APPENDIX E:
ESSENTIAL FISH HABITAT ASSESSMENT OCTOBER 21, 2020

ESSENTIAL FISH HABITAT ASSESSMENT

Oregon Inlet Fishing Center
Dare County, North Carolina
Motts Creek, SC Waters
HUC 0301020515

Prepared By:
Quible & Associates, PC
PO Drawer 870
Kitty Hawk, NC 27949
252-261-3300

Prepared For:
Cape Hatteras National Seashore
National Park Service
1401 National Park Drive
Manteo, NC 27954

Project Number 18078
October 21, 2020 Revision

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APPENDICES

I. INTRODUCTION

This Essential Fish Habitat (EFH) Assessment has been prepared by Quible & Associates, P.C. (Quible) as a component of a National Environmental Protection Act (NEPA) document for proposed development activities associated with the Oregon Inlet Fishing Center (OIFC). Please refer to **Figure 1-**Relevant Portion of USGS Topographic Quadrangle-Oregon Inlet for site location.

The OIFC is located on federal land managed by the National Park Service (NPS). NPS has a lease with OIFC, LLC to manage the fishing center and perform proposed upgrades to the facility. The NPS and OIFC propose to replace the existing structures with sustainable structures adapted to sea level rise and storm surge, and to conduct other site improvements to modernize premises and to support the replacement buildings. The replacement buildings and upgraded infrastructure would improve visitor experience, formalize existing informal parking in order to meet visitor demand, and provide for improved and safer marine traffic flow with a marine fuel dock outside of the marina basin. Proposed activities include the dredge of portions of Motts Creek (43,717 sf) and the man-made marina basin (83,285 sf).

An EFH assessment was requested by the US National Marine Fisheries Service (NMFS) in response to a consultation request submitted on January 28, 2020 related to the redevelopment of the OIFC. An EFH assessment was submitted via email on March 23, 2020. This document is an update to the March 20, 2020 report and includes a discussion of dredge activities (which were not proposed originally) as well as information obtained during an April 28, 2020 SAV Survey and September 8, 2020 sampling and analysis (Vibracore) of the substrate within the areas proposed to be dredged.

As defined in the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), EFH's are considered "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" and include wetlands, coral reefs, Submerged Aquatic Vegetation (SAV) and Rivers (Estuaries). High priorities for EFH management are areas referred to as Habitat Areas of Particular Concern (HAPC).

II. PROJECT SUMMARY

The Oregon Inlet Fishing Center (see attached **Relevant portion of USGS Quadrangle Oregon Inlet with the Site Identified**) has several vulnerable, dated and deteriorating structures and infrastructure that need significant repair and/or replacement. The NPS through its lessee (OIFC, LLC), are proposing to improve facilities by constructing new resilient buildings and infrastructure that would enhance the experience of the visiting public by improving and increasing parking, pedestrian connectivity, expanding retail and dining options, provide for improved and safer marine traffic flow with a marine fuel dock outside of the marina basin, and offer new recreational activities and services.

Currently the Site consists of a main retail building (6,577 sq. ft.), marina (~ 1,580 linear ft with existing concrete and wood bulkhead with 61 existing wet slips), four storage buildings (496 sq. ft.), an exhibit building (168 sq. ft.), asphalt parking area (~ 197 spaces), automobile fuel station booth (128 sq. ft.), a portion of a waste water system, and a fuel system consisting of three 10,000 gallon ConVault above ground storage fuel tanks and associated and existing dispensers serving both boats and motorists.

The purpose of this project is to improve visitor experience and safety by providing appropriate, safe and upgraded facilities and infrastructure while promoting the protection of natural resources

and processes.

The proposed project includes the following activities in general order of construction (see attached Proposed Conceptual Plan-**Figure 2**):

- Dredge portions of Motts Creek and install 950 sf transient fuel dock
- Replace fuel delivery system and reconfigure in slip marina fueling
- Construct new parking and reconfigure existing spaces
- Raze existing retail building
- Construct a new Oregon Inlet Fishing Center Building (+/- 6,393 sf footprint)
- Expand existing onsite wastewater system
- Reconfigure existing slips to increase from 61 to 67 wet slips.
- Construct a new fish cleaning building (+/-1,880 sf).
- Construct an open-air events pavilion (+/-3,400 sf).
- Enhance stormwater management
- Replace automobile fueling island

Impacts to public trust waters associated with the proposed development are limited to the in-water repairs of the marina (maintenance and repairs to finger piers and concrete bulkhead are being conducted under a Categorical Exclusion) and the construction of a new +/- 950 sf transient fuel dock (10 ft wide by 90 ft long with access pier as shown on attached **Figure 2**) and dredge of portions of Motts Creek (43,717 sf includes marina entrance) and the man made marina basin (83,285 sf) to a project depth of -8.0 feet MLLW. All proposed land-based construction will be conducted with appropriately permitted and constructed sedimentation control measures as approved by the North Carolina Department of Environmental Quality (DEQ) Division of Energy, Mineral and Land Resources (DEMLR).

III. MAGNUSON-STEVENS ACT AND THE FISHERIES MANAGEMENT COUNCILS

The Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 As amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act Public Law 10-479) is commonly referred to as the Magnuson-Stevens Act (Act) and is *"An Act to provide for the conservation and management of the fisheries, and for other purposes".* Further 104-297 (6) of the the "Act", provides, "*A national program for the conservation and management of the fishery resources of the United States is necessary to prevent overfishing, to rebuild overfished stocks, to insure conservation, to facilitate long-term protection of essential fish habitats, and to realize the full potential of the Nation's fishery resources*." The Act establishes Regional Fisheries Management Councils *(104-297 (7)) "to promote the protection of essential fish habitat in the review of projects conducted under Federal Permits, licenses, or other authorities that affect or have the potential to affect such habitat".*

The project area is located on the estuarine side of the Outer Banks approximately one mile north of Oregon Inlet. U.S. Regional Fishery Management Councils (FMCs) for the project area include the Mid-Atlantic FMC, South Atlantic FMC and Federally Implemented Fishery Management Plans (FIFMPs) Atlantic Highly Migratory Species (HMS):

Fishery Councils	Fishery Management Plans	Example Species
SAFMC	Shrimp	White, Pink, and Brown shrimp, Spiny lobster
ASMFC	Red drum	Red drum
MAFMC	Bluefish	Bluefish

MAFMC	Summer flounder, Scup, Black sea bass	Summer flounder, Black sea bass
SAFMC	Coastal Migratory Pelagics	King/Spanish mackerel and Cobia
SAFMC	Dolphinfish/Wahoo	Dolphinfish/Wahoo
SAFMC	Snapper/Grouper	Snappers/Groupers
FIFMP	Highly Migratory Species	Tunas, Billfish, Marlins
FIFMP	Highly Migratory Species	Small coastal sharks
FIFMP	Highly Migratory Species	Large coastal sharks
FIFMP	Highly Migratory Species	Prohibited/Research sharks
MAFMC	Dogfish	Spiny/Smooth dogfish

In addition to the species and plans listed in the above table, there are other species that occur (at least regionally) within the project area that are managed by the Atlantic States Marine Fisheries Commission (ASMFC). This Commission was formed in the 1940's as an Interstate Compact that was ratified by the States and approved by Congress in 1942.

Species managed through the ASMFC include:

American Eel	Black Drum	Northern Shrimp	Spotted Seatrout
American Lobster	Black Sea Bass	Red Drum	Summer Flounder
Atlantic Croaker	Bluefish	Scup	Tautog
Atlantic Herring	Coastal Sharks	Shad and River Herring	Weakfish
Atlantic Menhaden	Cobia	Spanish Mackerel	Winter Flounder
Atlantic Striped Bass	Horseshoe Crab	Spiny Dogfish	
Atlantic Sturgeon	Jonah Crab	Spot	

IV. HABITAT AREAS OF PARTICULAR CONCERN

HAPC is a subset within the broader EFH designation that includes specific habitats that are significantly rare, stressed, vulnerable or particularly important for specific ecological functions of habitat used by federally managed species during their life cycle. As part of this Assessment, The NCDEQ, NCDMF and NOAA websites (web addresses accessed and dates of access presented in References) were all queried to review mapped areas for bottom type, SAV and any other Habitats of Particular Concern (HAPC) for species that have Fishery Management Plans (FMPs). A list of FMP species generated by the NOAA NMFS EFH Mapper GIS program that occur within the general project area are presented in the attached **Table 1**.

Based on the GIS data reviewed on the various web pages, there do not appear to be any mapped Fishery Nursery Areas (e.g. Primary, Secondary etc.), Hard Bottom Habitat Areas or SAV Habitat Areas (field confirmed by physical survey performed on April 28, 2020) within the proposed project area. Species lists for the South Atlantic and Mid Atlantic Fisheries Council along with the HAPC for each species were also reviewed. In addition to the SAFMC, MAFMC and Highly Migratory Species, the Project area includes the Albemarle River Herring and Striped Bass Management Areas.

According to the NC Coastal Habitats web page, the project area does include the following habitat types:

- Subtidal Soft Bottom Habitat http://portal.ncdenr.org/web/mf/habitat/soft-bottom
- Water column

- Intertidal Vegetated Shell (***mapped area appears along east of shoreline of developed marina within an existing parking area—this is likely an inadvertent mapping error and possibly, but unlikely, an error caused by scale—the adjacent shoreline is a developed charter marina***)

A field review of the shoreline and near shore environments to depths of approximately -5 feet (NWL) indicate that the bottom type within the project area is a soft silty bottom devoid of live shell and SAV within the project area. There are attached oysters, barnacles and various algae visible on pilings, rip rap and the concrete bulkhead within the marina.

The marina and Motts Creek where the existing and proposed work are to take place are developed and are used heavily by charter and recreational boaters. The shoreline throughout the project area is either hardened with concrete bulkhead (formalized marina) or rip rap along Motts Creek between the marina and the NPS boat ramp. There are sparse areas of emergent wetlands in locations along the rip rap shoreline, but the proposed project does not include any impacts to recognized wetland habitats (Section 404 Wetlands), including coastal (CAMA) wetlands. The project area is also immediately adjacent to the US Coast Guard Station-Oregon Inlet. There are two intertidal soft bottom areas mapped adjacent to, but outside of the project area on either end of the mouth of Motts Creek. See attached **Figure 3-Habitat Location Map** for general habitat locations, water quality classification etc.

V. ESSENTIAL FISH HABITAT DESIGNATION

An analysis of the project area demonstrates that the only potential EFH for any FMP species (all life stages) is subtidal soft bottom and water column (estuary). Please note that the proposed project is redevelopment of an existing marina that has served as regional access to the Albemarle Sound and the Atlantic Ocean (via Oregon Inlet) since at least the 1940's.

a. SUBMERGED AQUATIC VEGETATION

A formal SAV Survey was conducted on April 28, 2020 and report of findings was prepared on May 8, 2020. A copy of the SAV Report has been included as **Appendix A**. Based on the findings of the April 28, 2020 SAV survey of the project area, no SAV growth was observed and there was no indication that the project area supports SAV habitat. Attached algae was observed on portions of the rip rap shoreline along Motts Creek.

b. SUBSTRATE ANALYSIS

The substrate within the project area is best described as soft bottom comprised of silty to muddy sediments. There is no evidence of live shell or SAV occurrence within the project area. Vibracore samples were collected from portions of Motts Creek and within the marina basin. A review of the recovered sediment cores indicates that the substrate within the project area is predominately fine sands with finer grained material found inside the marina basin. TCLP analyses of the sediments recovered from the sediment cores was performed for volatile organics, semi-volatile organics, pesticides, herbicides, and metals by NC certified laboratory. There were no concentrations of any contaminants of concern detected at or above the method detection limit as specified in the laboratory analytical report for any of the samples analyzed. A copy of the Vibracore Sampling Report has been included as **Appendix C**.

VI. MANAGED SPECIES

Based on the substrate analysis, review of readily available information on the NOAA, DEQ and NC DMF websites and respective GIS web mapping portals, the project area does not appear to support shellfish habitat, HAPC or EFH areas protected from fishing (EFHA) for any FMP species. The project area includes subtidal soft bottom and water column habitats (as defined by NOAA NMFS) for finned fish species. However, the natural environment in and around Motts Creek has been impacted by development over the last 70 years. The basin was dredged and configured in the mid 1940's, the NPS boat ramp was installed in the 1970's and the USCG Station was constructed in the 1990's.

A list of FMP species that occur within the NOAA NMFS EFH Mapper 10-minute square that includes both the general project area, Oregon Inlet and open waters of the Atlantic Ocean has been included as **Table 1**. A screen shot of the 10-minute square is included as **Figure 4** (right). Several species listed (especially pelagic species) within the 10 minute-square likely do not rely on the soft bottom substrate and water column within the project area for spawning, breeding, feeding, or growth to maturity.

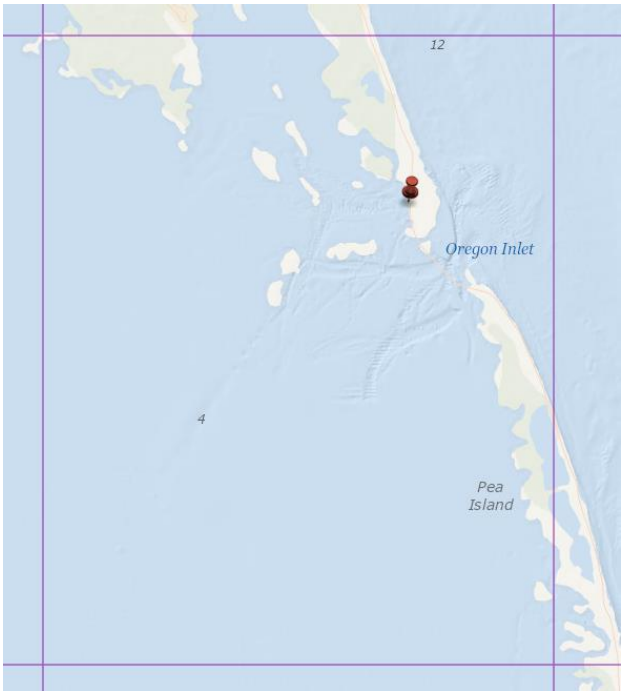


FIGURE 4: 10 Minute Square NMFS EFH Mapper

Using the EFH textual descriptions found in the specific FMPs (**Appendix B**), Species listed in **Table 1** were refined to include only those species (**Table 2**) that rely on the habitat found within the project area (and immediately surrounding areas) for spawning, breeding, feeding and or growth to maturity.

Using the species function on the NOAA EFH Mapper, along with the textual EFH descriptions required for each of the various Life Stages (E) Egg, Larval (L), Juvenile (J) and Adult (A), the project area may provide EFH for the following:

EFH for Species in Project Area (TABLE 2)

Mapped Species	Life Stages	EFH Habitat in Project Area (Textual)
Snapper Grouper Species	All	Subtidal soft bottom
Spiny Lobster	All	Subtidal soft bottom
Atlantic Butterfish	All	Water column
Bluefish	All	Water column
Scup	All	Subtidal soft bottom; water column
Summer Flounder	All	Subtidal soft bottom; water column

VII. ANALYSIS OF ADVERSE IMPACTS

Impacts associated with the project and immediately adjacent areas of Motts Creek include the proposed construction of a new transient fuel dock and associated dredge of an approximately 43,717 sf area of Motts Creek and approximately 83,285 sf area of maintenance dredge within the man made marina basin to a project depth of -8.0 feet MLLW. Dredge operations will temporarily disturb substrate and deepen shallow soft sediments (project depth is -8.0 feet MLLW). A Work performed on the uplands around the marina has the potential to adversely impact water quality through sedimentation during construction, continued operation of a charter marina and petroleum leaks from in-slip boat fueling. However, there is not a proposed increase in fuel storage capacity associated with this proposal and all proposed uses will be the same as current uses. Cumulative impacts include dredging and creation of a charter marina (1940's), NPS Boat Ramp (1970's) Coast Guard Station (1990's) and all the maintenance that each of these facilities have required over the years. In addition, most if not all of the shoreline is hardened with rip rap and concrete bulkhead.

a. Direct/Indirect Impacts

New work proposed within the project area includes maintenance dredge of the marina basin that would impact nearly 83,285 square feet of substrate generating an estimated 5,000 cubic yards of dredge spoil. The proposed action/preferred alternative also includes the dredge of a portion of Motts Creek around the entrance to the marina basin and the proposed transient dock (43,717 square feet generating an estimated 4,326 cubic yards of dredge spoil) to provide adequate water depths for boats to refuel along the prosed transient fuel dock. The transient fuel dock is proposed to be 90 linear feet by eight feet wide and would shade 950 square feet of waters and substrate near the entrance to the adjacent NPS boat ramps and laying along the north west shoreline of the marina. Approximately 30 pilings would be required to be installed to support the wooden structure.

Based on a Submerged Aquatic Vegetation (SAV) survey conducted on April 28, 2020, there are not any SAV resources or habitat that occur within the proposed project area. A copy of the SAV Survey is attached as **Appendix A**.

The proposed action/preferred alternative would temporarily animate sediments in the water column, deepen shallow soft substrate and add permanent wooden structures to Motts Creek.

b. Cumulative Impacts

The project area and surrounding waters of Motts Creek have historically been the location of a ferry terminal and public access to the Pamlico Sound and the Atlantic Ocean for vessels since the 1940's. In the 1970's a NPS public boat ramp was added adjacent to the project area at the west end of Motts Creek. In the 1990's the USCG constructed station Oregon Inlet across Motts Creek from the OIFC.

The proposed project/preferred alternative would add boat slips (reconfigured internally within the existing marina) and a transient fuel dock in Motts Creek further increasing opportunities for vessels in the project area. The proposed project/preferred alternative would incrementally increase impacts to the substrate of Motts Creek by adding a transient fuel dock and dredging an area so that larger boats can access the proposed transient fueling dock. The addition of a fuel dispenser in Motts Creek may also add to the risk of a fuel spill. However, the USCG operates fuel dispensers in Motts Creek currently. Fuel dispensers inside the marina basin would be replaced with in slip fueling to help alleviate congestion. This dispersion of dispensers around the

marina could create a situation where a release of petroleum products (e.g. during a catastrophic failure due to a storm or other disaster) to the waters of the marina and Motts Creek would be spread over a larger area and more difficult to contain than the current configuration which is confined to the northern end of the basin. However, the fuel delivery system and associated underground lines would be replaced with new equipment and fire code would require shutoff valves, breakaway protection and interstitial monitoring of the fuel deliver system which would mitigate the possibility of large releases of petroleum products.

The proposed project/preferred alternative would temporarily disturb the substrate within Motts Creek and result in deeper water depths (-8 feet MLLW) in the marina and Motts Creek. Please note, the USCG proposes to perform maintenance dredge for the Walter Slough channel that serves Station Oregon Inlet during the winter months of 2020 and any dredge activity proposed as part of the proposed project/preferred alternative in Motts Creek may be performed at the same time. Because the in water work related to the proposed action/preferred alternative would not permanently impact any critical habitat of any biological species of concern (specifically sea turtles), it would not incrementally add to adverse cumulative impacts to sea turtles or their habitat when included with other past, present, and reasonably foreseeable future actions.

VIII. PROPOSED MITIGATIVE MEASURES

Mitigation for the proposed project is focused on appropriate construction methodology, avoiding in water construction during spring and summer months and following best management practices related to marina operations (fuel, sewage pump out etc.). All dredge activities will be conducted during the appropriately established dredge moratorium for this area. A CAMA Major Permit for the proposed work has been prepared and submitted to the NC Division of Coastal Management.

IX. SUMMARY

As currently proposed, the project involves the redevelopment of the Oregon Inlet Fishing Center to remedy years of deferred maintenance. Current plans include demolition of upland structures, construction of a new Oregon Inlet Fishing Center Building (+/- 6,393 sf footprint), reconfiguration of existing slips to increase from 61 to 67 wet slips, provide in slip fueling throughout marina, construction of a new 1,130 sf transient fuel dock, construction of a new fish cleaning building (+/-1,880 sf), construction of an open-air events pavilion (+/-3,400 sf), dredge of portions of Motts Creek and maintenance dredge of the man-made marina basin, and construction of a new on-site wastewater treatment and disposal system to accommodate the new retail center and restaurant. The development plan also involves adding additional parking and providing formal stormwater management.

Technically, the project area provides subtidal soft substrate and water column habitats for several managed species (as detailed in the preceding report). However, all proposed activities occur within areas that currently and historically (former location of ferry terminal) serve as a point of primary access to the Atlantic Ocean via Oregon Inlet and the Albemarle-Pamlico Estuary system. Motts Creek also serves as access for the United States Coast Guard Station-Oregon Inlet.

X. CONCLUSIONS

The project area does not include any areas of SAV, hard bottom or mapped shellfish habitat. Subtidal soft bottom and water column habitats are present within the project area. However, the area of the proposed project has been developed since the 1940's and heavily used by both recreational and charter fisherman. Therefore, it is not likely that the proposed project area provides EFH for any of the federally managed species identified to occur within the project area.

XI. REFERENCES

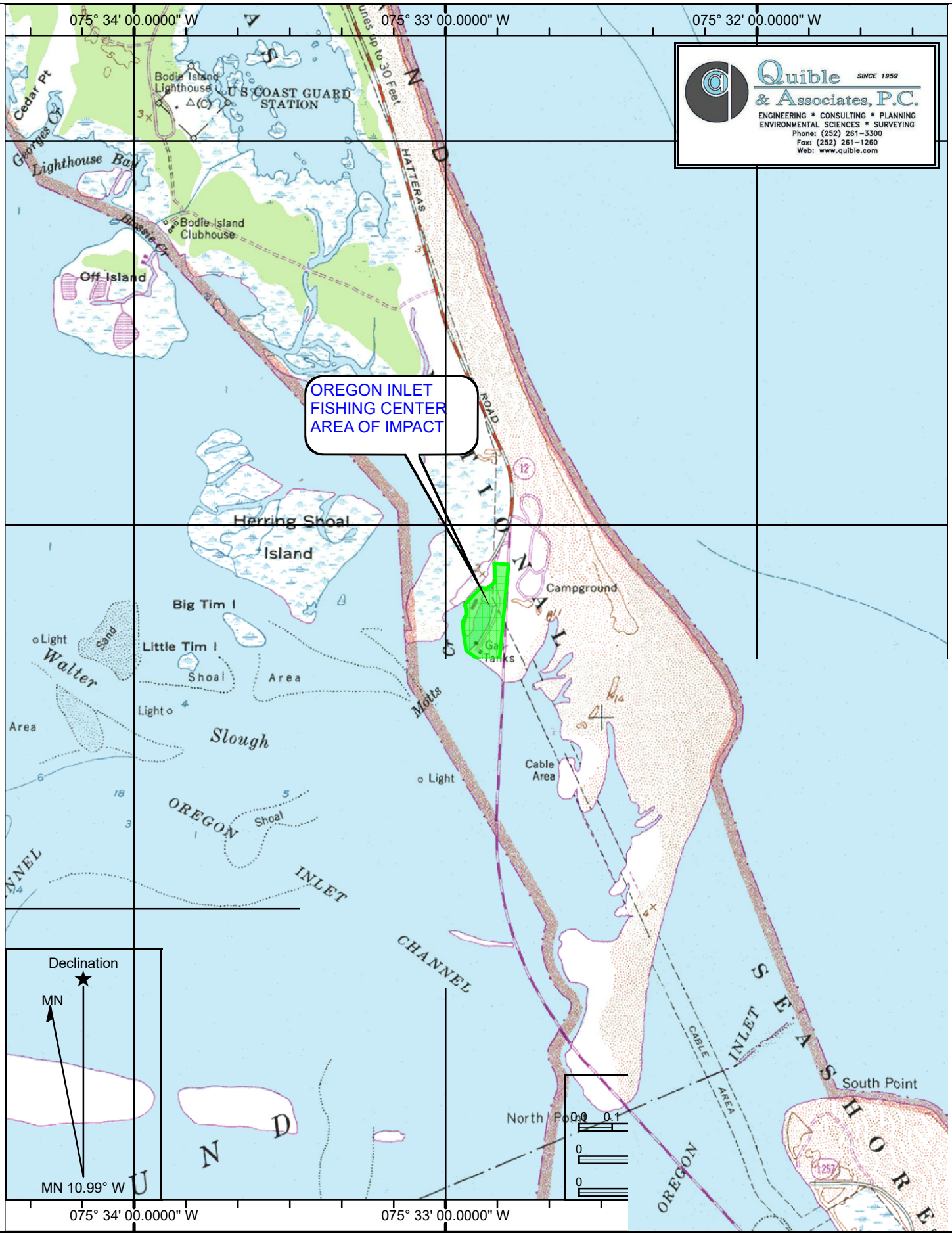
1. NOAA Habitat Conservation EFH Mapper Tool. *EFH Mapper*, https://www.habitat.noaa.gov/application/efhmapper/index.html

2. Atlantic States Marine Fisheries Commission https://www.asmfc.org/fisheries-management/management-101

3. South Atlantic Fishery Management Council https://safmc.net/download/SAFMC-FEP-II-Implementation-Plan-March-2018.pdf

4. Mid Atlantic Fishery Management Council http://www.mafmc.org/fishery-management-plans

FIGURES



Name: OREGON INLET
Date: 01/14/20
Scale: 1 inch = 2,000 ft.

