits and/or loamy eolian deposits over fluviomarine deposits. Both soil series found in the study site are hydric, but not highly erodible (USDA NRCS, 2002a; USDA NRCS, 2002b).

3.2.1 Prime and Unique Farmlands

Prime farmland is defined as land having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses per Natural Resources Conservation Service (NRCS) regulation, 7USC 4201(c)(1)(A). It has the combination of soil properties, growing season, and moisture supply needed to produce sustained, high yields of crops in an economic manner if treated and managed according to acceptable farming methods. Prime farmland is designated independently of current land use, but it cannot be areas of water or urban or built-up land as defined for the national resource inventories. Map units that are complexes or associations containing components of urban land or miscellaneous areas as part of the map unit name cannot be designated as prime farmland. Soil survey map units that meet the soil requirements for prime farmland are identified,

coordinated and listed, and are available to users of soil survey information. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops, per NRCS regulation 7USC 4201(c) (1) (B).

The Farmland Protection Policy Act (FPPA), Public Law 97-98, authorizes the United States Department of Agriculture (USDA) to develop criteria for identifying the effects of Federal programs on the conversion of farmland to nonagricultural uses. Federal agencies are directed to use the developed criteria; to protect farmland.

According to the USDA Web Soil Survey Mapper no prime and unique farmlands are designated on Smith Island. The existing upland is comprised of three towns, and is surrounded by unbroken expanses of tidal wetlands. Due to the water based nature, there is no traditional agricultural activity in the area. Farming has not occurred for decades as a result of land lost to erosion and saltwater intrusion.

3.3 GEOLOGY/TOPOGRAPHY

Smith Island is a complex of salt marsh islands separated primarily by narrow tidal creeks and shallow water areas. The majority of the Rhodes Point area is salt marsh, with the town of Rhodes Point located on the upland area. The few upland areas in the vicinity of Rhodes Point are limited to several former dredged material placement areas and to two isolated and formerly inhabited hammocks. The adjacent high ground is utilized by colonial nesting waterbirds and other wildlife. The town itself is located on the remaining high ground near the project area. The upland area is slowly converting into wetlands. The local residents place considerable emphasis on protecting the remaining upland and their town.

The average elevation of the island is two feet above mean sea level (MSL) and the maximum elevation is about five feet above MSL. Sheep Pen Gut has erosion rates of seven to eight feet per year. As stated in the Somerset County, Maryland, Rising Sea level Guidance 2008 publication, sea level is rising at a rate of 3.1 mm per year in the Chesapeake Bay. According to a 2008 publication by MD DNR, it is predicted that Smith Island will be almost completely underwater in approximately 2100 as the entire island is less than three feet above sea level.

3.4 HYDROLOGY

3.4.1 Water Depths and Circulation

The mean range of tide is about 2.2 feet. Rhodes Point is exposed to a long (57 miles) open-water fetch (distance over water that the wind blows for a given direction). The average depth of the fetch is 31.5 feet with a 25-year wave height of 5.3 feet. Sea level is rising at a rate of 3.1 mm per year in the Chesapeake Bay. Higher tides allow the waves generated along the various fetches to propagate closer to shore before breaking. If the tide elevation is great enough, large portions of the island are inundated allowing direct wave attack on interior portions of the island.

3.4.2 Wild and Scenic Rivers/American Heritage Rivers

There are no federally designated Wild and Scenic River reaches or American Heritage Rivers within the project area.

3.5 WATER QUALITY

Natural shoreline erosion and resuspension of bottom sediments by waves reduces water clarity in the vicinity of the island. The silty marsh soils, composed of fine particles, add suspended solids to the water when eroded, decreasing light availability to aquatic resources. Dissolved oxygen ranges from 5.6 mg/L

in July to 11 mg/L in December. Smith Island is surrounded by brackish water (mesohaline) typical of the middle Bay, with a salinity ranging from 13 (in the spring) to 19 (in the fall) parts per thousand (ppt). Several areas around Smith Island have been temporarily closed to shellfish harvesting due to high fecal coliform levels as a result of inadequate wastewater treatment. Shellfish closure standards are of significance because bivalves concentrate bacteria and toxins in their tissue that can subsequently be consumed by people.

Streams and other water bodies in Maryland are each assigned a "designated use" in the Code of Maryland Regulation (COMAR) 26.08.02.08. Each use is associated with water quality criteria that are necessary to support that use. According to Maryland Department of the Environment's (MDE) designated uses for surface waters website, all of the bodies of water in the proposed project area are designated under Use II: Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting.

- Shellfish Harvesting Subcategory
- Seasonal Migratory Fish Spawning and Nursery Subcategory (Chesapeake Bay only)
- Seasonal Shallow-Water SAV Subcategory (Chesapeake Bay only)
- Open-Water Fish and Shellfish Subcategory (Chesapeake Bay only)
- Seasonal Deep-Water Fish and Shellfish Subcategory (Chesapeake Bay only)
- Seasonal Deep-Channel Refuge Use (Chesapeake Bay only)

Included on Maryland's 303(d) list of impaired waters website: http://www.mde.state.md.us/programs/Water/TMDL/Integrated303dReports/Pages/303d.aspx the MDE has identified Tangier Sound (MD basin codes 02130206, 02139998) in Maryland's Integrated Report as impaired by the following (listing years in parentheses): total suspended solids (1996); total phosphorus (1996); total nitrogen (1996); and fecal coliform (2012).

3.6 AIR QUALITY

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to set primary National Ambient Air Quality Standards (NAAQS) for commonly occurring air pollutants that pose public health threats. These pollutants are known as criteria pollutants. Currently, NAAQS exist for ground level ozone, particulate matter, carbon monoxide, sulfur dioxide, lead, and nitrogen oxides. Somerset County is in attainment for all NAAQS.

3.7 CLIMATE

The Smith Island climate consists of a summer where temperatures tend to be in the 70s (°F) and a winter with temperatures in the 30s. The hottest month of the year is July, with an average maximum temperature of 86 °F, while the coldest month of the year is January, with an average minimum temperature of 30 °F. Temperature variations between night and day tend to be fairly limited during the summer and winter with a difference as much as 15 °F. The average water temperature in the area ranges from 82 °F in July to 39 °F in February. The average annual precipitation is 38.4 inches. Rainfall is fairly evenly distributed throughout the year. The wettest month of the year is March, with an average of 4.3 inches of precipitation. All of Smith Island is exposed to significant wind conditions. The prevailing winds are from a northwesterly direction, which intensify over the Chesapeake Bay because of the wide fetch (greater than five miles). Winds speeds and return intervals were calculated for Smith Island. The strongest winds are, as expected, from the northwest.

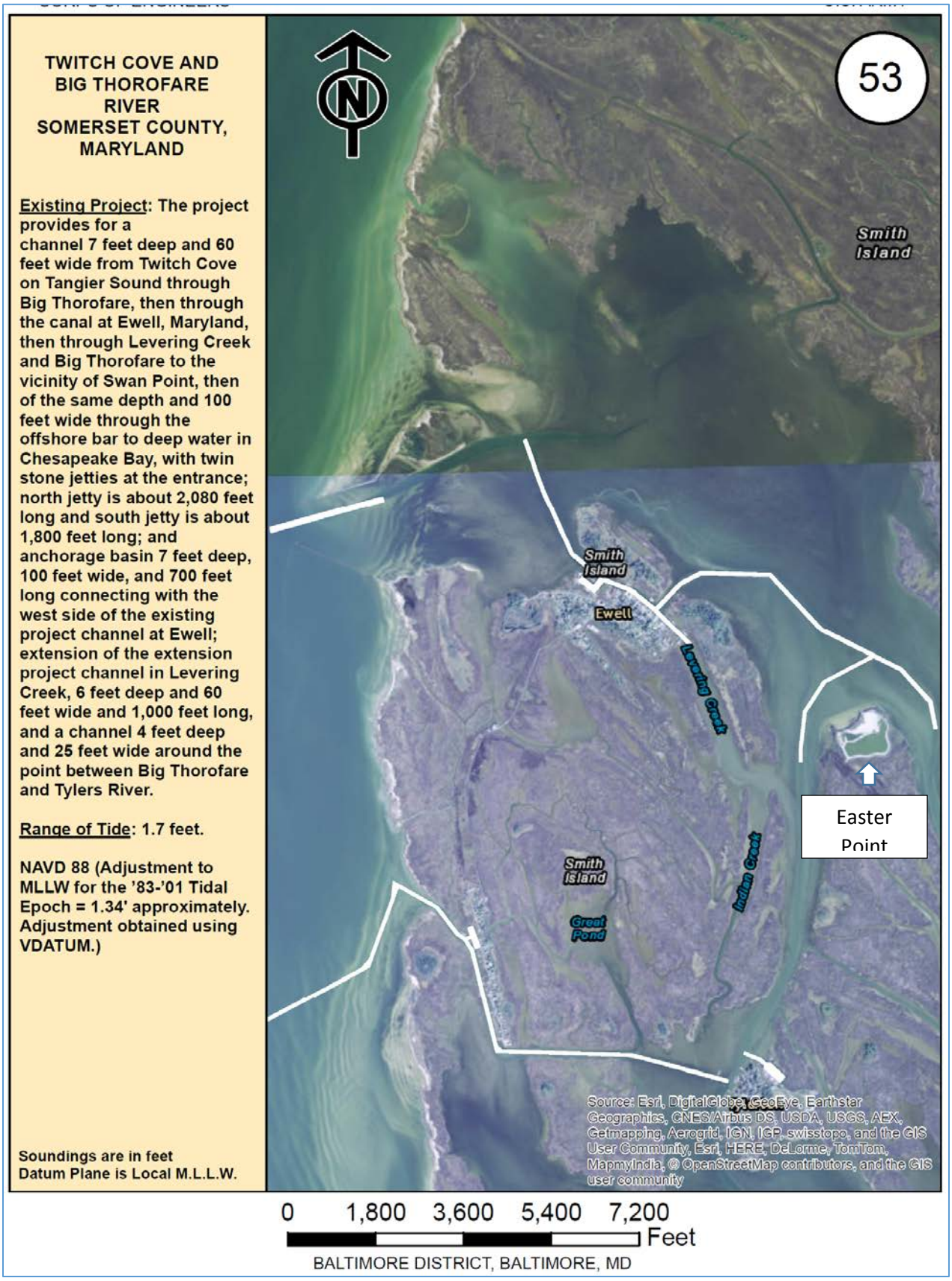
3.8 BIOLOGICAL RESOURCES

3.8.1 Vegetation

Emergent Wetlands

The majority of the emergent wetland vegetation is black needlerush (*Juncus gerardii*). Other species located in the Smith Island area are smooth cordgrass (*Spartina alterniflora*), saltmeadow hay (*Spartina patens*), salt grass *(Distichlis spicata*), marsh elder (*Iva annua),* groundsel bush (*Baccharis halimifolia),* saltmarsh bulrush (*Bolboschoenus robustus),* waterhemp (*Amaranthus rudis*), and common reed (*Phragmites australis*). Common reed, an invasive wetland plant of relatively low wildlife value, is associated with a previously used upland dredged material placement site on Smith Island (Easter Point See Figure 3-1).

Figure 3-1. Twitch Cove and Big Thorofare Navigation Projects



Submerged Aquatic Vegetation

Extensive SAV beds occur within the protected interior shallow waters of Smith Island and along the shoreline facing Tangier Sound. The Martin National Wildlife Refuge (NWR) located on Smith Island is the most productive area for SAV in the Chesapeake Bay National Wildlife Refuge complex[2]. The grass beds are important both ecologically and economically, providing food to small invertebrates and migratory waterfowl, and shelter to young fish and blue crabs. SAV keeps water clear and healthy by absorbing excess nutrients, trapping suspended sediment, and slowing shoreline erosion during times of the year when above bottom plant material is present (http://www.chesapeakebay.net/issues/issue/bay_grasses).

SAV has emergent tissue typically during the period of April through October. In the Smith Island area, two species tolerant of brackish salinities are dominant: eelgrass (*Zostera marina)* and widgeon grass (*Ruppia maritia)* (USFWS, 2006). Water clarity in the photic zone is required for sustained SAV growth. SAV beds in the vicinity of Smith Island have undergone substantial variation in bed acreage over time, with beds tending to be larger during years with less precipitation. Precipitation introduces nutrients that support algal growth, which reduces water clarity.

In studying the utilization of sea grass habitat by blue crabs in the Chesapeake Bay, Orth et al. (1996) estimated that small juvenile crabs are five times more abundant in SAV than in adjacent unvegetated habitats. SAV beds support juvenile crabs and a locally based crab scrape (soft-shell crab) fishery on Smith Island (USFWS, 2006). Figure 3-2 depicts SAV habitat and existing beds from data collected from 2002 to 2015 and Figure 4-2 identifies SAV present in the project area in 2011 through 2014. There are extensive beds of SAV up and down the shoreline south of Sheep Pen Gut and patches of SAV have occurred during this time period at the mouth of Sheep Pen Gut and north. It is important to note that the SAV bed presence and density vary from year to year in the project area (Figure 4-2) which will be discussed further in the Environmental Consequences section of this EA.