Location: 035° 47' 45.4898" N, 075° 32' 54.0681" W
OREGON INLET FISHING CENTER
(AREA OF IMPACT SHOWN IN GREEN)

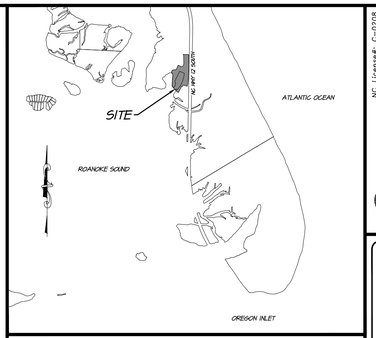
Datum: NAD27

NOTES:

1. CURRENT OWNER: US GOVERNMENT (NATIONAL PARK SERVICE)
2. LESSEE: OREGON INLET FISHING CENTER, LLC
   C/O: RUSSELL KING
   8770 OREGON INLET ROAD
   NAGS HEAD, NC 27959
3. PIN: 071700685112 / PID: 025076998
4. PROPERTY ADDRESS: 8770 OREGON INLET ROAD
   NAGS HEAD, NC 27959
5. SUBJECT REFERENCES: DB 1907, PG 0359;
6. ALL EXISTING FEATURES FIELD SURVEYED BY QUIBLE & ASSOCIATES. THIS IS NOT A BOUNDARY SURVEY. BATHYMETRIC INFORMATION SHOWN PER A FILED SURVEY COMPLETED BY QUIBLE & ASSOCIATES P.C. ALL DEPTHS ARE SHOWN RELATIVE TO MEAN LOWER LOW WATER (MLLW) (-0.7' NAVD88). AERIAL IMAGERY IS 2019 POST HURRICANE DORIAN IMAGERY PROVIDED BY NOAA. ALL INFORMATION SHOWN IS FOR DISCUSSION AND PERMITTING PURPOSES ONLY.
7. WATER SUPPLY PER DARE COUNTY. WATER CONNECTION MUST BE MADE IN ACCORDANCE WITH DARE COUNTY SPECIFICATIONS AND SHALL BE PERFORMED BY A LICENSED WATER UTILITY CONTRACTOR. NOTIFY TOWN PRIOR TO INSTALLATION.
8. ALL UTILITIES TO BE PLACED UNDERGROUND UNLESS OTHERWISE NOTED
9. PRIOR TO LAND DISTURBANCE, AN APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN MAY BE REQUIRED.
10. EXISTING VEGETATION TO BE PRESERVED WHERE POSSIBLE.
11. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL PROPERTY MONUMENTS DURING CONSTRUCTION. DISTURBED OR REMOVED PROPERTY MONUMENTS SHALL BE REPLACED BY A NORTH CAROLINA LICENSED PROFESSIONAL LAND SURVEYOR.
12. ALL WORK WITHIN THE NC DOT RIGHT-OF-WAY REQUIRES AN APPROVED NC DOT RIGHT-OF-WAY ENCROACHMENT AGREEMENT.

DEMOLITION NOTES:

1. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND SERVICES – TO INCLUDE BUT NOT LIMITED TO ELECTRIC, CABLE, TELEPHONE, GAS, SANITARY SEWER AND WATER – AND SHALL COORDINATE PROPER PROTECTION AND/OR RELOCATE WITH APPROPRIATE OWNER/UTILITY COMPANY.
2. CONTRACTOR SHALL WALK THE SITE AND BE FAMILIAR WITH THE SCOPE OF DEMOLITION REQUIRED. ALL DEMOLITION WORK REQUIRED TO CONSTRUCT NEW IMPROVEMENTS WILL BE PERFORMED BY THE CONTRACTOR AND BE UNCLASSIFIED EXCAVATION.
3. DEMOLITION SHALL INCLUDE BUT IS NOT LIMITED TO THE EXCAVATION, HAULING AND OFFSITE DISPOSAL OF CONCRETE CURBS AND GUTTERS, BITUMINOUS CONCRETE PAVEMENTS AND ALL MATERIALS OR VEGETATION CLEARED AND STRIPPED TO THE EXTENT NECESSARY FOR THE INSTALLATION OF NEW IMPROVEMENTS AND WITHIN THE LIMITS OF CLEARING AND GRADING. COORDINATE WITH APPROPRIATE DRAWINGS.
4. THE CONTRACTOR SHALL PROTECT ALL PROPERTY AND STRUCTURES AND UTILITIES ON THE PROPERTY NOT TO BE DEMOLISHED. DAMAGE TO THE PROPERTY DUE TO THE CONTRACTOR'S ACTIVITIES SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. ALL EXISTING IMPROVEMENTS INDICATED OR REQUIRED TO BE DEMOLISHED SHALL INCLUDE REMOVAL FROM PROJECT AREA.
6. THE CONTRACTOR SHALL PRODUCE A PHOTOGRAPHIC RECORD OF DEVELOPMENT COMMENCING WITH A RECORD OF THE SITE AS IT APPEARS BEFORE DEMOLITION IS BEGUN. AFTERWARDS A PHOTOGRAPHIC RECORD SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS.
7. EXISTING PAVEMENT, CURB AND GUTTER, LIGHTS, FENCES, TREE/VEGETATION AND UTILITIES NOT INTENDED FOR DEMOLITION SHALL BE MAINTAINED, PROTECTED, AND UNDISTURBED DURING DEMOLITION. CONTRACTOR SHALL COORDINATE THE REMOVAL OF BITUMINOUS CONCRETE PAVEMENTS AND CURB AND GUTTER WITH THE SITE PLAN.
8. SMOOTH SAW CUT OF EXISTING PAVEMENTS, CURBS AND CURBS AND GUTTERS TO BE DEMOLISHED SHALL BE PROVIDED.
9. ALL DEMOLITION WORK SHALL BE DONE IN STRICT ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AS WELL AS OSHA REGULATIONS.
10. CONTRACTOR'S ACTIVITIES SHALL NOT IMPEDE USAGE OR INGRESS/EGRESS TO ADJACENT PROPERTIES. COORDINATE WITH OWNER MAINTENANCE OF TRAFFIC/PEDESTRIAN CIRCULATION DURING CONSTRUCTION.
11. MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL TIMES DURING DEMOLITION.
12. A DEMOLITION PERMIT MUST BE OBTAINED FROM THE TOWN OF NAGS HEAD PRIOR TO DEMOLITION WORK.



VICINITY MAP
N.T.S.

LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE
- PROPOSED DEMOLITION
- EX. UTILITY POLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. ELECTRICAL CONNECTION
- EX. EXTERIOR LIGHT
- EX. LIGHT POLE

GRAPHIC SCALE
50' 0 25' 50' 100'
(IN FEET)
1 inch = 50 ft.

NOTE: THIS DOCUMENT IS PRELIMINARY – NOT FOR CONSTRUCTION, RECORDATION, SALES OR CONVEYANCES – THIS DOCUMENT IS FOR DISCUSSION PURPOSES ONLY! EXISTING INFORMATION SHOWN ON THIS DOCUMENT IS BASED ON BEST AVAILABLE DATA AND IS NOT A CERTIFIED SURVEY. ALL INFORMATION SHOWN ON THIS DOCUMENT IS SUBJECT TO ANY REQUIREMENTS BY ANY REGULATORY AGENCY, ENTITY OR AUTHORITY.

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9449 CARATOKE HWY
POWELLS POINT, NC 27966
Phone: (252) 491-8146
Fax: (252) 491-8146
quiblesurveying@quible.com
93 CHURCH STREET, SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 419-3856
quiblesurveying@quible.com

THIS MAP IS NOT A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.
CERTIFICATION

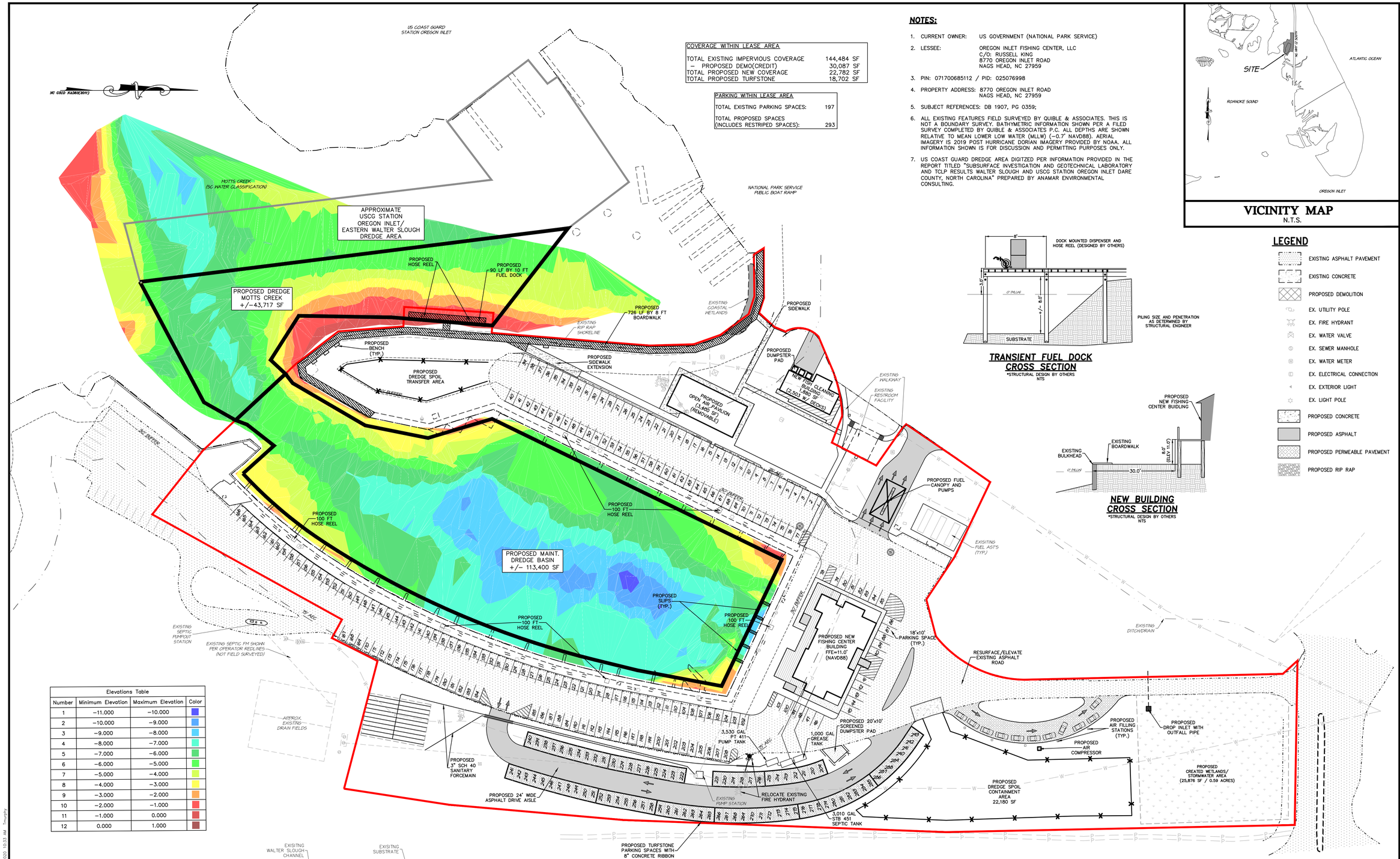
NO.	DATE	REVISIONS

EXISITNG CONDITIONS

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD
NAGS HEAD TOWNSHIP DARE COUNTY NORTH CAROLINA

PROJECT NO.	P18078
DESIGNED BY	JTM/CMS
DRAWN BY	JTM/BRJ
CHECKED BY	MWS
ISSUE DATE	10/20/20

SHEET NO. 1 OF 2 SHEETS



COVERAGE WITHIN LEASE AREA	
TOTAL EXISTING IMPERVIOUS COVERAGE	144,484 SF
— PROPOSED DEMO(CREDIT)	30,087 SF
TOTAL PROPOSED NEW COVERAGE	22,782 SF
TOTAL PROPOSED TURFSTONE	18,702 SF

PARKING WITHIN LEASE AREA	
TOTAL EXISTING PARKING SPACES:	197
TOTAL PROPOSED SPACES (INCLUDES RESTRIPED SPACES):	293

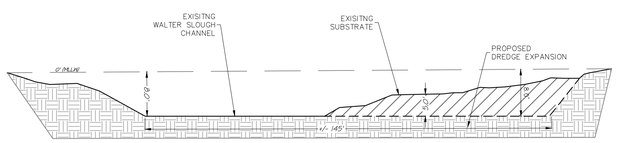
NOTES:

1. CURRENT OWNER: US GOVERNMENT (NATIONAL PARK SERVICE)
2. LESSEE: OREGON INLET FISHING CENTER, LLC C/O: RUSSELL KING 8770 OREGON INLET ROAD NAGS HEAD, NC 27959
3. PIN: 071700685112 / PID: 025076998
4. PROPERTY ADDRESS: 8770 OREGON INLET ROAD NAGS HEAD, NC 27959
5. SUBJECT REFERENCES: DB 1907, PG 0359;
6. ALL EXISTING FEATURES FIELD SURVEYED BY QUIBLE & ASSOCIATES. THIS IS NOT A BOUNDARY SURVEY. BATHYMETRIC INFORMATION SHOWN PER A FILED SURVEY COMPLETED BY QUIBLE & ASSOCIATES P.C. ALL DEPTHS ARE SHOWN RELATIVE TO MEAN LOWER LOW WATER (MLLW) (–0.7' NAVD88). AERIAL IMAGERY IS 2019 POST HURRICANE DORIAN IMAGERY PROVIDED BY NOAA. ALL INFORMATION SHOWN IS FOR DISCUSSION AND PERMITTING PURPOSES ONLY.
7. US COAST GUARD DREDGE AREA DIGITZED PER INFORMATION PROVIDED IN THE REPORT TITLED "SUBSURFACE INVESTIGATION AND GEOTECHNICAL LABORATORY AND TCLP RESULTS WALTER SLOUGH AND USCG STATION OREGON INLET DARE COUNTY, NORTH CAROLINA" PREPARED BY ANAMAR ENVIRONMENTAL CONSULTING.

VICINITY MAP
N.T.S.

TRANSIENT FUEL DOCK CROSS SECTION
*STRUCTURAL DESIGN BY OTHERS
NTS

NEW BUILDING CROSS SECTION
*STRUCTURAL DESIGN BY OTHERS
NTS



CHANNEL DREDGE CROSS SECTION
*STRUCTURAL DESIGN BY OTHERS
NTS

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	–11.000	–10.000	
2	–10.000	–9.000	
3	–9.000	–8.000	
4	–8.000	–7.000	
5	–7.000	–6.000	
6	–6.000	–5.000	
7	–5.000	–4.000	
8	–4.000	–3.000	
9	–3.000	–2.000	
10	–2.000	–1.000	
11	–1.000	0.000	
12	0.000	1.000	

LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE
- PROPOSED DEMOLITION
- EX. UTILITY POLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. ELECTRICAL CONNECTION
- EX. EXTERIOR LIGHT
- EX. LIGHT POLE
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED PERMEABLE PAVEMENT
- PROPOSED RIP RAP

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GRAPHIC SCALE
50' 0 25' 50' 100'
(IN FEET)
1 inch = 50 ft.

Quible & Associates, P.C.
NC License# C-0208
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
**NOT A LICENSED SERVICE AT THIS OFFICE
9449 CARATOKE HWY
POWELLS POINT, NC 27966
Phone: (252) 491-8146
Fax: (252) 491-8146
quiblesurveying@outlook.com
93 CHURCH STREET, SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 419-9125

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CERTIFICATION

NO.	DATE	REVISIONS

CAMA PLAN

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD
NAGS HEAD TOWNSHIP DARE COUNTY NORTH CAROLINA

PROJECT NO.	P18078
DESIGNED BY	JTM/CMS
DRAWN BY	JTM/BRJ
CHECKED BY	WDE
ISSUE DATE	10/20/20

SHEET NO. 2 OF 2 SHEETS

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GRAPHIC SCALE
50' 0 25' 50' 100'
(IN FEET)
1 inch = 50 ft.

*PARCEL & AERIAL DATA SHOWN, BASED ON DARE COUNTY GIS DATA.

Quible & Associates, P.C.
NC License#: C-0208
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
**ENGINEERING WORK NOT PERFORMED BY A LICENSED ENGINEER
8466 CARATOKE HWY
POWELLS POINT, NC 27966
Phone: (252) 491-8146
Fax: (252) 491-8146
90 CHURCH STREET, SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 419-9168
Fax: (252) 491-8146

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CERTIFICATION

NO.	DATE	REVISIONS

FIGURE 3 HABITAT LOCATION PLAN

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD

NAGS HEAD TOWNSHIP DARE COUNTY NORTH CAROLINA

COMMISSION NO.	P18078
DESIGNED BY	JTM
DRAWN BY	JTM/OTH
CHECKED BY	WDE
ISSUE DATE	03/12/20

SHEET NO. 1 OF 1 SHEETS

TABLES

TABLE 1-NOAA NMFS MAPPER SPECIES LIST
OREGON INLET FISHING CENTER

Species/Management Unit	Lifestage(s) Found 10 Min. Square (35.82 N; 75.53 W)	Management Council	FMP
Atlantic Herring	Juvenile Adult	New England	Amendment 3 to the Atlantic Herring FMP
Monkfish	Adult Eggs/Larvae	New England	Amendment 4 to the Monkfish FMP
Clearnose Skate	Adult	New England	Amendment 2 to the Northeast Skate Complex FMP
Spiny Lobster (2 Species) Spiny lobster (Panulirus argus) Slipper lobster (Scyllarides nodifer)	ALL	South Atlantic	Spiny Lobster
Snapper Grouper	ALL	South Atlantic	Snapper Grouper
Albacore Tuna	Juvenile	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Atlantic Angel Shark	ALL	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Bluefin Tuna	Adult Juvenile Spawning Eggs Larvae	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Spinner Shark	Juvenile/Adult	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Common Thresher Shark	ALL	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Dusky Shark	Neonate	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Sailfish	Adult Juvenile	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Sandbar Shark	Adult Juvenile Neonate	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Scalloped Hammerhead Shark	Juvenile/Adult	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Tiger Shark	Juvenile/Adult Neonate	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Yellowfin Tuna	Juvenile	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Blacktip Shark (Atlantic Stock)	Juvenile/Adult	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Smoothhound Shark Complex (Atlantic Stock)	ALL	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Atlantic Sharpnose Shark (Atlantic Stock)	Adult Juvenile	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH

TABLE 1 CONT'd-NOAA NMFS MAPPER SPECIES LIST
OREGON INLET FISHING CENTER

Species/Management Unit	Lifestage(s) Found at Location 35.82 N; 75.53 W	Management Council	FMP
Sand Tiger Shark	Neonate/Juvenile Adult	Secretarial	Amendment 10 to the 2006 Consolidated HMS FMP: EFH
Bluefish	Adult Juvenile	Mid-Atlantic	Bluefish
Atlantic Butterfish	Adult Juvenile	Mid-Atlantic	Atlantic Mackerel, Squid,& Butterfish Amendment 11
Spiny Dogfish	Sub-Adult Female Adult Female	Mid-Atlantic	Amendment 3 to the Spiny Dogfish FMP
Scup	Juvenile	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass
Summer Flounder	Larvae Juvenile Adult	Mid-Atlantic	Summer Flounder, Scup, Black Sea Bass

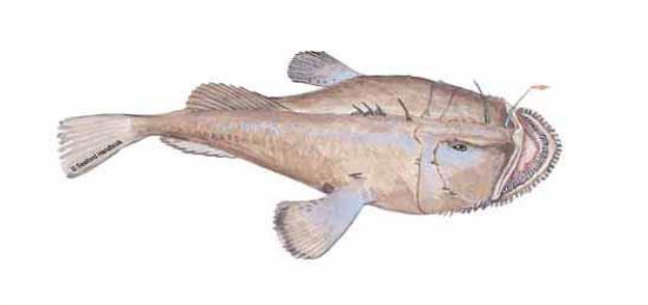
APPENDIX A

ATLANTIC HERRING (Clupea harengus)

en.wikipedia.org 1

Essential fish habitat for Atlantic herring: Eggs: Inshore and offshore benthic habitats in the Gulf of Maine and on Georges Bank and Nantucket Shoals in depths of 5 – 90 meters on coarse sand, pebbles, cobbles, and boulders and/or macroalgae. Eggs adhere to the bottom, often in areas with strong bottom currents, forming egg "beds" that may be many layers deep. Larvae: Inshore and offshore pelagic habitats in the Gulf of Maine, on Georges Bank, and in the upper Mid-Atlantic Bight, and in bays and estuaries. Atlantic herring have a very long larval stage, lasting 4-8 months, and are transported long distances to inshore and estuarine waters where they metamorphose into early stage juveniles ("brit") in the spring. Juveniles: Intertidal and sub-tidal pelagic habitats to 300 meters throughout the region. One and two-year old juveniles form large schools and make limited seasonal inshore-offshore migrations. Older juveniles are usually found in water temperatures of 3 to 15°C in the northern part of their range and as high as 22°C in the Mid-Atlantic. Young-of-the-year juveniles can tolerate low salinities, but older juveniles avoid brackish water. Adults: Sub-tidal pelagic habitats with maximum depths of 300 meters throughout the region, including bays and estuaries. Adults make extensive seasonal migrations between summer and fall spawning grounds on Georges Bank and the Gulf of Maine and overwintering areas in southern New England and the Mid-Atlantic region. They seldom migrate beyond a depth of about 100 meters and – unless they are preparing to spawn – usually remain near the surface. They generally avoid water temperatures above 10°C and low salinities. Spawning takes place on the bottom, generally in depths of 5 – 90 meters on a variety of substrates (see eggs).

MONKFISH (Lophius americanus)



seafoodsource.com 1

Essential fish habitat for monkfish: Eggs and Larvae: Pelagic habitats in inshore areas, and on the continental shelf and slope throughout the Northeast region. Monkfish eggs are shed in very large buoyant mucoidal egg "veils." Monkfish larvae are more abundant in the Mid-Atlantic region and occur over a wide depth range, from the surf zone to depths of 1000 to 1500 meters on the continental slope. Juveniles: Sub-tidal benthic habitats in depths of 50 to 400 meters in the Mid-Atlantic, between 20 and 400 meters in the Gulf of Maine, and to a maximum depth of 1000 meters on the continental slope. A variety of habitats are essential for juvenile monkfish, including hard sand, pebbles, gravel, broken shells, and soft mud; they also seek shelter among rocks with attached algae. Juveniles collected on mud bottom next to rock-ledge and boulder fields in the western Gulf of Maine were in better condition than juveniles collected on isolated mud bottom, indicating that feeding conditions in these edge habitats are better. Young-of-the year juveniles have been collected primarily on the central portion of the shelf in the MidAtlantic, but also in shallow nearshore waters off eastern Long Island, up the Hudson Canyon shelf valley, and around the perimeter of Georges Bank. They have also been collected as deep as 900 meters on the continental slope. Adults: Sub-tidal benthic habitats in depths of 50 to 400 meters in southern New England and Georges Bank, between 20 and 400 meters in the Gulf of Maine, and to a maximum depth of 1000 meters on the continental slope. Essential fish habitat for adult monkfish is composed of hard sand, pebbles, gravel, broken shells, and soft mud. They seem to prefer soft sediments (fine sand and mud) over sand and gravel, and, like juveniles, utilize the edges of rocky areas for feeding.

CLEARNOSE SKATE (Raja eglanteria)

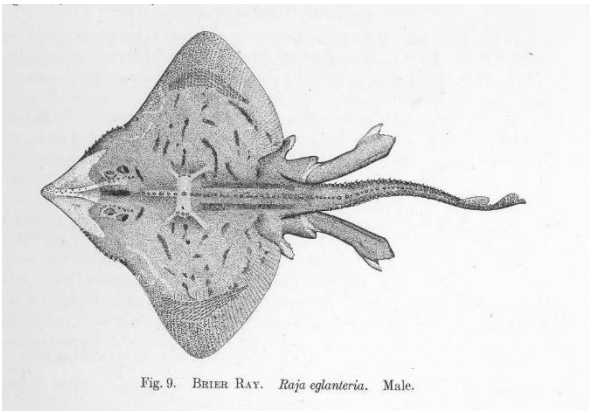


Fig. 9. Brier Ray. *Raja eglanteria.* Male.

For clearnose skate essential fish habitat is designated as follows: Juveniles: Sub-tidal benthic habitats in coastal and inner continental shelf waters from New Jersey to the St. Johns River in Florida, including the high salinity zones of Chesapeake Bay, Delaware Bay, and other bays and estuaries. Essential fish habitat for juvenile clearnose skates occurs from the shoreline to 30 meters, primarily on mud and sand, but also on gravelly and rocky bottom. Adults: Sub-tidal benthic habitats in coastal and inner continental shelf waters from New Jersey to Cape Hatteras, including the high salinity zones of Chesapeake Bay, Delaware Bay, and other bays and estuaries. Essential fish habitat for adult clearnose skates occurs from the shoreline to 40 meters, primarily on mud and sand, but also on gravelly and rocky bottom.

SPINY/SLIPPER LOBSTER


123rf.com 1

Essential fish habitat for spiny lobster includes nearshore shelf/oceanic waters; shallow subtidal bottom; seagrass habitat; unconsolidated bottom (soft sediments); coral and live/hard bottom habitat; sponges; algal communities (Laurencia); and mangrove habitat (prop roots). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse spiny lobster larvae. Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ.

SNAPPER GROUPER


Images courtesy of the South Atlantic Fishery Management Council 2014

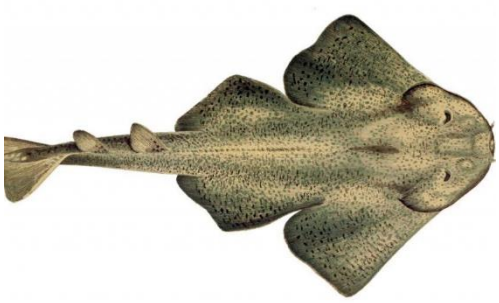
Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including Sargassum, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae. For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom. Refer to Section 3.0 in the Habitat Plan for a more detailed description of habitat utilized by the managed species. Also, it should be noted that the Gulf Stream occurs within the EEZ

ALBACORE TUNA (Thunnus alalunga)

seafoodsource.com 2

Spawning, eggs, and larvae: Insufficient information available Juveniles (< 90 cm FL): Offshore, pelagic habitats of the Atlantic ocean from the outer edge of the U.S. EEZ through Georges Bank to pelagic habitats south of Cape Cod, and from Cape Cod to Cape Hatteras, North Carolina. EFH also includes offshore pelagic habitats near the outer U.S. EEZ between North Carolina and Florida, and offshore pelagic habitats associated with the Blake Plateau. EFH also includes offshore pelagic habitats in the western and central Gulf of Mexico. Adults (≥ 90 cm FL): Offshore, pelagic habitats of the Atlantic ocean from the outer edge of the U.S. EEZ through Georges Bank to pelagic habitats south of Cape Cod, and from Cape Cod to Cape Hatteras, North Carolina. EFH also includes offshore pelagic habitats near the outer U.S. EEZ between North Carolina and Florida, and offshore pelagic habitats associated with the Blake Plateau. EFH also includes offshore pelagic habitats in the western and central Gulf of Mexico.

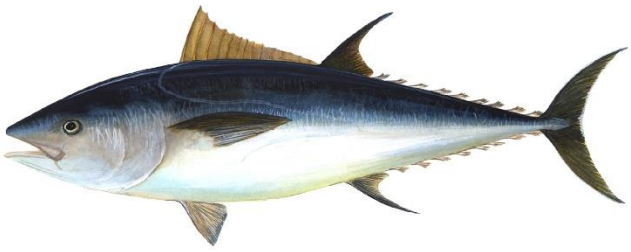
ATLANTIC ANGEL SHARK (Squatina dumeril)



UPI.com

Insufficient data are available to differentiate EFH between the juvenile and adult size classes; therefore, EFH is the same for those life stages. Neonate/YOY, Juvenile, and Adult: At this time, insufficient data is available to differentiate EFH between the juvenile and adult size classes; therefore, EFH is the same for those life stages. EFH in the Atlantic Ocean includes continental shelf habitats from Cape May, New Jersey to Cape Lookout, North Carolina. EFH in the Gulf of Mexico ranges from Florida to Mississippi, and from offshore habitats south

ATLANTIC BLUEFIN TUNA (Thunnus thynnus)



en.wikipedia.org 2

Essential Fish Habitat for **Atlantic Bluefin Tuna**:Spawning, eggs, and larvae: This life stage has been expanded into two areas of the Slope Sea (between North Carolina and Georges Bank, north of the Gulf Stream) due to the presence of extremely young larvae. One area encompasses pelagic habitats on and off the continental shelf, off the coast of North Carolina, and extends to the shoreline between the NC/VA line and Oregon Inlet. The other area includes pelagic waters of the Slope Sea, extending to the outer United States' EEZ south of Georges Bank. From the mid-east coast of Florida in the Atlantic Ocean to the western Gulf of Mexico (seaward of the 100m depth contour in the Gulf of Mexico). EFH for larvae is defined by habitat associations with temperatures ranging from 23.5 to 28 °C. Juveniles (< 185 cm FL): Coastal and pelagic habitats of the Mid-Atlantic Bight and the Gulf of Maine, between southern Maine and Cape Lookout, 110 from shore (excluding Long Island Sound, Delaware Bay, Chesapeake Bay, and Pamlico Sound) to the continental shelf break. EFH in coastal areas of Cape Cod are located between the Great South Passage and shore. EFH follows the continental shelf from the outer extent of the U.S. EEZ on Georges Bank to Cape Lookout. EFH is associated with certain environmental conditions in the Gulf of Maine (16 to 19 °C; 0 to 40 m deep). EFH in other locations associated with temperatures ranging from 4 to 26 °C, often in depths of less than 20 m (but can be found in waters that are 40-100 m in depth in

winter). Adults (≥ 185 cm FL): EFH is located in offshore and coastal regions of the Gulf of Maine the mid-coast of Maine to Massachusetts; on Georges Bank; offshore pelagic habitats of southern New England; from southern New England to coastal areas between the mouth of Chesapeake Bay and Onslow Bay, North Carolina; from coastal North Carolina south to the outer extent of the U.S. EEZ, inclusive of pelagic habitats of the Blake Plateau, Charleston Bump, and Blake Ridge. EFH also consists of pelagic waters of the central Gulf of Mexico from the continental shelf break to the seaward extent of the U.S. EEZ between Apalachicola, Florida and Texas. Habitat Area of Particular Concern (HAPC): Pelagic waters of the Gulf of Mexico seaward of the 100m bathymetric line, extending to the seaward extent of the United States' EEZ and eastward to the 82º W long. line.

SPINNER SHARK (Carcharhinus brevipinna)

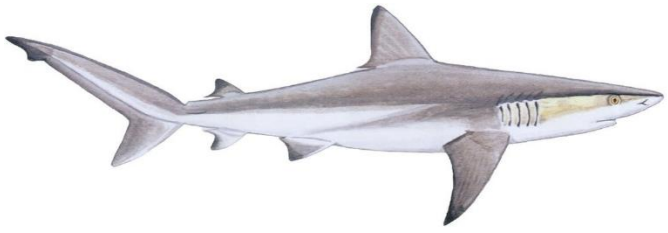
Essential Fish Habitat for **Spinner Shark**: Neonate/YOY (≤ 57 cm FL): In the Atlantic Ocean EFH includes coastal areas between Cape Hatteras, North Carolina and the Florida Keys. EFH in the Gulf of Mexico includes coastal areas surrounding the Florida Keys and from the Big Bend Region to southern Texas. Gulf of Mexico EFH consists of sandy bottom areas where sea surface temperatures range from 24.5 to 30.5 °C and mean salinity is around 36 ppt. Juveniles and Adults (> 57 cm FL): EFH in the Atlantic Ocean includes coastal areas between North Carolina and Florida. Juvenile spinner shark EFH is associated with temperatures of 21.9 to 30.1 °C, salinities of 21.0 to 36.2 ppt, and DO 3.5 to 5.0 mL/L. Juvenile and adult EFH in the Gulf of Mexico includes coastal areas from Apalachicola, Florida to southern Texas. In all locations, juveniles EFH extends from shore to depths to 20m, whereas adult EFH extends from shore to 90m in depth.

COMMON THRESHER SHARK (Alopias vulpinus)

fisheries.noaa.gov 1

Essential Fish Habitat for **Common Thresher Shark**, Juveniles, and Adults: At this time, insufficient data is available to differentiate EFH between the juvenile and adult size classes; therefore, EFH is the same for those life stages. EFH is located in the Atlantic Ocean, from Georges Bank (at the offshore extent of the U.S. EEZ boundary) to Cape Lookout, North Carolina; and from Maine to locations offshore of Cape Ann, Massachusetts. EFH occurs with certain habitat associations in nearshore waters of North Carolina, especially in areas with temperatures from 18.2 to 20.9 °C and at depths from 4.6 to 13.7 m (McCandless et al. 2002).

DUSKY SHARK (Carcharhinus obscurus)



sharks.org 1

Essential Fish Habitat for **Dusky Shark**: Neonate/YOY (≤ 98 cm FL): EFH in the Atlantic Ocean includes offshore areas of southern New England to Cape Lookout, North Carolina. Specifically, EFH is associated with habitat conditions including temperatures from 18.1 to 22.2 °C, salinities of 25 to 35 ppt and depths at 4.3 to 15.5 m. Seaward extent of EFH for this life stage in the Atlantic is 60 m in depth. Juvenile and Adult (> 98 cm FL): Coastal and pelagic waters inshore of the continental shelf break (< 200 meters in depth) along the Atlantic east coast from habitats offshore of southern Cape Cod to Georgia, including the Charleston Bump and adjacent pelagic habitats. Inshore extent for these life stages is the 20-meter bathymetric line, except in habitats of southern New England, where EFH is extended seaward of Martha's Vineyard, Block Island, and Long Island. Pelagic habitats of

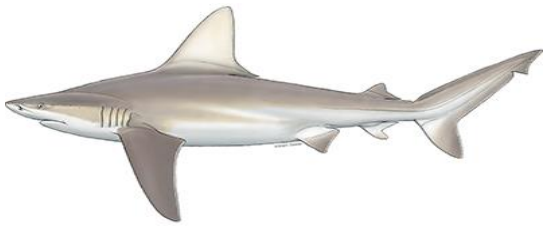
southern Georges Bank and the adjacent continental shelf break from Nantucket Shoals and the Great South Channel to the eastern boundary of the United States EEZ. Adults are generally found deeper (to 2000 meters) than juveniles, however there is overlap in the habitats utilized by both life stages. Offshore waters of the western and north Gulf of Mexico, at and seaward of the continental shelf break (a buffer is included ~10 nautical miles north of the 200 meter bathymetric line), and in proximity to numerous banks along the continental shelf edge (e.g., Ewing and Sackett Bank). The continental shelf edge habitat from Desoto Canyon west to the Mexican border is important habitat for adult dusky sharks.

SAILFISH (Istiophorus spp.)

en.wikipedia.org

Essential Fish Habitat for **Sailfish**: Spawning, eggs, and larvae: Off the southeast coast of Florida to Key West, FL, associated with waters of the Gulf Stream and Florida Straits from 5 mi offshore out to the EEZ boundary. EFH in the Gulf of Mexico consists of offshore pelagic habitats from the Florida Keys to the continental shelf off of southern Texas. EFH extends from the 200m bathymetric line to the seaward extent of the U.S. EEZ. Juveniles (20 - 179 cm LJFL): Localized distribution of EFH in the Atlantic Ocean from Maryland to Georgia. EFH is also located along the east coast of Florida and on the Blake Plateau through the Florida Straits (south of the Florida Keys) to habitats seaward of the southwestern edge of the West Florida Shelf. Localized EFH in the central and northern Gulf of Mexico, between Apalachicola and southern Texas. Eastern Puerto Rico and Virgin Islands. Adults (≥ 180 cm LJFL): Atlantic Ocean at the continental shelf break off the Delmarva Peninsula; along the Outer Banks of North Carolina to Cape Fear, North Carolina; off the central coast of South Carolina; and from northern Florida through the Florida Straits and Florida Keys to the southern edge of the West Florida Shelf. EFH in the Gulf of Mexico spans from coastal habitats off the western Florida panhandle and coastal Louisiana to offshore pelagic habitats associated with the continental shelf westward to the coast of Texas. Also around the Virgin Islands and the northeastern coast of Puerto Rico.

SANDBAR SHARK (Carcharhinus plumbeus)

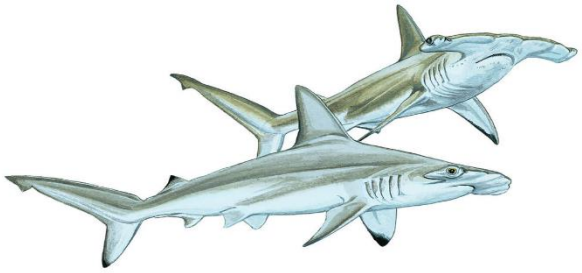


vims.edu

Essential Fish Habitat for **Sandbar Shark** : Neonate/YOY (< 66 cm FL): Atlantic coastal areas from Long Island, New York to Cape Lookout, North Carolina, and from Charleston, South Carolina to Amelia Island, Florida. Important neonate/YOY EFH includes: Delaware Bay (Delaware and New Jersey) and Chesapeake Bay (Virginia and Maryland), where the nursery habitat is limited to the southeastern portion of the estuaries (salinity is greater than 20.5 ppt and depth is greater than 5.5 m); Great Bay, New Jersey; and the waters off Cape Hatteras, North Carolina. In all nursery areas between New York and North Carolina, unless otherwise noted, EFH is associated with water temperatures that range from 15 to 30 °C; salinities that vary from 15 to 35 ppt; water depths that range from 0.8 to 23 m; and sand, mud, shell, and rocky sediments/benthic habitat. 170 EFH in the Gulf of Mexico includes localized coastal areas on the Florida panhandle (Indian Pass and St. Andrew Sound, Florida) in water temperatures from 20 to 31 °C at salinities from 19 to 39 ppt and depths of 2.1 to 5.2 m in silt/clay habitats. Juvenile (67 to 154 cm FL): EFH includes coastal portions of the Atlantic Ocean between southern New England (Nantucket Sound, Massachusetts) and Georgia in water temperatures ranging from 20 to 24 °C and depths from 2.4 to 6.4 m. Important nurseries include Delaware Bay, Delaware and New Jersey; Chesapeake Bay, Virginia; Great Bay, New Jersey; and the waters off Cape Hatteras, North Carolina. For all EFH, water temperatures range from 15 to 30 °C, salinities range from 15 to 35 ppt, water depth ranges from 0.8 to 23 m, and substrate includes sand, mud, shell, and rocky habitats. EFH in the Gulf of Mexico includes localized areas off Apalachicola Bay, Florida. Adult (> 154 cm FL): EFH in the Atlantic Ocean includes coastal areas from southern New England to the Florida Keys, ranging from inland waters of Delaware

Bay and the mouth of Chesapeake Bay to the continental shelf break. EFH in the Gulf of Mexico includes coastal areas between the Florida Keys and Anclote Key, Florida; areas offshore of the Big Bend region; coastal areas of the Florida panhandle and Gulf coast between Apalachicola and the Mississippi River; and habitats surrounding the continental shelf between Louisiana and south Texas. Adults commonly use habitats in the West Florida Shelf, off Cape San Blas, and cool, deep, clear water offshore of Texas and Louisiana.

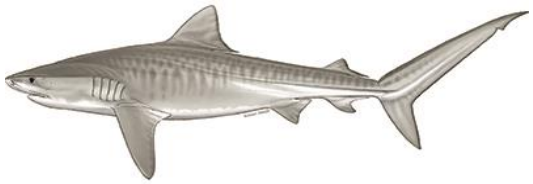
SCALLOPED HAMMERHEAD (Sphyrna lewini)



sharks.org

Essential Fish Habitat for **Scalloped Hammerhead** Neonate/YOY (≤ 45 cm TL): Atlantic east coast from North Inlet/Winyah Bay, South Carolina to the mid-east coast of Florida, including estuarine habitats. Coastal areas in the Gulf of Mexico including those adjacent to Charlotte Harbor and Tampa Bay, coastal areas of Florida around Apalachicola and Cape San Blas, and coastal Texas. EFH is located in temperatures of 23.2 to 30.2 °C, salinities of 27.6 to 36.3 ppt, DO of 5.1 to 5.5 mL/L, depths in the 5 to 6 m, and mud and seagrass substrate. Juveniles and Adults (> 45 cm FL): EFH in the Atlantic Ocean ranges from North Carolina to the Florida Keys, including Florida Bay and the Dry Tortugas. EFH is also located in the northern Gulf of Mexico from eastern Louisiana to Pensacola Florida, (Mississippi Delta to DeSoto Canyon).

TIGER SHARK (Galeocerdo cuvier)



vims.edu

Essential Fish Habitat for **Tiger Shark** Neonate/YOY (≤ 101 cm FL): EFH in the Atlantic Ocean includes coastal areas from the North Carolina/Virginia border to the Florida Keys. EFH in the Gulf of Mexico includes coastal and offshore areas, between the Florida Keys and Alabama. Juveniles (102 - 266 cm TL) and Adults (> 266 cm TL): EFH in the Atlantic Ocean extends from offshore pelagic habitats associated with the continental shelf break at the seaward extent of the U.S. EEZ boundary (south of Georges Bank, off Massachusetts) to the Florida Keys, inclusive of offshore portions of the Blake Plateau. EFH in the Gulf of Mexico includes pelagic and coastal habitats between Tampa Bay, Florida Bay and Florida Keys, and the edge of the West Florida Shelf; and an area extending from off eastern Louisiana, Mississippi, and Alabama to offshore pelagic habitats in the central Gulf of Mexico. Grass flats in the Gulf of Mexico are considered feeding areas and are included as EFH. EFH also includes coastal and pelagic habitats surrounding Puerto Rico (except on the northwest side of the island) and the U.S. Virgin Islands.

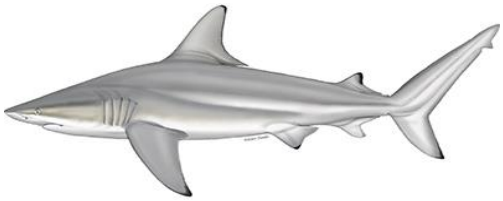
YELLOWFIN TUNA (Thunnus albacares)

fisheries.noaa.gov

Essential Fish Habitat for **Yellowfin Tuna** Spawning, eggs, and larvae: In offshore waters in the Gulf of Mexico to the EEZ and portions of the Florida Straits, and most the U.S. Caribbean seaward of the 200m bathymetric line. Juveniles (< 108 cm FL): Offshore pelagic habitats seaward of the continental shelf break between the seaward extent of the U.S. EEZ boundary on Georges Bank and Cape Cod, Massachusetts. Offshore and coastal habitats from Cape Cod to the mid-east coast of Florida and the Blake Plateau. Locally distributed in the Florida Straits and off the southwestern edge of the West Florida Shelf. In the central Gulf of Mexico from Florida Panhandle to southern Texas. Localized EFH southeast of Puerto Rico. 117 Adults (≥ 108 cm FL): Offshore pelagic habitats seaward of the continental shelf break between the seaward extent of the U.S. EEZ boundary on Georges Bank and Cape Cod, Massachusetts. Offshore and coastal habitats from Cape Cod to North Carolina, and offshore pelagic habitats of the

Blake Plateau. EFH in the Gulf of Mexico spans throughout much of the offshore pelagic habitat from the West Florida Shelf to the continental shelf off southern Texas.

BLACKTIP SHARK (Carcharhinus limbatus)



vims.edu

Essential Fish Habitat for **Blacktip Shark** (Atlantic Stock) Neonate/YOY (≤ 59 cm FL): In Atlantic Ocean coastal areas out to 20 m depth contour from northern Florida through areas with muddy bottoms in Georgia and the seaward side of coastal islands of the Carolinas, at depths of 2 to 4 m. Juvenile (60-125 cm FL) and Adult (≥ 126 cm FL): EFH is in Atlantic coastal areas from Florida to the Maryland/Virginia line (northern extent of EFH is Chincoteague Island), including the mouth of Chesapeake Bay and adjacent coastal areas along the Delmarva Peninsula. EFH is also in South Carolina Inlets, estuarine, and nearshore waters (including Winyah Bay and North Inlet) associated with water temperatures ranging from 19 to 33 °C, salinities ranging from 13 to 37 ppt, water depth ranging from 2.4 to 12.8 m, and DO ranging from 4.3-6.1 mg/L in shell, sand, and rocky habitats. EFH also ranges from northern Cape Canaveral (~28°40' N lat.) south to the Key Biscayne area (~27°04' N lat.) in water depths of 3 to 11 m.

SMOOTHHOUND SHARK

vims.edu

Essential Fish Habitat for the **Smoothhound Shark Complex (Atlantic stock)**: Neonate/YOY, Juvenile, and Adult: At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation. Smoothhound shark EFH identified in the Atlantic is exclusively for smooth dogfish. EFH in Atlantic coastal areas ranges from Cape Cod Bay, Massachusetts to South Carolina, inclusive of inshore bays and estuaries (e.g., Pamlico Sound, Core Sound, Delaware Bay, Long Island Sound, Narragansett Bay, etc.). EFH also includes continental shelf habitats between southern New Jersey and Cape Hatteras, North Carolina.

ATLANTIC SHARPNOSE (Rhizoprionodon terraenovae)

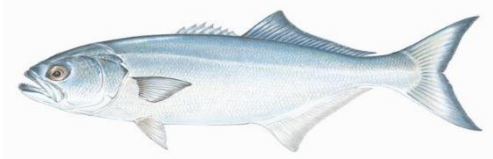
Essential Fish Habitat for **Atlantic Sharpnose** (Atlantic Stock) Neonate/YOY (≤ 51 cm FL): Atlantic Ocean EFH includes areas between the mid-coast of Florida and Cape Hattaras, with seasonal summer distribution in the northern part of the range. Most EFH includes important nursery habitats include inshore and nearshore waters from Cape Hatteras to Holden Beach, North Carolina; estuarine and nearshore waters of South Carolina (21-29 °C, salinity range of 24-37 ppt, , nursery occupation through October); and estuarine and coastal waters of Georgia (26.4-30.8 °C, salinity range of 21.6-36.4 ppt, 2.7-13.1 m depth). The northeastern coast of Florida to Cape Canaveral is an important nursery area (18.4- 213 30.7 °C, salinity range of 22.8-33.7 ppt, 0.9-4 m depth). Offshore depth extent of EFH is 20m for this life stage. Juvenile (52 - 59 cm FL): EFH for this life stage extends from portions of the lower Chesapeake Bay (Virginia) to the mid-coast of Florida, with seasonal summer distribution in the northern part of the range. Important nursery areas for juveniles include: inshore and nearshore waters from Cape Hatteras to Holden Beach, North Carolina (17.3-33 °C, 1.4-16.5m depth); estuarine and nearshore waters of South Carolina (21-29 °C, salinity range of 24-37 ppt, nursery occupation through October); and estuarine and coastal waters of Georgia (26.4-30.8 °C, salinity range of 21.6-36.4 ppt, 2.7-13.1 m depth). Offshore depth extent of EFH for this life stage is 180m. Adult (≥ 60 cm FL): EFH for this life stage extends from portions of Delaware Bay and Cape May, NJ to the mid-coast of Florida, including portions of Chesapeake Bay, with seasonal summer distribution in the northern part of the range. Offshore depth extent for this life stage is 180m.

SAND TIGER SHARK (Carcharias Taurus)

sharks.org

Essential Fish Habitat for **Sand Tiger Shark** Neonate/YOY (< 109 cm FL) and Juvenile (109 to 193 cm FL): Neonate EFH ranges from Massachusetts to Florida, specifically the PKD bay system, Sandy Hook, and Narragansett Bays as well as coastal sounds, lower Chesapeake Bay, Delaware Bay (and adjacent coastal areas), Raleigh Bay and habitats surrounding Cape Hatteras. Juveniles EFH includes habitats between Massachusetts and New York (notably the PKD bay system), and between mid-New Jersey 253 and the mid-east coast of Florida. EFH can be described via known habitat associations in the lower Chesapeake Bay and Delaware Bay (and adjacent coastal areas) where temperatures range from 19 to 25 °C, salinities range from 23 to 30 ppt at depths of 2.8-7.0 m in sand and mud areas, and in coastal North Carolina habitats with temperatures from 19 to 27 °C, salinities from 30 to 31 ppt, depths of 8.2-13.7 m, in rocky and mud substrate or in areas surrounding Cape Lookout that contain benthic structure. Adults (≥ 194 cm FL): In the Atlantic along the mid-east coast of Florida (Cape Canaveral) through Delaware Bay. Important habitats include lower Chesapeake Bay and Delaware Bay (and adjacent coastal areas) where sand tiger sharks spend 95 percent of their time in waters between 17 and 23 °C. EFH is restricted off the coast of Florida to habitats that are less than 200 meters in depth. Habitat Area of Particular Concern (HAPC): (1) Lower portions of Delaware Bay to areas adjacent to the mouth of Delaware Bay for all life stages. The inshore extent of the HAPC reflects a line drawn from Port Mahon east to Egg Point Island (39º11'N lat.), and from Egg Point Island southeast to Bidwell Creek. The HAPC excludes an area rarely used by sand tiger sharks, which is north of a line between Egg Point Island and Bidwell Creek that includes Maurice Cove. The HAPC spans the mouth of Delaware Bay between Cape Henlopen and Cape May, and also includes adjacent coastal areas offshore of Delaware Bay and areas south (between the Indian River inlet and Cape Henlopen, Delaware). (2) The entire PDK bay system in coastal Massachusetts for neonate/YOY and juvenile sand tiger sharks.

BLUEFISH (Pomatomus saltatrix)



mass.gov

Eggs: 1) North of Cape Hatteras, pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ) at mid-shelf depths, from Montauk Point, NY south to Cape Hatteras in the highest 90% of the area where bluefish eggs were collected in the MARMAP surveys; and 2) South of Cape Hatteras, 100% of the pelagic waters over the continental shelf (from the coast out to the eastern wall of the Gulf Stream) through Key West, Florida at mid-shelf depths. Bluefish eggs are generally not collected in estuarine waters and thus there is no EFH designation inshore. Generally, bluefish eggs are collected between April through August in temperatures greater than 64°F (18 °C) and normal shelf salinities (> 31 ppt). Larvae: 1) North of Cape Hatteras, pelagic waters found over the continental shelf (from the coast out to the limits of the EEZl most commonly above 49 ft (15 m), from Montauk Point, New York south to Cape Hatteras, in the highest 90% of the area where bluefish larvae were collected during the MARMAP surveys; 2) South of Cape Hatteras, 100% of the pelagic waters greater than 15 meters over the continental shelf (from the coast out to the eastern wall of the Gulf Stream) through Key West, Florida; and 3) the "slope sea" and Gulf Stream between latitudes 29° 00 N and 40° 00 N. Bluefish larvae are not generally collected inshore, so there is no EFH designation inshore for larvae. Generally, bluefish larvae are collected April through September in temperatures greater than 64 °F (18 °C) in normal shelf salinities (> 30 ppt). Juveniles (25 ppt). Source: Amendment 1 to the Bluefish Fishery Management Plan, Mid-Atlantic Fishery Management Council, 1998.

ATLANTIC BUTTERFISH (Peprilus triacanthus)

fisheries.noaa.gov

Eggs: EFH is pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to the south shore of Long Island, New York, in Chesapeake Bay, and on the continental shelf and slope, primarily from Georges Bank to Cape Hatteras, North Carolina. EFH for Atlantic butterfish eggs is generally found over bottom depths of 1,500 meters or less where average temperatures in the upper 200 meters of the water column are 6.5-21.5°C. Larvae: EFH is pelagic habitats in inshore estuaries and embayments in Boston harbor, from the south shore of Cape Cod to the Hudson River, and in Delaware and Chesapeake bays, and on the continental shelf from the Great South Channel (western Georges Bank) to Cape Hatteras, North Carolina. EFH for Atlantic butterfish larvae is generally found over bottom depths between 41 and 350 meters where average temperatures in the upper 200 meters of the water column are 8.5-21.5°C. Juveniles (≤11 cm FL): EFH is pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to Pamlico Sound, North Carolina, in inshore waters of the Gulf of Maine and the South Atlantic Bight, and on the inner and outer continental shelf from southern New England to South Carolina. EFH for juvenile Atlantic butterfish is generally found over bottom depths between 10 and 280 meters where bottom water temperatures are between 6.5 and 27°C and salinities are above 5 ppt. Juvenile butterfish feed mainly on planktonic prey. Adults (≥12 cm FL): EFH is pelagic habitats in inshore estuaries and embayments from Massachusetts Bay to Pamlico Sound, North Carolina, inshore waters of the Gulf of Maine and the South Atlantic Bight, on Georges Bank, on the inner continental shelf south of Delaware Bay, and on the outer continental shelf from southern New England to South Carolina. EFH for adult Atlantic butterfish is generally found over bottom depths between 10 and 250 meters where bottom water temperatures are between 4.5 and 27.5°C and salinities are above 5 ppt. Spawning probably does not occur at temperatures below 15°C. Adult butterfish feed mainly on planktonic prey, including squids and fishes. Source: Amendment 11 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan. Mid-Atlantic Fishery Management Council, May 2011.

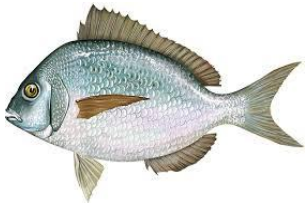
SPINY DOGFISH (Squalus acanthias)

fisheries.msc.org

Juveniles (male and female, <36 cm):
Pelagic and epibenthic habitats, primarily in deep water on the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine. Young are born mostly on the offshore wintering grounds from November to January, but newborns (neonates or “pups”) are sometimes taken in the Gulf of Maine or southern New England in early summer.
Female Sub-Adults (36-79 cm):
Pelagic and epibenthic habitats throughout the region. Sub-adult females are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. Sub-adult females are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.
Male Sub-Adults (36-59 cm):
Pelagic and epibenthic habitats, primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras. Sub-adult males are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. Sub-adult males are not as widely distributed over the continental shelf as the females and are generally found in deeper water. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.
Female Adults (≥80 cm):
Pelagic and epibenthic habitats throughout the region. Adult females are found over a wide depth

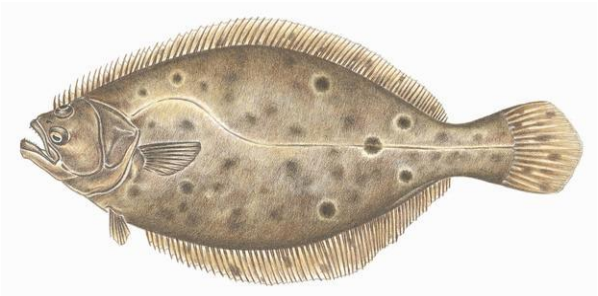
range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.
Male Adults (≥60 cm):
Pelagic and epibenthic habitats throughout the region. Adult males are found over a wide depth range in full salinity seawater (32-35 ppt) where bottom temperatures range from 7 to 15°C. They are widely distributed throughout the region in the winter and spring when water temperatures are lower, but very few remain in the Mid-Atlantic area in the summer and fall after water temperatures rise above 15°C.
Source: Amendment 3 to the Spiny Dogfish Fishery Management Plan, Mid-Atlantic Fishery Management Plan, 2014.