[2] The Chesapeake Marshlands National Wildlife Refuge Complex is located on the Eastern Shore of Maryland and Virginia. It includes the Blackwater NWR, Eastern Neck NWR, Martin NWR and Susquehanna NWR. Other parts of the Complex are the Barren Island, Watts Island, Garrett Island, Bishops Head, and Spring Island Divisions. A map of the Chesapeake NWR complex is here: https://www.fws.gov/northeast/chesapeakemarshrefugecomplex/pdf/ComplexMap.pdf

Figure 3-2. SAV in Project Area

Upland Vegetation

Upland habitat is limited and locally valuable on Smith Island because the majority of the island consists of tidal wetlands. Much of the upland is used by human communities, and includes lawns and landscaped plantings. Natural vegetative communities found on Smith Island are characterized by orache (*Atriplex*), seaside goldenrod (*Solidago sempervirens*), saltmarsh fleabane (*Pluchea odorata*), American sea rocket (*Cakile edentula*), American beach grass (*Ammophila breviligulata*), and switchgrass (*Panicum virgatum*). Additional upland habitat occurs on scattered, isolated hammocks, surrounded by marsh, characterized by shrub and tree species such as wax myrtle (*Myrica cerifera*), groundsel bush (*Baccharis halimifolia*), black cherry (*Prunus serotina*), sassafras (*Sassafras albidum*) and hackberry (*Celtis occidentalis*). Understory vegetation is comprised of vine species such as Japanese honeysuckle (*Lonicera japonica*), poison ivy (*Toxicondendron radicans*), and blackberry (*Rubus sp.*). As discussed earlier the previously used dredged material placement site (Easter Island Figure 3-1) is vegetated with common reed. There are no uplands in the project area.

3.8.2 Plankton

Phytoplankton and zooplankton form the base of the aquatic food web and support a variety of fish species, which help support larger species. According to the MD DNR's Chesapeake Bay phytoplankton sampling website page (http://www.dnr.state.md.us/bay/monitoring/phyto/data/Algae.html), in 2012, numerous species of phytoplankton and zooplankton inhabit the waters near Smith Island at the Cedar Island sampling station. As in other areas of the Bay, Smith Island is sensitive to excess levels of nutrients (typically nitrogen and phosphorous) and summer algae blooms may damage the aquatic habitat and adversely impact SAV by reducing water clarity.

3.8.3 Benthos and Oyster Beds

Benthic organisms are bottom dwelling organisms of aquatic ecosystems, such as snails, worms, insects, clams, shrimp, macroinvertebrates, whelks and crabs. The ecological significance of most invertebrate communities lies in their contributions to the food web, often comprising the staple diet for larger organisms.

The Smith Island and Tangier Sound area also supports commercial shellfish operations including the harvest of oysters and clams. In a letter dated May 12, 2015, the MD DNR indicated there is a designated natural oyster bar (NOB 36-3) located approximately 4,000 feet west of the mouth of Sheep Pen Gut (See Appendix D). The existing Federal navigation channel comes to within about 4,000 feet of the southern boundary of this NOB (Figure 3-3). MD DNR recommended that the realigned channel should avoid NOB 36-2 and indicated that dredging within the boundaries of NOB 36-2 could result in impacts to oysters and/or oyster habitat on the natural oyster bar.

In addition, blue crabs seek the protection of SAV during the molting season. Smith Island is centrally located for the blue crab's annual migrations, making the SAV beds one of the most productive blue crab areas in the United States (see Figure 3-4).

Figure 3-3. NOB 36-2 Location in Relation to Proposed Action

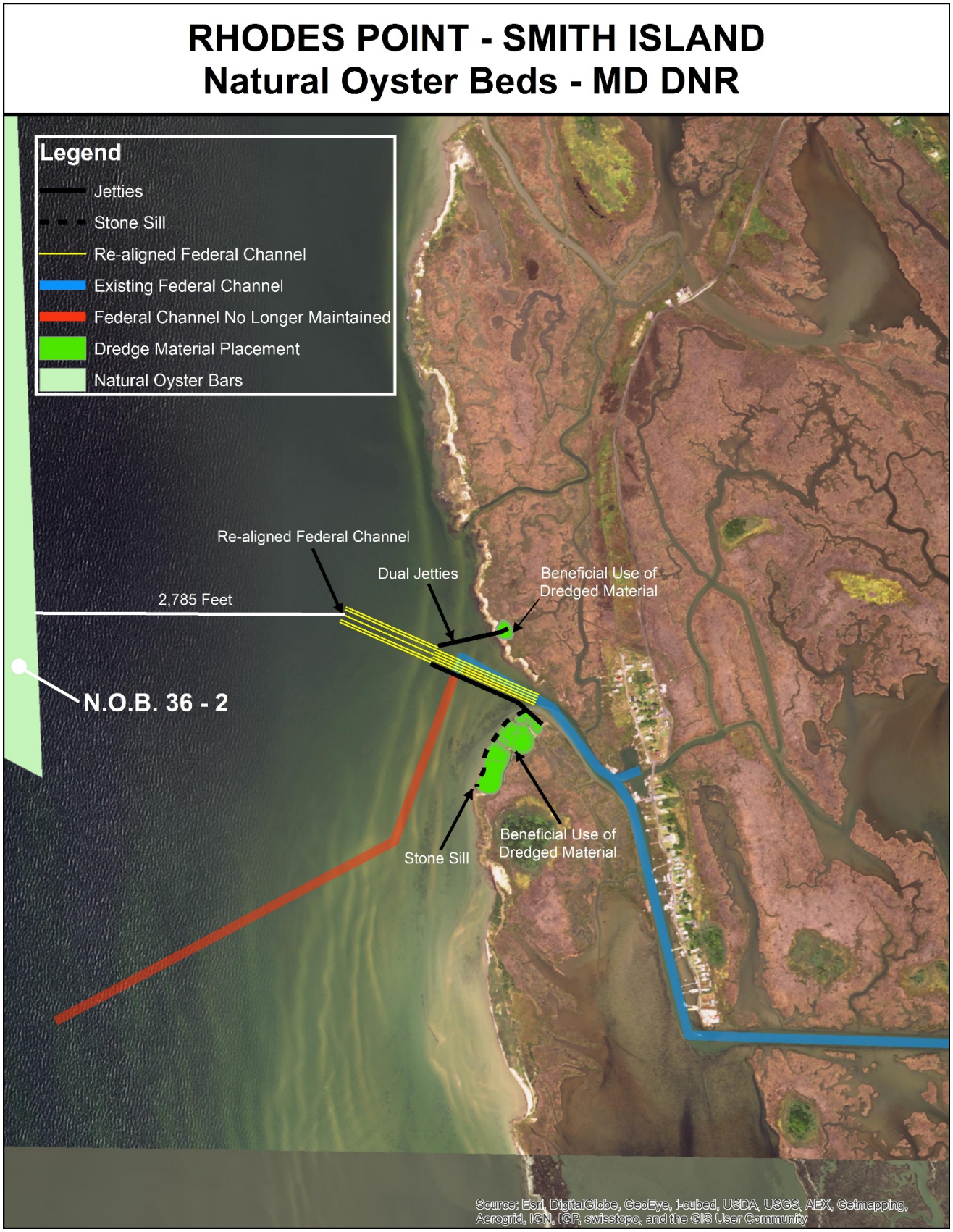


Figure 3-4. Blue Crab Migration Pattern in Chesapeake Bay

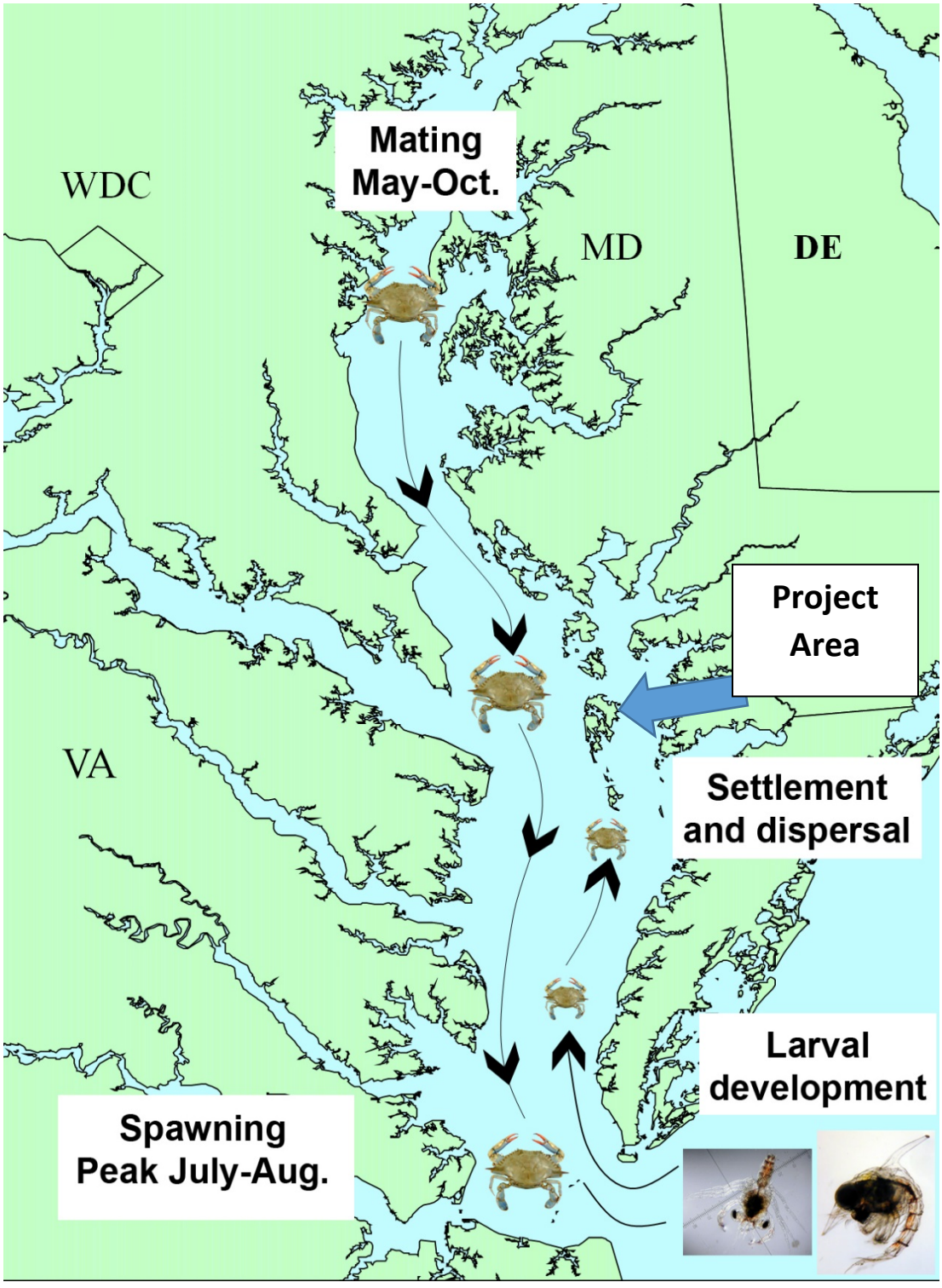


Image Courtesy of Smithsonian Environmental Research Center

3.8.4 Fish

The marshes of Smith Island are permeated with tidal creeks, which provide spawning, nursery, and feeding habitat for multiple species of finfish. The contiguous waters of Chesapeake Bay and Tangier Sound also support extensive fishery stocks. Shallow waters near Smith Island are likely to support minnows, killifish, silversides, and striped bass. Species that inhabit deeper water include: menhaden, rays, bluefish, sea trout, spot, croaker, summer flounder, and drum (Lippson and Lippson, 1997).

The tidal marsh wetlands, SAV beds, and shallow water habitat found at the Smith Island complex provides spawning, nursery, forage and cover habitat for an abundance of finfish species. The tidal marsh wetlands and SAV beds are especially important during juvenile life stages, when the fish are most vulnerable to predation from larger organisms. SAV beds, comprised of eelgrass and widgeon grass, in and around Smith Island provide a high quality nursery and forage habitat for several commercially important fish species, including summer flounder and red drum.

Essential Fish Habitat

The Magnuson-Stevenson Fishery Conservation and Management Act requires that essential fish habitat (EFH) areas be identified for each fishery management plan and that all Federal agencies consult with the National Marine Fisheries Service (NMFS) on all Federal actions that may adversely affect EFH. The EFH areas have been designated by the Fishery Management Councils and were published in March 1999 by National Oceanic and Atmospheric Administration (NOAA) and NMFS as the "Guide to Essential Fish Habitat in the Northeastern United States, Volume V: Maryland and Virginia."