SCUP (Stenotomus chrysops)



Eggs: EFH is estuaries where scup eggs were identified as common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general, scup eggs are found from May through August in southern New England to coastal Virginia, in waters between 55 and 73 °F and in salinities greater than 15 ppt. Larvae: EFH is estuaries where scup were identified as common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones . In general, scup larvae are most abundant nearshore from May through September, in waters between 55 and 73 °F and in salinities greater than 15 ppt. Juveniles (≤15 cm TL): 1) Offshore, EFH is the demersal waters over the continental shelf (from the coast out to the limits of the EEZ, from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares of the area where juvenile scup are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where scup are identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general, juvenile scup are found during the summer and spring in estuaries and bays between Virginia and Massachusetts, in association with various sands, mud, mussel and eelgrass bed type substrates and in water temperatures greater than 45 °F and salinities greater than 15 ppt. Adults (>15 cm TL): 1) Offshore, EFH is the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares of the area where adult scup are collected in the NEFSC trawl survey. 2) Inshore, EFH is the estuaries where scup were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing and "seawater" salinity zones. Generally, wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 45 °F. Source: Amendment 12 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, Mid-Atlantic Fishery Management Council, 1998.

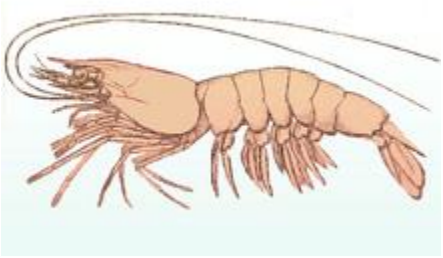
SUMMER FLOUNDER (Paralichthys dentatus)



Eggs: 1) North of Cape Hatteras, EFH is the pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of the all the ranked ten-minute squares for the area where summer flounder eggs are collected in the MARMAP survey. 2) South of Cape Hatteras, EFH is the waters over the continental shelf (from the coast out to the limits of the EEZ), from Cape Hatteras, North Carolina to Cape Canaveral, Florida, to depths of 360 ft. In general, summer flounder eggs are found between October and May, being most abundant between Cape Cod and Cape Hatteras, with the heaviest concentrations within 9 miles of shore off New Jersey and New York. Eggs are most commonly collected at depths of 30 to 360 ft.
Larvae: 1) North of Cape Hatteras, EFH is the pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras,

North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where summer flounder larvae are collected in the MARMAP survey. 2) South of Cape Hatteras, EFH is the nearshore waters of the continental shelf (from the coast out to the limits of the EEZ), from Cape Hatteras, North Carolina to Cape Canaveral Florida, in nearshore waters out to 50 miles from shore. 3) Inshore, EFH is all the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database, in the "mixing" (defined in ELMR as 0.5 to 25.0 ppt) and "seawater" (defined in ELMR as greater than 25 ppt) salinity zones. In general, summer flounder larvae are most abundant nearshore (12-50 miles from shore) at depths between 30 to 230 ft. They are most frequently found in the northern part of the Mid-Atlantic Bight from September to February, and in the southern part from November to May. Juveniles (<28 cm TL): 1) North of Cape Hatteras, EFH is the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where juvenile summer flounder are collected in the NEFSC trawl survey. 2) South of Cape Hatteras, EFH is the waters over the continental shelf (from the coast out to the limits of the EEZ) to depths of 500 ft, from Cape Hatteras, North Carolina to Cape Canaveral, Florida. 3) Inshore, EFH is all of the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database for the "mixing" and "seawater" salinity zones. In general, juveniles use several estuarine habitats as nursery areas, including salt marsh creeks, seagrass beds, mudflats, and open bay areas in water temperatures greater than 37 °F and salinities from 10 to 30 ppt range.
Adults (≥28 cm TL): 1) North of Cape Hatteras, EFH is the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina, in the highest 90% of all the ranked ten-minute squares for the area where adult summer flounder are collected in the NEFSC trawl survey. 2) South of Cape Hatteras, EFH is the waters over the continental shelf (from the coast out to the limits of the EEZ) to depths of 500 ft, from Cape Hatteras, North Carolina to Cape Canaveral, Florida. 3) Inshore, EFH is the estuaries where summer flounder were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally, summer flounder inhabit shallow coastal and estuarine waters during warmer months and move offshore on the outer continental shelf at depths of 500 ft in colder months.
Source: Amendment 12 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, Mid-Atlantic Fishery Management Council, 1998.

White Shrimp (**Litopenaeus setiferus)**



en.wikipedia.org

White Shrimp (Gray Shrimp, Lake Shrimp, Green Shrimp, Green-tailed Shrimp, Blue Tailed Shrimp, Rainbow Shrimp, Daytona Shrimp, Common Shrimp, and Southern Shrimp). White Shrimp range from Fire Island, New York to St. Lucie Inlet on the Atlantic Coast of Florida. Along the Atlantic Coast of the U.S., the White Shrimp has centers of abundance in South Carolina, Georgia, and northeast Florida. White Shrimp are generally found on muddy bottoms concentrated in waters < 89 feet (27 meters). White Shrimp are more active during daylight hours. All penaeid shrimp undergo 11 larval stages in coastal waters with the period for White Shrimp being 10 to 12 days. The mechanism for larval recruitment to the estuaries is not fully understood, but most likely involves nearshore tidal currents as early as April to July. Juveniles are typically found in small creeks of the estuaries with growth rates of up to 0.09 inches per day (South Atlantic Fishery Management Council 1996b). Sub-adults migrate to the sounds, with an offshore migration of mature adults (> 4.7 inches, 120 millimeters) typically occurring between April and June, with spawning occurring within a few miles of the coast at temperatures above 72oF. All penaeid shrimp have an annual life cycle. Their abundance is driven primarily by environmental conditions (water temperature) and can fluctuate seasonal. White Shrimp is the largest shrimp fishery in Atlantic waters off the southeastern U.S., with a roe season in the spring, the bulk of the harvest in the fall, and an overwintering fishery (usually in federal waters > 3nm). It is managed under the South Atlantic Fishery Management Council's Shrimp FMP as an annual crop. As such standard procedures to establish an overfishing threshold are difficult. Instead, the Council establishes targets and thresholds based on annual landings and CPUE data from the Southeast Area Monitoring and Assessment Program – South Atlantic (SEAMAP-SA) to indicate relative abundance (health) of the stock. Vulnerabilities and sources of mortality include predation, decline in estuarine water quality, environmental conditions (winter freeze kills, coastal flooding, etc.), and disease (black gill).

Brown Shrimp (Farfantepeneaus aztecus)

fisheries.noaa.gov

Brown Shrimp (Brownie, Green Lake Shrimp, Red Shrimp, Redtail Shrimp, Golden Shrimp, Native Shrimp, and also the Summer Shrimp in North Carolina). 68 Brown Shrimp occur on the Atlantic Coast from Martha's Vineyard, Massachusetts to the Florida Keys. Breeding populations apparently do not range north of North Carolina. The species may occur in commercial quantities in waters as deep as 361 feet (110 meters), but they are most abundant in water less than 180 feet (55 meters), in areas of mud, sand, and shell bottom. Brown Shrimp burrow into the sediment and are most active at night. All penaeid shrimp undergo 11 larval stages in coastal waters with the period for Brown Shrimp being 11 to 17 days. Postlarvae overwintering in offshore bottom sediments. The mechanism for larval recruitment to the estuaries is not fully understood with an influx of postlarvae reported during February and March. Juveniles are typically found in small creeks of the estuaries with growth rates of up to 0.098 inches (2.5 millimeters) per day. Sub-adults migrate to the sounds, with an offshore migration of mature adults (> 5.5 inches, 140 millimeters) being reported off South Carolina during October and November. The precise

spawning area is uncertain but believed to be further offshore (> 9nm). All penaeid shrimp have an annual life cycle. Brown Shrimp is driven primarily by environmental conditions (water temperature and salinity) and can fluctuate seasonal. Brown Shrimp are primarily a summer (June to August) fishery in Atlantic waters off the southeastern U.S. It is managed under the South Atlantic Fishery Management Council's Shrimp FMP as an annual crop. As such standard procedures to establish an overfishing threshold are difficult. Instead, the Council establishes targets and thresholds based on annual landings and CPUE data from the Southeast Area Monitoring and Assessment Program – South Atlantic (SEAMAP-SA) to indicate relative abundance (health) of the stock. Vulnerabilities and sources of mortality include predation, decline in estuarine water quality, environmental conditions (coastal flooding), and disease (black gill).

Pink Shrimp (Farfantepenaeus duorarum)

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Pink Shrimp (Spotted Shrimp, Hopper, Pink Spotted Shrimp, Brown Spotted Shrimp, Grooved Shrimp, Green Shrimp, Pink Night Shrimp, Red Shrimp, Skipper, and Pushed Shrimp). 69 Along the Atlantic waters off the southeastern U.S., Pink Shrimp occur from southern Chesapeake Bay to the Florida Keys but are most common in Florida and North Carolina. Pink shrimp are most abundant in waters of 36 to 121 feet. They are common in the estuaries surrounding southern Florida and into deep water (approximately 328 ft) southeast of the Keys and are the dominant species within the Dry Tortugas shrimping grounds and Florida Bay. Pink Shrimp prefer hard sand and calcareous shell bottom (Williams 1955, 1984). They burrow into the sediment by day and are most active at night. All penaeid shrimp undergo 11 larval stages in coastal waters with the period for Pink Shrimp being 15 to 25 days. The larval transport mechanism for Pink Shrimp larvae to enter the estuaries is not well known but shoreward counter currents and favorable winds may enhance movement to the northeast Florida coast. Florida Pink Shrimp typically leave the estuaries two to six months after recruitment. Growth varies by region and season with a range of 0.010 to 0.067 inches per day (0.25 to 1.7 millimeters) . In Florida, shrimp growth faster in the winter than in the spring, while North Carolina growth rates peak during the summer. Offshore migration of mature adults (> 3.35 inches, 85 millimeters) occurs in April and May, and again during October and November in Florida, while small Pink Shrimp first occur in North Carolina commercial catches in August. All penaeid shrimp have an annual life cycle. Their abundance is driven primarily by environmental conditions (water temperature) and can fluctuate seasonal. Pink Shrimp harvest occurs nearly exclusively in Florida - 67% and North Carolina - 33%. The fishery is managed under the South Atlantic Fishery Management Council's Shrimp FMP as an annual crop. As such standard procedures to establish an overfishing threshold are difficult. Instead, the Council establishes targets and thresholds based on annual landings and CPUE data from the Southeast Area Monitoring and Assessment Program – South Atlantic (SEAMAP-SA) to indicate relative abundance (health) of the stock. Vulnerabilities and sources of mortality include predation, decline in estuarine water quality, environmental conditions (cold water kills).

APPENDIX B

SINCE 1959

2020 SAV SURVEY
OREGON INLET FISHING CENTER
8770 Oregon Inlet Road
Nags Head, NC 27959

Prepared For:
Russell King
Oregon Inlet Fishing Center, LLC
and
US National Park Service

Prepared By:

Quible & Associates, P.C.
Engineering · Environmental Sciences · Surveying · Planning
PO Drawer 870
Kitty Hawk, North Carolina 27949
(252) 261-3300 FAX (252) 261-1260
Quible.com

Project Number P18078
May 8, 2020

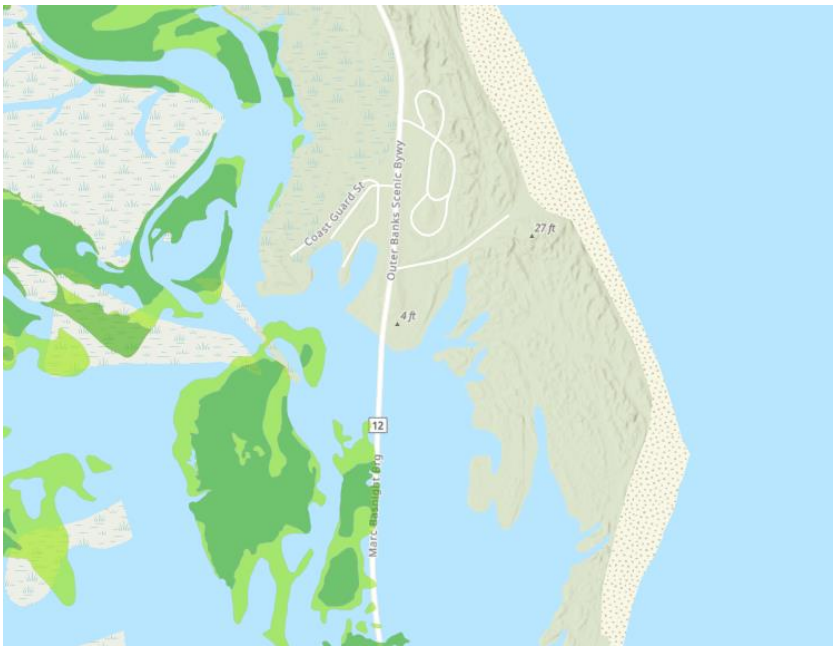
I. Introduction

The purpose of this report is for Quible & Associates, P.C. (Quible) to provide state and federal regulatory agencies with the results of a Submerged Aquatic Vegetation (SAV) survey conducted along the shoreline of Motts Creek adjacent to the Oregon Inlet Fishing Center (OIFC) located at 8770 Oregon Inlet Road, Nags Head, Dare County, NC (**Exhibit A – Site Exhibit**).

The April 28th SAV survey was performed in response to a request by the North Carolina Marine Fisheries (NC DMF) Habitat and Enhancement Section related to a proposal to construct a transient fuel dock, demolish existing onsite structures and construct a new retail center at the OIFC.

A review of online GIS data (NC OneMap 2006-2008 SAV updated 3/19/20) shows SAV occurrence outside of the project area. Ground truthing was performed by environmental scientists from Quible during the April 28, 2020 SAV survey.

The SAV survey was conducted during the growing season as required by resource management agencies.



SAV 2006-2008 Mapping Revised (3/9/2020) NC OneMap

II. Methodology

The attached base map (**Exhibit A**) includes 2016 aerial photography (NC OneMap), highlighted projected area, water depths and findings of the survey. Water depth surveying was conducted on January 24th, 2020 by a survey crew from Quible using survey-grade GPS (single beam echo-sounder). SAV surveying consisted of wading through the project area to depths of 4 feet below water level. Ideal weather conditions on April 28th (light winds and clear skies) allowed for clear views of the substrate to depths of approximately 5.0 feet below water surface. During the SAV survey, water depths, substrate type, flora and fauna notations and general observations were made and are presented in this report.

III. Findings and Observations

On April 28th, the winds were very light (+/- 2-5 mph) out of the SE. The survey occurred during a rising tide (high tide at Oregon Inlet was 11:51 am survey conducted at 10-11 am) resulting in water levels that were estimated to be about 8-12 inches above normal water levels (NWL). Normal Water Level is based on visible biological (algae, barnacles etc.) and physical markers (water marks) evident on pilings, rip rap etc.

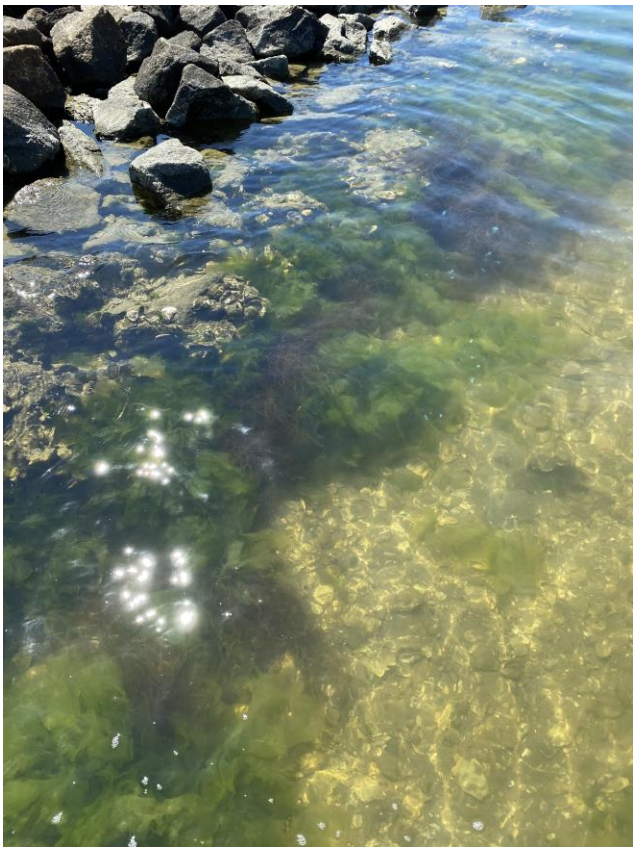
The bottom type in Motts Creek is loose sand and silt with some loose discarded oyster shell scattered near the shoreline. Sparse live oysters are attached to the riprap along the shoreline near the substrate. The entire shoreline of Motts Creek is stabilized with riprap, and some of the smaller riprap is scattered to depths of -1.0 to -2.0 feet below NWL.

No rooted SAV or rhizomes were observed within the project area. However, four different attached algae species were observed growing within the review area along the submerged portions of the riprap (See Attached Pictures). Sea Lettuce (Ulva spp.) was the dominate species, the area of Sea Lettuce is shown on the accompanying Site Exhibit (**Exhibit A**). Another species of an attached brown algae was found occurring sporadically (<5%) along the southern end of the shoreline. The other species of brown and green algae were observed very sparsely (<2%) in small quantities along the rip rap. All algae species were attached to either rip rap of oyster shell.

IV. DISCUSSION and CONCLUSION

The findings of this study indicate that the area reviewed does not support SAV and likely is not SAV habitat. Several undifferentiated species of green and brown algae were observed during the survey with Ulva spp. being the dominant type.

V. PHOTOGRAPHS



View of shoreline with attached algae species visible

Sea Lettuce Ulva spp.

Attached Brown Algae

Green Hair Algae

Brown Algae

NOTE: THIS DOCUMENT IS PRELIMINARY – NOT FOR CONSTRUCTION, RECORDATION, SALES OR CONVEYANCES – THIS DOCUMENT IS FOR DISCUSSION PURPOSES ONLY! EXISTING INFORMATION SHOWN ON THIS DOCUMENT IS BASED ON BEST AVAILABLE DATA AND IS NOT A CERTIFIED SURVEY. ALL INFORMATION SHOWN ON THIS DOCUMENT IS SUBJECT TO ANY REQUIREMENTS BY ANY REGULATORY AGENCY, ENTITY OR AUTHORITY.

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NCGRID (NAD83-2011)

MOTTS CREEK
(SC WATER CLASSIFICATION)

SUBTIDAL
SOFT BOTTOM

PROPOSED
90 LF BY 8 FT
FUEL DOCK

EXTENTS OF
ATTACHED ALGAE

RIP RAP

PROJECT
BOUNDARY

MAINTAINED
GRASSES

30' BUFFER

*PARCEL & AERIAL DATA SHOWN, BASED ON DARE COUNTY GIS DATA.

NC License#: C-0208
Quible & Associates, P.C.
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
ENG./SUR. NOT OFFERED AT BLACK MTN. OFFICE
8466 Caratoke Hwy, Powells Point, NC 27966
Phone: (252) 491-8147 Fax: (252) 491-8146
90 Church St., Ste. B, Black Mountain, NC 28711
Phone: (828) 793-0398 Fax: (252) 491-8146
administrator@quible.com

THIS MAP IS NOT A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.

SAV EXHIBIT

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD

NAGS HEAD TOWNSHIP
DARE COUNTY
NORTH CAROLINA

0 30 60
GRAPHIC SCALE IN FEET 1"= 30'

PROJECT	DRAWN BY	CHECKED BY	DATE
P18078	JTM/OTH	WDE	04/28/20

Q:\2018\P18078\Drawings\P18078-COMMUNITIES JTM.dwg 4/28/2020 2:02 PM Tmurphy

APPENDIX C

VIBRACORE SAMPLING REPORT
Oregon Inlet Fishing Center
Dare County, North Carolina
Motts Creek
HUC 0301020515

Prepared By:
Quible & Associates, PC
PO Drawer 870
Kitty Hawk, NC 27949
252-261-3300

Prepared For:
Cape Hatteras National Seashore
National Park Service
1401 National Park Drive
Manteo, NC 27954

Project Number 18078
October 21, 2020

TABLE OF CONTENTS

FIGURES

APPENDICES

1.0 INTRODUCTION

The following narrative discusses sediment collection from the proposed dredge area associated with the redevelopment of the Oregon Inlet Fishing Center (Site). Understanding the physical and chemical properties of the proposed dredge spoil material is required so that decisions can be made about the fate of dredge spoils.

Sediment samples were collected using Vibracore techniques in locations as shown on the attached **Figure 1**. The cores and subsequent sediment extraction for sampling was conducted in accordance with the most recent Region 4 US EPA Laboratory Services and Applied Science Division Operating Procedures (LSASDPROC-200-R4). Sediment samples were submitted to a certified laboratory for analysis of Toxicity Characteristic Leaching Procedure (TCLP) for Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), Metals, Pesticides and Herbicides. In addition, sediment samples from each core were submitted to a Geotechnical laboratory for grain size analysis.

2.0 VIBRACORE SEDIMENT SAMPLING

A total of seven sediment samples were collected from seven total borings within an area proposed to be dredged as part of the redevelopment of the Site (**Figure 1**). Dredging is required within Motts Creek to create sufficient water depths (adjacent to Walter Slough Channel) for refueling of boats along a newly proposed transient fuel dock. In addition, maintenance dredge of the entrance and basin of the Oregon Inlet Fishing Center is proposed and required due to shoaling which has constricted the entrance channel and rendered several of the interior existing boat slips unusable or limited. Vibracore sampling cores (three-inch thin wall aluminum irrigation pipe) were advanced to the proposed project depth of -8.0 feet MLLW or core refusal. At each location the depth to water was noted and a three-inch aluminum thin wall irrigation pipe was vibrated into the substrate (to the proposed project depth of -8.0 MLLW or core refusal) using a 8 HP Dreyer concrete vibrator and custom fabricated clamp. Cores were capped below the water level and capped with a three-inch expansion plug, and then extracted from the substrate using a tripod and winch mechanism with a diver in the water to cap the bottom of the core to eliminate any core loss. Sediment collection and sampling was conducted in accordance with guidance provided in Region 4 LSASDPROC-200-R4 Sediment Sampling.

Generally, the sediments encountered outside of the marina basin are best described as light grey fine sands with minor shell and very little organics. Sediments collected from within the basin are still best described as fine sands, however, there is more organic material and silt and the sediments are darker in color (dark grey to black and greenish black). Detailed lithologies and grain size analyses of the core samples are presented on each Vibracore Log (**Appendix A**).

2.1 SAMPLE COLLECTION

Once the cores were extracted, they were capped (sealed), labeled (core number and top and bottom) and transported to Quible's offices where the cores were split, and the lithology was described. Once the cores were split and described, stainless steel spoons were used to extract sediments and place the material into laboratory provided glassware. Sample jars were labeled, packed on ice and placed into a cooler and shipped to a NC Certified laboratory (Environmental Chemists, Inc. DWR # 94) for analysis of TCLP for VOCs, SVOCs, Metals, Pesticides and Herbicides. In addition, sediment samples from each core were submitted to a Geotechnical laboratory for grain size analysis. Grain size analyses are presented on each Vibracore Log which are included in **Appendix A**. Laboratory analytical reports summarizing the results of the

chemical analyses are included as **Appendix B**. A discussion of the analytical results is presented below in Section 6.0.

3.0 INVESTIGATIVE DERIVED WASTE HANDLING

Sediment remaining from the sampling activities was placed into a 5-gallon bucket for temporary storage until laboratory analytical results were finalized. Based on the laboratory analytical results, spoils remaining from the core samples were spread on the lawn at Quible's office.

4.0 DECONTAMINATION PROCEDURES

Dedicated three-inch thin wall aluminum irrigation piping was used to collect Vibracore samples. Vibracore samples were split using a power saw. Sediment samples were collected directly from the split cores and placed into laboratory provided glassware using stainless steel spoons and laboratory provided glassware Steel collection spoons were washed in DI water and Alconox® between each sample collection.

5.0 SAMPLING COLLECTION PROTOCOL AND PROCEDURES

All field sampling and field measurement procedures followed the guidance provided in the most recent version of the US-EPA Region 4 LSASDPROC-200-R4 Sediment Sampling.

6.0 ANALYTICAL RESULTS

Based on the Laboratory Analytical Report, there were no concentrations of any compound analyzed detected above the method detection limits as specified in the laboratory analytical report.