The area of the Chesapeake Bay near Smith Island is known to be EFH for 10 species: bluefish (*Pomatomus saltatrix*), summer flounder (*Paralichthys dentatus*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), dusky shark (*Carcharhinus obscurus*), sandbar shark (*Carcharhinus plumbeus*), clearnose skate (*Raja eglanteria*), little skate (*Leucoraja erinacea*), and winter skate (*Leucoraja ocellata*) (https://www.greateratlantic.fisheries.noaa.gov/hcd/md7.html). In coordination with NMFS, it was concluded that of the 10 species with EFH designated in the study area vicinity, only 2 required consideration in the EFH Impacts Assessment (K Beard, NMFS, personal communication, May 6, 2015). These are juvenile and adult summer flounder, and juvenile and adult bluefish.

For further information on these species and essential fish habitat, please refer to the Essential Fish Habitat Assessment located in Appendix A.

Commercial and Recreational Fishery

The predominant commercial species in the study area are blue crabs (*Callinectes sapidus*), and shellfish such as clams and oysters. In addition, commercial fisheries for finfish such as striped bass (*Morone saxatilis*), sea trout (*Salmo trutta*), herring (*Clupeidae*), croaker (*Micropogonias undulatus*), Spanish mackerel (*Scomberomorus maculatus*), and summer flounder (*Paralichthys dentatus*) exist near Smith Island. The population of shad, black sea bass (*Centropristis striata*), and bluefish (*Pomatomus saltatrix*) has fallen below commercially viable populations. The Smith Island-Tangier Sound area has a significant recreational fishery as well. The most common recreational species include sea trout, croaker, spot (*Leiostomus xanthurus*), bluefish, striped bass, and summer flounder.

3.8.5 Birds

Smith Island's tidal wetlands and scattered uplands provide both a food supply and suitable nesting sites for colonial waterbirds and dozens of migratory bird species. Upland islands are higher elevation areas

within wetlands called hammocks, which are used extensively by the colonial water bird populations and other wildlife. Smith Island serves as an important stop-over site during the spring and fall migrations and hosts year round populations of nesting birds. Because of the small human population on Smith Island and the remote location of many of the upland sites, human impacts on nesting birds are limited (USFWS, 2013). The intersection of the aquatic and terrestrial habitats such as found at Smith Island is primarily utilized by shorebirds, wading birds, and waterfowl which will be expanded upon below.

Seasonal surveys conducted in the Chesapeake Bay have identified five major groups of inhabiting birds including predatory/scavenging birds (raptors), land birds, colonial waterbirds, shorebirds and marsh birds and waterfowl (USFWS, 2015).

Raptors

The American bald eagle and osprey are the Chesapeake Bay's most familiar raptors. The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC) website indicated migratory bird species that are protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act are located in the project area.

Land Birds

Land birds include birds typically present in upland habitats in the mid-Atlantic region, such as American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), blue jay (*Cyanocitta cristata*), and various species of finches and sparrows (CBP, 2016).

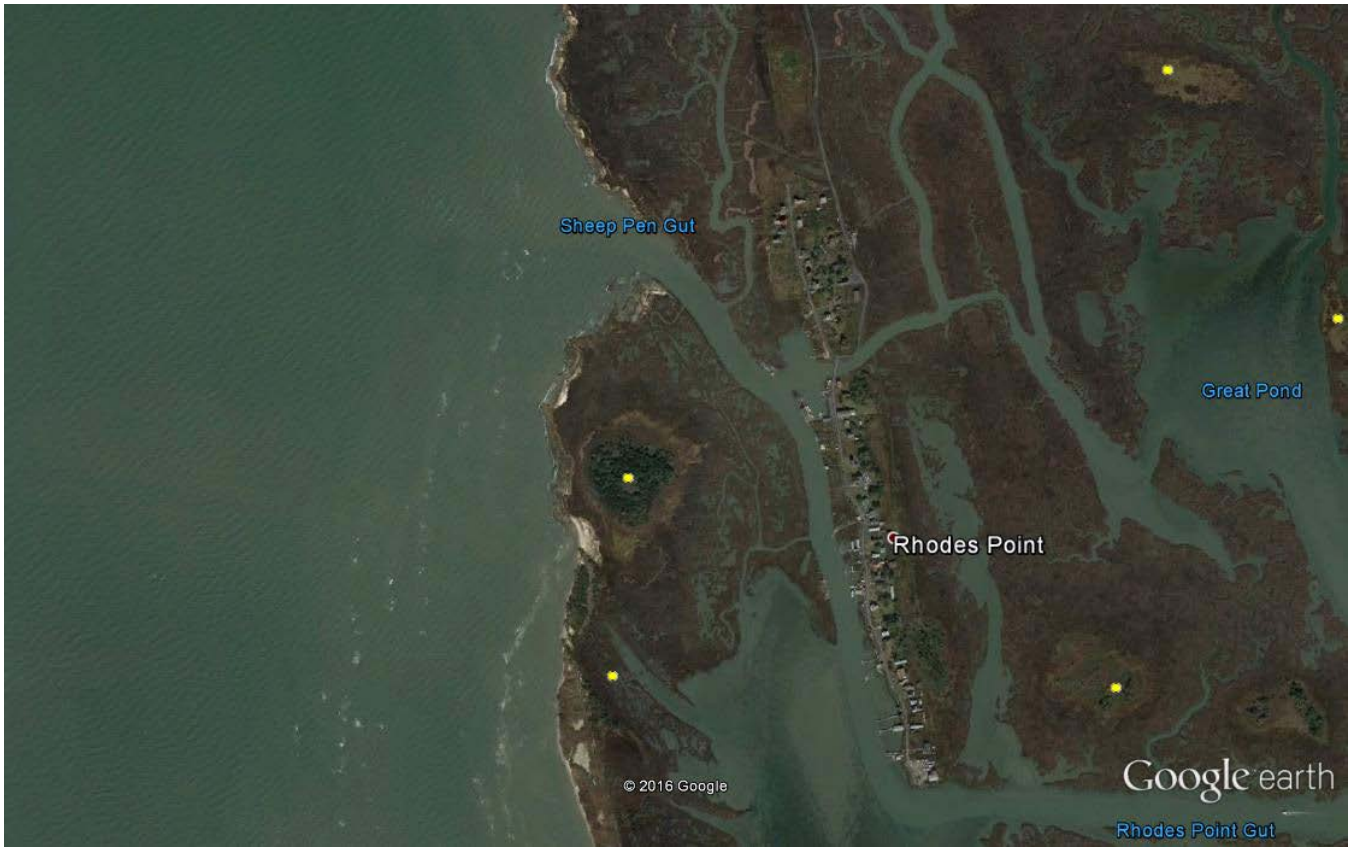
Colonial Waterbirds

Colonial wading waterbirds, distinguished by their use of long-term nesting sites, use the scattered upland hammocks as rookeries. The waterbirds nest in the uplands and feed in the nearby expanses of emergent wetlands and mudflats. Smith Island is a premier colonial waterbird habitat, providing protection and an ample food source. The following colonial waterbird species have been identified on Smith Island: glossy ibis, great-blue heron, great egret, snowy egret, tricolored heron, little blue heron, cattle egret, black-crowned night-heron, and yellow-crowned night-heron. Of these species, the glossy ibis, snowy egret, tricolored heron, and black-crowned night-heron are considered to be declining in number in Maryland (USFWS, 2015).

Non-wading waterbirds, terns and gulls, also utilize the marshes, dunes, and hammocks. These include: brown pelican, double-crested cormorant, great black-backed gull, herring gull, laughing gull, royal tern, sandwich tern, common tern, roseate tern, Forster's tern, least tern, gull-billed tern, and black skimmer. Of these species, the least tern and black skimmer are considered to be threatened in Maryland (USFWS, 2015).

MD DNR-Wildlife Heritage Service indicated that there are two active waterbird colonies that occur within the vicinity of this project site (Figure 3-5). One colony is mixed heron species and the other supports great blue herons (D. Brinker, MD DNR, personal communication, December 15, 2016).

Figure 3-5. Colonial Waterbird Nesting Sites in the Project Vicinity



*Centers of the known waterbird nesting colonies (yellow dots) near the project area. Figure provided by MD DNR.

Shorebirds and Marshbirds

Shorebirds rely on sandy and muddy shorelines as forage and rest sites, especially during the spring and fall migrations. These birds feed on small mollusks, worms, and crustaceans, foraging in mudflats, tidal pools, and sandy intertidal zones. The vast areas of tidal flats on Smith Island provide ideal habitat for shorebirds (USFWS, 2013).

The following shorebirds have been identified on Smith Island: American oystercatcher, willet, semipalmated sandpiper, spotted sandpiper, least sandpiper, western sandpiper, purple sandpiper, pectoral sandpiper, black-bellied plover, semipalmated plover, killdeer, dunlin, red knot, lesser yellowlegs, greater yellowlegs, snipe, and sanderling (USFWS, 2013).

Waterfowl

The habitats of Smith Island are a combination of extensive undisturbed shallow-water, SAV beds, tidal mudflats, and miles of fringing low marsh. Each of these habitats provides important wintering forage for a variety of waterfowl. Collectively, they make Smith Island an important resting point for a variety of migratory waterfowl. Smith Island is an important habitat feature for migratory waterfowl using the Atlantic Flyway. The overall decline of waterfowl in the Chesapeake Bay is exacerbated by the declines in usable habitat. Smith Island is an important breeding area for the American black duck, mallard, and gadwall. However, numerous other waterfowl are believed to use Smith Island as a stopover point during

their spring and fall migrations, including Canada goose, canvasback, widgeon, pintail, redhead, bufflehead, black scoter, oldsquaw, brant, and tundra swan (USFWS, 2013).

Since 1956, the numbers of waterfowl including mallard, black duck, widgeon, pintail, redhead, and canvasback have been declining (USFWS, 2015). The waterfowl species decline has been attributed to regional population stresses, as well as marsh erosion and sea level rise (USFWS, 2015). Significant degradation on Smith Island will continue to add to the population stresses as it shrinks in size.

3.8.6 Reptiles

The diamondback terrapin *(Malaclemys terrapin)*, snapping turtle *(Chelydra serpentina)*, northern water snake *(Natrix sipedon)*, and rough green snake *(Opheodrys aestivus)* are known to occur in the Smith Island area (USFWS, 2013).

3.8.7 Mammals

The most prevalent mammalian species on Smith Island are muskrats and small rodents such as the meadow vole. River otter, mink, and red fox also occur on the island, and are an important part of the wetland ecosystem. Each of these species is native to tidal marshes, (USFWS, 2013).

3.9 RARE, THREATENED, AND ENDANGERED SPECIES

USFWS Information for Planning and Consultation (IPAC) website indicated that there are no records of the presence of any federally listed rare, threatened, or endangered species under USFWS purview. A state search was also done indicating that there are no records of the presence of any state listed rare, threatened, or endangered species in the project vicinity under MD DNR purview (Appendix D).

In a letter dated April 17, 2015 (Appendix D), NMFS indicated four federally listed threatened or endangered sea turtles have been documented to visit the Chesapeake Bay and the coastal waters of Maryland and Virginia. These include the threatened Northwest Atlantic Ocean distinct population segment (DPS) of loggerhead (*Carella caretta*), and the endangered Kemp's ridley (*Lepidochelys kempi*), green (*Chelonia mydas*) and leatherback sea turtles (*Dermochelys coriacea*).

Sea turtles are transient to the Chesapeake Bay and the project vicinity. Kemp's ridley and loggerhead turtles are the most frequent visitors to the Chesapeake Bay. Leatherback sea turtles typically continue their Atlantic Ocean migration north past the Chesapeake Bay and prefer nesting on the high wave energy beaches of the eastern seaboard. No nesting by sea turtle species has yet been recorded in the Chesapeake Bay (Evans et al. 1997). Sea turtles are expected to be present in the Bay from April through mid-November of each year. During cooler weather months when construction would occur, sea turtles are unlikely to be present in the project area.

Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) are present in the Chesapeake Bay and its adjacent rivers and tributaries, and the coastal waters of Maryland and Virginia. The New York Bight, Chesapeake Bay, South Atlantic and Carolina DPS of Atlantic sturgeon are endangered; the Gulf of Maine DPS is threatened. Individuals originating from any of these DPS could occur in the project area. Atlantic sturgeon are found throughout the tidal waters of the Chesapeake Bay. There have been 1,664 documented wild Atlantic sturgeon reports and 562 hatchery-origin Atlantic sturgeon reports since 1996. Some of these reports are multiple recaptures of individual fish. Atlantic sturgeon could be present in the project area, but monitoring suggests that they are not common (NFMS, 2009).

Shortnose sturgeon (*Acipenser brevirostrum*) are present in the Chesapeake Bay and some of its tributaries, including the Susquehanna and Potomac Rivers. Shortnose sturgeon are endangered throughout their range. Shortnose sturgeon are most prevalent in the upper Chesapeake Bay and within the Potomac River (NFMS, 2009). There is no data to suggest their presence in the project area thus they will not be analyzed any further in this assessment.

3.10 CHESAPEAKE BAY CRITICAL AREA, MARYLAND COSTAL ZONE, AND COASTAL BARRIER RESOURCES ACT

In 1984, to safeguard the Bay from the negative impacts of intense development, the Maryland General Assembly enacted the Chesapeake Bay Critical Area Protection Program, a far-reaching effort to control future land use development in the Chesapeake's watershed. The ribbon of land within 1,000 feet of the tidal influence of the Bay was determined to be crucial because development in this "critical area" has direct and immediate effects on the health of the Bay. The Critical Area Commission (CAC) was responsible for devising a set of criteria which would minimize the adverse effects of human activities on water quality and natural habitats and would foster consistent, uniform and more sensitive development activity within the Critical Area (http://dnr.maryland.gov/criticalarea/Pages/background.aspx.)

The study area is located within the Chesapeake Bay critical area and the State of Maryland's coastal zone boundaries. The critical area was established to mitigate the damaging impact of water pollution and loss of natural habitat, while also accommodating future growth. The Critical Area Act recognizes that the land immediately surrounding the Bay and its tributaries has the greatest potential to affect water quality and wildlife habitat and thus designated all lands within 1,000 feet of tidal waters or adjacent tidal wetlands as the "Critical Area." The Coastal Zone Management Act (CZMA), as amended, requires federal actions to be consistent with the enforceable polices of a coastal state's federally approved Coastal Management Plan.

In the early 1980s, Congress recognized that certain actions and programs of the Federal Government have historically subsidized and encouraged development on coastal barriers, resulting in the loss of natural resources; threats to human life, health, and property; and the expenditure of millions of tax dollars each year. To remove the federal incentive to develop these areas, the Coastal Barrier Resources Act (CBRA) of 1982 designated relatively undeveloped coastal barriers along the Atlantic and Gulf coasts as part of the John H. Chafee Coastal Barrier Resources System (CBRS), and made these areas ineligible for most new federal expenditures and financial assistance. USFWS provides an online mapping tool to determine if an area is part of the CBRS: https://www.fws.gov/CBRA/Maps/Mapper.html. The project area does not fall within a CBRS.

3.11 CULTURAL RESOURCES

The USACE is required by Section 106 of the National Historic Preservation Act and Executive Order 11593, to identify all archeological resources and historic properties within a project's area of potential effect which are eligible for listing in the National Register of Historic Places, and to assess the project's effect on those properties, should they exist.

The Maryland Historic Trust (MHT) is the State Historic Preservation Officer (SHPO) for the state of Maryland. A letter dated May 15, 2015 was received from MHT indicating that there are no known historic properties or archeological resources in the project area (Appendix D).

3.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

The Smith Island area of the Chesapeake Bay was evaluated for hazardous, toxic and radioactive wastes (HTRW) using the Environmental Protection Agencies Toxic Release Information System (TRI) and Resource Conservation Recovery Information (RCRIS) databases, as well as the Comprehensive Environmental Response, Compensations, and Liability Information System (CERCLIS) and National Priority List (NPL) in 2015. No HTRW sites were identified on Smith Island.

3.13 AESTHETICS AND RECREATION

Smith Island's aesthetic character is created and maintained by the mix of a vast expanse of tidal wetlands, hammocks, small communities, and watercraft and facilities. Group recreation activities on the island are focused around family, community, church, and school. Church buildings in each community provide space for club meetings, dinners, and similar organized indoor recreation activities. The Community Meeting Hall in Rhodes Point is used as a Senior Citizen Center, serving communal meals and sponsoring other activities. Several business locations also serve as regular informal gathering places. Bicycle riding is a popular form of recreation as well as a practical way to get around on the island's narrow lanes. The necessity of boats to island life makes boating an easily accessible recreation activity.

There are also several recreation opportunities available on Smith Island including canoeing, kayaking, fishing charters, and site seeing tours which include bird watching and beach combing opportunities (Smith Island Cultural Center, 2016). There is also a waterfowl hunting season which occurs September through April in Maryland and with specific dates varying by species.

3.14 TRANSPORTATION AND TRAFFIC

Since there are no land links between Smith Island and the mainland, normal access to the mainland from Smith Island is entirely dependent upon boats. Since most of the waterways of Smith Island are less than two feet deep, vessels depend on the deeper, easily navigated federal navigation channels to travel about Smith Island, and between Smith Island and the mainland. Most residents have at least one boat for commuting between the three towns on Smith Island and to the mainland. However, there are also a number of private ferries that make daily trips to Crisfield for supplies and general transportation. The trip takes approximately 45 minutes each way. A boat takes children to school in Crisfield each morning and carries mail and supplies for Smith Island residents. Bicycles and golf carts are the primary mode of transportation on the island. There are few cars but people can easily get around by walking to and from locations.

As discussed in Section 1 and depicted in Figure 1-2 this project is part of a larger network of navigation channels around Smith Island as described below and depicted in Figure 3-1.

Twitch Cove and Big Thorofare Federal Navigation Project

This navigation channel network is 7 feet deep and 60 feet wide extending from Twitch Cove on Tangier Sound through Big Thorofare to Ewell, Maryland, then through Levering Creek and Big Thorofare to the vicinity of Swan Point where it then widens to 100 feet wide (remains 7 feet deep) to deep water in Chesapeake Bay. The project has twin stone jetties in which the north jetty is about 2,080 feet long and south jetty is about 1,800 feet long with an anchorage basin of 7 feet deep, 100 feet wide, and 700 feet long connecting with the channel at Ewell. The project channel in Levering Creek, is 6 feet deep and 60 feet wide and 1,000 feet long. The channel between Big Thorofare and Tyler Creek is 4 feet deep and 25 feet wide. The project was completed in 1956. The Baltimore District dredges the existing channels periodically to maintain the project depths of 7 feet. The channels were dredged in 1994, 1996, 2002, and 2009.

Rhodes Point to Tylerton Federal Navigation Project

This navigation project (what is covered for this EA) provides for a channel 50 feet wide and 6 feet deep from Tyler Creek to the town of Tylerton, with an anchorage basin of the same depth, 150 feet wide, and 400 feet long. It also includes a channel, 50 feet wide and 6 feet deep, in Tyler Creek to Shanks Creek and Rhodes Point, with an anchorage basin at Rhodes Point, 100 feet wide and 400 feet long. The channel network also includes a channel 6 feet deep and 50 feet wide around Easter Point between Big Thorofare and Tilers Ditch. On 22 January 1982, the Chief of Engineers, under authority of Section 107 of the 1960 River and Harbor Act, as amended, authorized a channel 6 feet deep and 50 feet wide of about one mile from the anchorage basin at Rhodes Point through Sheep Pen Gut to deep water in Chesapeake Bay. The project was completed in 1982. The Baltimore District dredges the existing channels periodically to maintain the project depths of 6 feet. The existing channels continually shoal to depths that hinder navigational access around Smith Island. The channels were most recently dredged in 1994, 1996, 2002 and 2009.

3.15 NOISE

For purposes of regulation, noise is measured in dBA or A-weighted decibels. This unit uses a logarithmic scale and weights sound frequencies. Individuals with good hearing perceive a change in sound of 3 dB as just noticeable, a change of 5 dB as clearly noticeable, and 10 dB is perceived as doubling (or halving) of the sound level. The threshold of human hearing is 0 dBA. Values above 85-90 dBA would be considered very loud (Table 3-1) and have the potential to harm hearing given sufficient exposure time. Noise levels above 140 dBA can cause damage to hearing after a single exposure. The project area is primarily rural. The major sources of anthropogenic noise in the project area are produced by power boats. Only limited vehicular traffic occurs along adjacent Smith Island Road. Natural sounds produced by wind and waves mask noises produced by anthropogenic sources during much of the year.

Table 3-1. Typical Noise Levels and Subjective Impressions

Source	Decibel Level (dBA)	Subjective Impression
Normal breathing	10	Threshold of hearing
Soft whisper	30	---
Library	40	Quiet
Normal conversation	60	---
Television audio	70	Moderately loud
Ringing telephone	80	---
Snowmobile	100	Very loud
Shouting in ear	110	---
Thunder	120	Pain threshold

3.16 SOCIOECONOMIC CONDITIONS

3.16.1 Social and Cultural

According to the 2010 U.S. Census Report, there are 276 persons residing on Smith Island, Maryland which can double with part-time residents from May to November. The median age was 58 years with the largest percentage of people being the age of 65 to 69 (15.9 percent) and the lowest percentage of people being the age of 5 to 9 (1.1 percent). Of the total population 134 were males and 142 were female residents. The top three races (in population) are: White (96 percent), Black or African American (2.2 percent) and Asian (0.7 percent). According to USA City Fact (http://www.usacityfacts.com/md/somerset/smith-island/), on Smith Island, the median worker income is $11,250 which is lower than the national average of $29,709. 45.3 percent of the population on Smith Island has graduated from high school or has a general educational development (GED).

3.16.2 Economic Setting

Nearly all of the permanent residents at Rhodes Point are dependent on the seafood industry for their livelihood. Seafood is harvested and either processed locally or packed for shipment. Although crabs dominate, oysters and clams are also harvested and shipped across Tangier Sound to Crisfield. The return trips yield supplies and petroleum. There are an estimated 22 commercially used boats at Rhodes Point. Sixty percent of the boats are "tongers" or oyster vessels and 40 percent are "scrapers" or crab boats. In practice, 80 percent of the boats are used for both oystering and crabbing. The primary industry is the crab picking co-operative venture, run by the wives of many watermen.

The rapid formation of shoals in the navigation channel at Sheep Pen Gut is causing economic hardships in the form of navigational delays, boat damages, and infrastructure problems such as road and dock damages. The loss of SAV beds is reducing the availability of soft-shell crabs and other species in the waters around Smith Island. The islanders have traditionally depended on soft-shell crab harvests for income and crabs represent the main source of income.

The town of Rhodes Point contains many residents living on low or fixed incomes. The population is generally elderly and most are directly descended from the original English settlers.

There are approximately 12 choices for lodging between bed and breakfasts and house rentals, and a restaurant on the island which caters to the seasonal tourists disembarking from tour boats from May to October.

Commercial vessels used to harvest fish, crabs, and oysters are having problems related to shoaling of the Sheep Pen Gut navigation channel. According to the results of commercial watermen surveys, commercial vessels range from 34 to 60 feet in length, draft from 3.5 to 6 feet, and have a beam of 10 to 15 feet.

3.17 ENVIRONMENTAL JUSTICE

On February 11, 1994, President Clinton issued Executive Order (E.O.) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The E.O. requires Federal agencies to identify and address any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.

As defined by the "Guidance for Addressing Environmental Justice Under the National Environmental Policy Act" https://www.doi.gov/sites/doi.gov/files/migrated/pmb/oepc/upload/EJ-under-NEPA.pdf, "minority" includes persons who identify themselves as Asian or Pacific Islander, Native American or

Alaskan Native, black (not of Hispanic origin) or Hispanic. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The Census Bureau defines a "poverty area" as a Census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level (http://www.census.gov/topics/income-poverty/poverty/about/glossary.html).

Within Smith Island, per the 2010 census, the combined minority population is 12 out of the 276 persons or 3.6 percent of the population. The poverty level for families on Smith Island is 38.6 percent meaning it is a poverty area as defined by the Census Bureau.

3.18 CHILDREN'S HEALTH AND SAFETY

On April 21, 1997, the President issued E.O. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, which recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. This E.O. requires Federal agencies, to the extent permitted by law and mission, to identify and assess such environmental health and safety risks.

Within Smith Island, approximately 10.5 percent of the population is 19 years and under. There is one school located in Ewell for children in the study area. The school website lists 9 students from Kindergarten to seventh grade (http://ees.somerset.k12.md.us/apps/pages/index.jsp?uREC_ID=269423&type=d&pREC_ID=645501). Currently, students eighth grade and above are transported by boat to attend the mainland high school.

3.19 FLOODPLAIN PROTECTION

On May 24, 1977, President Carter issued E.O. 11988 "Floodplain Management". This E.O. requires federal agencies to provide leadership and take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

The study area is in tidal waters and is within the tidal floodplain as mapped by the Federal Emergency Management Agency's Floodplain Insurance Maps.

4 ENVIRONMENTAL CONSQUENCES

4.1 LAND USE

The Proposed Action will not alter the land use of Smith Island.