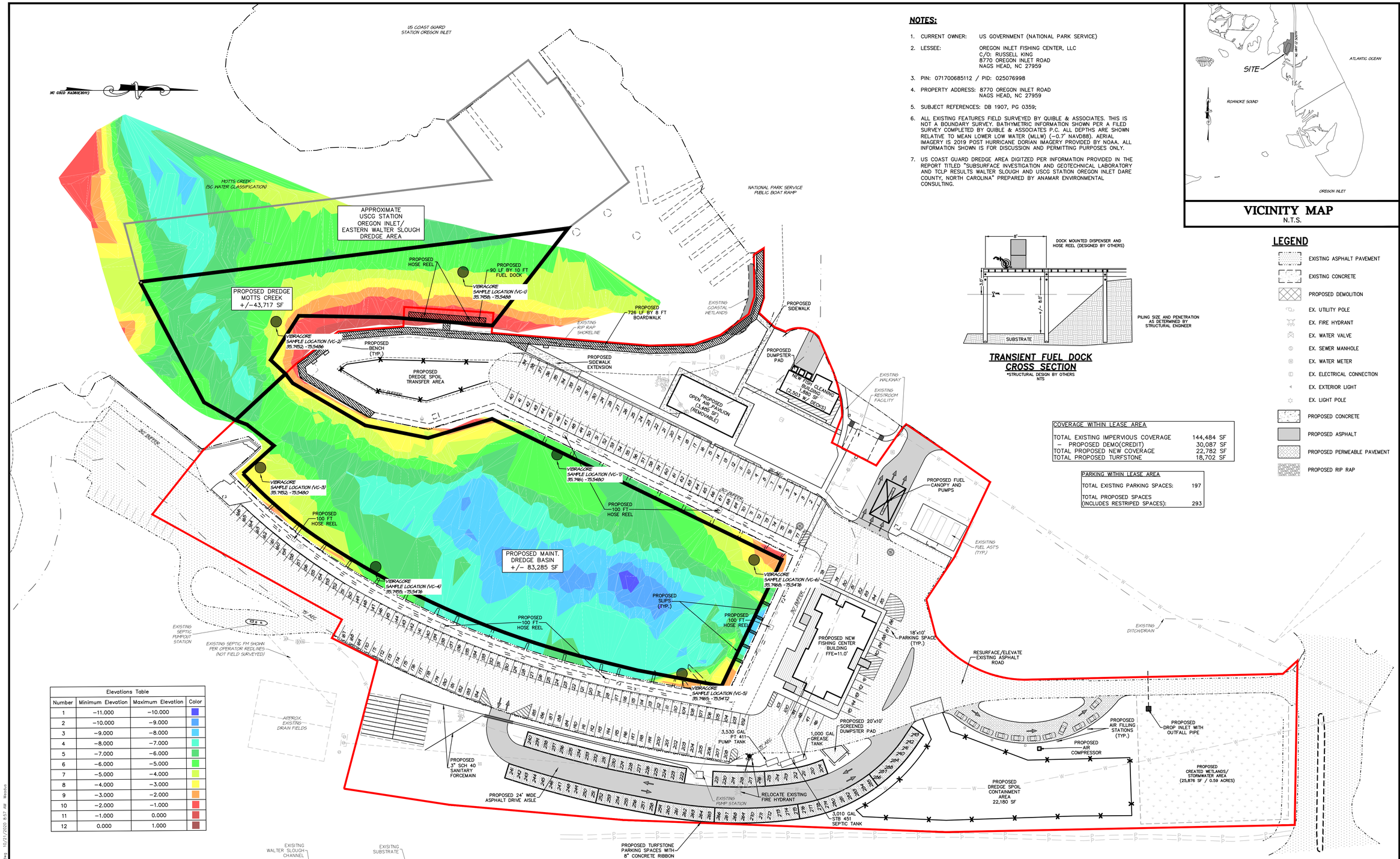
Complete copies of the Laboratory Analytical Reports are attached as **Appendix B**.

7.0 SUMMARY AND DISCUSSION

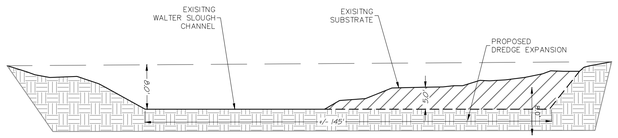
No concentrations of any compound analyzed were detected at or above the method detection limits as specified in the laboratory analytical report. Therefore, the dredge material can be considered for beneficial reuse purposes and the disposal location of dredge spoils associated with the project should be allowed to occur on site or any other location as determined by the property owner (National Park Service). Grain size analyses indicate that the dredge spoil material ***may*** be suitable for general non-structural fill applications. Prior to this material being used, the appropriate geotechnical analyses shall be performed, and the material should be allowed to completely dewater.

During dredging activities, if any spoil material is obviously contaminated (odors or other physical indicators) or unsuitable for disposal on site, the unsuitable material should be segregated from other dredge spoil materials and evaluated further to determine an appropriate disposal method.

FIGURE 1



Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	−11.000	−10.000	
2	−10.000	−9.000	
3	−9.000	−8.000	
4	−8.000	−7.000	
5	−7.000	−6.000	
6	−6.000	−5.000	
7	−5.000	−4.000	
8	−4.000	−3.000	
9	−3.000	−2.000	
10	−2.000	−1.000	
11	−1.000	0.000	
12	0.000	1.000	



CHANNEL DREDGE CROSS SECTION
*STRUCTURAL DESIGN BY OTHERS
NTS

NOTES:

1. CURRENT OWNER: US GOVERNMENT (NATIONAL PARK SERVICE)
2. LESSEE: OREGON INLET FISHING CENTER, LLC
   C/O: RUSSELL KING
   8770 OREGON INLET ROAD
   NAGS HEAD, NC 27959
3. PIN: 071700685112 / PID: 025076998
4. PROPERTY ADDRESS: 8770 OREGON INLET ROAD
   NAGS HEAD, NC 27959
5. SUBJECT REFERENCES: DB 1907, PG 0359;
6. ALL EXISTING FEATURES FIELD SURVEYED BY QUIBLE & ASSOCIATES. THIS IS NOT A BOUNDARY SURVEY. BATHYMETRIC INFORMATION SHOWN PER A FILED SURVEY COMPLETED BY QUIBLE & ASSOCIATES P.C. ALL DEPTHS ARE SHOWN RELATIVE TO MEAN LOWER LOW WATER (MLLW) (−0.7' NAVD88). AERIAL IMAGERY IS 2019 POST HURRICANE DORIAN IMAGERY PROVIDED BY NOAA. ALL INFORMATION SHOWN IS FOR DISCUSSION AND PERMITTING PURPOSES ONLY.
7. US COAST GUARD DREDGE AREA DIGITZED PER INFORMATION PROVIDED IN THE REPORT TITLED "SUBSURFACE INVESTIGATION AND GEOTECHNICAL LABORATORY AND TCLP RESULTS WALTER SLOUGH AND USCG STATION OREGON INLET DARE COUNTY, NORTH CAROLINA" PREPARED BY ANAMAR ENVIRONMENTAL CONSULTING.

TRANSIENT FUEL DOCK CROSS SECTION
*STRUCTURAL DESIGN BY OTHERS
NTS

COVERAGE WITHIN LEASE AREA	
TOTAL EXISTING IMPERVIOUS COVERAGE	144,484 SF
− PROPOSED DEMO(CREDIT)	30,087 SF
TOTAL PROPOSED NEW COVERAGE	22,782 SF
TOTAL PROPOSED TURFSTONE	18,702 SF

PARKING WITHIN LEASE AREA	
TOTAL EXISTING PARKING SPACES:	197
TOTAL PROPOSED SPACES (INCLUDES RESTRIPED SPACES):	293

VICINITY MAP
N.T.S.

LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE
- PROPOSED DEMOLITION
- EX. UTILITY POLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. ELECTRICAL CONNECTION
- EX. EXTERIOR LIGHT
- EX. LIGHT POLE
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- PROPOSED PERMEABLE PAVEMENT
- PROPOSED RIP RAP

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GRAPHIC SCALE
50' 0 25' 50' 100'
(IN FEET)
1 inch = 50 ft.

Quible & Associates, P.C.
NC License# C-0208
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
**NOT INCLUDED AT THIS OFFICE
9460 CARATOKE HWY
POWELLS POINT, NC 27966
Phone: (252) 491-8146
Fax: (252) 491-8146
quiblesurvey@outlook.com
90 CHURCH STREET, SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 419-3856

THIS MAP IS NOT A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.
CERTIFICATION

NO.	DATE	REVISIONS

VIBRACORE SAMPLING 09/08/20

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD
NAGS HEAD TOWNSHIP — DARE COUNTY — NORTH CAROLINA

PROJECT NO.	P18078
DESIGNED BY	JTM/CMS
DRAWN BY	JTM/BRJ
CHECKED BY	WDE
ISSUE DATE	10/01/20

SHEET NO. 1 OF 1 SHEETS

APPENDIX A

VIBRACORE LOG

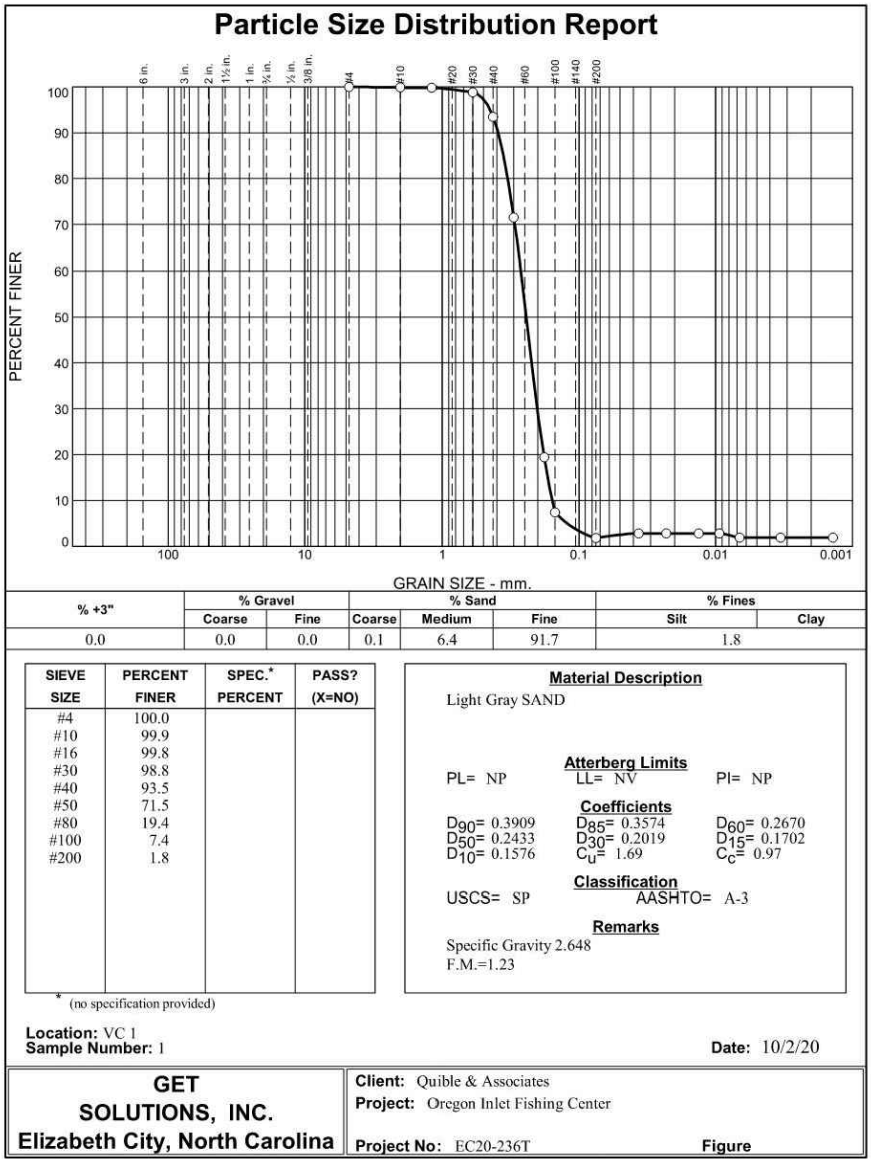
Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-1/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	4.0 FT. MLLW NAVD 88-CORE RECOVERY 3.59'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7958/-75.5488
STAFF:	WDE, BDR, JTM

FORMATION DESCRIPTION

0-3.59' GLEY 1 7/1 - LIGHT GRAY FINE SANDS

WATER DEPTH (FT.) (NAVD 88)



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	6.4	91.7	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#16	99.8		
#30	98.8		
#40	93.5		
#50	71.5		
#80	19.4		
#100	7.4		
#200	1.8		

* (no specification provided)

Material Description
Light Gray SAND

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.3909 D_{85}= 0.3574 D_{60}= 0.2670
D_{50}= 0.2433 D_{30}= 0.2019 D_{15}= 0.1702
D_{10}= 0.1576 C_u= 1.69 C_c= 0.97

Classification
USCS= SP AASHTO= A-3

Remarks
Specific Gravity 2.648
F.M.=1.23

Location: VC 1
Sample Number: 1
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T
Figure

VIBRACORE LOG

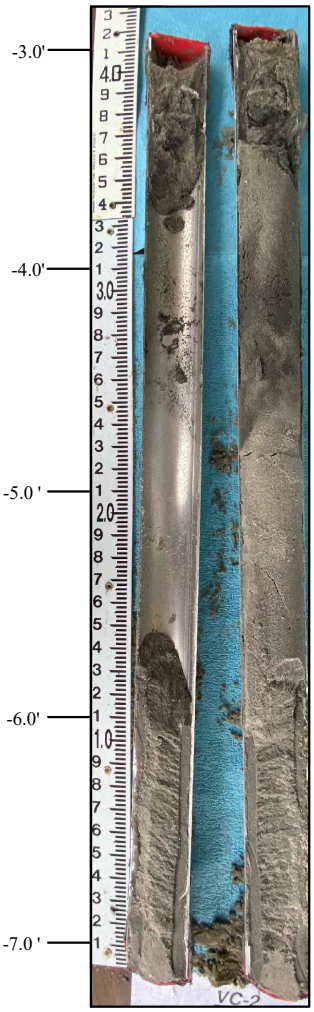
Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-2/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	3.0 FT. MLLW NAVD 88-CORE RECOVERY 4.10'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7952/-75.5486
STAFF:	WDE, BDR, JTM

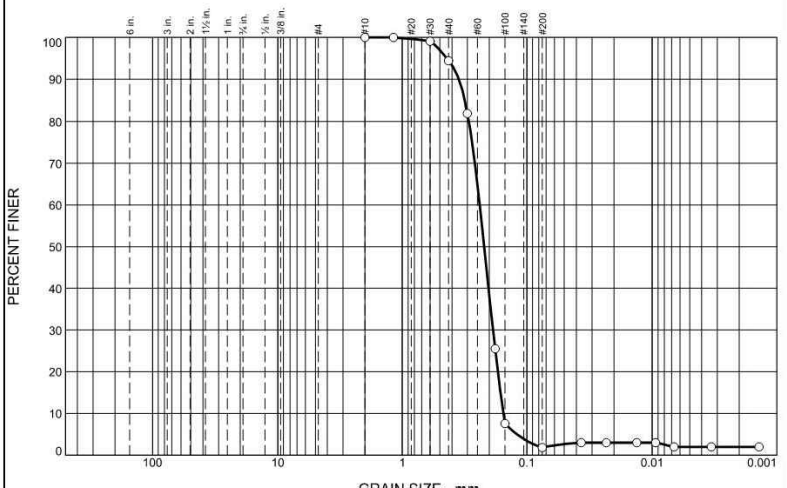
FORMATION DESCRIPTION

0-4.10' GLEY 1 7/1 - LIGHT GRAY FINE SANDS

WATER DEPTH (FT.) (NAVD 88)



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
				5.6	92.6	1.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#16	99.9		
#30	99.1		
#40	94.4		
#50	81.9		
#80	25.5		
#100	7.6		
#200	1.8		

* (no specification provided)

Material Description
Light Gray SAND

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.3519 D_{85}= 0.3148 D_{60}= 0.2392
D_{50}= 0.2200 D_{30}= 0.1870 D_{15}= 0.1632
D_{10}= 0.1546 C_u= 1.55 C_c= 0.95

Classification
USCS= AASHTO= A-3

Remarks
Specific Gravity 2.648
F.M.=1.11

Location: VC 2
Sample Number: 2
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T **Figure**

VIBRACORE LOG

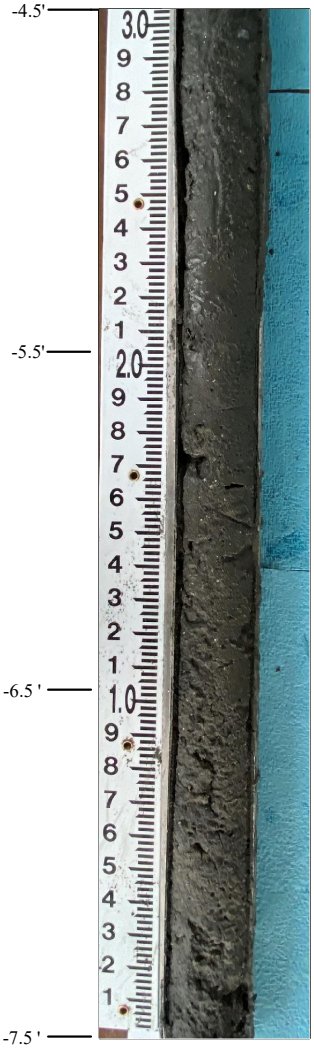
Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-3/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	4.5 FT. MLLW NAVD 88-CORE RECOVERY 3.0'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7952/-75.5480
STAFF:	WDE, BDR, JTM

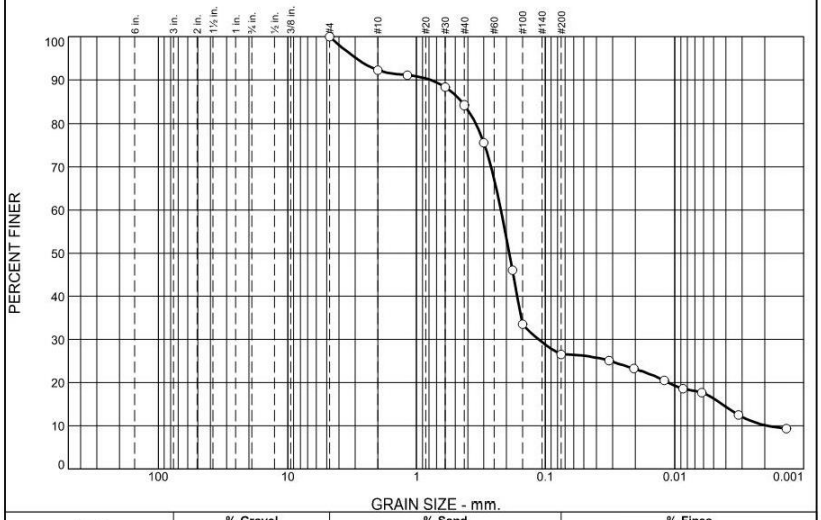
FORMATION DESCRIPTION

0-1.5'	GLEY 2 2.5/5PB - BLACK ORG. FINE SANDS
1.5'-3.0'	GLEY 1 3/10B - DARK GREY BLUISH GREY VF SANDS WITH SHELL

WATER DEPTH (FT.) (NAVD 88)



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	7.8	8.0	57.6	10.3	16.3

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	92.2		
#16	91.1		
#30	88.3		
#40	84.2		
#50	75.6		
#80	46.1		
#100	33.5		
#200	26.6		

* (no specification provided)

Material Description
Gray SAND w/gravel and shell

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.7871 D_{85}= 0.4488 D_{60}= 0.2208
D_{50}= 0.1901 D_{30}= 0.1126 D_{15}= 0.0043
D_{10}= 0.0019 C_u= 115.56 C_c= 30.05

Classification
USCS= SM AASHTO= A-2-4(0)

Remarks
Specific Gravity 2.533
F.M.=1.18

Location: VC 3
Sample Number: 3
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T
Figure

VIBRACORE LOG

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Fax: (252) 491-8146
Web: www.quible.com

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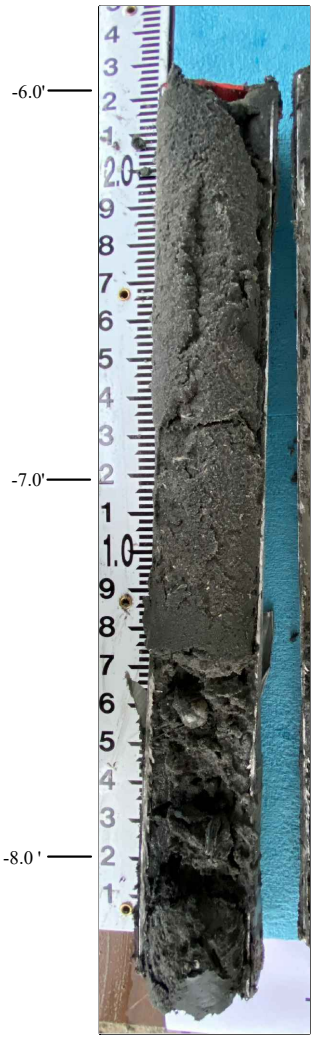
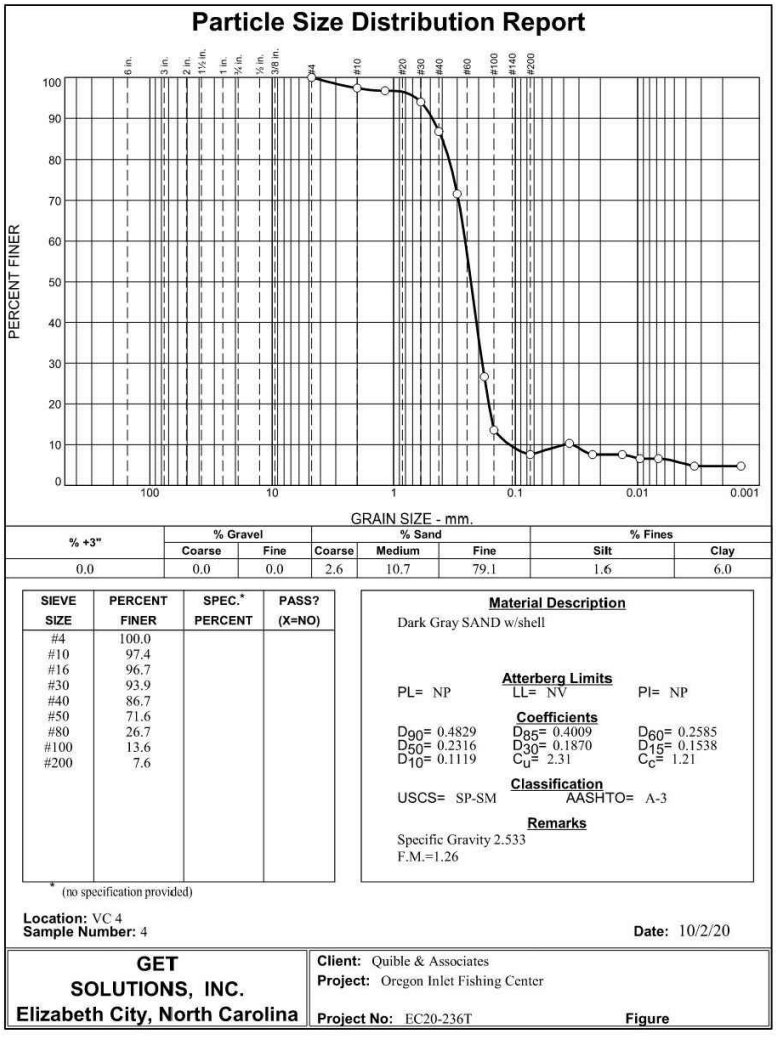
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-4/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	6.0 FT. MLLW NAVD 88-CORE RECOVERY 2.2'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7955/-75.5476
STAFF:	WDE, BDR, JTM

FORMATION DESCRIPTION

0-1.1'	GLEY 2 4/1 -GREY FN SANDS
1.1'-2.0'	GLEY 2 2.5/1 - BLUISH BLACK ORG. FN SANDS WITH SHELL

WATER DEPTH (FT.) (NAVD 88)





VIBRACORE LOG

Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

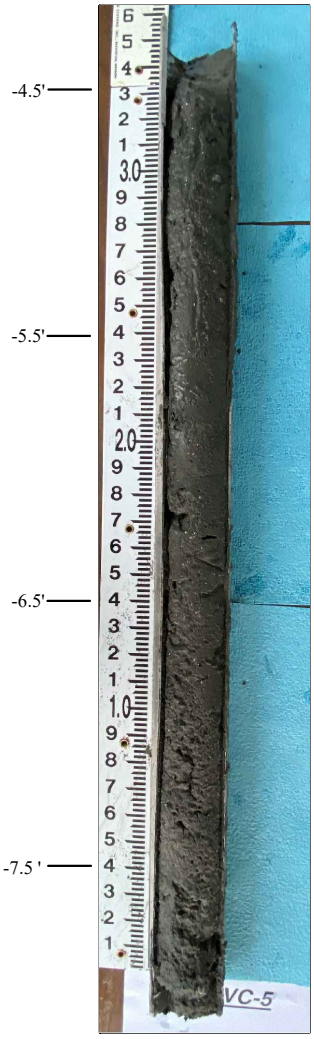
OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-5/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	4.5 FT. MLLW NAVD 88-CORE RECOVERY 3.5'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7965/-75.5472
STAFF:	WDE, BDR, JTM

FORMATION DESCRIPTION

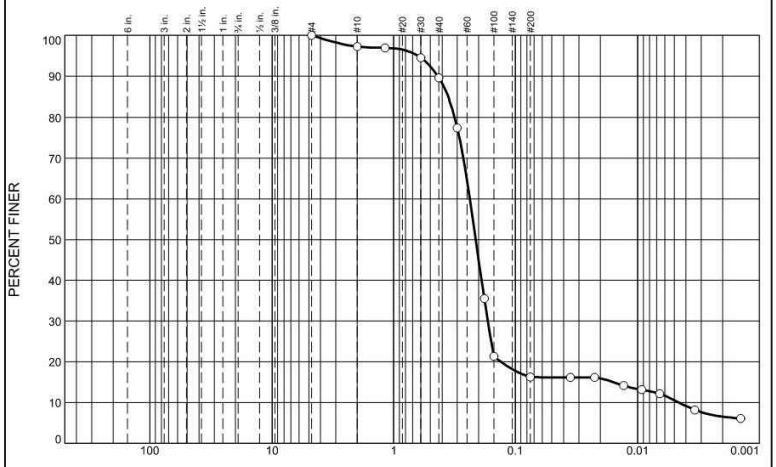
0-1.5' GLEY 1 3/3 GREY BLACK ORG. SILT AND FN SANDS WITH MINOR SHELL; LOOSE

1.5'-3.5' GLEY 1 3/3 - GREY BLACK FN SANDS AND SILT WITH MINOR SHELL

WATER DEPTH (FT.) (NAVD 88)



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.8	7.7	73.3	5.6	10.6

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.2		
#16	96.9		
#30	94.5		
#40	89.5		
#50	77.5		
#80	35.5		
#100	21.3		
#200	16.2		

* (no specification provided)

Material Description
Gray SAND w/shell and wood debris

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.4356 D_{85}= 0.3562 D_{60}= 0.2365
D_{50}= 0.2113 D_{30}= 0.1689 D_{15}= 0.0159
D_{10}= 0.0046 C_u= 51.64 C_c= 26.33

Classification
USCS= SM AASHTO= A-2-4(0)

Remarks
Specific Gravity 2.457
F.M.=1.12

Location: VC 5
Sample Number: 5
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T
Figure

VIBRACORE LOG

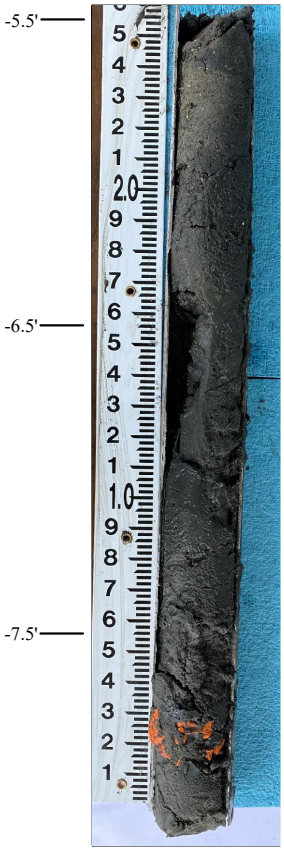
Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-6/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	5.5 FT. MLLW NAVD 88-CORE RECOVERY 2.6'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7968/-75.5476
STAFF:	WDE, BDR, JTM

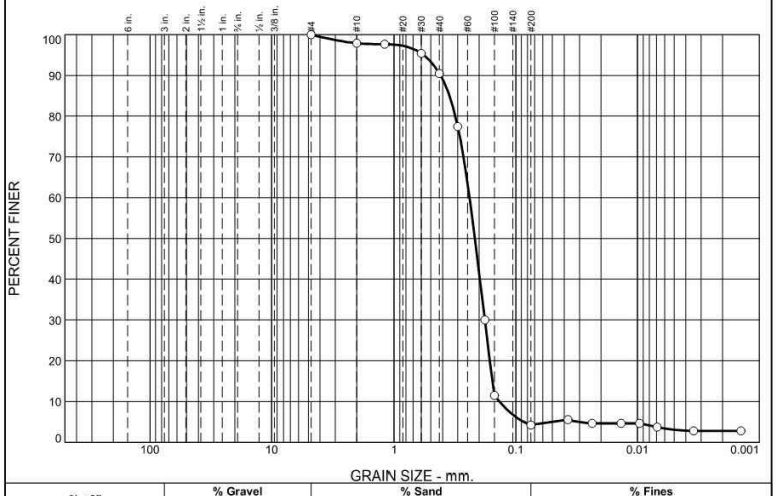
FORMATION DESCRIPTION

0-0.5'	GLEY 1 2.5/1 GREENISH GREY VF SANDS WITH MINOR SHELL
0.5'-1.5'	GLEY 1 3/1 GREY BLACK FN TO VF SANDS
1.5'-2.0'	GLEY 1 2.5/N- BLACK SILT AND ORG. MUD
2.0'-2.6'	GLEY 1 3/5G DARK GREENISH GREY ORG. FN SANDS; PLASTIC

WATER DEPTH (FT.) (NAVD 88)



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	2.1	7.5	86.2	1.2	3.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	97.9		
#16	97.6		
#30	95.4		
#40	90.4		
#50	77.4		
#80	30.0		
#100	11.5		
#200	4.2		

* (no specification provided)

Material Description
Gray SAND w/shell

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.4164 D_{85}= 0.3508 D_{60}= 0.2402
D_{50}= 0.2169 D_{30}= 0.1800 D_{15}= 0.1561
D_{10}= 0.1366 C_u= 1.76 C_c= 0.99

Classification
USCS= SP AASHTO= A-3

Remarks
Specific Gravity 2.533
F.M.=1.20

Location: VC 6
Sample Number: 6
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T
Figure

VIBRACORE LOG

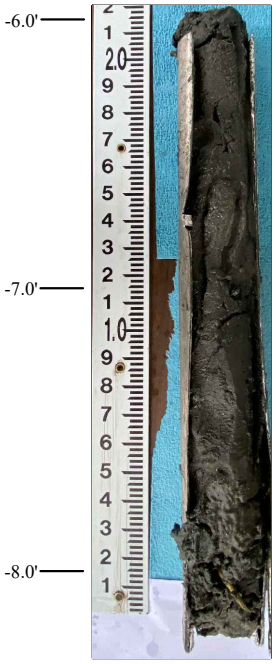
Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
Phone: (252) 491-8147
Fax: (252) 491-8146
Web: www.quible.com

OWNER:	OIFC, LLC 8770 Old Oregon Inlet Rd. Nags Head, NC
PURPOSE OF VIBRACORE:	Dredge spoil determination (lithology and sediment quality analysis)
CORE IDENTIFICATION/LOCATION:	VC-7/SEE ATTACHED SITE MAP
DATE:	9/8/2020 CORE; 9/9/20 EXTRACTION AND SAMPLING
DEPTH TO SUBSTRATE/DATUM:	6.0 FT. MLLW NAVD 88-CORE RECOVERY 2.0'
REFERENCE:	MLLW
LATITUDE/LONGITUDE:	35.7961/-75.5480
STAFF:	WDE, BDR, JTM

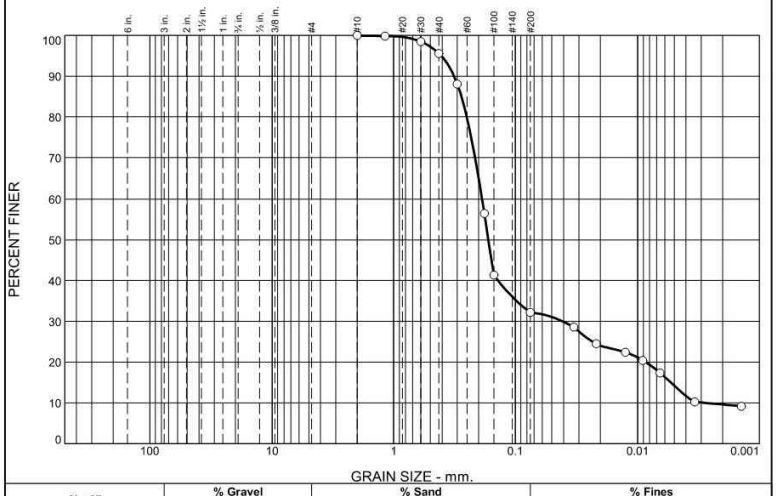
FORMATION DESCRIPTION

0-2.0' GLEY 1 3/1 GREY BLACK FN TO VF SANDS AND ORG. MUD; SULFIDIC

WATER DEPTH (FT.) (NAVD 88)



Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
				4.5	63.3	18.0	14.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#16	99.8		
#30	98.5		
#40	95.5		
#50	88.1		
#80	56.5		
#100	41.3		
#200	32.2		

* (no specification provided)

Material Description
Gray SAND

Atterberg Limits
PL= NP LL= NV PI= NP

Coefficients
D_{90}= 0.3185 D_{85}= 0.2779 D_{60}= 0.1877
D_{50}= 0.1671 D_{30}= 0.0407 D_{15}= 0.0054
D_{10}= 0.0029 C_u= 65.71 C_c= 3.09

Classification
USCS= AASHTO= A-2-4(0)

Remarks
Specific Gravity 2.457
F.M.=0.72

Location: VC 7
Sample Number: 7
Date: 10/2/20

GET SOLUTIONS, INC.
Elizabeth City, North Carolina

Client: Quible & Associates
Project: Oregon Inlet Fishing Center
Project No: EC20-236T
Figure

APPENDIX B

envirochem (SM)

Environmental Chemists, Inc.

6602 Windmill Way, Wilmington, NC 28405 • 910.392.0223 Lab • 910.392.4424 Fax
710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39490	**Site:** VC-1	9/8/2020 8:30 AM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	85.1 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020

envirochem SM

ANALYTICAL & CONSULTING CHEMISTS

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6602 Windmill Way, Wilmington, NC 28405 • 910.392.0223 Lab • 910.392.4424 Fax
710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/17/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

envirochem SM
ANALYTICAL & CONSULTING CHEMISTS

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39492	**Site:** VC-2	9/8/2020 9:15 AM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	92.4 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020

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ANALYTICAL & CONSULTING CHEMISTS

Environmental Chemists, Inc.

6602 Windmill Way, Wilmington, NC 28405 • 910.392.0223 Lab • 910.392.4424 Fax
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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

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Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/17/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/17/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

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ANALYTICAL & CONSULTING CHEMISTS

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39493	**Site:** VC-3	9/8/2020 12:30 PM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	72.9 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/18/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

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info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39494	**Site:** VC-4	9/8/2020 12:00 PM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	78.4 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

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PO Box 870
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Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/18/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39495	**Site:** VC-5	9/8/2020 11:15 AM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	78.8 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

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info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/18/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39496	**Site:** VC-6	9/8/2020 10:30 AM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	79.9 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

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PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/18/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/18/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

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710 Bowsertown Road, Manteo, NC 27954 • 252.473.5702 Lab/Fax
255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

ANALYTICAL & CONSULTING CHEMISTS

info@environmentalchemists.com

Quible & Associates
PO Box 870
Kitty Hawk NC 27946
Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Lab ID	Sample ID:	Collect Date/Time	Matrix	Sampled by
20-39497	**Site:** VC-7	9/8/2020 1:00 PM	Solid/Sludge	Client

Test	Method	Results	Date Analyzed
Total Solids (%)	SM 2540 B	51.1 %	09/14/2020
Chlordane (TCLP)	SW 846 Method 8081B/3510	<0.02 mg/L	09/17/2020
Endrin (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Heptachlor epoxide (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Lindane (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Methoxychlor (TCLP)	SW 846 Method 8081B/3510	<0.0005 mg/L	09/17/2020
Toxaphene (TCLP)	SW 846 Method 8081B/3510	<0.05 mg/L	09/17/2020
1,4-Dichlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,6-Trichlorophenol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4-Dinitrotoluene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloro-1,3-butadiene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachlorobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Hexachloroethane (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
m + p-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Nitrobenzene (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
o-Cresol (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
Pentachlorophenol (TCLP)	SW 846 method 8270/3510	<0.250 mg/L	09/15/2020
Pyridine (TCLP)	SW 846 method 8270/3510	<0.050 mg/L	09/15/2020
2,4,5-TP (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
2,4-D (TCLP)	SW846 Method 8151A	<0.0003 mg/L	09/18/2020
1,1-Dichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
1,2-Dichloroethane (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020

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Environmental Chemists, Inc.

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255-A Wilmington Highway, Jacksonville, NC 28540 • 910.347.5843 Lab/Fax

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Attention: Warren Eadus

Date of Report: Oct 08, 2020
Customer PO #:
Customer ID: 08100100
Report #: 2020-15506
Project ID: OIFC

Benzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Carbon Tetrachloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Chlorobenzene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Chloroform (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Methyl ethyl ketone (TCLP)	SW846 Method 8260/5030	<0.05 mg/L	09/22/2020
Tetrachloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Trichloroethylene (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
Vinyl Chloride (TCLP)	SW846 Method 8260/5030	<0.01 mg/L	09/22/2020
TCLP Metals			
Arsenic	EPA 200.7	<1.0 mg/L	09/16/2020
Barium	EPA 200.7	<1.0 mg/L	09/16/2020
Cadmium	EPA 200.7	<1.0 mg/L	09/16/2020
Chromium	EPA 200.7	<1.0 mg/L	09/16/2020
Lead	EPA 200.7	<1.0 mg/L	09/16/2020
Selenium	EPA 200.7	<1.0 mg/L	09/16/2020
Silver	EPA 200.7	<1.0 mg/L	09/16/2020
Mercury	EPA 245.1	<0.0002 mg/L	09/17/2020

Comment:
Reviewed by: Amy Pruitt

Environmental Chemist, Inc., Wilmington, NC Lab #94

6602 Windmill Way
Wilmington, NC 28405
910.392.0223

Sample Receipt Checklist

Client: DUBLE & ASSOC. Date: 9/11/20 Report Number: 20-15506

Receipt of sample:		Delivered ☒	UPS ☐ FedEx ☐ Other ☐
☐ YES	☐ NO	☒ N/A	1. Were custody seals present on the cooler?
☐ YES	☐ NO	☒ N/A	2. If custody seals were present, were they intact/unbroken?
Original temperature upon receipt 5.4 °C			Corrected temperature upon receipt ____ °C
How temperature taken:		☐ Temperature Blank	☒ Against Bottles
IR Gun ID: Thomas Traceable S/N 192511657			IR Gun Correction Factor °C: 0.0
☐ YES	☐ NO		3. If temperature of cooler exceeded 6°C, was Project Mgr./QA notified?
☒ YES	☐ NO		4. Were proper custody procedures (relinquished/received) followed?
☒ YES	☐ NO		5. Were sample ID's listed on the COC?
☒ YES	☐ NO		6. Were samples ID's listed on sample containers?
☒ YES	☐ NO		7. Were collection date and time listed on the COC?
☒ YES	☐ NO		8. Were tests to be performed listed on the COC?
☒ YES	☐ NO		9. Did samples arrive in proper containers for each test?
☒ YES	☐ NO		10. Did samples arrive in good condition for each test?
☒ YES	☐ NO		11. Was adequate sample volume available?'
☒ YES	☐ NO		12. Were samples received within proper holding time for requested tests?
☐ YES	☐ NO		13. Were acid preserved samples received at a pH of <2? *
☐ YES	☐ NO		14. Were cyanide samples received at a pH >12?
☐ YES	☐ NO		15. Were sulfide samples received at a pH >9?
☐ YES	☐ NO		16. Were NH3/TKN/Phenol received at a chlorine residual of <0.5 m/L? **
☐ YES	☐ NO		17. Were Sulfide/Cyanide received at a chlorine residual of <0.5 m/L?
☐ YES	☐ NO		18. Were orthophosphate samples filtered in the field within 15 minutes?

* TOC/Volatiles are pH checked at time of analysis and recorded on the benchsheet.

** Bacteria samples are checked for Chlorine at time of analysis and recorded on the benchsheet.

Sample Preservation: (Must be completed for any sample(s) incorrectly preserved or with headspace)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly

by adding (circle one): H_2SO_4 HNO_3 HCl NaOH

Time of preservation: _____ If more than one preservative is needed, notate in comments below

Note: Notify customer service immediately for incorrectly preserved samples. Obtain a new sample or notify the state lab if directed to analyzed by the customer. Who was notified, date and time: _____

Volatiles Sample(s) _____ were received with headspace

COMMENTS:

envirochem
Analytical & Consulting Chemists

ENVIRONMENTAL CHEMISTS, INC

NCDENR: DWQ CERTIFICATION # 94 NCDHHS: DLS CERTIFICATION # 37729

6602 Windmill Way Wilmington, NC 28405
OFFICE: 910-392-0223 FAX 910-392-4424
info@environmentalchemists.com

COLLECTION AND CHAIN OF CUSTODY

Client: Quible and Associates	PROJECT NAME: OLFC	REPORT NO: 20-15506
ADDRESS: PO DRAWER 870	CONTACT NAME: Warren Eadus, PG	PO NO: P 18078
KURY HAWK NC 27949	REPORT TO: WARREN EADUS	PHONE/FAX: 252 491 8147
	COPY TO: WARREN EADUS	email: eadus@quible.com

Sampled By: _____ SAMPLE TYPE: I = Influent, E = Effluent, W = Well, ST = Stream, SO = Soil, SL = Sludge, Other:

Sample Identification	Collection: Date	Time	Temp	Sample Type	Composite or Grab	Container (P or G)	Chlorine mg/L	LAB ID NUMBER	PRESERVATION: NONE	HCL	H2SO4	HNO3	NAOH	THIO	OTHER	ANALYSIS REQUESTED
VC-1	9/8/20	0830			~~C~~ G	P G		39490	3							TCLP 8240; 8270; 6010 8151A/8081B metals (~~+Hg~~) Removed per client 9/11/20
VC-2		0925			~~C~~ G	P G		39492								
VC-3		1230			~~C~~ G	P G		39493								
VC-4		1200			~~C~~ G	P G		39494								
VC-5		1115			~~C~~ G	P G		39495								
VC-6		1030			~~C~~ G	P G		39496								
VC-7		1300			~~C~~ G	P G		39497								
					C G	P G										
					C G	P G										

Transfer	Relinquished By:	Date/Time	Received By:	Date/Time
1.	WE Quible	09/10/20 4:00pm	B	
2.				

Temperature when Received: 5.4 On. Accepted: ✓ Rejected: _____ Resample Requested: _____

Delivered By: FEDEX ice Received By: B Date: 9/11/20 Time: 11:55

Comments: _____ TURNAROUND: _____ RUSH 5-7 Day TAT

APPENDIX F:
SUBMERGED AQUATIC VEGETATION (SAV) SURVEY APRIL 28, 2020

SINCE 1959

2020 SAV SURVEY
OREGON INLET FISHING CENTER
8770 Oregon Inlet Road
Nags Head, NC 27959

Prepared For:
Russell King
Oregon Inlet Fishing Center, LLC
and
US National Park Service

Prepared By:

Quible & Associates, P.C.
Engineering · Environmental Sciences · Surveying · Planning
PO Drawer 870
Kitty Hawk, North Carolina 27949
(252) 261-3300 FAX (252) 261-1260
Quible.com

Project Number P18078
May 8, 2020

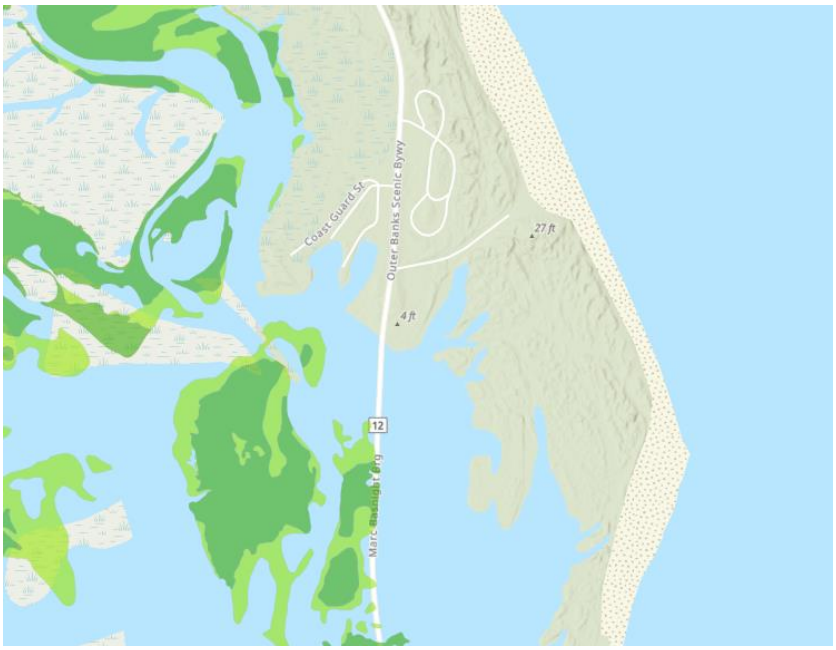
I. Introduction

The purpose of this report is for Quible & Associates, P.C. (Quible) to provide state and federal regulatory agencies with the results of a Submerged Aquatic Vegetation (SAV) survey conducted along the shoreline of Motts Creek adjacent to the Oregon Inlet Fishing Center (OIFC) located at 8770 Oregon Inlet Road, Nags Head, Dare County, NC (**Exhibit A – Site Exhibit**).

The April 28th SAV survey was performed in response to a request by the North Carolina Marine Fisheries (NC DMF) Habitat and Enhancement Section related to a proposal to construct a transient fuel dock, demolish existing onsite structures and construct a new retail center at the OIFC.

A review of online GIS data (NC OneMap 2006-2008 SAV updated 3/19/20) shows SAV occurrence outside of the project area. Ground truthing was performed by environmental scientists from Quible during the April 28, 2020 SAV survey.

The SAV survey was conducted during the growing season as required by resource management agencies.



SAV 2006-2008 Mapping Revised (3/9/2020) NC OneMap

II. Methodology

The attached base map (**Exhibit A**) includes 2016 aerial photography (NC OneMap), highlighted projected area, water depths and findings of the survey. Water depth surveying was conducted on January 24th, 2020 by a survey crew from Quible using survey-grade GPS (single beam echo-sounder). SAV surveying consisted of wading through the project area to depths of 4 feet below water level. Ideal weather conditions on April 28th (light winds and clear skies) allowed for clear views of the substrate to depths of approximately 5.0 feet below water surface. During the SAV survey, water depths, substrate type, flora and fauna notations and general observations were made and are presented in this report.

III. Findings and Observations

On April 28th, the winds were very light (+/- 2-5 mph) out of the SE. The survey occurred during a rising tide (high tide at Oregon Inlet was 11:51 am survey conducted at 10-11 am) resulting in water levels that were estimated to be about 8-12 inches above normal water levels (NWL). Normal Water Level is based on visible biological (algae, barnacles etc.) and physical markers (water marks) evident on pilings, rip rap etc.

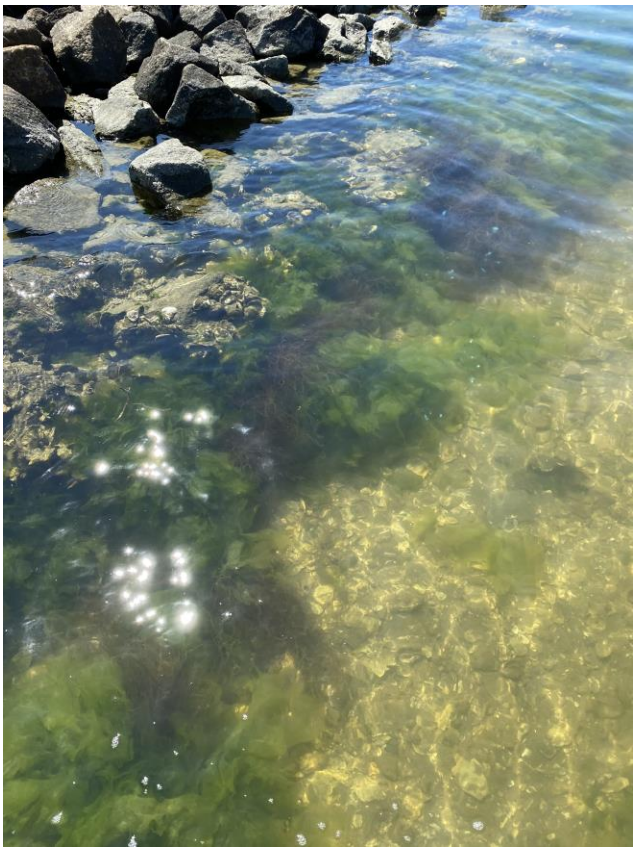
The bottom type in Motts Creek is loose sand and silt with some loose discarded oyster shell scattered near the shoreline. Sparse live oysters are attached to the riprap along the shoreline near the substrate. The entire shoreline of Motts Creek is stabilized with riprap, and some of the smaller riprap is scattered to depths of -1.0 to -2.0 feet below NWL.

No rooted SAV or rhizomes were observed within the project area. However, four different attached algae species were observed growing within the review area along the submerged portions of the riprap (See Attached Pictures). Sea Lettuce (Ulva spp.) was the dominate species, the area of Sea Lettuce is shown on the accompanying Site Exhibit (**Exhibit A**). Another species of an attached brown algae was found occurring sporadically (<5%) along the southern end of the shoreline. The other species of brown and green algae were observed very sparsely (<2%) in small quantities along the rip rap. All algae species were attached to either rip rap of oyster shell.

IV. DISCUSSION and CONCLUSION

The findings of this study indicate that the area reviewed does not support SAV and likely is not SAV habitat. Several undifferentiated species of green and brown algae were observed during the survey with Ulva spp. being the dominant type.

V. PHOTOGRAPHS



View of shoreline with attached algae species visible

Sea Lettuce Ulva spp.

Attached Brown Algae

Green Hair Algae

Brown Algae

NOTE: THIS DOCUMENT IS PRELIMINARY – NOT FOR CONSTRUCTION, RECORDATION, SALES OR CONVEYANCES – THIS DOCUMENT IS FOR DISCUSSION PURPOSES ONLY! EXISTING INFORMATION SHOWN ON THIS DOCUMENT IS BASED ON BEST AVAILABLE DATA AND IS NOT A CERTIFIED SURVEY. ALL INFORMATION SHOWN ON THIS DOCUMENT IS SUBJECT TO ANY REQUIREMENTS BY ANY REGULATORY AGENCY, ENTITY OR AUTHORITY.

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NCGRID (NAD83-2011)

MOTTS CREEK
(SC WATER CLASSIFICATION)

SUBTIDAL
SOFT BOTTOM

PROPOSED
90 LF BY 8 FT
FUEL DOCK

EXTENTS OF
ATTACHED ALGAE

RIP RAP

PROJECT
BOUNDARY

MAINTAINED
GRASSES

30' BUFFER

*PARCEL & AERIAL DATA SHOWN, BASED ON DARE COUNTY GIS DATA.

NC License#: C-0208
Quible & Associates, P.C.
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
ENG./SUR. NOT OFFERED AT BLACK MTN. OFFICE
8466 Caratoke Hwy, Powells Point, NC 27966
Phone: (252) 491-8147 Fax: (252) 491-8146
90 Church St., Ste. B, Black Mountain, NC 28711
Phone: (828) 793-0398 Fax: (252) 491-8146
administrator@quible.com

THIS MAP IS NOT A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS.

SAV EXHIBIT

OREGON INLET FISHING CENTER
8770 OREGON INLET ROAD

NAGS HEAD TOWNSHIP
DARE COUNTY
NORTH CAROLINA

0 30 60
GRAPHIC SCALE IN FEET 1"= 30'

PROJECT	DRAWN BY	CHECKED BY	DATE
P18078	JTM/OTH	WDE	04/28/20

Q:\2018\P18078\Drawings\P18078-COMMUNITIES JTM.dwg 4/28/2020 2:02 PM Tmurphy

APPENDIX G:
DRAFT FLOODPLAINS STATEMENT OF FINDINGS

Environmental Assessment for Oregon Inlet Marina Building and Site Improvements

FLOODPLAINS STATEMENT OF FINDINGS

for

Executive Order 11988: Floodplain Management

Director's Order 77-2: Floodplain Management

Recommended:

_____

David E. Hallac Date
Superintendent, Cape Hatteras National Seashore

Certification of Technical Adequacy and Servicewide Consistency:

_____

Forrest (Ed) Harvey Date
Chief, Water Resources Division, National Park Service

Approved:

_____

Stan Austin Date
Regional Director, Department of the Interior Region 2, South-Atlantic Gulf, National Park Service

INTRODUCTION

The National Park Service (NPS) has prepared this Floodplain Statement of Findings (FSOF) in compliance with Executive Order 11988 *Floodplain Management* and Directors Order 77-2. NPS would undertake a federal action at Oregon Inlet Marina, within Cape Hatteras National Seashore, in order to replace vulnerable, deteriorating buildings with resilient and sustainable structures and in order to conduct associated site improvements to modernize the marina premises.