4.2 SEDIMENTS AND SOILS

The construction of the jetties and stone sill may alter the sedimentation in the area immediately adjacent to Rhodes Point, but the area affected will be localized to those areas immediately adjacent to the jetties. Another probable construction impact is an expected reduction in the rate of shoreline erosion both inside the mouth of Sheep Pen Gut and along the shoreline south of the proposed jetties. An increase in scour along the slope of the jetties and sill are also likely to occur. These impacts are minor but permanent.

4.2.1 Prime and Unique Farmlands

As stated in Section 3, there no designated prime and unique farmland on Smith Island thus there will be no impacts to this resource.

4.3 GEOLOGY/TOPOGRAPHY

The Proposed Action will not alter the topography of the island significantly. The jetties will not alter how the shorelines experience surge but will deflect energy from normal waves and tides. The stone sill will protect against wave action that may otherwise erode the shoreline.

4.4 HYDROLOGY

4.4.1 Water Depths and Circulation

The two stone jetties and stone sill will become permanent structures that will alter (limit) the water depth within the footprint of these structures. The channel realignment will extend westerly by 425 from the end of the existing channel at a -6-foot MLLW contour (plus an additional 1 foot allowed for overdredging). These components will also alter water circulation; the sheltering by jetties of the new (realigned) channel is expected to reduce wave energy/waters current circulation in the channel and in areas in the lee of these structures. The jetties also provide an indirect protection to the north and south shorelines (Appendix E). Water circulation and depth will not be altered at the larger, tributary-level. However, at the local scale, minimal changes are expected and any impacts to the aquatic ecosystem would be minor.

4.4.2 Wild and Scenic Rivers/American River Heritage Rivers

There are no designated Wild and Scenic Rivers or American River Heritage Rivers in the project area thus there are no impacts to these resources.

4.5 WATER QUALITY

Pipeline dredging of material from the navigation channel is not expected to produce excess turbidity in the water column. Turbidity produced by placement of dredged material behind the stone sill is expected to be localized and short-term. A minor increase in turbidity caused by placement of stone is expected in the area. These impacts would cease with the completion of placement operations. Turbidity effects are expected to be temporary and localized and will have only a minor adverse impact on water quality and the aquatic ecosystem.

Construction of the jetties and sill would cause some short-term disturbance to the existing eroding material. Construction will comply with all applicable federal, state, local laws concerning environmental

pollution control and abatement. Construction will not pollute with fuels, oils, bitumens, calcium, acid waste or other harmful materials. A turbidity curtain will be maintained during construction, it will be weighted at the bottom and the top must float. It will be of sufficient height to provide complete coverage at high tide. It will be advanced as necessary during construction. The turbidity curtain would minimize sediment from entering the water column and affecting water quality. The Proposed Action would stabilize the eroding shoreline through the restoration of wetlands utilizing dredged material from the channel to stabilize the eroding wetland. Construction will adhere to TOY restrictions (no work with the possible exception of planting will be done from April 1 to October 31) which will minimize water quality disturbances to less critical times of year for aquatic resources in the area.

Based on past analysis (USACE, 2009), the chemical constituents in the material proposed for dredging are present at low concentrations, and neither dredging nor placement activities are expected to release significant concentrations of dissolved constituents (that could impact water column organisms or affect human health). Overall, dispersion of sediment and chemical releases during the dredging and placement operations would be rapid (yielding *de minimis* exposures), and only minor impacts to aquatic life would be expected within the vicinity of dredging or placement operations.

For the reasons stated above, discharges into the waters of the United States as part of the Proposed Action are anticipated to have only minor and temporary impacts. In accordance with Section 404 of the Clean Water Act, a 404(b) (1) analysis was performed (See Appendix B), which determined that the Proposed Action complies with the guidelines for discharge and dredged material of Section 404 of the Clean Water Act.

4.6 AIR QUALITY

Although there will be a minimal amount of dust generated during the placement of the rocks at this location to construct the jetties and stone sill, it is anticipated that the air quality will only be affected within the immediate construction area, and only during the period of construction. Aside from short-term emissions generated by construction equipment, no impacts on air quality are expected. The vehicle/boat emissions are expected to be minor and temporary during construction which is anticipated to be up to 5 months of "in-water" construction plus up to an additional month for planting of the wetlands. Following construction, the structures will be passive and will not generate any additional air pollutants. There will be no permanent impacts to air quality as a result of this project.

4.7 CLIMATE

The Proposed Action is not expected to alter the climate at Smith Island or elsewhere.

4.8 BIOLOGICAL RESOURCES

4.8.1 Vegetation

Wetlands

The entire LOD, including the beneficial use site (5 acres), 25 foot buffer around the beneficial use site, and placement area at the north jetty tie-in, conservatively encompasses approximately 7 acres. Impacts to existing wetlands are expected to be minor and temporary due to local increases in turbidity during construction and disturbance from placement (by covering up wetlands with dredged material). All wetlands disturbed within the LOD will be replanted with native coastal wetland species. Within the 5 acre placement site, wetlands will be planted with native species found in coastal wetland systems as a combination of high and low marsh and hammocks as discussed in Section 2.4.

Additionally, to reduce the spread/encroachment of any invasive plant species, the beneficial use site will be graded to appropriate wetland elevations and planted as soon as feasible to allow native plant species to establish themselves.

It is important to note that the existing wetlands in this area are at risk due to the rapidly eroding shoreline which is converting the wetlands to shallow water habitat (the shoreline erodes in this area at a rate of 1.5 to 9.3 feet per year). There will be overall a net positive benefit to wetlands as the Proposed Action will restore and enhance approximately 5 acres of wetlands as well as protect up to 15 acres of wetlands in the area.

Submerged Aquatic Vegetation

As discussed previously, persistent and extensive beds of SAV exist at the mouth of Sheep Pen Gut and along the shoreline south of the existing channel as stated by NOAA (May 4, 2015 email correspondence, see Appendix D) and MD DNR in letter correspondence (May 12, 2015).

SAV location and densities vary annually. Based on Virginia Institute of Marine Science (VIMS, 2016) SAV surveys, from 2012-2015[3], SAV has not been present within any of the Proposed Action footprints of the jetties, sill, or channel. Figure 4-1 depicts SAV location and densities in the project area for the most recent year data is available, which is 2015. Over the period of record (2002-2015) SAV in low densities was present in 2008-2011 (Figure 3-2). The last time any SAV was present in any of the Proposed Action project footprints was 2011 in which low densities occurred within the channel and proposed northern jetty. The encroachment of SAV into the channel in this time period occurred because the channel has not been maintained to its authorized depth of 6 feet. Figure 4-2 depicts SAV presence and density in the project area annually from 2011-2014.

A continuous stone structure along the shoreline would reduce water circulation and could impact SAV. Therefore USACE added notches to the proposed stone sill to improve circulation and flow of water thus minimizing impacts to SAV (May 4, 2015 email correspondence see Appendix D). Additionally USACE aligned the stone sill so that it follows the existing fringe alignment of the existing SAV footprint and will adhere to TOY restrictions and not conduct any construction from April 1-October 31 when SAV is dormant to minimize SAV impacts.

A likely positive impact from the Proposed Action to SAV would be from the stabilization of the shoreline provided by the stone sill. The expected reduction in sediment loading will improve water clarity offshore and in the interior creeks, possibly benefiting SAV.

In summary, since SAV has not been present in any of the Proposed Action footprints since 2012 and USACE will be implementing designs and TOY restrictions to minimize impacts to the SAV USACE has determined that there are no expected long-term impacts to SAV. USACE has been in discussion with the sponsor and MDDNR to discuss post-construction monitoring of SAV presence in this area.

[3] 2016 data was not available at the writing of this document.

Figure 4-1. SAV in the Project Vicinity-2015

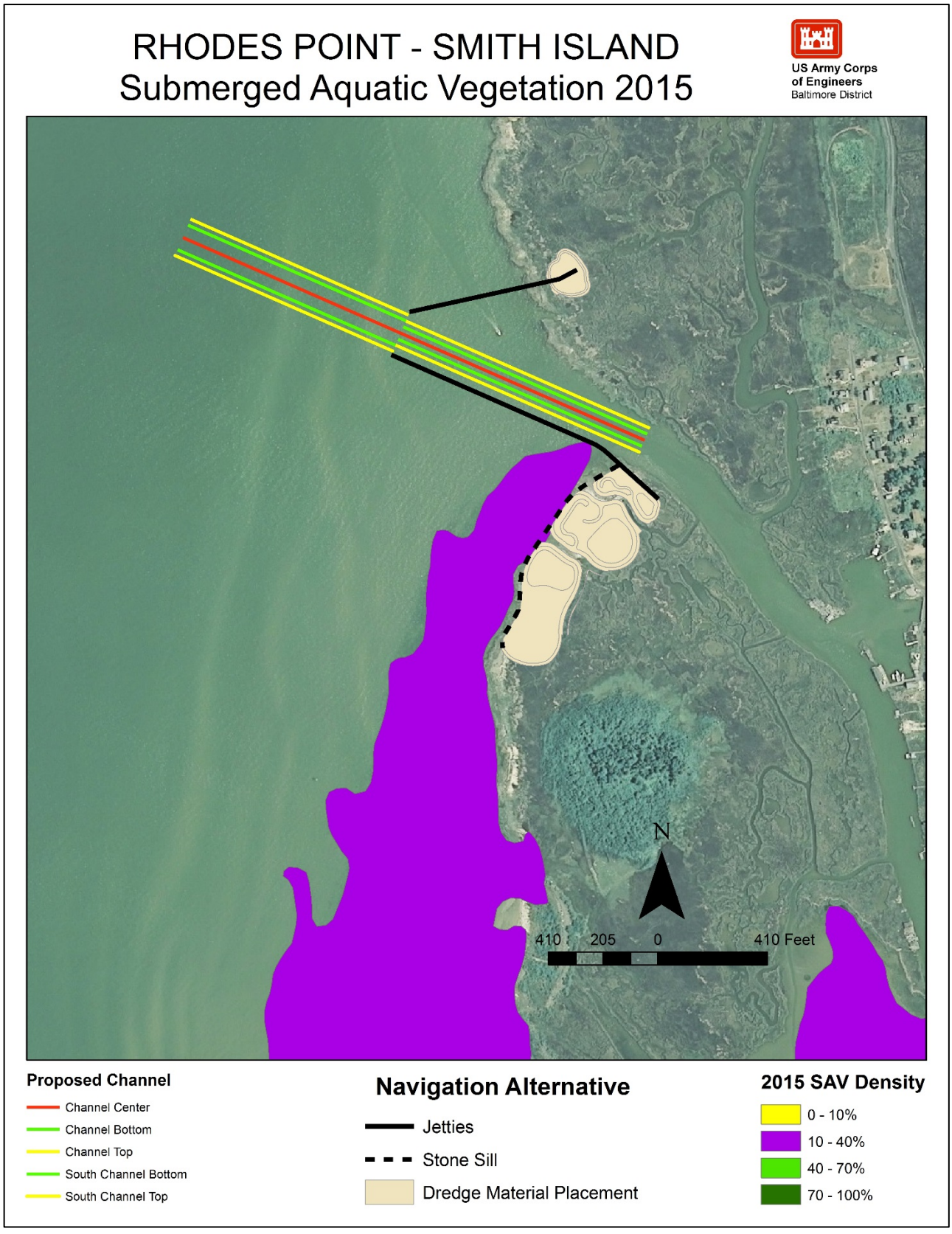
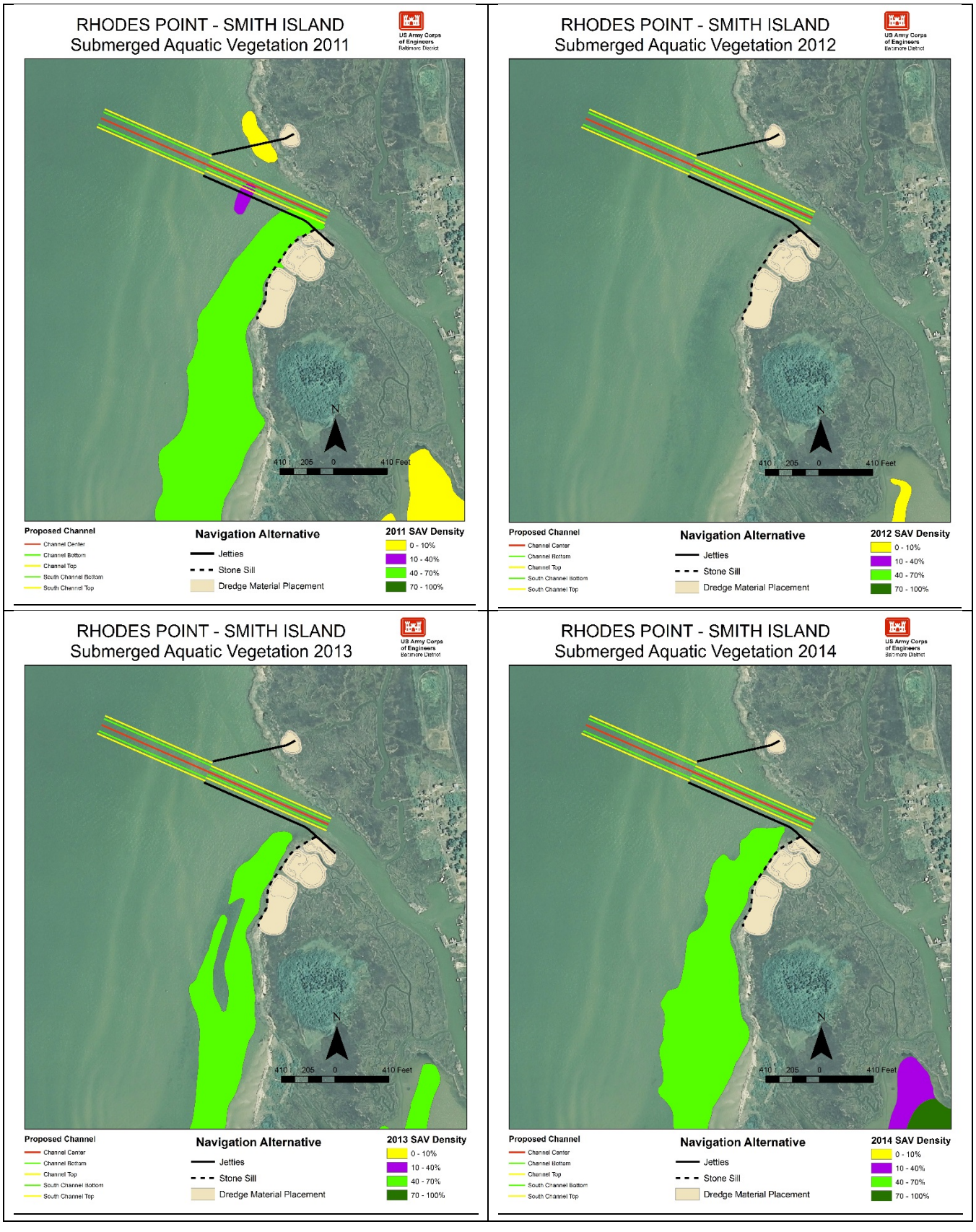