Oregon Inlet Marina (also known as Oregon Inlet Fishing Center) is a commercial charter fishing marina located within Cape Hatteras National Seashore (Seashore) in Nags Head, North Carolina in the region of barrier islands known as the Outer Banks. Fishing operations and a marina in some form have been in place at Oregon Inlet for several decades. The National Park Service (NPS) has permitted or contracted fishing center and marina operations at Oregon Inlet since 1953 and the marina has been in operation in its current location since December 1956. While some of the facilities and operations have changed over the years, the marina operation has continuously provided charter fishing and associated services.

Oregon Inlet Marina (marina) is operated by Oregon Inlet Fishing Center, LLC (OIFC) under a 20-year lease with the NPS (2018 – 2038). In general, OIFC provides the following services at the marina: slip rentals for charter fishing boats, headboats and tour boats; booking services for charter fishing and other boats; retail sales; fuel sales; and food & beverage sales. OIFC is also authorized to provide: non-motorized watercraft rentals (such as kayaks and canoes); special events, such as fishing tournaments; and a children's play area. Under the terms of the lease, the lessee is required to fund and conduct all maintenance on the marina premises, as well as fund and undertake improvements and alterations to the premises as approved by the NPS.

The marina premises (also referred to as the “project area”) is +/- 11.3 acres and consists of a retail building (6,577 sf), marina basin (~ 1,580 linear ft with 61 existing wet slips), maintained landscape area (~ 1 acre), four (4) storage buildings (496 sf), an exhibit building (168 sf), asphalt parking area (~ 197 spaces), automobile fuel station booth (128 sf), waste water systems, and a fuel system consisting of three 10,000 gallon ConVault above ground storage tanks and six dispensers providing marine and vehicle fuel. All of the current development includes a total impervious area of 144,484 square feet or 3.32 acres.

The proposed action includes demolishing and replacing all the existing marina buildings within the project area and conducting other site improvements, including: formalizing informal parking areas and adding a driveway for air pump stations; upgrading the fuel system with in-slip fueling, a new transient fuel dock (including associated dredging) and placing the vehicle fuel area in a new location with a new driveway; adding pedestrian paths including a boardwalk near the transient fuel dock; maintenance dredging of the existing marina basin; formalizing stormwater management infrastructure to handle runoff from impervious surfaces; and adding a new wastewater pump station and drainfield (~ 1,600 gallons per day).

Brief Site Description

In 1937, Cape Hatteras became the first national seashore. It was designated to preserve dynamic barrier islands and its unique vegetation, wildlife and coastal processes, and to provide recreation and enjoyment for the public. Stretching over 70 miles from north to south, Cape Hatteras National Seashore crosses three islands: Bodie, Hatteras, and Ocracoke in the region known as the Outer Banks.

Oregon Inlet Marina is a commercial charter fishing marina located in the Bodie Island District of the Seashore. The marina is located just south of the town of Nags Head, North Carolina, just north of the Marc Basnight Bridge, adjacent to United States Coast Guard Station Oregon Inlet and an NPS public boat ramp, and across NC-12 from the NPS Oregon Inlet Campground.

Fishing operations and a marina in some form have been in place at Oregon Inlet for several decades. According to the Seashore's administrative history, a fishing center was in existence at Oregon Inlet prior to government ownership and NPS management of this area of Bodie Island. The NPS has permitted or contracted fishing center and marina operations at Oregon Inlet since at least 1953 and the marina has been in operation in its current location since December 1956. While some of the facilities and operations have changed over the years (for example, the facilities have previously housed a full-service restaurant and the main marina building has been added-on to meet operational needs), the marina operation has continuously provided charter fishing and associated services since the 1950's.

The lease premises, which is also the project area, is shown in red on Figure 1. The majority of the project area is mapped within Firm Zone (AE 5') with a small portion, where the existing septic drain fields are located, mapped as Shaded X (Panel 3730072600K). The mapped Federal Emergency Management Agency (FEMA) flood zones are shown on the attached Figure 2.

Brief Description of the Proposed Action

The proposed action is the action alternative and preferred alternative described in the Oregon Inlet Marina Improvements Site Plan and Environmental Assessment (EA). The purpose of the proposed action is to replace vulnerable, deteriorating structures with sustainable structures adapted to sea level rise and storm surge, and to conduct other site improvements to modernize the marina premises and to support the replacement buildings.

The proposed action includes the following activities (shown on Figure 1):

- Demolish all buildings currently in the project area (retail building - 6,577 sf., four (4) storage buildings – totaling 496 sf, an exhibit building - 168 sf, and automobile fuel station booth - 128 sf)
- Replace buildings with sustainable and resilient buildings with a first-floor elevation of 11-feet (exceeding Dare County Flood Damage Prevention Ordinance [hereafter "Dare County requirements"] by 3 feet and the Federal Emergency Management Agency (FEMA) requirement to participate in the National Flood Insurance Program [hereafter "FEMA requirements"] by 6 feet) as follows:
    - Main marina building (retail, food & beverage, and marina operations) +/- 6,393 sf first floor footprint

  - Fish cleaning building +/- 1,880 sf
- Increase formal parking infrastructure to accommodate up to 293 automobiles
- Enhance vehicular and pedestrian circulation within in the lease premises and between adjacent uses (NPS Boat Ramp and Recreational Vehicle (RV) pump out) by adding secondary vehicular egress in the vehicle fuel area, constructing pedestrian paths and wooden boardwalks, and adding a driveway for air pump stations
- Replace existing marine fuel docks and aged fuel infrastructure with the following:
  - An ~ 900 sf fuel dock with two (2) fueling stations for transient boats in Motts Creek (outside of marina basin)
  - Seven (7) in-slip fueling stations located throughout the marina
- Replace existing fuel docks with up to six (6) boat slips
- Replace existing vehicle fuel in a new location with a new driveway
- Construct new on-site wastewater treatment and disposal system (+/- 1,600 gpd) to accommodate replacement buildings, including food and beverage services
- Enhance stormwater management by constructing formal Stormwater Control Measures (SCMs)
- Perform maintenance dredging of marina basin and portions of Motts Creek
- Place a removable, open-air events pavilion (+/- 3,400 sf) on the lease premises, which will be the personal property of the lessee (not real property of NPS)

All the activities in the proposed action would take place within the already-developed marina area in order to support continued marina operations at Oregon Inlet. As the marina premises are located within a floodplain, all the activities under the proposed action are also within in a floodplain. As demonstrated in the associated EA and this FSOF, the proposed actions have been intentionally designed to mitigate risks associated with the project's location in a floodplain and to mitigate anticipated sea level rise and storm surge.

The existing marina buildings are vulnerable, deteriorating, have significant deferred maintenance, and do not meet elevation standards for the flood zone in which they are located (Firm Zone (AE 5')). The proposed replacement structures would exceed finished floor elevation (FFE) requirements and the structures would be designed for sustainability.

The main marina building (replacement structure, including retail, food & beverage and marina operations with a first floor footprint +/- 6,393 sf) would be a pile-supported structure and elevated so that the finished floor elevation (FFE) would be at least 11.0 feet (relative to NAVD 88), which is three feet higher than the local (county) first floor requirement of 8.0 feet (NAVD 88) and six feet higher than the FEMA requirement of 5.0 feet (NAVD 88). Currently, the FFE of the retail structure and fish cleaning building (one unit) are at an elevation of 5.95 feet (NAVD 88). The 100-year flood elevation based on the current FEMA Flood Maps and a comparison of site topography is approximately 5.0 feet (NAVD 88). The fish cleaning building (replacement structure for fish cleaning services and operations, +/- 1,880 sf) would be a pile-supported or block foundation structure located on an area of fill with a proposed fill grade elevation of 8.5 feet (NAVD 88) which would bring the structure above the 100 year flood plain. The fill is beneficial fill sourced from the proposed dredge of Motts Creek. Filling would allow for service vehicles, hand carts and pedestrians to directly access the fish cleaning building with their catch without the need for extensive wooden ramps or other mechanical means. The fish cleaning building would be elevated to a first floor elevation of 11.0 feet (NAVD 88), which is six feet

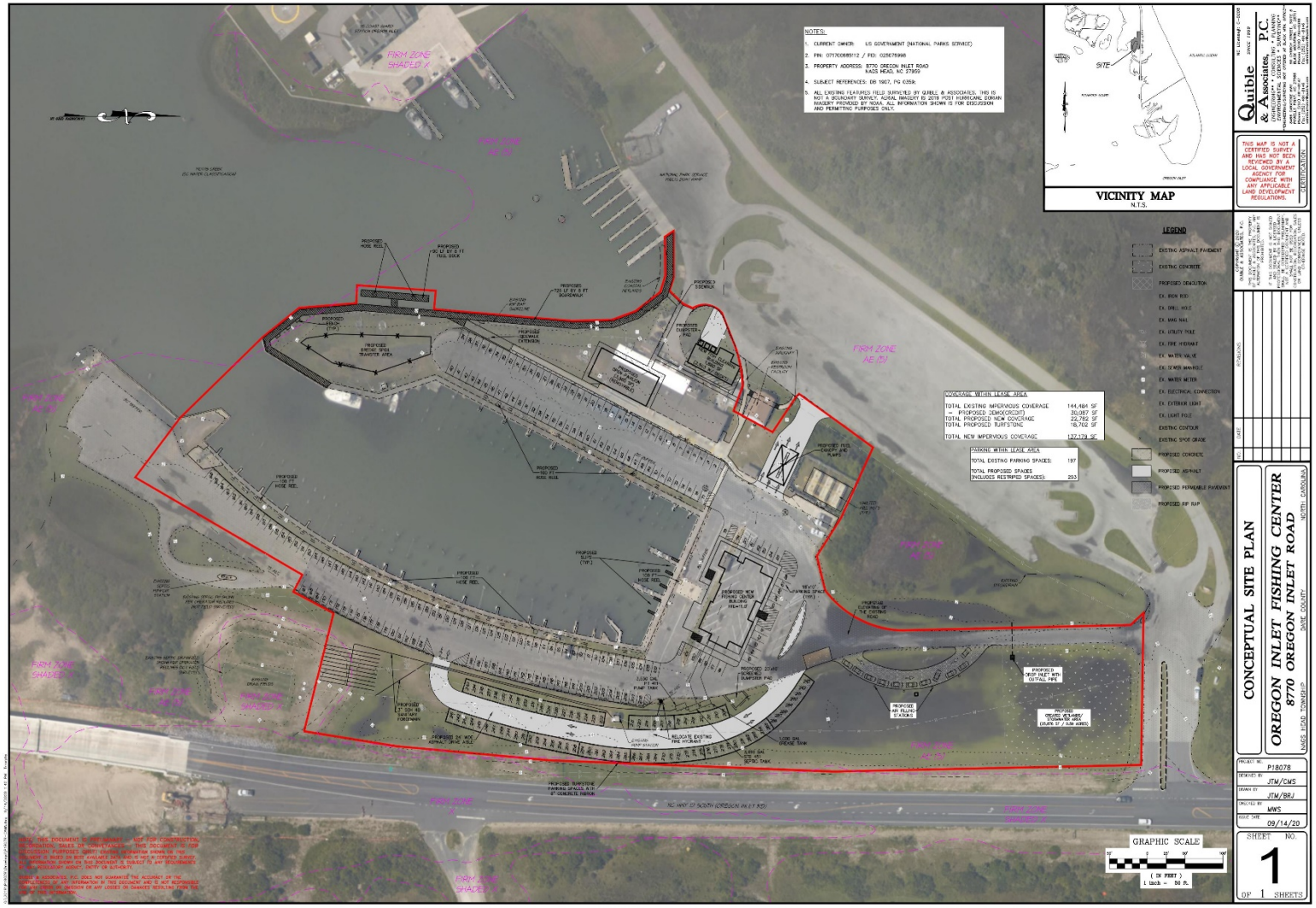
higher than the 100-year flood plain elevation FEMA requirement (5.0 feet NAVD 88) and three feet higher than the county first floor requirement of 8.0 feet (NAVD 88). The fish cleaning operation requires that large volumes of fish and ice be able to be delivered and offloaded quickly and directly to the fish cleaning building.

The proposed site improvements to support the replacement buildings and to modernize the marina would also be designed for sustainability and resilience in a floodplain. The proposed additional formal parking infrastructure and other improvements related to vehicle and pedestrian circulation would include mitigations such as the use of permeable pavement. The improvements to the fuel system would include appropriate mitigative actions to protect the loss of fuel in the case of a 500-year flood such as: hurricane straps on the fuel tanks (already in place) and steel and double-walled fuel pipes. The drainfield of the proposed wastewater system will be elevated above the 100-year floodplain. Stormwater control measures will function normally during regular rainfall events and offer stormwater retention and treatment. In general , stormwater control measures are situated lower than the areas of the property that they are designed to serve.

The proposed ~ 900 sf transient fuel dock would be typical wood construction with 6-8 feet on center pilings and decking would be constructed of treated lumber (as specified by a structural engineer). The dock would be elevated a minimum of three feet above normal water level (NWL) at an elevation of approximately 3.5 feet (NAVD 88). In order to function as a fuel dock for boats in the water, the dock cannot be elevated above the 100-year or 500-year flood plain.

The proposed removable, open-air events pavilion (+/-3,400 sf) will be the personal property of the lessee, thus not real property of NPS or of NPS consideration with regards to constructing capital improvements in a floodplain. However, by design, water will be able to freely flow through the open pavilion structure thus presenting little to no risk associated with flooding.

Figure 1: Conceptual Diagram of Proposed Action



General Characterization of Floodplain Values and of the Nature of Flooding and Associated Floodplain Processes in the Area

Floodplains within the Seashore perform important natural functions, including temporary storage of floodwaters, dissipation of storm water runoff, moderation of peak flows, groundwater recharge, prevention of erosion, and maintenance of water quality. In general, natural buffers, such as the sandy beach, dunes, and vegetation in the vicinity of the project area help maintain the natural functions of the floodplain. The proposed project/preferred alternative would occur within areas that are currently developed and have been developed since the early 1950's.

The park supports several natural features that reduce flooding severity. For example, dunes along the seashore impede storm surge, and ponds and other depressions also function to store water during over wash or large precipitation events. Flooding on the Seashore can range from minor over wash events during high tides to major flooding from hurricanes and other coastal storms. Excessive precipitation can also flood low elevation areas across the park. Major storms can drive ocean storm surges completely across the island, dramatically changing habitats and the entire landscape. As storm winds and waves scour sand away from the ocean beaches, sediments are deposited along the sound side. Many of the highest points on the islands are within the relict dune fields. Soils are sandy and the vegetation cover is often incomplete. The amount of natural vegetation cover present and the amount of impervious surface within a floodplain influences the degree of retention or effective function a floodplain can provide. The more vegetation and less impervious surface that is present within the floodplain, the better the floodplain can serve to protect the surrounding area from soil erosion and flooding. The ecological value of a heavily vegetated floodplain also increases because it provides more suitable habitat for wildlife (EMI 2008). The dynamic Bodie Island floodplain provides habitat for migrant water birds and helps reduce sound-side wind and wave impacts from storm effects. As a benefit when the sound floods, it brings an abundance of invertebrates, fish, and plants into the freshwater pond adjacent to the project area which then provides food for resting and feeding waterfowl (FEMA 1992).

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Description of Why the Proposed Action Must be Located within the Floodplain

The proposed action (outlined above and described in the associated EA) must occur within the floodplain, because the proposed replacement buildings and associated site improvements must be located within proximity to the marina basin and associated infrastructure in order to support ongoing marina operations. However, the proposed action will reduce the square footage of solid structures located in the floodplain by elevating the replacement buildings and reducing the overall footprint currently located withing the floodplain.

The project area lies at elevations below the 100-year floodplain (100-year flood elevation 5 feet), as shown on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panel: 3730072600K for Dare County, NC (Figure 2).

FEMA defines geographic areas as flood zones according to varying levels of flood risk. In the proposed action, all of the physical structures would be located within areas mapped as AE (5') on the FEMA flood maps, with the exception of the proposed wastewater drainfield, which would be filled to match the existing drainfields (7.0 feet or greater) in order to provide separation from the seasonal high water table. The proposed drainfield would be elevated above the 100-year floodplain into the 500-year floodplain at an elevation of approximately 7.0 feet (NAVD 88). The existing drainfields are located in a Shaded X Flood Zone and the new drainfield would be designed to match the existing drainfields. The zone AE (5') indicates that these areas have a 1 in 100 or 1% annual chance of flooding at elevations of 5.0 feet or less. Based on topographic surveys of the property and using the FEMA Flood Zone Maps, the 100-year flood zone includes portions of the project area that occur at elevations of 5 feet (NAVD 88) or less. The 500-year flood zone is defined as areas with a 0.2% annual chance flood hazard or 1% annual chance flood with an average depth of one foot or less or with a drainage area of less than one square mile. The major sources of flooding in this area would be flooding from storm surge or over wash from the direction of the Roanoke Sound and heavy rainfall events that are commonly associated with tropical events.

Description of Site-Specific Flood Risk

According to the United States Department of the Interior (DOI) NPS Procedural Manual #77-2, it is NPS policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. To implement NPS floodplain policy, proposed actions are classified into of three action classes. Depending upon the action class, one of three "regulatory floodplains" applies (100-year, 500 year, or Extreme).

Action classes are divided into three categories: Class I Actions, Class II Actions and Class III Actions.

Class I Actions include location or construction of administrative, residential, warehouse, and maintenance buildings: non-excepted parking lots or other human-made features which, by their nature, entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Class I Actions are subject to the floodplain policies and procedures if they lie within the 100-year floodplain (The Base Floodplain). The 100-year floodplain occurs at elevations of 5.0 feet (NAVD 88) and less, within the project area.

Class II Actions include any activity for which even a slight chance of flooding is too great. Class II Actions are subject to the floodplain policies and procedures if they lie within the 500-year floodplain. The entire project area lies within the mapped 500-year floodplain. Examples of Class II Actions are the location or construction of:

- Schools, hospitals, clinics, or other facilities occupied by people with physical or medical limitations;
- Emergency services;
- Fuel storage facilities, 40,000 gallons per day or larger sewage treatment plants, and storage of toxic or water-reactive materials, including hazardous materials; and
- Irreplaceable records, museums, and storage of archaeological artifacts.

Class III Actions include Class I and Class II Actions in high hazard areas, which include coastal high hazard areas and areas subject to flash flooding. There are no Class III Actions associated with this proposed action.

Class I Actions associated with the proposed action that will occur within the 100-year floodplain include the replacement of all buildings and associated infrastructure (plumbing mechanical and electric), parking improvements, and wastewater treatment and disposal (less than 40,000 gpd) that would occur at elevations of 5 feet (NAVD 88) or less. The proposed wastewater disposal field will be likely be filled approximately 24 inches, which would bring the elevation above 5 feet (NAVD 88) and above the 100-year floodplain. Class II Actions associated with the proposed action are limited to the storage of fuel on site in three 10,000 gallon above-ground storage tanks, which are currently sited at elevations of 4-5 feet (NAVD 88). However, it should be noted that the above-ground fuel storage tanks are all existing, serve the marina, and there is not a practicable alternative to place the tanks outside of the 100-year floodplain within the project area.

Measures to Mitigate Flood Hazard to Human Health/Life, Property (Capital Investment), and Natural/Beneficial Floodplain Values

Through project planning for the proposed action, including the EA associated with this FSOF, as well as day-to-day operations, both the NPS and marina lessee (OIFC) have and will continue to take measures to mitigate flood hazards. Normal flooding events, such as those caused by heavy rain, are not considered particularly hazardous to people or property at the marina (project area). More extreme flooding events, such as those caused by hurricanes, tropical storms, or nor'easters, pose hazards to human health/life and property. The purpose of the proposed action is to replace vulnerable, deteriorating structures with sustainable structures adapted to sea level rise and storm surge, and to conduct other site improvements to modernize the marina premises and to support the replacement buildings. The replacement structures and associated site improvements would be specifically designed to mitigate flood hazards that currently exist at the marina due to aging, deteriorated infrastructure that does not meet construction standards for this flood zone. Additionally, the NPS and marina lessee will continue current best practices associated with operating and maintaining a coastal marina in a flood plain.

Protection of Human Health/Life

The marina does not provide, and the proposed action does not include, any overnight accommodations or housing, so there are no hazards to human health or life associated with living or overnight occupancy of the project. While those hazards do not exist due the property use, the NPS and the lessee are and would continue to mitigate potential hazards to human health and life associated with marina operations in a floodplain.

To mitigate flood hazards to human health and life, the NPS and lessee will continue best practices for associated with operating and maintaining a coastal marina in a flood plain, which include maintaining and following storm preparedness / severe weather plans and a Spill Prevention, Control and Countermeasure (SPCC) plan specific to the marina's fuel system. The

Seashore maintains and follows a Severe Weather Plan, which is implemented when certain hazardous conditions are expected (such as Tropical Storm force winds), and includes Seashore coordination with the marina lessee. The lessee also maintains and follows its own Storm Preparedness Plan that has been reviewed and approved by the NPS and describes procedures for preparing for and recovering from severe weather events at the marina, including flooding. These plans and associated actions help protect human health and life in the floodplain by ensuring that the Seashore and lessee prepare facilities well-ahead of storm events, which helps prevent humans from being present at the marina during a storm event (including associated flooding). The SPCC plan and associated actions also help protect human health and life in the floodplain by setting standards fuel operations, preventing and controlling spills, which mitigate human health and life risks associated with fuel spills.

In addition to the plans, preparedness and recovery actions outlined above and described in the associated plans, the proposed action includes specific improvements to marina structures and infrastructure that will mitigate hazards to human health and life in a floodplain. These include replacing the current buildings that do not meet flood elevation standards with buildings that exceed these standards (described below), as well as replacing aged and dilapidated fuel infrastructure with fuel lines and dispensers that meet modern standards.

As noted above, the only Class II Action associated with the proposed action is the continued continued storage of fuel in three above ground storage tanks (ASTs). The marina's ASTs are double walled concrete tanks that are strapped to a concrete foundation with hurricane straps (NPS SPCC 2016). The tanks were installed in 2007 and in good working order with recent repairs (2017) and ongoing maintenance. Therefore, the proposed action does not include any changes to these tanks and hazard mitigation is already in place. The proposed action does include replacing fuel piping, dispensers and other fuel infrastructure (marine and vehicle fuel), which would mitigate current hazards associated with the aged infrastructure, including hazards to human health and life. In the proposed action, all fuel lines and dispensers would have secondary containment, sumps and emergency cutoff switches and breakaway couplings to protect from spills in the event of extreme weather events. In the event of a catastrophic weather event, fuel in the ASTs and fuel lines could be evacuated to prevent from a release of petroleum products to the environment.

Protection of Property (Capital Investment)

As described above, the purpose of the proposed action is to replace vulnerable, deteriorating structures with sustainable structures adapted to sea level rise and storm surge, and to conduct other site improvements to modernize the marina premises and to support the replacement buildings. Therefore, the proposed action is designed to mitigate flood hazards to the property / capital investment.

All proposed above-ground structures (wastewater infrastructure excluded) would occur within the 100-year floodplain due to the project's proximity to the marina basin. However, the proposed replacement structures would exceed finished floor elevation (FFE) requirements and the structures would be designed for sustainability and to protect the capital investment in the marina.

The main marina building (replacement structure, including retail, food & beverage and marina operations with a first floor footprint +/- 6,393 sf) would be a pile-supported structure and elevated so that the finished floor elevation (FFE) would be at least 11.0 feet (relative to NAVD 88), which is three feet higher than the local (county) first floor requirement of 8.0 feet (NAVD 88) and six feet higher than the FEMA requirement of 5.0 feet (NAVD 88). Currently, the FFE of the retail structure and fish cleaning building (one unit) are at an elevation of 5.95 feet (NAVD 88). The 100-year flood elevation based on the current FEMA Flood Maps and a comparison of site topography is approximately 5.0 feet (NAVD 88). The fish cleaning building (replacement structure for fish cleaning services and operations, +/- 1,880 sf) would be a concrete block or short pile-supported structure and elevated to a first floor elevation of 11.0 feet (NAVD 88), which is six feet higher than the 100-year flood plain elevation FEMA requirement (5.0 feet NAVD 88) and three feet higher than the county first floor requirement of 8.0 feet (NAVD 88). The area where the replacement fish cleaning is proposed would be filled to an elevation of 8.5 feet (NAVD 88) to elevate the structure above the 100 year flood plain and allow for efficient delivery of fish and ice.