Figure 4-2. SAV Location and Density in the Project Vicinity: 2011-2014.



Upland Vegetation

The proposed jetties and stone sill are to be located offshore of Rhodes Point, and no construction for the project or access to the site will take place on any upland area. Therefore, no upland vegetation will be impacted by the proposed construction.

4.8.2 Plankton

The footprint of the proposed construction project could displace phytoplankton and zooplankton inhabiting the water columns where structures will be placed. However, these organisms will relocate and the overall impact on the food chain will not be significant.

4.8.3 Benthos and Oyster Beds

Short-term minor impacts to the benthic community are expected. The proposed construction of jetties with a realigned channel and stone sill will alter the existing project footprint. Proposed Action features (sill, jetties, and channel) have a combined footprint of 4.55 acres. The placement of dredged material behind the stone sill to be beneficially used to restore and enhance a wetland will convert approximately .86 acres of shallow water habitat to wetlands. As discussed previously the rapidly eroding shoreline is converting wetlands in this area to shallow water habitat (the shoreline erodes in this area at a rate of 1.5 to 9.3 feet per year), therefore, this shallow water habitat was previously wetlands.

The placement of the permanent jetty and stone sill structures on the bay bottom will displace local bottom dwelling organisms, but the impacted bottom area is so small in relation to the total bay bottom area that the overall impact to benthic life will be minimal. The proposed project could disturb shellfish harvesting areas, but the impacts will be minimal and no long term impact on shellfish populations is expected.

The realigned channel will extend perpendicularly out from the shore into an area not currently impacted by the authorized channel (a footprint of approximately 0.37 acres of previously undisturbed bottom will be dredged). Conversely, most of the footprint of the current authorized navigation channel will no longer be impacted by maintenance dredging or vessel traffic since it is being proposed to no longer be maintained (See Figure 2-1). Organisms with the ability to vacate the area (e.g., mobile invertebrates such as blue crabs) would be able to re-colonize the channel after the dredging is completed. Those organisms unable to vacate the area would likely be lost during conveyance in the hydraulic pipeline to the placement site. Other benthic organisms are likely to repopulate the channel within two years following dredging.

As discussed previously, MD DNR indicated that there is a designated natural oyster bar (NOB 36-2) located approximately 4,000 feet west of the mouth of Sheep Pen Gut. The existing channel is located within 2,000 feet of the southern border of this NOB. The realigned channel is located farther away within 2,800 feet of the southern border of this NOB (Figure 3-3). MD DNR noted in a letter dated May 12, 2015 that no hydraulic dredging should be performed within 500 yards (1,500 feet) of an NOB from 1 June through 30 September of any year. The proposed dredging activities are located more than 500 yards away from the designated oyster bars so no adverse impacts are expected to oysters from dredging (Appendix D). USACE will adhere to these TOY restrictions for oysters.

The planting of wetland plants along the shore behind the stone sill is expected to restore or enhance approximately 5 acres of additional wetlands in the project area. This area will provide habitat beneficial to benthic organisms, including shellfish.

4.8.4 Fish

Although the proposed construction of jetties with a realigned channel and stone sill will alter the existing project footprint, it is not expected that project construction and components will adversely impact resident fish species, long-term. With the existing navigation project, periodic maintenance dredging takes place. The dredging impacts with the realigned channel are not expected to impact resident fish species beyond what occurs with the existing maintenance dredging. Because the food web in the project impact area is not expected to be adversely impacted and because fish species have the mobility to respond rapidly to possible displacement effects, project construction is not expected to adversely impact fish species.

The planting of wetland plants along the shore behind the stone sill is expected to restore and enhance approximately 5 acres of wetlands in the project area (see Section 4.8.1). This area will provide habitat beneficial to species that provide sustenance to resident fish species. Notches in the stone sill, have been incorporated into the design to allow for fish passage and adequate flushing for wetland habitat for fish. During a site visit (April 14, 2016) USFWS recommended that the design include some channels in the wetlands where dredged material will be placed. USACE has included this recommendation in the Proposed Action minimizing impacts to fish and allowing them access to the wetland. Minor and short-term increases in turbidity will occur in the project area during construction. The turbidity effects are expected to be temporary and localized and will have only a minor adverse impact on fish species and the aquatic ecosystem. There are no long-term impacts to fish resources.

EFH

The Baltimore District evaluated impacts of the proposed project on EFH, and concluded that the project would comply with the provisions of the Magnuson-Stevens Act, as amended (Appendix A).

In coordination with NMFS, it was concluded that of the 10 species with EFH designated in the study area vicinity, only 2 required consideration in the EFH Impacts Assessment (K Beard, personal communication, May 6, 2015). These are juvenile and adult summer flounder, and juvenile and adult bluefish.

Adult and juvenile bluefish and summer flounder occur in the proposed project area waters. The Proposed Action will restore and enhance 5 acres of wetlands while minimizing loss of about 2.25 acres of shallow water habitat.

The Proposed Action will also provide a more stable habitat for future SAV beds and fish habitat as it will reduce the turbidity from the eroding face of the wetlands along the shoreline. The impacts to the EFH in the project area are anticipated to be minor. The wetland will support juvenile summer flounder and bluefish as well as a wide variety of their forage species. The restoration of this habitat is expected to compensate somewhat for loss of open water and benthic habitats.

Maryland tidal waters contain areas of SAV habitat designated as Habitat Area of Particular Concern (HAPC). Anticipated impacts to SAV from the Proposed Action are expected to be minor and are discussed in Section 4.8.1.

Sill and jetty construction, and hydraulic dredging and placement of dredged material landward of the sill will comply with state (MDE) water quality standards, and should result in only short term, minor perturbations to local water quality, and minimal impacts to individuals of both summer flounder and bluefish.

After reviewing relevant fisheries information and analyzing potential project impacts, USACE has determined that the Proposed Action will not have an adverse impact on EFH, or on species with designated EFH in the project area. Overall, direct, secondary, and cumulative impacts to EFH and associated species will be minimal. The project would protect and restore wetland habitat for species managed under the Magnuson-Stevens Act. Coordination with NFMS is ongoing to confirm their concurrence with this final EFH assessment.

4.8.5 Birds

Although some temporary noise impacts may disturb any resident birds, these impacts will be limited to the construction period, and will most likely only cause the birds to go to other parts of Smith Island during construction.

Positive effects include the approximately 5 acres of restored and enhanced wetlands that will provide habitat beneficial to resident bird species and the structures (jetties and sill) are likely to become resting areas for shore birds.

Minor and short-term increases in turbidity will occur in the project area during construction. The turbidity effects are expected to be temporary and localized and will have only a minor adverse impact on some bird species. For example, prey such as fish may move out of area during construction.

MD DNR (letter dated June 18, 2016) noted that disturbance of colonial waterbirds includes actions such as cutting nest trees, cutting nearby trees, or construction that causes abandonment of chicks by adults. The Proposed Action will not be cutting any trees or shrubs. To avoid abandonment of chicks MD DNR recommends a protection area of 0.25 mile radius from the colony's outer boundary. Within this area three zones of protection will be established: Zone 1 extends from the outer boundary of the colony to a radius of 330 feet, Zone 2 extends from 330 feet to 660 feet in radius, and Zone 3 extends from 660 feet to 0.25 mile (1320 feet). During the cumulative breeding season for these heron species, 15 February through 15 August, all human entry into Zone 1 will be restricted.

The closest waterbird colony site is the shrub clump just south of the mouth of Sheep Pen Gut (Figure 3-5). This colony site is just within the 0.25 mile buffer referenced the guidelines above. The Proposed Action will be done entirely by water (with the exception of grading the dredged material, planting at the placement sites, and construction activities where the jetties are tied into the land at the tie-in location). MD DNR noted that with the water based work strategy, there is little likelihood of adverse impact from the proposed project. MD DNR also indicated that during the project no access should be allowed to the colony site (the high marsh ring that surrounds the colony and the shrub clump (dark green) in Figure 3-5) (D. Brinker, personal communication, December 15, 2016). USACE will adhere to these restrictions to avoid impacts to colonial waterbirds.

There are no long-term impacts expected to bird resources. Short-term, minor impacts are expected from increased turbidity and noise during construction which may disturb nearby birds. Additionally, the project will provide permanent positive impacts to birds as the stone sill will stabilize the shoreline, thus stabilizing and protecting important bird habitat as well as the restoration of wetlands for use by birds.

4.8.6 Reptiles

Although the proposed construction of jetties with a realigned channel and stone sill will alter the existing project footprint, it is not expected that project construction will have any adverse long-term impacts to resident or transient reptile species.

Short-term, minor impacts are expected from increased turbidity and noise during construction which may disturb nearby reptiles. Additionally, the project will provide permanent positive impacts to reptiles as the stone sill will stabilize the shoreline, thus stabilizing and protecting reptile habitat.

4.8.7 Mammals

Although the Proposed Action will alter the existing project footprint, it is not expected that project construction will adversely impact resident mammal species. Impacts will be temporary and minor in nature. Noise from construction, for example, could cause mammals to relocate from the area temporarily.

Restoring 5 acres of wetlands will provide habitat beneficial to mammal species as well as provide a food source for resident mammals such as the meadow vole river otter, mink, and red fox.

4.9 RARE, THREATENED AND ENDANGERED SPECIES

To determine if there will be effects to ESA listed species USACE considered the following factors as listed in Table 4-1.

Table 4-1. ESA considerations for Proposed Actions

	Sea Turtles (loggerhead, Kemp's Ridley, Green, Leatherback)	**Sturgeon (Atlantic)**
Consideration of effects to species from Proposed Action		
Injury or mortality due to capture, impingement or entrainment in a dredge	No effect due to construction occurring outside of TOY restrictions.*	No effect due to construction occurring outside of TOY restrictions.
Effects of increased suspended sediment through dredging and disposal	No effect due to construction occurring outside of TOY restrictions.	No effect due to construction occurring outside of TOY restrictions.
Impacts of dredge and dredged materials disposal vessels	No effect due to construction occurring outside of TOY restrictions.	No effect due to construction occurring outside of TOY restrictions.
Potential impacts of change in vessel traffic in the widened channels	No effect as this channel has been authorized to this depth since 1982.	No effect as this channel has been authorized to this depth since 1982.
Suspension of contaminated sediment	N/A	N/A
Discharge of any other pollutant	N/A	N/A

Loss of prey	No effect. Based on the location of the project in a navigation channel that is often disturbed by vessel traffic and subject to maintenance dredging, it is not expected to be suitable habitat for opportunistic foraging by sea turtles	No effect. Based on the location of the project in a navigation channel that is often disturbed by vessel traffic and subject to maintenance dredging, it is not expected to be suitable habitat for opportunistic foraging by sturgeon.
Impacts to habitat or conditions that make affected water bodies less suitable for these species	No effect due to TOY restrictions	No effect due to TOY restrictions

***** No work will be done during the TOY restrictions of April 1 to October 31 with the possible exception of the planting of native plants on the dredged material.