Preservation/Restoration of Natural and Beneficial Values

In addition to mitigating hazards associated with human health/life and protection of capital investment in a floodplain, the proposed action would also provide some preservation and restoration of the natural and beneficial values of the floodplain. The proposed action would remove all of the current marina buildings, none of which allow for water flow through the site. The replacement main marina would be elevated above the floodplain and constructed on pilings, which would allow for freer flow of water in the floodplain. Additionally, the proposed project would reduce impervious surfaces by removing approximately 7,305 sf of asphalt and concrete paving (which exists in the location proposed for the replacement main marina building, and adjacent to and underneath the existing main marina building). The proposed action would include new parking and drive aisle improvements amounting to a total of 22,782 sf, but these improvements would be pervious. A reduction in impervious surfaces will offer increased groundwater recharge and should help alleviate and mitigate flooding from extreme weather events and limit standing water following routine rainfall events. The removal of impervious surfaces would help to slow down floodwaters and encourage groundwater recharge

Figure 2: FEMA Flood Insurance Rate Map (FIRM) Panel: 3730072600K for Dare County, NC

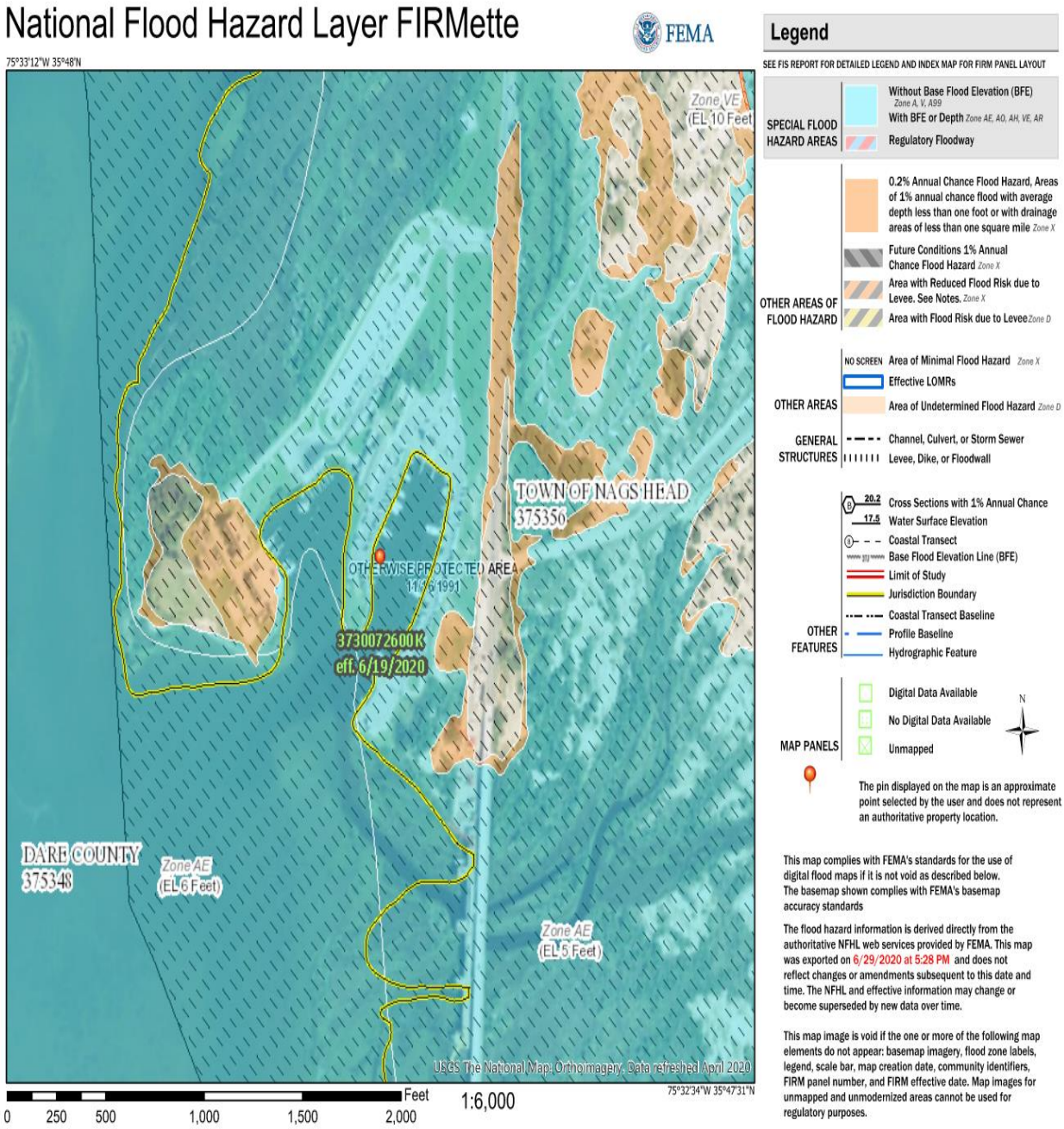
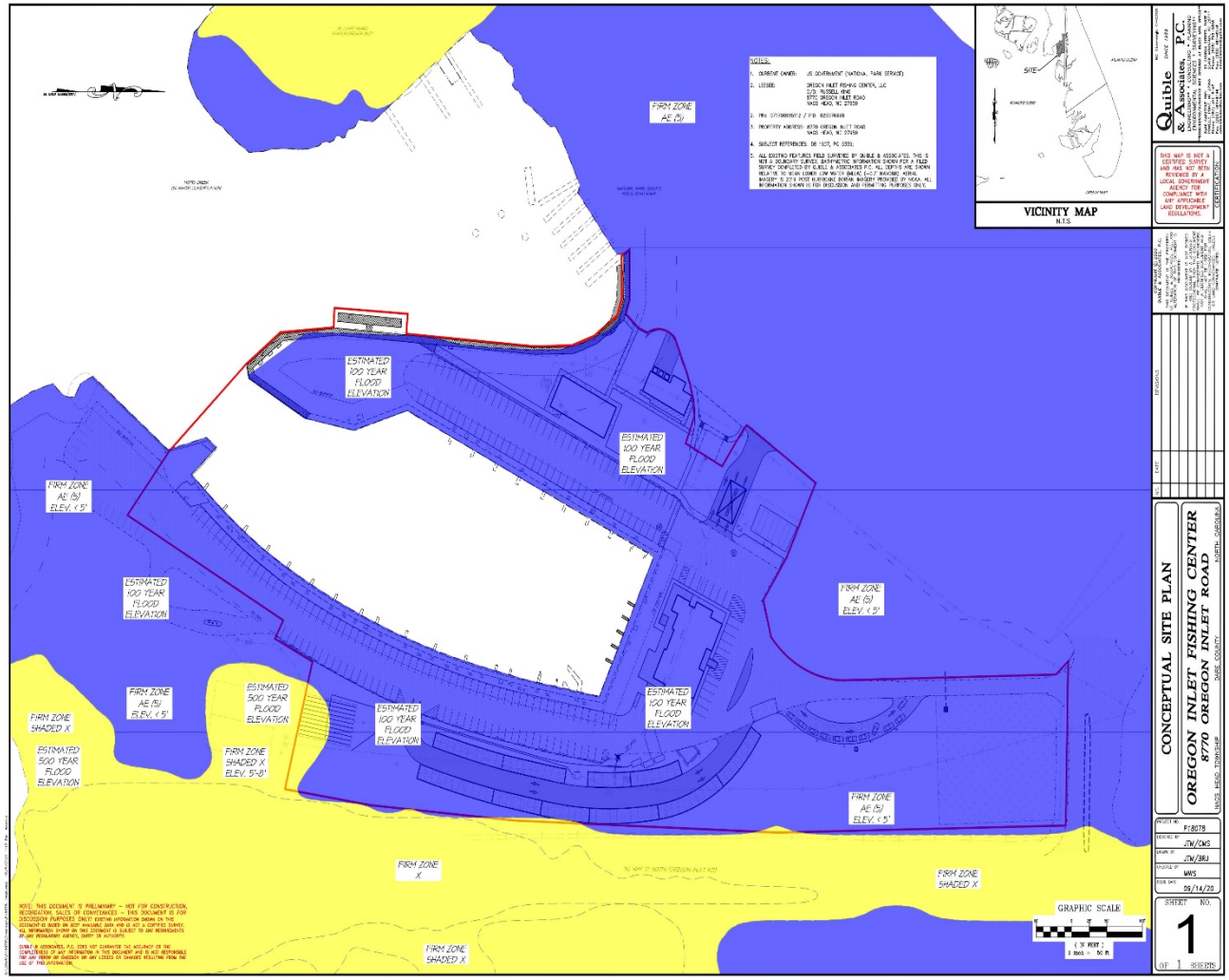


Figure 3: Estimated Depths of 100-year and 500-year Floods



Summary

The National Park Service finds that the proposed action at Oregon Inlet Marina to replace vulnerable, deteriorating structures with sustainable structures adapted to sea level rise and storm surge, and to conduct other site improvements to modernize the marina premises and to support the replacement buildings, is essential for continued public use and benefit, even though the actions would be in designated and mapped flood-prone areas. The National Park Service also finds that in order to continue operations at Oregon Inlet Marina, there are no practicable alternatives to locating the proposed action (project) in a floodplain. The proposed action is specifically designed to mitigate hazards to human health/life and property (capital investment) in a floodplain, as well as provide some preservation and restoration of the natural and beneficial values of the floodplain. These design elements and mitigations include replacing the existing buildings with structures exceeding constructions standards for this flood zone, improving fuel system components to mitigate hazards in flood events, and promoting natural surface water flows by removing impervious surfaces and elevating structures above the floodway. This project is consistent with the policies and procedures of NPS Director's Order #77-2 (Floodplain Management) and Executive Order 11988.

REFERENCES:

Emergency Management Institute (EMI). 2008. Floodplain Management: Principles and Current Practices. Floodplain Natural Resources and Functions (Chapter 8). Available on the Internet at https://www.training.fema.gov/hiedu/aemrc/courses/coursetreat/fm.aspx.

Federal Environmental Management Agency (FEMA). 1992. Floodplain Management in the United States: An Assessment Report. Volume 1 Summary Report. Interagency Floodplain Management Taskforce.

National Park Service (NPS).2003. Directors Order DO #77-2 Floodplain Management and Procedural Manual PM #77-2 *Floodplain Management*.

APPENDIX H:
IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

This appendix presents an overview of impact topics that were considered for full analysis, but were ultimately dismissed from further analysis in this EA. An impact topic was initially considered for, but dismissed from, further analysis if it was determined that the resource is not present in the project area or that there would not be a meaningful effect to the resource, i.e. impacts would be less than minor, typically temporary, and localized.

Air Quality

Section 118 of the Clean Air Act requires the NPS to meet all federal, state, and local air pollution standards (42 USC 7401 et seq.). The proposed project/preferred alternative would not significantly increase vehicle trips to the project area. Currently, the project area serves charter boats and visitors who travel to the project area via automobile or boat. Proposed actions would include increasing the formal parking area from approximately 197 spaces to a total of 293 spaces within the lease area. Parking areas outside of the project area would not be affected by this proposal. The project area is adjacent to NC Highway 12, which serves motorists traveling to Hatteras Island and Ocracoke Island. Vehicles that travel on the highways and visit the Seashore are subject to federal emissions standards. Air quality impacts from increased visitation to the project area would be negligible as any visiting cars would be parked and not running. Implementation of the proposed action/preferred alternative would result in localized exhaust emissions and fugitive dust within the project area during construction activities. However, emissions and fugitive dust would occur only during the construction period and would dissipate quickly. No long-term impacts on air quality are expected. Therefore, the topic was dismissed from further analysis in this document.

Federal Species of Special Concern and Their Habitat (Terrestrial)

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. This requirement was fulfilled by querying the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (https://ecos.fws.gov/ipac/) on 2/10/2020 to generate a list of federal species of concern and their habitat that may occur within the project area.

The IPaC list identified the following terrestrial species of threatened, endangered, or candidate species and migratory birds that may occur within the proposed project location. Marine/aquatic species are listed separately in Table 1 and Table 2 in Chapter 3 Affected Environment and Environmental Consequences.

Table 3 - IPaC Resource List Terrestrial Species

Scientific Name	Common Name	Federal Status	Determination of Impacts
Myotis septentrionalis	Northern Long-eared Bat	Threatened	Not likely to adversely affect
Canis rufus	Red Wolf	Experimental	Not likely to adversely affect
Laterallus jamaicensis ssp. jamaicensis	Eastern Black Rail	Proposed Threatened	Not likely to adversely affect
Charadrius melodus	Piping Plover	Threatened	No effect
Calidris canutus rufa	Red Knot	Threatened	No effect
Picoides borealis	Red-cockaded Woodpecker	Endangered	No effect
Sterna dougallii	Roseate Tern	Endangered	No effect
Amaranthus pumilus	Seabeach Amaranth	Threatened	No effect

Migratory Birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act that occur on the USFWS Birds of Concern list or warrant special attention in the project location are listed within the IPaC Resource List included as Appendix A. In addition, a total of 42 species of birds are listed on the IPaC resource list and many of the birds can be found near the project area.

A Probability of Presence Summary is included in the IPaC list and presented in Appendix A. Based on a review of the IPaC Resource List, critical habitat for any of the listed species is not found within the project area. In addition, construction would generally occur during winter months which would not interfere with any of the listed species breeding times as listed in the IPaC Resource List. Therefore, it does not appear that any of the species listed would be adversely affected by the proposed project/preferred alternative.

Correspondence from the USFWS (February 20, 2020) concurred that the proposed action/preferred alternative is not likely to adversely affect any federally listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act within the project area (see Appendix C).

Additionally, the USFWS letter provided recommendations regarding the potential impacts the proposed action/preferred alternative might have on aquatic species. Aquatic resources are highly susceptible to sedimentation and they recommend that all practicable measures be taken to avoid adverse impacts to aquatic species, including implementing directional boring methods and stringent sediment and erosion control measures. In their February 20, 2020 letter, the USFWS requested that an erosion and sedimentation control plan be submitted to and approved by the North Carolina Department of Environmental Quality (DEQ), Division of Energy Mineral and Land Resources (DEMLR) prior to any land disturbance (see Appendix C).

The land disturbance required to implement the proposed project/preferred alternative would require the installation and maintenance of erosion and sedimentation control measures between the construction site and any nearby down-gradient surface waters (see Mitigations Measures Chapter 2: Alternatives) to stop sediment from entering surface waters or adjacent wetlands. In addition, natural, vegetated buffers on all streams and creeks adjacent to the project area would be maintained.

The actions in the proposed project/preferred alternative occur within already developed areas and a review of federally listed and endangered species indicates that there are not any critical habitats for any of the federally listed species within the project area. Therefore, the topic of federal species of special concern and their habitat (terrestrial) has been dismissed from further analysis in this document.

Vegetation

Vegetation within the project area is limited to open grassed areas that are routinely mowed by the NPS and/or the marina lessee. An analysis of the plant communities that occur within the project area was conducted on January 31, 2020. In addition, the North Carolina Natural Heritage Program (NCNHP) database was queried on February 6, 2020 to gather information about any records of rare species, important natural communities, natural areas, and/or conservation/managed areas with the proposed project area boundaries. Based on the field observations and review of the findings in the NCNHP Report (Appendix B), the project area does not support any state or federally listed and special status plant species.

There are existing low-lying areas with native vegetation that is indicative of a Salt Flat (Shafale and Weakley 2012) dominated by Salicornia spp., Distichlis spicata and Schoenoplectus robustus. Site stormwater and floodwater currently flows to these low-lying areas and eventually infiltrates into the shallow water table or flows into the adjacent brackish marsh north of the project area.

The open grassed areas within the project area where additional formal parking would be added are routinely mowed by NPS and used as informal, overflow parking as needed. It is unlikely that these areas provide permanent habitat to any faunal species due to the frequency of mowing. More likely, this area serves as foraging and occasional congregation of birds during flood events.

Any ground disturbing activity has the potential to introduce and spread nonnative or exotic plant species. Areas within the project boundaries where ground disturbance would occur are within developed and previously disturbed areas, and the spread of nonnative species would be limited and less than minor. Mitigation measures would be in place, as described in Chapter 2, to minimize the introduction of nonnative plant species and to eradicate any species that enter construction areas. Because the area is maintained grass and does not support any state or federally listed or special status plant species and mitigation would be in place to minimize impacts, vegetation was dismissed from further analysis.

Archeological Resources

The construction of any proposed improvement that requires ground disturbance may impact archeological resources, if present. Although a substantial percentage of the Seashore has a low probability of yielding archeological resources, only a very small portion of the Seashore has been fully surveyed to current NPS standards. The project area has not been fully surveyed for archeological resources to current NPS standards, however, most of the project area has been previously disturbed as it has been used for marina operations and adjacent uses, including the NPS public boat ramp and campground dump station. Additionally, a consultation request was submitted to The North Carolina Department of Natural and Cultural Resources (DCR) on January 27, 2020, outlining proposed project actions. The North Carolina State Historic Preservation Office responded with a letter on January 31, 2020, stating that the DCR “are aware of no historic resources which would be affected by the project". Therefore, the likelihood that any significant archeological resources are present within the project area is very low.

While significant archeological resources are not likely to be present in the overall project area, the proposed actions on the east side of the property (between the existing parking and driveway and NC Highway 12) have a slightly greater potential to disturb any undiscovered archeological resources, because this is currently an open grassy area, which has been less disturbed than the remainder of the project area. Therefore, for ground disturbing activities within the area proposed for the new parking, driveway and septic system (on the east side of the project area between the driveway and parking and NC Highway 12), an archeologist, who meets Secretary of Interior Standards and Guidelines must monitor the construction activities. If a non-NPS archeologist is hired to conduct the monitoring, they must obtain a NPS permit in accordance with the Archaeological Resource Protection Act (ARPA) prior to monitoring activities.

If, during construction, previously unknown archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and

documented. If significant resources could not be preserved in situ, an appropriate mitigation strategy (e.g., the excavation, recordation, and mapping of cultural remains prior to disturbance to ensure the recovery of archeological data that otherwise would be lost) would be developed in consultation with the State Historic Preservation Officer and, as appropriate, associated Native American tribes. Mitigation measures would be put in place that would minimize impacts; therefore, the impact topic of archeological resources was considered but dismissed from further analysis.

Cultural Landscapes

According to the NPS Directors Order 28: Cultural Resource Management Guideline (NPS 1998), a cultural landscape is a reflection of human adaptation and use of natural resources, and is often expressed in the way land is organized and divided as patterns of settlement, land use, systems of circulation, and in the types of structures that are built. A cultural landscape inventory has not been conducted for the project area. However, there are no listed historic structures in the vicinity (SHPO ER 20-0115). While there are iconic features (such as the Basnight Bridge and Oregon Inlet) associated with the general area immediately adjacent to the project area, there are no historic structures within the project area, and this limits the potential for a cultural landscape (as defined in NPS Directors Order 28). For these reasons, cultural landscapes were dismissed from further analysis.

Ethnographic Resources

The NPS defines ethnographic resources as any "site, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). According to NPS Cultural Resources staff and the Seashore's general management plan (NPS 1984) to date, no ethnographic resources within the area have been determined eligible for listing in the National Register. For this reason, ethnographic resources have been dismissed from further analysis.

Historic Structures

Sections 106 and 110 of the NHPA of 1966, as amended (54 USC 306108, et seq.) and its implementing regulations under 36 CFR 800 require all federal agencies to consider the effects of federal undertakings on historic properties, including historic structures eligible for or listed in the National Register of Historic Places. In order for a structure to be listed in the National Register, it must be associated with an important historic event, person(s), or embody distinctive characteristics or qualities of workmanship.

On November 15, 2019, the NPS issued a letter to the State Historic Preservation Office (SHPO) detailing the history of the concessions building at the Oregon Inlet Fishing Center with a statement that the structures "lack integrity of design, location and association. For these reasons, we conclude that the building is not eligible for listing on the National Register." In a December 16, 2019, reply from SHPO, they concurred with the NPS determination. A copy of the NPS and SHPO correspondence is included as Appendix C. For these reasons, historic structures have been dismissed from further analysis.

Geologic Processes

The project area is developed and has generally been in its current configuration and location for more than 50 years. Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS), the project area is comprised of three main soil types as indicated on the soils map included as Appendix D. Paved areas and locations of buildings within the project area are delineated as Psammets (PsB), which are recognized as dredged soils. Newhan (NeC) fine sands are delineated in the areas between the marina parking lot and NC Highway

12. The open grassed areas north of the parking area are delineated as Duckston (DtA) fine sands. All proposed upland improvements are within developed and previously disturbed areas. Any ground clearing and grading for improvements would disturb soils within the project area, however, impacts to soils would be minor to negligible and would not significantly alter soil properties within the project area.

Natural migration of sands and dunes occur during Marine Regressive and Transgressive Cycles caused by eustatic sea level change (Soller and Mills 1991). A Marine Transgressive Cycle is a geologic event and name for times when sea level is rising. In its natural state, the project area would be subject to wind driven sand migration as well as occasional sound side flooding and ocean over wash. However, the creation of high primary dunes along the Atlantic Ocean during the 1930s (Civilian Conservation Corps and the Works Progress Administration), protection of Highway 12 by NC DOT, new construction of the Marc Basnight Bridge (formerly the Bonner Bridge) and hardening of the inlet - effectively meaning that this location is protected from natural geologic processes for the near term.

The proposed action/preferred alternative would have an impact on roughly three acres of in-situ soils stemming from excavation for utilities, installation of new pavement sections, removing old structures and earth movement related to deposition of dredge spoils. However, these impacts are less than minor in comparison to the other development that has occurred at the site in the past. All proposed construction associated with the proposed project/preferred alternative would occur in areas that have historically been impacted by development. Therefore, this topic has been dismissed from further analysis.

Lightscapes

The marina is located in an area with minimal existing light pollution. Current buildings within the project area have dark night sky compliant outside lighting. The proposed replacement facilities would require lighting, which could result in impacts to dark night skies. However, dark night sky compliant lighting would be required for the replacement facilities to reduce potential light pollution. Therefore, it is expected that development lighting would not have significant impact on adjacent sites. For this reason, this topic has been dismissed from further analysis in this document.

Land Use

The lessee (OIFC) is funding the proposed improvements and the NPS must authorize improvements as specified in the Lease. The NPS would continue to retain ownership of the land and any improvements on the land with the exception of the proposed open-air pavilion, which would be removable personal property of OIFC. Maintenance of the proposed replacement buildings and other site improvements is the responsibility of the lessee for the duration of the lease.

The project area and adjacent Seashore serves the public by providing public access to the Pamlico Sound via NPS public boat ramps fish cleaning stations, retail fuel sales, wet slip marina, fishing and sightseeing charters, automobile air pumps, NPS campground RV dump station, public restrooms and general vacation stop for the visiting public. Adjacent areas within the Seashore also includes the United States Coast Guard Station Oregon Inlet and Cape Hatteras Electrical Corporation powerline infrastructure. Proposed actions would continue and enhance all existing land use and would not interfere or eliminate any of the current uses within the Project area or surrounding Seashore. For these reasons, this topic has been dismissed from further analysis.

Environmental Justice

The surrounding communities were assessed by reviewing Dare County demographic data, to contain both minority and low-income populations (2020 DATAUSA). The proposed project/preferred alternative would not impact any minority and low-income populations. The site would remain available for use by all people regardless of race or income, and any construction workforces would not be hired based on race or income. Furthermore, the NPS actively solicited public participation as part of the planning process and gave equal consideration to all input from persons regardless of age, race, income status, or other socioeconomic or demographic factors. For these reasons, this topic has been dismissed from further analysis.

Soundscape

In general, the natural sounds of the project area include wind, wind blowing the marsh grasses, water and waves lapping onto the shore and marina bulkhead, ocean waves and birds and shore bird calls. Anthropogenic sounds that currently dominate the project area include automobiles on the adjacent Highway 12, sounds associated with a commercial marina (e.g. boat motors, human voices).

Construction and mechanized sounds generated during construction of the proposed project would temporarily and adversely impact the natural soundscape. Given the history of the site as a commercial marina and proximity to Highway 12, the proposed construction sounds produced would be a less than minor and temporary impact. For this reason, soundscapes have been dismissed from further analysis.

Viewsheds

The replacement buildings included in the proposed action/preferred alternative would be elevated could impact viewsheds. The proposed replacement retail building is expected to be two stories and no taller than 35 feet as measured from finished grade. While the proposed replacement buildings would be taller than the existing structures, there would be a consolidation of all of the storage buildings and other structures that have been added to the marina over the years, which would cumulatively improve the viewshed in the project area.

The proposed project/preferred alternative, would improve the aesthetics of the project area and open up views of the adjacent Pamlico Sound, Bodie Island Lighthouse and other points of interest in vicinity of the project area. These improvements would be localized and long-term, but less than minor in reference to the scale of the facilities already present within the project area. For these reasons, this topic has been dismissed from further analysis.

Water Quality and Quantity

Construction activities associated with the proposed action/preferred alternative would have the potential to adversely affect the quality and quantity of water draining to the marina basin. The proposed action/preferred alternative decreases the total impervious surfaces (144,848 sf existing and 137,179 sf proposed) at the facility. New parking areas are proposed to be constructed of pervious pavement (+/- 18,702 sf) and are not counted in the impervious surface calculations. Overall, the proposed project/preferred alternative would not result in an increase in the impervious surfaces throughout the site. However, a formal area of stormwater treatment is proposed to provide flood control and enhanced nutrient uptake of the stormwater runoff generated by the existing impervious surfaces.

The proposed replacement for the main marina building would include a full-service restaurant and more retail square footage than is currently present on site. These changes would create more wastewater flow than is currently being generated (it is estimated that an additional 1,600 gallons per day would be generated). New and expanded wastewater treatment and disposal facilities would decrease the likelihood of groundwater contamination that could potentially occur from these sources.

The proposed project/preferred alternative would include replacing of all fuel dispensers and underground piping. During construction, sedimentation and erosion control measures would be implemented to prohibit sediments from leaving the project area and inadvertently filling surface waters or adjacent wetlands.

All stormwater, wastewater and fuel systems would be designed and constructed following current best management practices as described in Chapter 2: Alternatives. There would be no new direct discharges of any surface waters, onsite wastewater disposal or any other substance that would adversely impact surface water or groundwater quality at the facility and marina. Therefore, impacts to water quality and water quantity would be minimized and because of this, this impact topic was dismissed from further analysis.

Wetlands

The Clean Water Act was enacted to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 USC 1251 et seq.). Consideration of impacts on wetlands is also required under Executive Order 11990, "Protection of Wetlands," and NPS Director's Order 77-1: Wetland Protection (NPS 2002). There are wetlands adjacent to the project area, but no wetlands are located within the project area nor would there be any impacts to the existing adjacent wetlands due to any proposed project actions. For these reasons, wetlands have been dismissed from further analysis in this document.

Marine or Estuarine Resources

The proposed action/preferred alternative includes construction of a new transient fuel dock and associated dredging in Motts Creek, modification of boat slips along the north end of the marina and replacement of fuel slips with in-slip fueling throughout the marina basin. In addition, the proposed action/preferred alternative would involve temporary land disturbance.

The transient dock would permanently shade 792 sf of substrate within Motts Creek and would involve the installation of approximately 30 timber pilings. The proposed action/preferred alternative also includes dredging in Motts Creek and within the marina basin as described in Chapter 2.
Species listed under the Endangered Species Act are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries). As part of this assessment, NOAA Fisheries was contacted on January 29, 2020 and information related to managed resources and species was requested. NOAA fisheries requested an Essential Fish Habitat (EFH) Assessment be conducted for the project area. An EFH Assessment was prepared and submitted to NOAA Fisheries on March 20, 2020 and a revised EFH that includes the sediment analysis and discussion about the proposed dredge aspect of the project was submitted on October 21, 2020. A copy of the updated EFH Assessment is included with this document as Appendix E.

The proposed in-water work would have a less than minor and temporary impact on marine and estuarine resources. Substrate disturbance during piling installation and dredging activities would be temporary and the proposed work would be minor in scope and scale to activities that have and continue to occur in waters and substrates within and adjacent to the project area. These existing and past activities include the historical dredge and maintenance of the marina basin, Walter Slough channel dredge and maintenance, installation and maintenance of NPS boat ramps, historic ferry terminal operation and operation of the United States Coast Guard Station Oregon Inlet.

There are no reported critical habitats of any listed species found to occur within the project area. In addition, the proposed work is the type of work that is routinely allowed with proper permits through various State and Federal agencies. The permanent shading of 792 square feet of Motts Creek would have minimal to no impact on the substrate that is documented to be devoid of shellfish beds and submerged aquatic vegetation (SAV Survey conducted April 28, 2020). Therefore, this topic has been dismissed from further analysis in this document.