USACE has determined that the Proposed Action will have no effect on ESA-listed species or critical habitat for Atlantic sturgeon and the four endangered species of turtles. On December 20, 2016, USACE discussed this finding with NMFS and they agreed that there will be no effect to these species as long as TOY restrictions are adhered too (April 1 through October 31) (personal communication, Brian Hopper, NFMS December 20, 2016.

4.10 CHESAPEAKE BAY CRITICAL AREA, MARYLAND COASTAL ZONE, AND COASTAL BARRIER RESOURCES ACT

The project is designed to improve the federal navigation channel (Sheep Pen Gut) and the eroding shoreline, to include valuable wetland habitat. The proposed work has been coordinated with the State's Chesapeake Bay Critical Area Commission (letter dated June 1, 2015 Appendix D). Any areas disturbed above mean high water (MHW) will be restored and replanted as a part of this project so USACE has concluded that this project is consistent with the CZMA and the Critical Area Law similar to other USACE dredging projects. It is anticipated that the Chesapeake Bay Critical Area Commission would concur with USACE's finding upon review of this EA once provided for public review.

The project does not fall into a designated CBRS therefore there are no impacts to these resources.

4.11 CULTURAL RESOURCES

MHT indicated in a letter dated May 15, 2015 that there are no known historic properties or archeological resources in the project area (Appendix D), thus no adverse impacts are anticipated to this resource. If any cultural resources are discovered during construction, work will stop until the appropriate coordination with the SHPO would be conducted.

4.12 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES

The Smith Island area of the Chesapeake Bay was evaluated for HTRW using the EPA's TRI and RCRIS databases, CERCLIS and NPL in 2015. No HTRW sites were identified on Smith Island. If any HTRW are encountered work at the site would cease until, appropriate coordination with MDE will occur.

4.13 AESTHETICS AND RECREATION

There would be increased boat traffic at the project site during construction. Recreational activities such as fishing, boating, hunting, and bird-watching may be temporarily adversely impacted during the construction of the project. After construction is completed, recreational activities would resume. No long-term adverse effects are expected. Positive impacts to recreation are anticipated as recreational boaters will be able to navigate the waters more safely.

The proposed jetties would be constructed to a crest of +5 feet MLLW and the sill will be constructed to a crest height of +3 feet MLLW. Construction of the project will alter the viewshed at Rhodes Point. This impact will be permanent. The aesthetic impact is not anticipated to block any of the viewshed from any nearby landowners. Overall, this impact is anticipated to be minimal as there are few houses within the viewshed of this project. The stone sill will have a low profile and will stabilize 850 feet of shoreline allowing for a positive impact to aesthetics as there will be less sediment entering the nearby waters. Additionally, there will be a temporary and minor aesthetic impact within the area of dredging due to construction activities.

4.14 TRANSPORTATION AND TRAFFIC

The existing entrance channel of the federal channel would be realigned to eliminate the turn in the channel to the left. The realignment of the federal channel would be a positive, permanent, and direct long-term impact. Proper communication with local boaters and the US Coast Guard (USCG) of the realignment would prevent this change from causing any impact to boater safety.

The capacity of the existing road systems on Smith Island would not be directly impacted by the proposed project as construction will be entirely from the water.

Dredging activities will be restricted to the channel and will require the use of a hydraulic dredge coupled with a pipeline to convey the dredged material to the placement site. The entire portion of the pipeline in the channel will be marked and lighted in accordance with U.S. Coast Guard regulations. The presence of the pipeline in the water would be a direct effect. The project activities would be short-term, and the temporary presence of dredging equipment is not expected to significantly impact existing transportation routes.

Notice to mariners of the time of the dredging, construction, and placement of the material would be coordinated through the USCG.

The proposed dredged material placement site is adjacent to the Sheep Pen Gut Navigation Channel and is not in any navigation route taken by inhabitants of Smith Island. It is remote from concentrations of human activity. Furthermore, it is in a shallow, high-energy area unattractive to recreational boaters.

4.15 NOISE

There would be no substantial, long-term, adverse noise impacts from the construction of the Proposed Action. Short-term noise caused by heavy construction equipment would cause minor disturbances to local residents and wildlife in the area. Construction would be limited to daylight hours, the 8 a.m. to 5 p.m.

Noise during construction will be produced by construction equipment, such as dredges and barges and grading equipment to get the dredged material to the planned elevations.

Following construction, grading equipment will be removed. No long-term noise impacts are expected, except during periodic maintenance dredging of the channel.

4.16 SOCIOECONOMIC CONDITIONS

4.16.1 Social and Cultural

There are no anticipated negative impacts to the social and cultural well-being of the residents of Smith Island.

4.16.2 Economic Setting

The economic benefits of an improved navigation channel and jetties in the Sheep Pen Gut channel are defined by reducing operating costs and damages that would be experienced in the future without a project. These would be indirect effects from the project. It is assumed that with a project, all boats currently using the channel will be able to pass through for a longer period of time. Therefore, it is anticipated that there will be a beneficial, indirect impact to economics and employment in the area.

An indirect effect of the project would be support to the local area's economy. Since many residents of the area are dependent on the federal navigation channel for commercial fishing, the Proposed Action is expected to have a net positive effect on the local economy and help support the economic prosperity of its citizens over the short and long-term.

4.17 ENVIRONMENTAL JUSTICE

The Proposed Action is not expected to result in disproportionate adverse impacts to human health, or environmental effects on minority or low-income populations. All populations will benefit from the Proposed Action.

4.18 CHILDREN'S HEALTH AND SAFETY

Access to the project site would be restricted during construction, so as to ensure the safety of children and others. No children would suffer disproportionately for environmental health or safety risks caused by the proposed project.

4.19 FLOODPLAIN PROTECTION

The proposed site is located along the shoreline and within the tidal floodplain. Work would help deter and possibly prevent future erosion and protect area property in Rhodes Point.

5 CUMULATIVE IMPACTS

The CEQ regulations (40 CFR 1500-1508) implementing the procedural provisions of NEPA of 1969, as amended (42 U.S.C. 4321 et seq.), define cumulative effects as, the impact on the environment which results from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7).

The Proposed Action is not anticipated to result in cumulative adverse effects. Actions by federal and non-federal entities that are (1) in the reasonably foreseeable future or can be reasonably forecasted, (2) planned, or (3) on-going in the study area are summarized below with a brief description of potential impacts.

Periodic maintenance dredging is conducted around Smith Island in small navigation channels including Twitch Cove and Big Thorofare (Figure 5-1). The last time these channels were dredged was 2009. Currently, USACE has a solicitation out for the maintenance dredging of these channels and the contract is planned to be awarded in early 2017. Dredging will likely not begin until the fall of 2017 (due to TOY restrictions). Maintenance dredging of the federal channels in these locations would result in displacement of fish and benthic resources immediately after dredging. These dredging projects will cause only temporary bottom disturbance and loss of benthos.

The USFWS Fog Point Living Shoreline Restoration Project, at the Glenn Martin National Wildlife Refuge on the northern half of Smith Island (see Figure 5-1), began in July 2015 and was completed in June 2016. Construction of a living shoreline will help protect nearby Smith Island communities from the effects of intense storms and sea-level rise, as well as wildlife and habitat at Glenn Martin National Wildlife Refuge. The project is supported by federal funding from the Hurricane Sandy Disaster Relief Act. This project constructed 20,950 feet of living shoreline to stabilize a highly vulnerable shoreline at Martin National Wildlife Refuge and directly protects over 1,200 acres of quality tidal high marsh, SAV and clam beds. https://www.fws.gov/hurricane/sandy/projects/FogPoint.html. Further, the dredged material from the Twitch Cove and Big Thorofare federal navigation channels will be beneficially used to restore dune and wetland habitat on Swan Island, which is part of the Glenn Martin National Wildlife Refuge. The material on Swan Island will be contained and planted for stabilization.

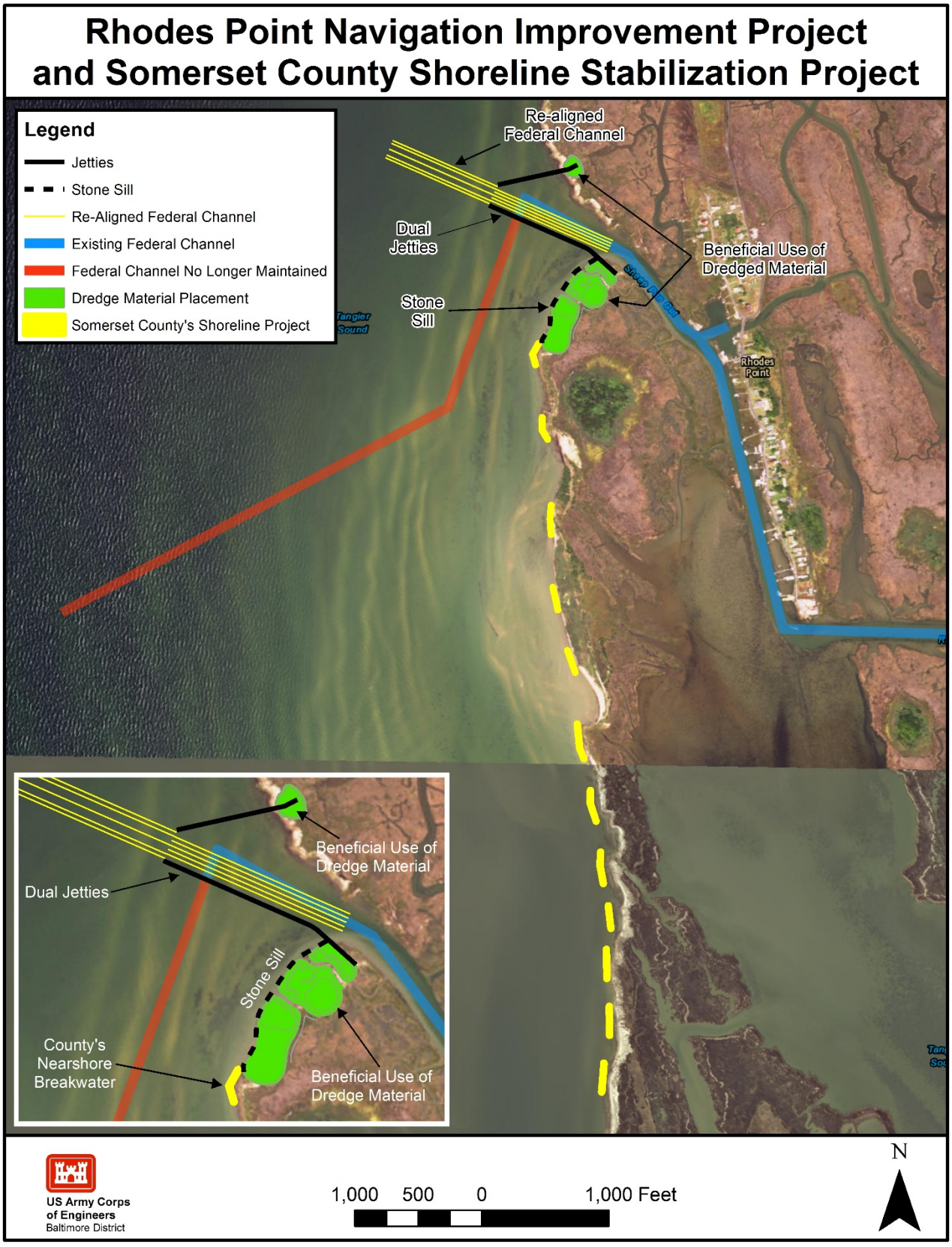
In early 2017 Somerset County completed construction of a living shoreline at Rhodes Point (Figure 5-2). Overall, the project should have positive environmental benefits given the historic loss of 211 acres of Hog Neck Peninsula and associated wetlands. The project provides shoreline erosion control to a shoreline that was eroding 1.5 to 9.3 feet a year, and prevent breaches of the Hog Neck Peninsula that protects the existing Rhodes Point community and the extensive SAV beds in the lagoon landward of the Hog Neck project shoreline. For this project the county applied for and received a tidal wetlands license from MDE which includes some overlap with the project area for the proposed action for this EA.

The material dredged from the various other USACE projects in the Bay is placed at other sites, versus the site laid out in the Proposed Action. There is no action to utilize a single location for placing dredged material from these unrelated channels that would create a cumulative effect. The periodic dredging of the federal navigation channels in the Chesapeake Bay results in periodic minor turbidity and disturbance of fish and other aquatic organisms. Temporary reductions in benthos within a limited area could occur from consecutive or concurrent dredging/placement operations. Depending on the location to be dredged and the placement site, some disturbance of terrestrial wildlife may also occur during these activities.

These effects are not significant. The occasional disturbance of fish and wildlife does not inhibit their growth or population size. The turbidity produced is of short duration, and contributes very little sediment to the natural ebb and flow of sediments in the area. For these reasons, the Proposed Action would not contribute to any significant adverse cumulative impact on natural resources in the project area. Additionally, the Proposed Action would not pre-empt any planned or ongoing actions in the area. Based on the minor nature of the impacts associated with the previous dredging of the proposed project, the current dredging is not expected to contribute to adverse cumulative impacts. The beneficial cumulative impact of the proposed action are stabilizing a portion of shoreline of a rapidly eroding area (Smith Island) and navigation improvements to the small channel of the Proposed Action will be connecting to a larger network of navigation channels in and around Smith Island.

Figure 5-1. Fog Point Living Shoreline Restoration Project Location

Figure 5-2. Somerset County Living Shoreline Project



6 COORDINATION, PUBLIC REVIEW AND COMMENTS

6.1 RESOURCE AGENCY COORDINATION

Coordination began with a Study Initiation letter distributed on April 1, 2015 to the Maryland Department of Planning State Clearinghouse, Chesapeake Bay Program, Maryland Department of Housing and Community Development, MD DNR, Chesapeake Bay CAC, MDE, NOAA, USEPA, NMFS, Maryland Waterman's Association, NRCS-USDA, USFWS, Chesapeake Bay Foundation, Senator Mikulski, Senator Cardin, Representative Harris, Governor Larry Hogan, MD State Senator Mathias, MD Delegate Otto, US Geological Survey, Maryland Geological Survey, Mid Atlantic Fisheries Council, Chesapeake Marshlands NWR Complex, various Smith Island organizations, and various Somerset County agencies. For the full list of agencies and persons consulted see Appendix D.

A coordination letter was sent to the USFWS on April 1, 2015 regarding Section 7 Endangered Species Act and Fish and Wildlife Coordination Act. A letter was sent to NMFS on April 1, 2015 regarding EFH and Section 7 of the Endangered Species Act and another letter was sent to MHT on April 1, 2015 regarding Section 106 of the National Historic Preservation Act determination. A letter was sent to MDE and MD DNR as well requesting information on resources under their purview on April 1, 2015. All of these coordination letters and the Study Initiation Notice are included Appendix D.

A Notice of Availability (NOA) announcing the availability of the draft EA and FONSI is expected in the summer of 2017. It is expected that the Proposed Action will result in a FONSI and an Environmental Impact Statement will not be required.

6.2 PUBLIC VIEWS AND RESPONSES

This EA will be released for public review prior to signing of a FONSI and advertisement for construction. A complete list of public comments and responses will be contained in Appendix C.

7 ENVIRONMENTAL COMPLIANCE OF THE PROPOSED ACTION

As part of the NEPA process, the applicable environmental laws and statutes were reviewed relative to the recommended plan for the Rhodes Point Small Navigation Study. The recommended plan was found to comply with all pertinent regulations, as presented in the Environmental Compliance Table. In addition, coordination with resource agencies via letters, phone conversations, and site visits led to issue resolution as noted throughout this document. All resource agency concerns have been addressed. Appropriate resource agency personnel will continually be coordinated with throughout both the detailed design process and construction. Avoidance, minimization and construction best management practices will be implemented to the fullest extent.

Federal Statutes	**Level of Compliance[1]**
Archeological and Historic Preservation Act	Full
Clean Air Act	Full
Clean Water Act	Pending
Coastal Barrier Resources Act	Pending
Coastal Zone Management Act	Pending
Comprehensive Environmental Response, Compensation and Liability Act	N/A
Endangered Species Act	Pending
Estuary Protection Act	Full
Farmland Protection Policy Act	Full
Federal Water Project Recreation Act	Full
Fish and Wildlife Coordination Act	Pending
Land and Water Conservation Fund Act	Full
Magnuson-Stevens Act	Pending
Marine Mammal Protection Act	N/A
National Historic Preservation Act	Full
National Environmental Policy Act	Pending
Resource Conservation and Recovery Act	N/A
Rivers and Harbors Act	Full
Water Resources Planning Act	Full
Watershed Protection and Flood Prevention Act	Full
Wild and Scenic Rivers Act	N/A
Executive Orders, Memoranda, etc.	
Migratory Bird (E.O. 13186)	Full

Protection and Enhancement of Environmental Quality (E.O. 11514)	Full
Protection and Enhancement of Cultural Environment (E.O. 11593)	Full
Floodplain Management (E.O. 11988)	Full
Protection of Wetlands (E.O. 11990)	Full
Prime and Unique Farmlands (CEQ Memorandum, 11 Aug 80)	Full
Environmental Justice in Minority and Low-Income Populations (E.O. 12898)	Full
Protection of Children from Health Risks & Safety Risks (E. O. 13045)	Full
Invasive Species (E.O. 13112)	Full
Recreational Fisheries (E.O. 12962)	Full
Chesapeake Bay Restoration and Protection (E.O. 13508)	Full

1 Level of Compliance:
Full Compliance (Full): Having met all requirements of the statute, E.O., or other environmental requirements for the current stage of planning.
Non-Compliance (NC): Violation of a requirement of the statute, E.O., or other environmental requirement.
Pending: Coordination is on-going. In most cases, full compliance involves review of draft document.
Not Applicable (N/A): No requirements for the statute, E.O., or other environmental requirement for the current stage of planning.

8 CONCLUSION

The Proposed Action is to implement a small navigation project, which includes realignment of a portion of the authorized dimensions of the federal navigation channel at Smith Island in Sheep Pen Gut, construction of jetties, and a stone sill. The dredged material and other suitable excavated material will be beneficially used for restoration, enhancement and protection of the wetland located south of the Sheep Pen Gut federal channel.

The purpose of the action is to provide navigation improvements to the federally maintained channel at Sheep Pen Gut. Although the primary purpose of the project is satisfied by the construction of the jetties and realignment of the navigation channel, secondary benefits will accrue from the beneficial use of the dredged material to stabilize the eroding shoreline along the western shore of Smith Island south of the Sheep Pen Gut Channel. This allows for restoration and protection of wetlands in this area.

The project is expected to have these benefits: improve navigable access to Chesapeake Bay from the Smith Island towns of Rhodes Point and Tylerton and protect the Sheep Pen Gut channel from shoaling. Secondary benefits are to restore and enhance the eroded wetland along the western shoreline of Smith Island south of the Sheep Pen Gut Channel.

The potential impacts to the environment associated with implementation of this navigation improvement project will occur over a relatively small area. It is anticipated that there will be minor, localized permanent impacts to water depths and circulation, sediment, aesthetics (viewshed), benthos, and vegetation due to the permanent placement of the structures. However, these impacts are small and considered minor within the study area. The affected resources impacted by these structures are expected to recover in the area.

Although the navigation channel, jetty, stone sill, and beneficial use placement site are permanent features the potential impacts to the environment associated with implementation of this navigation improvement project will occur over a relatively small area, will be minor, and most will be temporary in nature. These minor temporary impacts are expected to be associated with the construction of the project and its future maintenance. It is anticipated that there will be minor, temporary impacts to sediments and soils, water depths and water circulation, water quality, noise, air quality, plankton, shellfish, benthos, mammals, birds, fish, vegetation, reptiles, aesthetics (viewshed), navigation and recreation.

The project will produce a net beneficial impact to the environment through the beneficial use of the dredged material by restoring the eroding western shoreline of Smith Island and the stabilization of the wetlands landward of the shoreline. The restoration of this wetland area and stabilization is beneficial to the protection of the larger wetland system, the value and function of the wetlands, and the resources in the waterway including benthos, mammals, birds, fish and vegetative resources. The construction of the jetties is anticipated to have long-term beneficial impacts to the local economy, navigation, recreational boaters, and safety due to these structures reducing the erosion of the federal navigation channel.

The real estate interest identified to be acquired for this project is a Channel Improvement Easement that will affect two parcels at the jetty and placement locations. Coordination with the property owner is ongoing.

The No Action Alternative would have long-term negative impacts to water quality, aquatic resources, SAV, transportation, and socio-economics as the shoaling of the channels would hamper recreational and

commercial transportation in the area and increase turbidity within the water column thereby impacting SAV beds and aquatic resources.

Assessment of the proposed project indicates that there would be no significant adverse effect to the natural or human environment and the Proposed Action has greater benefits than the No Action Alternative. Based on this assessment USACE expects that a FONSI would be issued.

Given the small scale of the Proposed Action, minimal adverse impacts, and the localized nature of the project effects, it is not expected that the preparation of an Environmental Impact Statement for the proposed actions being considered will be necessary.

9 REFERENCES

CBP. 2016. Chesapeake Bay Field Guide: Birds. http://www.chesapeakebay.net/fieldguide/categories/category/birds. Accessed online 12 August 2016.

Chesapeake Fishing Adventures. 2016. All About Chesapeake Fishing Adventures [Cited 2016]. Available from: http://www.visitsmithisland.com/togo.html. Accessed December 9, 2016.

Custom Soil Resource Report for Somerset County, Maryland (Sheep Pen Gut and Rhodes Point). 2015. USDA-NCRS.

Evans, J., A. Norden, F. Cresswell, K. Insley, and S. Knowles. 1997. Sea Turtle Strandings in Maryland, 1991 through 1995. The Maryland Naturalist 41(1-2): 23-34.

Ewell Elementary School Webpage. 2016. Available from http://ees.somerset.k12.md.us/apps/pages/index.jsp?uREC_ID=269423&type=d&pREC_ID=645501. Accessed December 13, 2016.

Lippson, Alice Jane., and Robert L Lippson. Life in the Chesapeake Bay. Second edition. John Hopkins University Press, 1997

Lippson, Alice Jane. 1973. The Chesapeake Bay in Maryland: An Atlas of Natural Resources. The Johns Hopkins University Press, Baltimore.

National Marine Fisheries Service (NMFS). 2000. Summary of Essential Fish Habitat (EFH) and General Habitat Parameters for Federally Managed Species. https://www.greateratlantic.fisheries.noaa.gov/hcd/efhtables.pdf.

National Marine Fisheries Service (NMFS). 2009. Agency correspondence from NMFS to USACE on 7 May 2009 on the "2009 EA for Maintenance dredging of Twitch Cove and Big Thoroughfare, and Rhodes Point to Tylerton Federal Navigation Channels.

Orth, R., J., van Montfrans, R.N. Lipcius, and K.S. Metcalf. 1996. Utilization of seagrass habitat by the blue crab, Callinectes sapidus Rathburn, in Chesapeake Bay: A review. In Kuo, J., R. Phillips, D. Walker, and H. Kirkman (eds.), Seagrass Biology: Proceedings of and International Workshop: 213-224. University of Western Australia.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online WWW]. Mispillion Series. 2002a. USDA-NRCS. https://soilseries.sc.egov.usda.gov/OSD_Docs/M/MISPILLION.html. Accessed 27 May 2015.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions [Online WWW]. Transquaking Series. 2002b. USDA-NRCS. https://soilseries.sc.egov.usda.gov/OSD_Docs/T/TRANSQUAKING.html. Accessed 27 May 2015.

Smith Island Cultural Center. 2016. http://smithisland.org/. Accessed December 9, 2016.

USACE. 2003. Rhodes Point, Smith Island, Maryland. Section 107 Feasibility Report and Integrated Environmental Assessment. January.

USACE. 2009. Environmental Assessment for Maintenance dredging of Twitch Cove and Big Thoroughfare, and Rhodes Point to Tylerton Federal Navigation Channels.

USFWS. 2006. Chesapeake Marshlands National Wildlife Refuge Complex Comprehensive Conservation Plan. https://www.fws.gov/refuge/Blackwater/what_we_do/finalccp.html. Accessed 12 August 2016.

USFWS. 2015. Waterfowl, Population Status, 2015. http://flyways.us/sites/default/files/uploads/statusreport2015_final_7-23-15.pdf. Accessed 27 May 2015.

USFWS. 2013. Glen Martin National Wildlife Refuge website. https://www.fws.gov/refuge/Martin/wildlife_and_habitat/index.html Accessed 27 May 2016.

Virginia Institute of Marine Science. 2016. SAV in Chesapeake Bay and Coastal Bays, SAV Maps. http://web.vims.edu/bio/sav/index.html. Accessed December 2016.